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‘Do-It-Yourself’ to adapt: Lessons from the COVID-19 crisis

David VALLAT, Institut d’Etudes Politiques, Lyon, France
david.vallat@sciencespo-lyon.fr

Sandra BERTEZENE, Conservatoire National des Arts et Métiers, Paris, France
sandra.bertezene@lecnam.net

Jacques MARTIN, University of Toulon (Hon.), France, Vietnam National University, Hanoi
jma.martin@wanadoo.fr

Abstract: The Covid-19 pandemic was a highly disruptive event for the health sector in France, as it was in other countries. The purpose of this paper is to see how health establishments coped with this sudden and unexpected event. The traditional way of handling situations of crisis proved to be totally ill-adapted and ineffective to take up the challenges of the pandemic. Therefore, health establishments had to find other unconventional ways to respond to the various threats posed by the occurrence and the spread of the virus.

Methodology: The reaction of health establishments and the decisions made during the Covid crisis were studied and evaluated.

Findings: It comes out of this research that health establishments had to dodge, supersede or even ignore the classic ways of tackling situations of crisis. The rational, standardized means for making decisions, labelled the ‘engineer’s approach’ had to be forsaken and replaced by improvised, make-do actions to combat the virus as it spread and developed through a ‘do-it-yourself’ approach where the engineer makes way to the handyman who has the ability to find solutions in an unpredictable, chaotic environment.

Managerial implications: A double approach combining the ‘engineer’ and the ‘handyman’ which can be developed through the means of simulations can offer organizations ways of responding in a reasonably satisfactory way though not ideal to ‘black swan’ critical situations.

Limitations: The study having been caried out in the French context, it would be fruitful to compare how health establishments reacted to the pandemic in other national contexts.

Keywords: Covid-19, uncertainty, ‘black swan’, ‘do-it-yourself’, simulations

Paper type: Research paper

1. Introduction

The COVID-19 epidemic put a huge stress on health establishments. A great reactivity was necessary to apply the recommendations that evolved regularly as the pandemic developed, and also as did the knowledge of the virus and the available resources. Each establishment had to deploy its own internal mobilization plan and adapt its functioning and activity depending on the kinetic evolution of the epidemy. A complete reorganization of activities was achieved: stoppage of planned activities, re-allocation of human means, freeing of beds, creation of new paths devoted to Covid patients, supplies. However, while implementing these major changes, each establishment also had to maintain the treatment of patients whose stay could not be postponed, ensure the safety of the personnel and organize remote work when possible.

The preparation for this organization, structured according to the ORSAN plan in France (Organization of response of health systems to exceptional circumstances), is founded on the identification of risks. Each situation implies organizational rules to guide the response of establishments to face the potential tensions generated by the risks involved. These rules aim at maintaining the care offer, but they cannot, alone, give all the answers in a situation of uncertainty (§ 1). The concept of 'black swan' allows us to understand why it is difficult to reflect on uncertainty (§ 2). Therefore, in a situation of the unexpected, we have to improvise, adapt ourselves, test, and experiment. We need to create limited knowledge to orient imperfect but adequate actions considering the circumstances. In a nutshell, we have to resort to a 'do-it-yourself' facilitate adaptation in a situation of uncertainty. This is where the tool of 'simulations' can help (§ 4).

2. Uncertainty weakens 'risk management'

For each establishment, the methodological framework for a 'management plan for hospital tensions and exceptional sanitary situations' is detailed in a guide. However complete this guide may be, it did not prevent a strong disorganization of establishments when the first wave of Covid-19 hit France. Indeed, the size, intensity and duration of the disorganization induced by the pandemic together with its societal impact was an event never seen before. This crisis clearly revealed the limits of the classic approach of 'risk management' where crises are considered as isolated events that can be analyzed as a linear series of causes and consequences leading to the implementation of pre-planned measures of adaptation and prevention. The risk is then something 'unknown' that is 'known'. It is identified, hence 'known', the unknown element being the moment when it occurs. 'Risk management' is about forecasting protection barriers to contain the harmful consequences of the risk if it occurs. During the Covid crisis, the multiplicity and diversity of institutional and individual actors, the interconnections between hospitals, the health system and the social and economic systems, the lack of knowledge about the behaviour of the virus (propagation modes and speed of propagation, appearance of mutations, possible treatments) led to a context of 'unknown, unknown'. Uncertainty is total, including about the consequences of the measures adopted in the heat of the crisis.

3. An aversion for uncertainty

A 'risk management' approach is not sufficient because the uncertainty coming from a complex environment manifests itself in a loss of control that we do not accept easily. Nassim Nicholas Taleb (2007) helps us to understand why with the concept of 'black swan', which can be adapted to the circumstances of the Covid crisis. A 'black swan' is an event with three key characteristics: it is very rare, i.e. with an extremely low probability of occurrence, hence unpredictable, it has a devastating impact, but it is 'retrospectively predictable'. As far as the

Covid crisis is concerned, we need to mitigate our qualification. As a sudden unexpected harmful pandemic event, it is not strictly speaking a 'black swan', we know that there have been such pandemics in the past and that there will be others in the future. But as the sudden emergence of a totally unknown virus whose characteristics and lethal nature are by definition unknown, at least officially (we will never know), it can be qualified of 'black swan'.

This oxymoron of a 'retrospective prevision', a 'prevision' being *in ipso*, prospective, is very present in the media, among politicians and people in general in times of crisis. We just need to have a look at the comments ceaselessly repeated about the 'late' reaction of the government and the inadequacy of the decisions made. All these people are the victims of a 'narrative fallacy', as Taleb calls it, consisting in re-interpreting the past in the light of the present as if what happened was 'inevitable', hence predictable. We look for meaning (i.e. cause-effect links) in a succession of past events, by selecting information, more or less consciously, that fit with the chosen narration. This is how we look for scape goats, for example the French Minister of Health (Ms. Agnès Buzin) who resigned in February 2020.

In fact, the 'narrative sophism' is a way of re-assuring oneself. 'Now that we know who is responsible, not to say guilty (a couple of members of the government in France were sued, including the Prime Minister), that measures have been taken, this will never happen again. This behaviour incites people to believe that chance is predictable and controllable like in games of chances; something that Taleb calls the *ludic fallacy* through which confirmation of an occurrence is the result of a bias. Indeed, in a casino, probabilities are known and can be controlled, primarily by the croupiers not the gamblers, because a casino is a closed highly regulated place, which is the opposite of the world we live in.

As opposed to a risk which is a 'known unknown', uncertainty is an 'unknown unknown'. It is not quantifiable, it cannot be measured and hence cannot be controlled. Such a situation is hard to bear for people, therefore they use a process of ratiocination to transform, so to say, uncertainty into a risk. But uncertainty escapes men as it is impossible to master all the parameters of the environment and consequently anticipate changes. Past experience is no longer useful to anticipate the future. Uncertainty delays, or even paralyzes decision-making. Therefore, the understanding of this uncertainty is a major challenge for the strategy of organizations.

4. 'Do-It-Yourself' for adapting

This unpredictability which was felt throughout hospitals during the Covid crisis expressed itself differently depending on the hierarchical level. The basic reason is that the top management, the middle management and operational personnel (medical and non-medical) were facing different problematic situations. Hence, they invented responses which were the result of 'do-it-yourself' *ad hoc* actions, sometimes mere tinkering as their effectiveness was unknown, freeing themselves from established rules and ignoring the logic of centralized regulation which was the norm in health establishments.

'Do-It-Yourself' was a response adapted to the unheard-of circumstances that had the be tackled. Such a behaviour is quite interesting as responses could be invented where the traditional scientific, evidence-based approach production of knowledge (the 'normal' way of operating for hospitals) was unable to provide any. This do-it-yourself behaviour, superseding established processes and routines, goes with resorting to improvisation in the decision-making process, organizational practices or innovation. It is conceived as a characteristic of resilient organizations. The strength of the handyman is to be creative under pressure, to create an order from chaos and uncertainty, to overcome the paralysis that seizes most actors (Weick, 1993)

Claude Lévi-Strauss (1962) uses the concept of 'do-it-yourself' to characterize a mode of understanding of a world founded on experimentation, on a 'science of the concrete'. "The handyman is the man who works with his hands, using roundabout ways compared to the man of art."

With the analogy of the do-it-yourself Lévi-Strauss wants to go beyond the 'neolithic paradox', an era when pottery, weaving, metallurgy, cattle rearing appeared not as a result of a 'modern' rational scientific approach, like Descartes', but not by chance either. Therefore, two scientific approaches in fact co-exist in history, that embodied by the handyman (e.g. Robinson Crusoe), and that embodied by the engineer (e.g. Leonardo da Vinci).

According to Lévi-Strauss, the handyman is able to perform a big number of diversified tasks. But, contrary to the engineer, these tasks are not dependent on obtaining specific raw materials and tools for their realization. The handyman makes do with what is available. The handyman does not work within the framework of a 'project'.

The engineer has been most often glorified in history to the detriment of the handyman, although many great innovations have been the result of 'handymen' (Weren't Pasteur, Edison, Bell, for example, handymen?). The engineer tends to be convinced that he has *the* solution whereas the handyman thinks he has *a* solution, probably not the best one, but a satisfactory one (Simon, 2004)

During the Covid crisis the do-it-yourself approach permitted to find innovative solutions to never seen circumstances: organizational circumstances (shortening of hierarchical chains, monitoring closer to the field, re-orientation of beds and personnel, faster training of resuscitation personnel), logistical innovations (faster purchasing procedures, partnerships with companies to quickly get hydro alcoholic gel, etc.), technological innovations (use of 3D printing pour shields or respirators parts, on site production of individual protection equipment).

The idea is not to oppose the logic of the handyman to that of the engineer but to show that each is adapted to specific circumstances. The engineer operates in an environment under control. In normal times, organizational routines allow to save time, energy and resources. Do-it-yourself finds its meaning when routines are no longer adapted. In an uncertain environment, following past trends does not help for the future. The environment is complex due to its systemic dimension. It is very difficult or impossible to grasp all the interactions that make up the environment. The uncertainty is amplified by cumulative phenomena of feedback. For example, the confinement in China impeded the supply of masks made in China. It is not possible to anticipate everything and even less to control everything. But it is possible to get prepared to this complexity through training, particularly by resorting to simulations of crisis situations.

5. Simulations for training for 'do-it-yourself'

Simulations are an excellent tool permitting to immerge oneself in a situation of uncertainty, which is largely used by military forces (Bourguilleau, 2020). The military has used simulations for decades, if not centuries, as war is a highly uncertain activity due to its complexity and the will of the enemy to surprise and cheat. Simulations are also adapted to the world of the firm to support strategic decisions (Gilad, 2009). Military or civil simulations facilitate organizational training (Vallat, 2016) and permit to test, experiment, make mistakes without consequences. The goal is to learn from one's errors through the systematic practice of returns on experience (Vallat, 2021).

Simulation already exists in the hospital world notably in the training of the medical personnel (e.g. https://teamhcl.chu-lyon.fr/simulyon-simulation-en-sante). In those training centres medical students are confronted with situations of crisis and have to adapt to circumstances and find a solution. In that case, the environment is under control, the patient is a mannikin (SimMan Essentiel, SimMan 2G et 3G, SimKelly, etc.) which faithfully reproduces the symptoms of the pathology treated. The simulations are filmed and then the object of a debriefing (return on experience). Though the uncertainty is limited, it is a good enough start to learn how to 'do it yourself' (Koca et al., 2023).
The Covid crisis has however shown that the uncertainty is not limited to a diagnostic on a patient. The more numerous the involved parties are, the bigger the uncertainty, and consequently the more a preparation is needed as it is impossible to anticipate all the problems and have ready made procedures due to the complexity of the situations. The *Management guide of hospital tensions and exceptional sanitary situations* proposes 'reflex cards' for the different risks identified, while specifying that the performance of exercises permits to test procedures, to acquire experience and spot weak and strong points and improvement possibilities. These exercises are more of an organizational nature than a medical one.
Health establishments can resort to different types of simulation exercises to cope with crises even if each crisis is unique, in order to improve the decision process through experience. This is for example the purpose of the iCrisis software developed by the University of Lorraine (www.icrisis.com). This software simulates the decision-making process at the strategic level through various scenarios. The monitors of the exercise make the circumstances evolve depending on the reactions of the participants. The software keeps track of the decisions made to facilitate the work on the return of experience (Judek, 2019).

6. Conclusion

The Covid crisis has shown that established standardized rules, processes and procedures cannot cope with 'black swan' type events. Perforce the engineer has to give way to the handyman. The latter can do things that the former cannot do, that is make improvised decisions short circuiting standard channels or just ignoring them altogether in order to find effective solutions, even if in a relative way, to tackle a situation which had never been seen before. Extreme situations offer, in a way, a revenge for the handyman on the engineer. It seems that the handyman, in such an extreme situation, is more able to survive than the engineer. The Covid crisis, which first hit the health establishments, has shown that the do-it-yourself approach of the handyman has surely permitted to a certain extent to mitigate, if not to control, the impact of the virus. Of course, the question arises of the possibility of preparing someone to something about which nobody knows anything. The use of the simulation tool can be of great help as it makes it possible to put actors in the most improbable and unthinkable situations, especially today with the help of IT and its 'Artificial Intelligence' developments (Lefevre-Scelles, 2022).
It would be, however sterile to oppose the handyman and the engineer. Each has his merits, and shortcomings, and one can be both at the same time, as the history of innovation has shown.

7. References:

Bourguilleau A. (2020) : *Jouer la guerre. Histoire du wargame*, Passés/Composés, Ministère des Armées, 2020

Gilad B. (2009): Business War Games: How Large, Small, and New Companies Can Vastly Improve Their Strategies and Outmaneuver the Competition, Franklin Lakes, Career Press

Judek C., Verhaegen F., Edjossan-Sossou A-M, Verdel T (2019*): "Simulation-Based Training for Improving Managers' Awareness to a Crisis: An Empirical Study to Observe the Capability of the iCrisis Simulation Approach to Generate Crisis at the Strategic Level." IDRiM Journal* 9 (1): 83–107

Koca A., Schlatter S., Delas Q., Denovel L., Lilot M., Rimmelé T. (2023): *"Influence of the embedded participant on learners' performance during high-fidelity simulation sessions in healthcare", BMC Med Educ* 23, 751

Lefevre-Scelles A, Barege V, Roussel M, Gachet F, Sibert L, Clavier T, Damm C. (2022): *« Development and evaluation of a mass casualty medicine simulation method using figurines », British Journal of Anaesthesia.* 2022 Feb;128(2):e210-e212

Lévi-Strauss C. (1962) : La Pensée sauvage, Plon, Paris

Simon H.A. (2004) : Les sciences de l'artificiel, Paris, France, Gallimard

Vallat D., Michel P. (2021) : Préparer les crises de demain : le retex première étape vers une organisation apprenante ? *Horizons publics*, Berger-Levrault

Vallat D., Bayart C., Bertezene S. (2016): "Serious games in favour of knowledge management and double-loop learning?", *Knowledge Management Research & Practice*, vol. 14, n°4, p.p. 470–477

Taleb N.N. (2007): The Black Swan, Pinguin Books, London, UK

Weick K.E. (1993): "The collapse of sensemaking in organizations: the Mann gulch disaster", *Administrative Science Quarterly*, vol. 38, n°4, p.p. 628–652