

Cycles of pan(dem)ic and neglect: Learning from supply chain tsunami researchⁱ

The chaos that COVID-19 is creating throughout the world seems unique and unexpected, but it is not. In trying to make sense of what is going on, many people have called the pandemic a 'black swan', a term coined by Nassim Taleb.¹ We argue it is not and that labelling it as such is not only highly confusing but uncondusive to the situation. A black swan is a very rare and completely unpredictable event for which it is, by definition, quasi-impossible to prepare. Since the current pandemic looks like a duck (black swan), swims like a duck (black swan), and quacks like a duck (black swan), people conclude it must be a duck (black swan). People are right about the animal, not about its colour: what we see here is a grey swan. What on earth is a grey swan and what is the use of talking about swans here?

A crisis that is neither rare nor unpredictable

While it is safe to say that most of us have not been locked in our houses before, our civilizations have seen similar disasters before, and we survived them. Recently, we had Ebola in 2014, MERS in 2015, Zika in 2016, Ebola again in 2018. It all started with SARS in 2003 and H1N1 in 2009. The humanitarian world has seen pandemics grow from pretty much zero to one of the most critical challenges over the last decade. Climate change, deforestation, uncontrolled urbanization, and other factors undoubtedly contribute to this, and will make matters worse. 'Rare' therefore is not exactly the right word. Neither is unpredictable. Many experts have warned for major outbreaks such as the current one. Gro Harlem Brundtland, ex-prime minister of Norway and ex-director-general of the World Health Organization, currently on the Global Preparedness Monitoring Board (GPMB), stated "unfortunately it is beyond doubt that what we experience was a pre-warned disaster." In September 2019 the GPMB published a report specifying the threat of a pandemic of a respiratory disease.ⁱⁱ

This then is not a black swan, but a bird of a different colour: grey. Grey swan events are still very unlikely, but have occurred before, [...] and can in principle be foreseen [...].² By appropriately naming this beast, we are better able to analyse and respond to it, for grey swans – as opposed to their black counterparts – are manageable and much more within

ⁱ This case, published in May 2020, was written by LUK VAN WASSENHOVE (INSEAD Humanitarian Research Group) and HENK AKKERMANS (Tilburg University). The authors acknowledge the help of Gina Fialka, Research Associate at INSEAD, in the writing of this article.

ⁱⁱ "While disease has always been part of the human experience, a combination of global trends, including insecurity and extreme weather, has heightened the risk. Disease thrives in disorder and has taken advantage--outbreaks have been on the rise for the past several decades and the spectre of a global health emergency looms large. If it is true to say "what's past is prologue", then there is a very real threat of a rapidly moving, highly lethal pandemic of a respiratory pathogen killing 50 to 80 million people and wiping out nearly 5% of the world's economy. A global pandemic on that scale would be catastrophic, creating widespread havoc, instability and insecurity. The world is not prepared." Foreword, p6 of GPDM annual report 2019

our reach.³ In earlier research (Akkermans and Van Wassenhove^{2,3,4}) we looked at a very specific kind of grey swan events, called business (supply chain) tsunamis. To better understand the governmental and managerial response to the current crisis, it is helpful to draw a parallel with these industry disruptions, because the decision traps are remarkably similar (see Sengupta, Abdel-Hamid, and Van Wassenhove⁵ for a more in-depth discussion of decision traps). We have also noticed them in our research on the fight against Ebola, for instance.ⁱⁱⁱ

When a business tsunami hits

The point of arguing about the colour of a swan is to say: we are not helpless and this can be explained. This is why it is useful to turn to our research on business tsunamis. The following sequence of events (Figure 1) can be observed from the outside when a business tsunami “hits” a company and its supply chain:

1. For a long time, all seems to be normal and well under control.
2. Suddenly and unexpectedly, bad news breaks.
3. This leads to a violent reaction in the market, with severe internal consequences.
4. It then becomes clear that supply chain and operational problems have long existed.
5. Finally, it becomes apparent that these problems were missed or systematically ignored, underestimated or even denied by management.

This sequence is valid for the Airbus A380 introduction disaster in 2006 or the CISCO 2001 internet bubble breakdown, or for any more recent spectacular business example (see Akkermans and Van Wassenhove 2018a, 2018b for an in-depth discussion). As illustrated in Figure 1, this process looks entirely different internally. There, for a long time, management can be stuck in a phase of denial and sensemaking, as ‘this time is different’ and ‘it will all blow over’ are much easier responses, initially. More often than not, management accepts the existence of what seem ‘minor issues’ early on in the process.⁶ Only when it is glaringly clear that things will not blow over, can decision-making start. By then, the problems have grown exponentially. This is certainly true when dealing with virus spreading like in the COVID-19 case where relatively small delays can have huge impact. This becomes clear when contrasting countries that acted relatively quickly with extensive testing and confinement to others that took longer to respond.

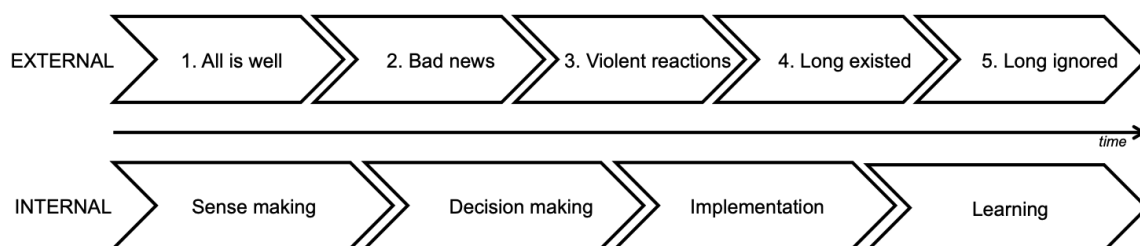


FIGURE 1. EXTERNAL AND INTERNAL PROCESS SEQUENCE OF A SUPPLY CHAIN TSUNAMI⁴

ⁱⁱⁱ For further reading see our Ebola vignettes [I](#) and [II](#), or see our [website](#).

Time is of the essence to break the cycle

Can such tsunamis be prevented? The causal structure shown in Figure 2 suggests they can.⁷ Reacting timely to a rare event with potential massive impact is basically a control loop, a negative feedback loop, with a set of delays. Bring down the delays and the response becomes timely. With problems growing exponentially, a short enough time delay can be the difference between a huge problem (e.g. a pandemic) and a modest setback (e.g. a controlled local outbreak). Let's walk through this feedback loop.

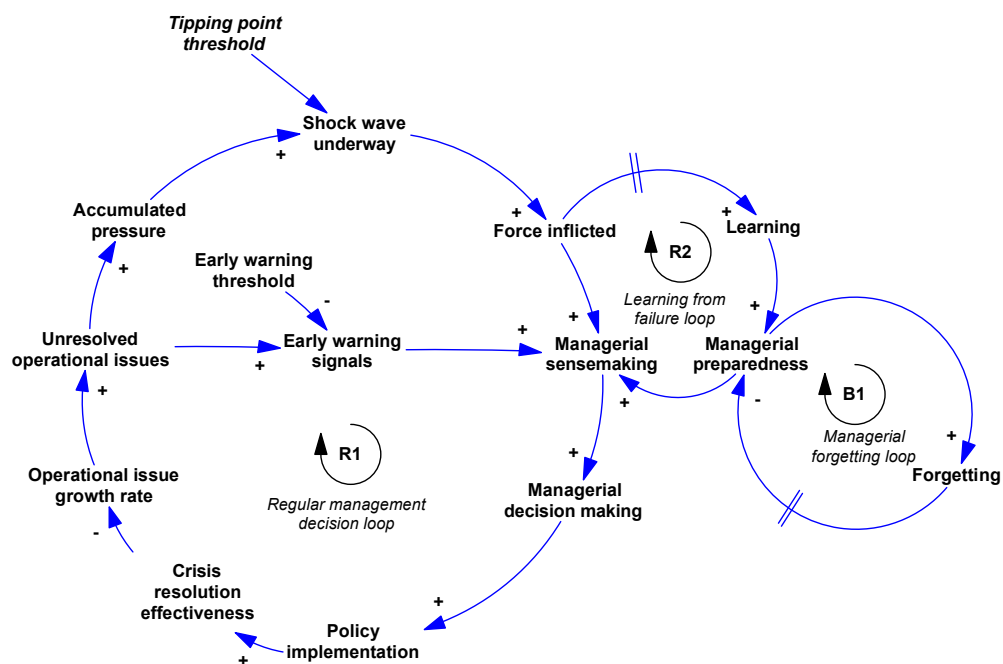


FIGURE 2. THE UNDERLYING CAUSAL STRUCTURE FOR SUPPLY CHAIN TSUNAMIS²

Figure 2 starts from an operational issue that keeps growing, leading to an accumulation of unresolved operational issues. These can be customers with quality problems or patients with COVID-19 symptoms. At a certain point, the issues become so big that a tipping point is passed and a shock wave, a tsunami, of problems hits decision-makers – such as the sudden exponential growth in COVID cases throughout Europe in the beginning of March. Up to that point, these decision-makers were not aware that this problem would not go away by itself, some even calling it “a nasty little flu”. This is because they typically missed the early warning signals, such as exponential growth rates in the number of issues.^{iv} This is common in complex processes, where managers tend to apply the rules of noncomplex situations until this is no longer possible.⁸ The typical stealth character of COVID-19 with its long incubation time and many hardly noticeable light cases, combined with little or no testing in

^{iv} This is shown in the diagram by the horizontal arrows from unresolved operational issues on the right to early warning signals in the middle to managerial sensemaking on the right.

many countries, made undetected exponential growth very easy, only to be followed by a tsunami of heavy cases over-stressing the health care system.

What happens in response (see Figure 3) is a massive pressure hit rate (more and more cases), followed by a fast decision-making rate ('sudden' flash of countries going in lockdown), and a gradual decline after that of the stock of unresolved issues ('flattening of the curve'). The similarities between these supply chain tsunamis in industry and the COVID-19 experience in many countries are striking. The underlying phenomena are indeed very similar.

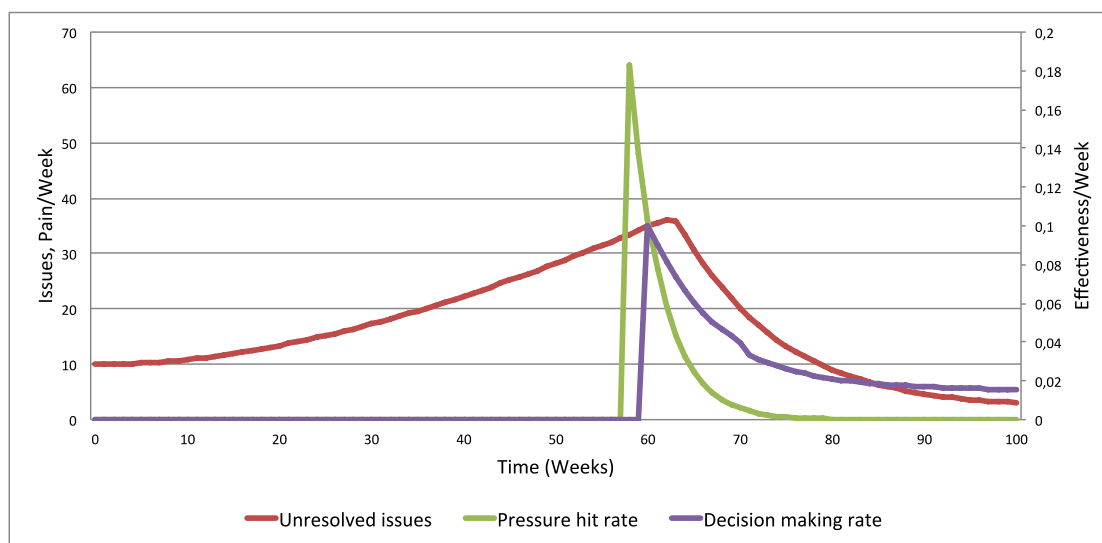


FIGURE 3. DYNAMICS OF A SUPPLY CHAIN TSUNAMI²

Lessons learnt from tsunamis

Several useful lessons for decision-makers can be distilled from our research on supply chain tsunamis. Not just for coping with the present crisis, but also to come out of it and “build back better” for the future.

1. Note early warning signals: search for the grey swans

When decision-makers are continuously ‘searching for the grey swans’, they will detect the increase in unresolved issues in time. The result is shown in Figure 4: no tipping point is passed, there is hardly any curve to flatten. In the case of COVID-19, the signs were all over and many experts repeatedly stated it was only a matter of time. The problem is that actively watching for early signals needs to be done persistently, much longer than the average tenure clock of managers or politicians, or that of budget cycles. Think about the many warning systems installed after the Indian Ocean tsunami which no longer function for lack of maintenance budgets.

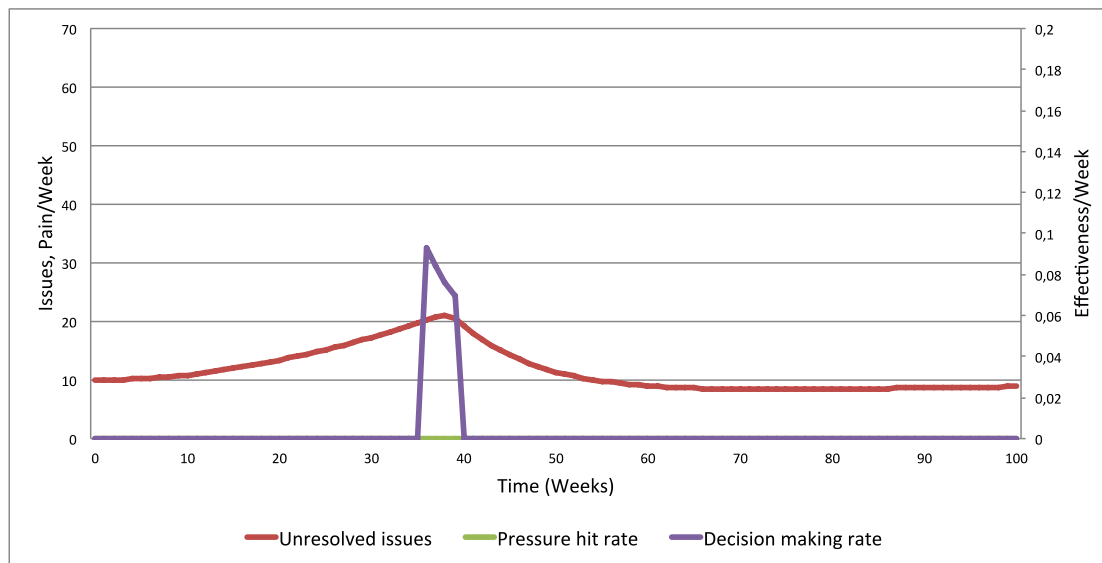


FIGURE 4: DYNAMICS OF A TIMELY ADDRESSED POTENTIAL SUPPLY CHAIN TSUNAMI²

2. Be prepared to make sense of what is happening

How quickly decision-makers can make sense of what they are seeing depends on how well prepared they are. This means that the right data are collected, the right expert knowledge is available, and the right analyses can be conducted quickly. We have seen examples of companies that barely survived a first supply chain tsunami but thrived through the next, a decade later. In the COVID-19 crisis, it has become clear that the countries with the SARS experience still on their minds took more rapid decisive actions than others. One could argue that some African countries, familiar with outbreaks, also reacted swiftly and appropriately, unlike some EU countries, for instance.

3. Make good decisions quickly

Making decisions both well and quickly is difficult. Whether it is one person or a small group that decides, there are many aspects to be taken into consideration. Here too, if the organizational structures are already in place to quickly involve a broad array of stakeholders and experts, then decisions are likely to be both swift and good. Again, the swifter the reaction, the sooner the exponential growth of unresolved issues will be stopped. In COVID-19 terms, intensive care units will not be swamped.

4. Deal with the underlying issues structurally and swiftly

The first focus should be on the underlying issues. As long as these are not resolved, it remains saving a leaky ship only by bailing water, not by plugging the leaks.⁹ The many potential (and known) viruses should not only be tracked with good surveillance systems but preventative measures should also be taken, e.g. hygiene and distancing from animals.

5. Deal with the knock-on effects

Then, it is time for the knock-on effects. In the COVID-19 crisis, the economic side effects are blatantly clear but substantial knock-on effects are also coming in health care, given that

non-COVID care may have been neglected or delayed for months. Our global interconnectedness and our complex intertwined supply chains that are going through common bottlenecks (like some harbours or logistics companies) will lead to knock-on effects we never experienced before and are not even fully ready to identify or predict. Clearly, serious research is required here.

6. Learn from your actions

Then, learning from your actions becomes important. That learning does not start after the crisis is over, because there is a great deal of learning happening from day 1, but it should certainly not stop as soon as we are back to business as usual. Like major disasters in aerospace or the process industry, careful analysis of what went wrong and what should be done to prevent it from happening again is essential. Not for the lawsuit that may follow, but for all of us in society. This is one of the weak spots. It is very tempting to shove things under the carpet and to go on with business, something that happens quite often.¹⁰ Remember the financial crisis? *Build back better* is a common term in humanitarian response action, e.g. after a major earthquake. But will we after COVID-19?

7. Never forget – stay vigilant

The biggest problem in the long run may be that people forget. Supply chain tsunamis are events that happen rarely, perhaps every decade. At the end of their career, every executive will probably have experienced several ones. However, organizations, managers and politicians all tend to forget quickly. Since these are low-likelihood events, one will most likely be rewarded for ignoring them. The money you did not spend on remaining prepared for their reoccurrence can be spent on something more urgent, which is a very tempting situation both in business and government. Saving money by not stockpiling masks, having little or no surge capacity in our drug supply chains, or cutting budgets of hospitals may look great until the tsunami strikes again.

Towards sustainable solutions

Sufficient information and swift decision-making are key. Not only is it important to collect the right data, it is crucial to be able to judge on the basis of this input and to act accordingly in time. Good surveillance systems for early detection of COVID-19 and proper timely confinement action could have reduced the pandemic to a local flare up without much impact. The cost of a good detection system is probably as little as one thousandth of the human and economic cost of the current pandemic. A case of being pennywise but pound foolish? All of this is confounded by lack of good governance, lack of collaboration, and timely information exchange. Pennywise, pound foolish is what people understand during the current COVID-19 crisis, but perhaps we should talk again a year from now when everything is seemingly hunky dory again. It is becoming painfully obvious that every now and then we will be confronted with the consequences of forgetting the lessons from the past, which perhaps our predecessors forgot.

This should be our wake-up call to start working towards a better future, to heed the call for sustainable development – “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.¹¹ We need to come up with strategies to rebuild. Strategies that “incorporate the UN Sustainable Development Goals, i.e. focus on innovation that creates growth and prosperity, while preserving a healthy and safe place to live, leaving no one behind, as the UNSDGs state”.¹² We should learn from supply chain tsunami and related research on decision traps. It does not help to bury our heads in the sand, because health tsunamis (pandemics) will strike again and at a much higher frequency than before. The COVID-19 story resembles the famous novel of Gabriel Maria Marquez: “Chronicle of a Death Foretold”. Calling it a black swan essentially says “there is nothing I could have done to prevent this...”.

¹ Taleb, N. N. (2007). *The Black Swan. The Impact of the Highly Improbable*. New York: Random House.

² Akkermans, H. A. & L.N. Van Wassenhove (2018a). A dynamic model of managerial response to grey swan events in supply networks. *International Journal of Production Research* 56(1-2), 10-21.

³ Akkermans, H. A. & L. N. Van Wassenhove (2013). Searching for the grey swans: The next 50 years of production research. *International Journal of Production Research* 51:23-24, 6746-6755.

⁴ Akkermans, H. A. & L. N. Van Wassenhove (2018b). Supply chain tsunamis: Research on low-probability, high-impact disruptions. *Journal of Supply Chain Management*, 54(1), 64–76.

⁵ Sengupta, K., Abdel-Hamid, T. K., & Van Wassenhove, L. N. (2008). The experience trap. *Harvard Business Review*, 86(2): 94–101, 137

⁶ Ibid.

⁷ Akkermans & Van Wassenhove, 2018a.

⁸ Sengupta et al., 2008.

⁹ Lyneis, J., & Sterman, J. (2016). How to save a leaky ship: Capability traps and the failure of win-win investments in sustainability and social responsibility. *Academy of Management Discoveries*, 2(1), 7-32.

¹⁰ Sengupta et al., 2008.

¹¹ Brundtland, G.H. (1987). *Our common future: Report of the 1987 World Commission on Environment and Development*. United Nations, Oslo.

¹² Van Wassenhove, L. N. (2020). Retrieved from <https://resources.ecovadis.com/blog/interview-insead-luk-vanwassenhove-non-black-swans-next-wave-crisis-sweeping-developing-world> on May 28th 2020.