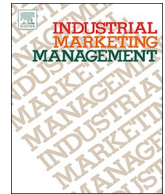




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Using design thinking to respond to crises: B2B lessons from the 2020 COVID-19 pandemic



Pinar Cankurtaran^a, Michael B. Beverland^{b,*}

^a Faculty of Industrial Design Engineering, Delft University of Technology, Landbergstraat 15, Delft 2628CE, the Netherlands

^b Strategy & Marketing, University of Sussex Business School, Jubilee Building, Falmer BN1 9SL, United Kingdom

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ABSTRACT

We examine the value of design thinking in times of crisis. Drawing on examples of firm innovations during the 2020 Covid-19 lockdown, we propose that disruptive events represent wicked problems that require managers to break out of established patterns of thinking. Design thinking, or the problem solving approaches and tools of designers, represents one such approach. Drawing on extant research, we identify a three-stage process of design thinking: disrupt, develop and deliver, and transform. We examine each stage, identifying how careful disruptive thinking with a focus on understanding problems within their context can give rise to innovative solutions, resulting in a more resilient organisation.

1. Introduction

As they entered into the second decade of the 21st century, few, if any, industrial marketers would have imagined that by March 2020, many of their markets would have disappeared, with supply chains and trade severely disrupted. For business-to-business (B2B) marketers, the subsequent lockdown by governments around the world resulted in an almost immediate loss of markets, as rapid collapse in consumer demand ensured the bull-whip effect quickly took hold within supply chains (Hufford & Tita, 2020; Lee, Padmanabhan, & Whang, 1997). The phrase “in these crazy times” entered into common business usage, reflecting a ‘new normal’ characterized by heightened uncertainty. Furthermore, it was not clear if, and when, normal business would return, as many upstream clients may not survive the Covid-19 lockdown period.

Given the likelihood of reoccurrence due to new viruses and/or mutations, and the high possibility of calamitous environmental events arising from climate change, what tools can B2B marketers use when these situations occur? In this article, we draw on research on design thinking (Luotola, Hellström, Gustafsson, & Perminova-Harikoski, 2017), or the problem solving method and tools used by designers to deal with wicked problems (Brown, 2008). Why design thinking? With many nations making reference to ‘wartime conditions’ (Financial Times, 2020), we believe that design thinking, with its emphasis on disruption, abductive thinking, and reframing, offers insights for the necessary pivot (Reis, 2011) that many B2B firms will have to undergo

to survive, and potentially, emerge stronger (Beverland, Wilner, & Micheli, 2015).

We only need to examine the rapid adjustment of some unlikely B2C firms to further support the merits of design thinking in responding to crisis situations. At the end of 2019, who would have thought that, in a few months, some of the biggest names in consumer luxury would have quickly shifted their famed ateliers away from crafting delicate perfumes, fine wines, and beautiful clothes, to supplying hand sanitiser and personal protective equipment (PPE) to stretched frontline medical staff? Yet this is precisely what LVMH, Burberry, Brooks Brothers, the Miroglio Group, Coty, Zara and many others did. Struggling airlines such as Delta and Jetblue have been offering free flights to medical professionals to ferry them quickly to hotspots across the United States, building new networks involving local governments and non-profit organisations such as American Red Cross and Doctors Without Borders (Puhak, 2020). Even McDonalds shared the secrets of its sausage and egg McMuffin recipe to retain brand connections with loyal users who were unable to venture out and get their favourite sandwich (Hardiman, 2020). The speed at which these organisations used their capabilities to pivot to a new reality was remarkable, and offers lessons for B2B marketers when the next crisis inevitably strikes.

2. Design thinking & wicked problems

Design thinking is an umbrella term encompassing the logics, practices and tools of design (Micheli, Wilner, Bhatti, Mura, &

* Corresponding author.

E-mail addresses: p.cankurtaran@tudelft.nl (P. Cankurtaran), m.beverland@sussex.ac.uk (M.B. Beverland).

Beverland, 2019). The term ‘design thinking’ was first used by Herbert Simon (1969) in his seminal *The Sciences of the Artificial*, to refer to the unique mental tools used by designers to solve problems. The term gained greater momentum when CEO of design-consultancy IDEO, Tim Brown, formalized his firm’s approach to strategy in a 2008 *Harvard Business Review* article and subsequent book. For Brown (2008), design thinking was something any manager could engage in:

“Design thinking uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity” (Brown, 2008, p. 86).

In essence, design thinking was the design discipline’s pitch to C-suite (Nussbaum, 2011), where design moved out of its functional silo to provide new ways of approaching core strategic challenges and organizing (Micheli, Perks, & Beverland, 2018). In a major conceptual review, Micheli et al. (2019) define the key attributes of design thinking as follows: creativity and innovation, user-centeredness and involvement, problem solving, iteration and experimentation, interdisciplinary collaboration, ability to visualize, gestalt view, abductive reasoning, tolerance of ambiguity and failure, and blending analysis and intuition. Supported by the use of design thinking tools and methods such as brainstorming, prototyping and ethnographic methods, these attributes are believed to be especially valuable for addressing the type of wicked problem that Covid-19 represents (Beverland et al., 2015).

For businesses, the challenges brought about by the Covid-19 pandemic are novel, multifaceted and interdependent:

“CEOs must rethink their routes to market as channel partners either adjust quickly or fail fast. They need to modify their supply chains as critical components are ‘cut off.’ They must rebuild their offshore customer care centers” (Allen, 2020).

Maintaining the continuity of business activities amidst the disruption caused by the epidemic represents a “wicked problem”, which Horst Rittel defines as “a class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing.” (cited in Churchman, 1967, p. 141). Wicked problems have ten defining characteristics (Rittel & Webber, 1973), which we present in Table 1 with examples of B2B challenges arising from Covid-19. In summary, how best to respond to the effects of Covid-19 for business is not obvious. The nature of the problems facing B2B marketers shifts, with governments changing the rules of the lockdown on a daily basis, often in response to new data that cast doubts over the key assumptions held

just a few days earlier.

Key practices such as JIT supply chains can no longer be supported in an environment with major disruptions to transportation and warehousing (Maidenberg, 2020). When lockdown conditions do ease, it is unclear what the ‘new normal’ will be, with many markets such as air travel potentially taking years to recover. Airbus for example has warned that even with travel restrictions removed, passengers may be unwilling to fly in cramped environments with little social distancing, possibly extending the industry recovery period (which was healthy prior to the crisis) to five years and requiring major redesigns to aircraft (on top of the shift to carbon neutrality required of the industry by regulators) (Jolly, 2020). Fragile sectors such as publishing, already struggling due to the disruption of social media, have seen an almost total decline in advertising revenue, leading many, such as New Zealand’s Bauer Media to shut down titles such as the *Listener* and *North and South*, leaving the nation without significant local content providers (Australian Associated Press, 2020).

3. Implications for B2B marketers during crisis

Given the novelty, complexity and magnitude of the crisis, organisations are forced to think beyond tried-and-tested ways of thinking and doing. Designers “conceive and plan what does not yet exist” (Buchanan, 1992, p. 18), making design thinking a particularly well-suited way for organisations to address the complex challenges in the broader business environment (Kolko, 2015) and solve wicked problems (von Thienen, Meinel, & Nicolai, 2014). The second author’s previous research into the benefits of design thinking in addressing wicked branding problems (Beverland et al., 2015), identified a three-stage innovation process: (1) *disrupt*, (2) *define and develop*, and (3) *transform* (see Fig. 1). We propose that this process can be used by B2B firms in their handling of crises. We illustrate this with examples of firm responses to the 2020 Covid-19 crisis.

3.1. Disrupt

Wicked problems cannot be solved with an extension of the same dominant logic used in times of greater certainty and stability. However, stepping outside of tried-and-true logics is difficult for managers. Previous research has identified three interconnected practices involved in disruption: naïve questioning, problem interrogation, and contextual immersion (Beverland et al., 2015). We explore these in more detail below.

Table 1
Covid-19, Wicked problems and B2B challenges.

Characteristics of wicked problems (Rittel & Webber, 1973)	Covid-19 pandemic as experienced by B2B marketers
1. There is no definitive formulation of a wicked problem.	Market demand collapses; no clear idea of future viability of customer and supply base.
2. Wicked problems have no stopping rule.	No clear path out of lock down; lack of clear timeline to ‘normalcy’.
3. Solutions to wicked problems are not true-or-false, but better or worse.	Solutions need to “make do”; they must focus on survival somehow, and apply resources to address every shifting requirement.
4. There is no immediate and no ultimate test of a solution to a wicked problem.	Normal time-to-market disrupted by immediate need.
5. Every solution to a wicked problem is a “one-shot operation”; because there is no opportunity to learn by trial-and-error, every attempt counts significantly.	Failure can potentially cost lives and waste precious time.
6. Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan.	Solutions involve combinations of resources that may be novel; solutions will require ‘off-script’ approaches that temporarily park taken for granted assumptions and operational shibboleths.
7. Every wicked problem is essentially unique.	Future challenges may take different forms, have different timelines, and impacts.
8. Every wicked problem can be considered to be a symptom of another problem.	Derived demand collapses; labour subject to illness and stay-at-home orders; suppliers of resources may collapse or face difficulties; transport of inputs severely disrupted.
9. The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem’s resolution.	Evolving government responses shift with updates in data, explanations and beliefs about best likely approach. What was ‘correct’ yesterday may be ‘wrong’ today.
10. The planner has no right to be wrong.	Failure can potentially cost lives and waste precious time; impact on reputation may be long lasting.



Fig. 1. Three stages of design thinking.

Naïve questioning involves asking seemingly simple questions to uncover existing assumptions, and help generate ideas for new alternatives. In previous research, naïve questioning was used to challenge pre-existing assumptions about brands as a means of driving through innovations that would address critical stakeholder demands, yet initially seemed at odds with the brand's position (Beverland et al., 2015). Examples of these questions include: “Why can't we do the following?”, “Why can't we meet the demands of this stakeholder / situation/ challenge?” and “What could we do to respond to this situation?”. The use of the term ‘naïve’ is deliberate as simple questions of the type mentioned help surface assumptions about ways of operating and enable one to interrogate the problem in more depth, while also helping to identify concerns that may need to be addressed in a solution. One example of this process is described below:

“In mid-March, Lennon Rodgers, director of the Grainger Engineering Design Innovation Lab at the University of Wisconsin in Madison, fielded a plea from the university's hospital to make 1,000 face shields. “Initially, I didn't take it too seriously,” he recalled. But after his wife, an anaesthesiologist, told him the shields were indispensable for dealing with highly infectious patients, he scoured hardware and craft stores for parts. He teamed up with Delve, a local design firm, and Midwest Prototyping, a contract manufacturer, to design their own “Badger Shield. “They expected to use 3-D printers, then concluded that wouldn't achieve the necessary scale. They uploaded the design to their website along with the necessary parts for anyone to download. A few days later Ford Motor Co. did, and, with tweaks of its own, began turning out face shields for Detroit-area hospitals.” (Ip, 2020).

Naïve questioning is characterised by the extensive use of abductive reasoning, defined by Martin (2009) as “the logic of what might be” (p. 27). The New Zealand government for example used abductive logic to define their Covid-19 response, working back from the worst possible scenario of 80,000 deaths (from a population of five million) to develop an early lockdown strategy that has been hailed worldwide for its success (Fifield, 2020). Upon hearing about a ‘mysterious illness’ from crew members with families in China and receiving similar reports from colleagues across the globe, Weta Digital (of *Lord of the Rings*' fame) began its own crisis planning well before Covid-19 was declared a pandemic. The company had to challenge basic film making conventions, which, despite its reputation as a digital effects' studio, still rely heavily on large numbers of actors, many of whom are in close physical contact in action scenes. Pushing the boundaries of digital production, Weta Digital was able to switch its workforce to working from home in a matter of 72 h, meet all its deadlines and even secure more projects (Hill, 2020).

Traditional modes of reasoning (i.e., deductive and inductive) that rely on proven facts and structured experience (Kolko, 2010) often produce satisfactory outcomes under stable conditions. However, they fall short of addressing the indeterminacy of wicked problems which

require the creation of new knowledge and insight that can be implemented into creative and innovative solutions, as the examples above show. To do this, organisations need to move beyond accepting the world as is, but “actively look for new data points, challenge accepted explanations, and infer possible new worlds” (Martin, 2009, p. 65).

This then leads to the next step, which is to interrogate the problem. Whereas it is common to marvel at the final design, design thinking is initially problem focused rather than in a rush to jump to solutions (Micheli et al., 2019). Early on in the spread of Covid-19 many firms were quick to rush to solutions, focusing on leveraging capabilities to produce quick outcomes. Scottish based BrewDog was one example, leveraging its alcohol production facilities to produce hand sanitiser for hospitals. However, the sanitiser failed to reach the alcohol levels necessary for hospital use and production was rejected (Butler, 2020). In contrast, in the example quoting Lennon Rodgers, scalability at rapid pace, followed by distribution, was the ultimate problem (rather than basic manufacturing) and one that has been hampered many similar local productions of PPE. Lennon Rodgers, as with many other market-place actors, therefore turned to sharing platforms, which then enabled Ford to leverage its scale and reach to equipment to healthcare professionals.

An emphasis on understanding problems helps avoid the rush to poor solutions. Problems often emerge out of a context of stakeholder rules, decisions, and practices that must be addressed in order for solutions to be viable (Beverland et al., 2015). Contextual immersion enables design thinkers to empathise with users and buyers (e.g., Brown, 2008). ServiceNow, who specialise in delivering digital workflows to organisations, responded to Covid-19 by introducing a customer care program with apps and resources to support client organisations in their crisis response. Key in this process was an empathetic approach to user needs and a move towards customer-centricity more typical of B2C marketing, as vice president Rhiannon Prothero explains:

“What we did very quickly was to move to a more a more consumer-centric view of empathy. B2B businesses are historically very good and very successful at being extremely able to clearly articulate what we have that could fix your problem. What we've had to pivot towards is more like, ‘what do you need?’ So, instead of ‘here's what we have, do you want it?’ it's ‘what do you need and how can we get creative with you as a potential customer?’ or in terms of understanding how what we have can improve your situation because we are now forced to think in terms of what is your peculiar need, right now.” (Prothero, 2020).

Since wartime allegories were common during the Covid-19 crisis, one example of contextual immersion from WW2 was the logic behind much Soviet weaponry (often adapted from Western designs). The Soviets had large reserves of personnel and desperately needed to get them to the front line. The Soviet Union's formidable T34 tank was designed to address this need. Not only did it provide crews with

protective armour and significant firepower, it was also simple to manufacture (resulting in thousands being ready in the key battle at Kursk), and required little training in use.

3.2. Define and develop

Disrupting results in either pivoting (changing or adding to your offering) or reframing (putting a different emphasis on an existing offer). This step entails taking stock of existing resources and capabilities to support disruptive solutions. Following Fig. 1 it involves capabilities matching, problem scoping, and solution development.

Capabilities matching is evident in many of the examples of firms pivoting and reframing during Covid-19. For example, chemical manufacturer Ineos promised to retool their operations within two days to ensure adequate supplies of hand sanitiser (Jolly, 2020). As an example of reframing, furloughed British Airways staff decided to leverage their skills in customer care by creating a lounge experience within hospitals to serve exhausted NHS staff during breaks in lengthy (up to 72-h) shifts (Campbell, 2020). Along with many fashion brands, Burberry pivoted by retooling its Castleford factory, home of its iconic trench-coat, to quickly produce over 100,000 surgical masks, drawing on its extensive supply chains across the globe to ensure an adequate supply of the relevant material inputs (Street, 2020). Tech giants such as Apple and Tesla also drew on their existing expertise and supply lines in offering to source and produce much needed medical equipment in the USA (Masunaga, 2020). In many instances, companies went beyond their organisational boundaries and pooled experience and resources in line with the ‘interdisciplinary collaboration’ principle of design thinking (Micheli et al., 2019). Tech companies such as Microsoft and Facebook partnered with the World Health Organization to organise #BuildforCOVID19, global a hackathon to promote the development of software to address Covid-19 related challenges in a wide range of areas (Mihalcik, 2020).

Once capabilities have been identified, the problem needs to be scoped in order for a solution to be developed. In times of crisis, the need for rapid pivoting or reframing often requires an emphasis on what we call ‘de-design’, or stripping offers down to their essentials. For example, it is worth thinking about how modular production and simplicity were the hallmarks of many WW2 successes (e.g., Mulberry harbours for D-Day). De-design enabled US ship builders to quickly produce an almost endless supply of modular “Liberty ships”, vessels that could be laden with much needed supplies for the United Kingdom and the Soviet Union. The effectiveness of Germany’s U-boat blockade meant vast numbers of ships were needed to replace lost vessels, necessitating the development of designs that were quickly scalable, and able to be manufactured by the large numbers of inexperienced women entering the workforce (Allen, 2020).

Returning to New Zealand film studio Weta Digital, the problems associated with Covid-19 threatened to shut down production of numerous big budget titles such as *Mulan*, the *Avatar* sequels and Amazon’s forthcoming *Lord of the Rings* adaptation (the sector earns \$NZ2 billion per year, the majority of it through Weta). Since these productions were currently in development, Weta’s executive team had to find a way to film large-scale action scenes when large casts of extras were no longer available. They also had to grapple with issues such as how many takes of a scene featuring two actors hugging would be ethical, and how to work around NZ’s strict level 4 lockdown rules which had made hair and make-up, so critical for fantasy productions, forbidden. The answer lay in building a diffuse digital-based network of skilled developers who could create digital avatars of actors and extras, ensuring that expensive productions did not go over budget and worry nervous backers in Hollywood. The ability to keep these productions on schedule meant they could be available for digital release through new platforms such as Disney+ or available for viewing when lockdowns ceased (an important consideration given the worry that the lockdown may result in a deficiency of product) (Sacks, 2020).

The wicked nature of the problems that emerged during Covid-19 also meant that designers’ emphasis on iteration became an invaluable tool for responding to possible threats to national health services. While a consortium of high-tech manufacturers (Airbus, Rolls Royce) focused on scaling up production of ventilators made by smaller specialists such as Smiths Medical, local manufacturer Gtech offered a stripped back approach. The firm made a stripped-back ventilator design open-source to ensure rapid production should the worse-case scenario of an overwhelmed National Health Service (NHS) emerge (a very real concern given the long lead times and subsequent regulatory approval challenges experienced by the likes of Dyson who had offered their services; Davies & Rankin, 2020). The design was made of standard industrial parts, many of which could be produced using 3D printing. Founder Nick Grey stated:

“There was a basic option in the brief and a more sophisticated one and what we set out to do was the very basics within two weeks. If you need us, great, if you can get something more sophisticated than that is fine as well.” (Barnett, 2020).

Abductive reasoning is iterative in nature. As decision makers become exposed to new information and explore new potential explanations, they update and clarify their understanding of the problem (Beckman & Barry, 2007). This allows problem scoping, whereby the organisation has a more concrete idea of the problem and is able to re-define it in terms of one that is narrower, and better lends itself to solution development. Solution development involves creating alternative ways by which the problem can be addressed. This process is aided by the use of design tools such as visualising and prototyping (Liedtka, 2014) to experiment with the solutions and assess their usefulness “in draft form” (Micheli et al., 2019, p. 14). By doing so, decision makers can learn from their mistakes and feed their newly generated insights into the next iteration loop. Gtech’s design was ultimately rejected by the NHS, as the government’s shift from containment to mitigation took pressure off the health service and ultimately saw orders for ventilators scaled back and cancelled. Nonetheless, Grey’s iterative approach for a worse-case scenario also offered a solution to underfunded health systems that demanded less complexity, resulting in uptake in other countries. After having their first batch of hand sanitizer rejected, BrewDog worked closely with the NHS to revise the formula to meet the clinical standards, and was able to deliver the second batch to hospitals in parts of Scotland (Morrison, 2020).

3.3. Transform

Design thinking is transformative (Brown, 2008) in so far as it aims to enhance a firm’s competitiveness and, in the context of crises, resilience. In their study of brand innovation, Beverland et al. (2015) identified that design thinking enabled brand managers to balance relevance with consistency, with the new design both mapping back to the brand’s heritage and also expanding it in the minds of key users, opening up the possibility of new opportunities in the future (re-stabilization).

For firms operating through the Covid-19 crisis, actions that reek of authenticity will have enduring effects on how they are perceived. BrewDog’s decision to use its idle transportation capacity to deliver school lunches to stay at home children (in lower socio-economic areas) got widespread praise on Twitter. In late May, the company announced the launch of the ‘BrewDog Kickstart Collective’ which aims to assist independent bars reopen across the UK (Little, 2020). These actions will no doubt reshape the brewer’s abrasive ‘punk’ reputation with end-users and key channel buyers. Luxury brands leveraging their productive capacity to produce protective equipment for medical staff will also enhance their reputation. These firms have an intuitive understanding that they must step up in times of crisis precisely because they are seen as non-essential (Joy, Sherry, Venkatesh, Wang, & Chan, 2012). Firms such as Burberry and Brooks Brothers have an established heritage of

pivoting, having produced military uniforms since founding (WWI and the American Civil War, respectively) (Dumcius, 2020). The actions of firms such as LVMH in producing a plain label sanitiser to be given away to French hospitals (Moné, 2020) will enhance their reputation across multiple stakeholders, and potentially open up new business-to-business markets in times of spare capacity. A similar set of opportunities exists for Spanish fast fashion giant Zara who used its renowned agility to produce protective clothing for frontline health workers (Reuters, 2020).

For many business to business organisations, reputational effects will be felt in key markets, institutional buyers (governments for example), and channels. Through their actions, firms such as Gtech have gained a higher profile among the general public than they enjoyed previously. Although they may not sell directly to consumers, one outcome of design thinking would be for B2B to move to B2B2C and vice versa, a possibility for professional chef uniform maker Hedley & Bennett who quickly pivoted to producing protective gear for hospital staff (Bennett, 2020). Colorado-based online surplus food wholesaler FoodMaven was also quick to move into the B2C sphere after sales to its usual institutional customers collapsed with the lockdown. In keeping with its mission of using all food with good purpose, FoodMaven launched a retail operation to make its inventory available to consumers and support food security in the local area (Business Wire, 2020). These actions increase firm reputation for key B2B brand attributes such as adaptability (Beverland, Napoli, & Lindgreen, 2007), which will appeal to larger industrial buyers including, but not restricted to, government institutions around the globe.

Crisis also offers firms more tangible opportunities. Should Zoom solve its privacy and security issues, it may become the dominant platform for video conferencing, for example. Weta's aforementioned pivot, combined with the country's success in managing Covid-19, has global studio executives relooking at New Zealand as a low-risk, high quality base for large budget productions (Sacks, 2020). The leveraging of capabilities may represent the first steps into new markets for many of the firms discussed within this article. Those of us teaching at universities will be all too aware how the sudden need to shift everything online enabled an outpouring of innovation and change. Common among many academic staff was the observation of how things deemed institutionally impossible in February suddenly became entirely possible and necessary in March. Sweeping away past practices and bureaucratic systems may enable faster innovation and greater appetite for change, or at the very least, stimulate the reassessment of how necessary previous practices really were. Pharmaceutical companies for example have fast tracked vaccine trials, in much the same way as they did for the Ebola outbreak in 2013–4 in the Democratic Republic of Congo (Salem, 2019).

Finally, transformation will require B2B marketers to rethink established practices. A McKinsey survey among more than 3600 B2B decision makers suggests that this is already starting to occur, showing that almost 90% percent of sales operations now take place digitally, with over half of the respondents regarding the new sales model to be just as effective, if not more so, than traditional B2B sales models (Gavin, Harrison, Plotkin, Spillecke, & Stanley, 2020). Rhiannon Prothero notes that the Covid-19 crisis has been a learning experience for ServiceNow, creating an appreciation for creativity and agility in the face of risk, and will have profound effects on the organisation:

“Ultimately, I think it will make us better at what we do, and it's a bit of a sanity check to say 'it's easy to drift into this format of here's what we have', whereas we should always be pulling back to 'what do you need and how can we help'.” (Prothero, 2020).

Managing the risk and uncertainty arising from crisis situations requires similar shifts in mindset with respect to other fundamental aspects of B2B marketing. For example, while make or buy decisions are essential to B2B marketing, in the context of pandemics, relying entirely on distant global supply lines may limit a firm's ability to respond to crisis events. Shortages of PPE for medical staff have seen governments

scramble to secure supplies from key producing nations. However, producing nations such as Turkey understandably placed restrictions on such sales to guarantee their own access to critical supplies. Some commentators have already noted that for many de-industrialized economies, Covid-19 may trigger strategic re-tooling to ensure key capabilities can be activated as and when needed. Design thinking can help in redesigning existing ecosystems, potentially in favour of a mix of local and global suppliers to ensure risk is adequately managed.

4. Conclusion

The 2020 Covid-19 pandemic generated a number of wicked problems for industrial marketers, who were suddenly faced with a lack of markets and potentially disastrous future. Wicked problems require tools that enable decision makers to break out of preferred patterns of thinking. Drawing on the literature, we identify a three stage process of design thinking that involves disrupting previous assumptions and practices, developing 'good enough' solutions, and transforming firm practices to ensure greater future resilience. For some firms, surviving the crisis may be the best possible outcome; however for others, enhanced reputations, forward and backward integration and new markets may result from the use of design methods and tools. Critically, the 'new normal' will require greater attention to risk management and scenario planning, involving the deployment of design thinking rapid responses to emergent and fluid challenges.

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