

# A plea for responsible and inclusive knowledge management at the world level

Responsible  
and inclusive  
knowledge  
management

211

Susanne Durst  
*School of Business, Högskolan i Skövde, Skövde, Sweden and  
Department of Business Administration, Tallinn University of Technology,  
Tallinn, Estonia*

Received 19 September 2021  
Revised 14 November 2021  
Accepted 3 December 2021

## Abstract

**Purpose** – This essay aims to draw attention to the idea of a new research approach to knowledge management (KM) labelled responsible KM (rKM) as a possible answer to not only address the consequences of the pandemic but also other present and upcoming societal challenges.

**Design/methodology/approach** – This essay has been prepared by a KM researcher who shares their own personal views and opinion regarding past and current societal developments and based on that offers a potentially new KM direction.

**Findings** – Switching the focus to rKM may help address current and upcoming social challenges that can only be addressed jointly by the global community and which would also involve a new consideration of the “knowledge” resource.

**Originality/value** – The essay proposes a new alternative approach to KM called rKM that is based on ideas that to the author’s knowledge have not been discussed in this way in the contemporary literature on KM.

**Keywords** Knowledge management, Inclusive knowledge management, New research direction, Responsible knowledge, Responsible knowledge management

**Paper type** Viewpoint

## 1. Short background to the origin of this essay

This essay is a transcription of a keynote address given by the author of this essay at the TAKE 2021 Theory and Applications in the Knowledge Economy Virtual Conference, held 7–9 July 2021. The TAKE conference manager, Dr Eduardo Tomé, invited the author to give a keynote speech on Knowledge Management in the New Normal. In preparation for this, the author very quickly concluded that knowledge management (KM) as a field of research needs something new (something alternative) to increase the chances of contributing to the consequences of the pandemic not only on the individual but also in terms of the challenges the world is facing as a whole. Indeed, it is argued that a world perspective needs to be taken to address present and upcoming challenges, which are primarily at the societal level.

The first results of the author’s reflections (which were also the content of the keynote) are presented below. It must be emphasized that the present work is a work in progress (or a first minimal viable model), and, considering the idea, it can only be further developed together with



© Susanne Durst. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

VINE Journal of Information and  
Knowledge Management Systems  
Vol. 54 No. 1, 2024  
pp. 211-219  
Emerald Publishing Limited  
2059-5891  
DOI 10.1108/VJKMS-09-2021-0204

other individuals. The work thus represents the beginning of a development (perhaps the development of a new theory?), and the author hopes that the alternative KM approach presented in the following will meet with a variety of interested parties who are willing to develop the approach collaboratively. Having said that, the essay presents a personal view.

## 2. The initial situation

On 31 December 2019, China informed the World Health Organization (WHO) of the outbreak of a new coronavirus. Since then, COVID-19 has spread. Although infectious diseases are not rare, they rarely reach the pandemic level (Durst and Henschel, 2021). Moreover, compared with previous external crises, the entire world is suffering from this new type of virus. It can be described as a transboundary crisis, i.e. it cuts across geographical and/or policy boundaries (Boin and Lodge, 2016). Although no one could have anticipated the scale of this crisis, the virus hit a world that had (has) obviously only rudimentary crisis management skills (Institute for Public Relations, 2020).

## 3. What have been the consequences since then?

According to the author, to discuss the consequences of the crisis, it is useful to do so from different levels; namely the individual, organizational, industry, national and intergovernmental levels which is done next.

### 3.1 *Consequences at the individual level*

The consequences of the pandemic at the individual level are manifold; in the keynote, the emphasis was placed on the digital divide, educational disadvantages and the increase in both poverty and child labour.

**3.1.1 *Digital divide.*** According to the organisation for economic co-operation and development Glossary of Statistical Terms, digital divide “refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities”. Although this divide has already existed before the pandemic, there are clear signs that the pandemic has furthered it. For example, the Pew Researcher Center reported, based on a survey of US adults conducted between 25 January and 8 February 2021, “that some 15% of home broadband users in the USA say they have had trouble paying for their high-speed internet service during the coronavirus outbreak. This includes 34% of those with household incomes of less than \$30,000 a year”. While DT Global an International development consultancy and thought leader, visualized Global Digital Divide to illustrate not only the inequities between countries but also within countries. The organization reports that globally women are 23% less likely to have internet access than men, and this divide exists even in countries with high internet penetration.

**3.1.2 *Educational disadvantages.*** Closely related to the digital divide are educational disadvantages, which also continue to increase as a consequence of the pandemic. For example, the World Bank reported on 22 January 2021 that in “all countries in the world, we see immense differences in what rich and poor students experience.” COVID-19 poses an even higher risk to girls’ education and well-being, as girls are more likely to drop out of school and are also more vulnerable to violence and face child marriage and adolescent fertility. Vulnerable groups such as children with disabilities, ethnic minorities, refugees, and displaced populations are also less likely to access remote learning materials and to return to school post-crisis”. In April 2021, the World Bank published an opinion highlighting, among others, that there is also initial evidence that school closures have resulted in learning losses. It is not surprising that these losses appear to be higher among students whose parents have less education.

*3.1.3 Increase in poverty and child labour.* In the beginning of June 2021, United Nations children's fund (UNICEF) and international labor organization (ILO) in a joint publication reported that "Global progress against child labour has stalled for the first time since we began producing global estimates two decades ago. Additionally, without urgent mitigation measures, the COVID-19 crisis is likely to push millions more children into child labour. "A new UN report launched on 10 June 2021 reported that for the first time in two decades, the number of children put to work has increased, to 160 million worldwide, representing an increase of 8.4 million over four years, while millions of others are at risk due to the COVID-19 pandemic.

### *3.2 Consequences at the organizational level*

The pandemic has also led to the situation that many companies had to cease their business activities or continue to struggle to survive. For example, already in September 2020 Fortune reported that nearly 100,000 establishments that temporarily shut down due to the pandemic were out of business in the meantime. The real consequences with regard to possible further company closures will be visible as soon as the effects of the support measures offered by many states have "fizzled out". At the same time, the pandemic has also facilitated the rise of start-ups in many countries (Fitzgibbon, 2021).

In organizations of all kinds, a rapid digitalization push took place. Many of them have also become more flexible in the way they were/are working. These rapid conversions were often due to the fact that without them, continued operation of the activities would not be possible, or only to a very limited extent. The future will show whether and to what extent the broad(er) mass of organizations will also use these measures (e.g. remote working) in the future. Rapid digitalization triggered by the pandemic has also led to an even stronger focus of organizations regardless of size to rethink their existing business models (Ritter and Pedersen, 2020). The study by Clauss *et al.* (2021), for example, has shown that a focus on temporary business model innovation can help organizations incrementally change existing business models not only in a short period of time but also by considering the finite resources at hand.

### *3.3 Consequences at the industry level*

The pandemic has caused entire industries to stop or significantly reduce their activities due to lockdown measures or infections of individual employees. Supply chains collapsed completely or could no longer operate as usual this led not only to an acute shortage of essential supplies needed to fight the pandemic but also daily necessities were also affected by these shortages, and still are. As regards the latter, companies of all sizes are increasingly reporting long waiting times for end products as well as spare parts. In August 2021, Toyota, the world's No 1 automaker announced it would reduce its output of cars in September by 40% compared to previous production plans because of the inability to secure a number of parts. Additionally, in November 2021 the shortage of computer chips continued to affect manufacturers across the world as they are the vital components of many products such as smartphones, laptops, etc. (Wired Business, 2021).

Thus, the world has learned how fragile global supply chains are due to raw material scarcity, production and transportation disruption, and social distancing (Paul *et al.*, 2021).

### *3.4 Consequences at the national level*

At the national level the pandemic has shown the states very quickly their limits (Mascio *et al.*, 2020) and as a consequence, the room for manoeuvre was (even further) restricted for many of them. For example, many countries, the less developed ones in particular, ran out of oxygen equipment or vaccines were/are not available. As regards the latter, UNICEF reported on the 27 of October that African countries in particular have been left without access to COVID-19

vaccines. COVID-19 has exacerbated the situation of underfunded and fragmented health systems. Key health services are compromised, and the shortage of skilled workers is (further) increasing. Routine check-ups and treatment of other diseases are delayed.

In fact, the negative and detrimental consequences of the budget cut the public sector in many states has been exposed to over the years have become apparent (Dunlop *et al.*, 2020). The consequences of the pandemic will lead to even more significant budgetary restrictions; funds pledged are no longer available. The national debt will increase, which in turn will further reduce the scope of action.

At the same time, considerable differences between regions/countries influenced not only by the available resources but also by the basic attitude towards the crisis on the part of the governing politicians became even clearer.

### *3.5 Consequences at the intergovernmental level*

At the intergovernmental level, the pandemic has illustrated the difficulty of this form of organisation when it comes to quick, decisive, and joint decisions and solutions, not only within one region, for example, the European Union, but also at the world level. The pandemic has unfortunately shown that most regions have mainly thought about themselves and their citizens instead of working on a global approach that would be appropriate in the context of the type of crisis (Médecins Sans Frontières [MSF], 2021). Recently, UNICEF reported that G20 member countries have received 15 times more COVID-19 vaccine doses per capita than sub-Saharan African countries. This situation has long-term implications not only for the overall health of the world's population but also for how the world as a whole will emerge from the pandemic.

### *3.6 Additional consequences*

There are "additional consequences" that should not be left unnoticed. The pandemic has led to excellent work not only in developing vaccines in the short term, but also in using them. From a KM perspective, one could say the practices of knowledge creation, dissemination and use show themselves at their best. One could also observe an increasing number of promising examples showing the power (and relevance) of big data analytics that goes beyond the benefit for individual organizations. Health care in particular has benefited from big data analytics; it not only supported the rapid development of vaccines but could also be used to predict the spread of disease, as it allows the processing of health-care information much more rapidly than during other past pandemics.

The rapid digitalization pushed by the pandemic has also led to an increase in cyber-attacks at all levels. For example, IT Governance reported for the first quarter of 2021 "a 50% increase in the total number of breaches compared to the same stage in 2020 and a significant rise in the total number of breached records. They further reported that cyber-attacks were by far the most common type of security incident in the 1st Quartal. With regard to the main forms of attack, criminal hackers exploit system vulnerabilities (40% of attacks), followed by phishing attacks (22%) and password breaches (19%). While CDNetworks listed in January 2021, small businesses, health-care institutions, government agencies, energy companies and higher education facilities as the industries that are most vulnerable to cyberattacks.

## **4. What does that all mean for research on knowledge management?**

The author of this essay argues that the above-mentioned consequences underlines the need to look at knowledge from broader perspectives, perspectives that go beyond the individual organization perspective and perspectives viewing knowledge primarily as an asset. The

consequences discussed above, require in the author's view a world perspective as otherwise the consequences at hand can be hardly addressed. Thus, the consequences call for more collaborative KM approaches than individual ones. Moreover, it appears even more relevant to consider the different qualities of knowledge; being in certain situation something valuable yet in other situations something negative or something that has become obsolete, as it no longer helps to address the present and upcoming challenges at different levels.

It is suggested that risk related to knowledge should be studied more intensively. [Durst and Zieba \(2018, p. 2\)](#) have defined "knowledge risk is a measure of the probability and severity of adverse effects of any activities engaging or related somehow to knowledge that can affect the functioning of an organization on any level". The aforementioned has not only led to new risks but also intensified old ones. As regards the latter, for example, a shortage of employees in the health system caused not only by poor pay but also by the overload that has resulted from the pandemic response is likely to reduce quality, as the relevant knowledge needed to care for patients is only transferred in a fragmented way or, in the worst case, not at all. The consequences of presented in section 3, have also contributed to the situation that the half-life of certain types of knowledge has been reduced even further, for example, our knowledge of SARS CoV-2 (incl. its variants) or cybersecurity. As a result, knowledge that has been deemed relevant before is only conditionally applicable or has even become completely obsolete.

In sum, the above-mentioned calls not only for even more research on KM, but also for more research on knowledge risk management (KRM) which covers a systematic and ongoing approach to the application of diverse tools and techniques that are required to detect, examine and react to risks related to the KM processes found in and across organizations ([Durst et al., 2016](#)).

Although the above-mentioned consequences have an impact on all types of organization and require joint and collaborative efforts of organizations, smaller organizations in particular are affected by them, and thus there is a further need for advancing research on KM in small organizations as well. Small organizations are highly sensitive to external threats ([Doern et al., 2019](#); [Herbane, 2013, 2019](#)). It is also known that the probability of failure among them, in particular younger ones, is higher compared to large and established firms ([Davidson and Gordon, 2016](#); [May and Lixl, 2019](#)). At the same time, these firms are not only exposed to the pandemic, as an example of an external threat, and its implications, but also to skills shortage, progressive digitalization, climate change, and many of them to company succession as well. These are all challenges that have to be tackled simultaneously, a challenge that is already impossible (!) for large (resource-rich) companies. Thus, it can be concluded that there is an even greater need for K(R)M in any small firm.

Considering the above-presented (which only addressed a few, however, in the opinion of the author, relevant aspects), future research should be designed in a way so that KM in small and medium-sized enterprises (SMEs) has a clear dynamic and collaborative perspective. One that is based on a continued exchange of internal and external knowledge sources; that addresses the pros and cons of knowledge; that combines people approaches with digital ones, and that further intensifies the long-term cooperation with diverse actors. This updated approach to KM would not only meet the requirements and prerequisites of small firms, but at the same time is able to cover the external dynamic complexity.

Of course, it is not necessary to start from scratch but the understanding of KM in SMEs developed over the years ([Durst and Edvardsson, 2012](#); [Massaro et al., 2016](#)) should be considered when designing forthcoming research.

However, the consequences mentioned above at the different levels also require decision makers in small firms to identify and describe their role in addressing present and forthcoming challenges at the world level, which in turn will also have consequences for the approach to KM in the respective firm. It will also influence research on K(R)M in general and KRM in SMEs in particular.

Even though the author of this essay calls for more intensive research on KM in small firms that takes into consideration the suggestions - and to come back to the beginning of the discussion in this section – the mentioned consequences in Section 3 together with the other challenges presented in conjunction with small firms calls in particular for research activities not only at a higher level but also at a global level in particular; which leads to the next section containing the main proposal of the keynote/this essay (personal view).

### 5. A move towards responsible knowledge management

In fact, the author argues that recent developments and upcoming challenges can only be addressed through a world perspective. More precisely, there is a need for something that the author labels responsible KM (rKM). rKM goes beyond organizational/national/etc. boundaries and acknowledges that only a collaborative and inclusive approach involving different and diverse partners of equal standing is capable of addressing present and future challenges (the consequences addressed in Section 3). rKM emphasizes knowledge creation, sharing, and retention for the greater good; the latter also forms the starting point of this approach to KM and not as typically found in the individual organization and its particular challenges.

As a consequence, rKM takes sustainability seriously, thus its focus is on supporting the development of “Truly Sustainable Businesses”. According to [Dyllick and Muff \(2016, p. 166\)](#), “truly sustainable business shifts its perspective from seeking to minimize its negative impacts to understanding how it can create a significant positive impact in critical and relevant areas for society and the planet. A Business Sustainability 3.0 firm looks first at the external environment within which it operates and then asks itself what it can do to help overcome critical challenges that demand the resources and competencies it has at its disposal. “Given, as argued above, that rKM is based on a collaborative and inclusive approach, the aim of rKM will be to develop truly sustainable ecosystems at the world level.

To do so and thus to increase the probability of success of the required measures and actions, rKM seeks and appreciates the skills and competencies of everyone regardless of the person’s role, function, education, age, ethnic background, etc. Moreover, rKM carefully applies the increasingly available digital tools and technologies for the greater good. It also implies that technology must be subordinate to people (society) and not vice versa.

To initiate concrete next steps, the author proposes a number of research directions:

- Development of novel research methods/approaches to contribute with insights that can help to address the challenges presented in Sections 3 and 4 taking the perspective of rKM as described before.
- The execution of studies aimed at increasing the quality of knowledge creation by not only making sure that old and still relevant knowledge is not discarded but also including knowledge that has been developed in different parts of the world/different actors.
- In case that knowledge has become obsolete, the execution of studies aimed a strategic unlearning at the world level.
- Development and maintenance of rKM ecosystems that function at the world level and are self-sustaining.

- Development of rKM systems that support people in making fast and informed decisions despite the increasing number of fake news and information spread increasingly by bots.
- Identification of suitable rKM strategies that support the activities of responsible world citizens willing to jointly work on the greater good.
- Development of rKM that accelerates knowledge creation and sharing at the world level so that everyone can benefit regardless of their geographical location and their own means.
- Identification of rKM governance that promotes KM cooperation and networks at the world level so that the issues raised in the previous sections and the upcoming ones can be addressed.
- Development and execution of KRM in the context of rKM that incorporates not only the increasing numbers of risks related to knowledge but also the interconnectivity between the risks arising from different challenges the world/organizations/individuals (i.e. world citizens) are exposed to.

The above-discussion has also huge consequences on training and education, given the author's profession, the questions would thus be:

- How to make rKM an integrated component of all curricula at Higher Education Institutes, secondary schools and earlier?
- How to constantly train and retrain citizens on rKM related issues?
- And, to begin with, what would an ideal rKM curriculum at the world level look like?

## 6. Concluding remarks

The author is aware that the thoughts shared above are at an early stage of development and thus require further deeper reflection and thought. On the other hand, the author hopes that it has become clear that recent developments and their consequences at different levels call for a different KM approach.

It is argued that to address current and future challenges, KM must be viewed from a world perspective, and in addition knowledge should be seen not only as a sustainable resource - rather than a distinctive resource that mainly benefits a few actors - but also its different qualities should be considered more intensively. It is time for an alternative perception of knowledge and thus its management and one that benefits people regardless where they live, what they are and where they come from. Looking at knowledge from an rKM perspective, as it is suggested in this essay, could be a start. The author believes that it is worth making a serious attempt and hopes that many people will think similarly and be willing to embark on a common path in this direction.

## References

- Boin, A. and Lodge, M. (2016), "Designing resilient institutions for transboundary crisis management: a time for public administration", *Public Administration*, Vol. 94 No. 2, pp. 289-298.
- Clauss, T., Breier, M., Kraus, S., Durst, S. and Mahto, R.V. (2021), "Temporary business model innovation - SMEs' innovation response to the covid-19 crisis", *R&D Management*, doi: [10.1111/radm.12498](https://doi.org/10.1111/radm.12498).

- Davidson, P. and Gordon, S. (2016), "Much ado about nothing? The surprising persistence of nascent entrepreneurs through macroeconomic crisis", *Entrepreneurship Theory and Practice*, Vol. 40 No. 4, pp. 915-941, doi: [10.1111/etap.12152](https://doi.org/10.1111/etap.12152).
- Doern, R., Williams, N. and Vorley, T. (2019), "Special issue on entrepreneurship and crises: business as usual? An introduction and review of the literature", *Entrepreneurship and Regional Development*, Vol. 31 Nos 5/6, pp. 400-412, doi: [10.1080/08985626.2018.1541590](https://doi.org/10.1080/08985626.2018.1541590).
- Dunlop, C.A., Ongaro, E. and Baker, K. (2020), "Researching COVID-19: a research agenda for public policy and administration scholars", *Public Policy and Administration*, Vol. 35 No. 4, pp. 365-383, doi: [10.1177/0952076720939631](https://doi.org/10.1177/0952076720939631).
- Durst, S. and Edvardsson, I.R. (2012), "Knowledge management in SMEs: a literature review", *Journal of Knowledge Management*, Vol. 16 No. 6, pp. 879-903, doi: [10.1108/13673271211276173](https://doi.org/10.1108/13673271211276173).
- Durst, S. and Henschel, S. (2021), "COVID-19 as an accelerator for developing strong(er) businesses? Insights from Estonian small firms", *Journal of the International Council for Small Business*, Vol. 2 No. 1, pp. 1-29, doi: [10.1080/26437015.2020.1859935](https://doi.org/10.1080/26437015.2020.1859935).
- Durst, S. and Zieba, M. (2018), "Mapping knowledge risks: towards a better understanding of knowledge management", *Knowledge Management Research and Practice*, Vol. 17 No. 1, doi: [10.1080/14778238.2018.1538603](https://doi.org/10.1080/14778238.2018.1538603).
- Durst, S. Bruns, G. and Henschel, T. (2016), "The management of knowledge risks: what do we really know?", *International Journal of Knowledge and Systems Science*, Vol. 7, pp. 19-29. [10.4018/IJKSS.2016070102](https://doi.org/10.4018/IJKSS.2016070102).
- Dyllick, T. and Muff, K. (2016), "Clarifying the meaning of sustainable business: introducing a typology from business-as-usual to true business sustainability", *Organization and Environment*, Vol. 29 No. 2, pp. 156-174, doi: [10.1177/1086026615575176](https://doi.org/10.1177/1086026615575176).
- Fitzgibbon (2021), available at: <https://london.ac.uk/news-opinion/london-connection/feature/how-covid-triggered-start-up-boom>
- Herbane, B. (2013), "Exploring crisis management in UK small- and medium-sized enterprises", *Journal of Contingencies and Crisis Management*, Vol. 21 No. 2, pp. 81-95, doi: [10.1111/1468-5973.12006](https://doi.org/10.1111/1468-5973.12006).
- Herbane, B. (2019), "Rethinking organizational resilience and strategic renewal in SMEs", *Entrepreneurship and Regional Development*, Vol. 31 Nos 5/6, pp. 476-495, doi: [10.1080/08985626.2018.1541594](https://doi.org/10.1080/08985626.2018.1541594).
- Institute for Public Relations (2020), "COVID-19: How businesses are handling the crisis", available at: [https://instituteforpr.org/wp-content/uploads/PC\\_IPR\\_Coronavirus\\_vFinal.pdf](https://instituteforpr.org/wp-content/uploads/PC_IPR_Coronavirus_vFinal.pdf) (accessed 10 August 2020).
- Mascio, F.D., Natalini, A. and Cacciatore, F. (2020), "Public administration and creeping crises: insights from COVID-19 pandemic in Italy", *The American Review of Public Administration*, Vol. 50 Nos 6/7, doi: [10.1177/0275074020941735](https://doi.org/10.1177/0275074020941735).
- Massaro, M., Handley, K., Bagnoli, C. and Dumay, J. (2016), "Knowledge management in small and medium enterprises: a structured literature review", *Journal of Knowledge Management*, Vol. 20 No. 2, pp. 258-291, doi: [10.1108/JKM-08-2015-0320](https://doi.org/10.1108/JKM-08-2015-0320).
- May, S. and Lixl, D. (2019), "Restructuring in SMEs – a multiple case study analysis", *Journal of Small Business Strategy*, Vol. 29 No. 1, pp. 85-98.
- Médecins Sans Frontières (2021), available at: [www.msf.org/european-union-more-empty-promises-about-global-covid-19-vaccine-equity](http://www.msf.org/european-union-more-empty-promises-about-global-covid-19-vaccine-equity)
- Paul, S.K., Chowdhury, P., Moktadir, M.A., and Lau, K.H. (2021), "Supply chain recovery challenges in the wake of COVID-19 pandemic", *Journal of Business Research*, Vol. 136, pp. 316-329.
- Ritter, T. and Pedersen, C.L. (2020), "Analyzing the impact of the coronavirus crisis on business models", *Industrial Marketing Management*, Vol. 88, pp. 214-224.
- Wired Business (2021), available at: [www.wired.com/story/why-chip-shortage-drags-on/](http://www.wired.com/story/why-chip-shortage-drags-on/) (accessed 14 November 2021).

---

**Internet sources**

- available at: [www.pewresearch.org/fact-tank/2021/06/03/34-of-lower-income-home-broadband-users-have-had-trouble-paying-for-their-service-amid-covid-19/](http://www.pewresearch.org/fact-tank/2021/06/03/34-of-lower-income-home-broadband-users-have-had-trouble-paying-for-their-service-amid-covid-19/) (accessed 17 September 2021).
- available at: <https://dt-global.com/company/blog/march-4th-2021/visualizing-digital-divide> (accessed 17 September 2021).
- available at: [www.worldbank.org/en/news/immersive-story/2021/01/22/urgent-effective-action-required-to-quell-the-impact-of-covid-19-on-education-worldwide](http://www.worldbank.org/en/news/immersive-story/2021/01/22/urgent-effective-action-required-to-quell-the-impact-of-covid-19-on-education-worldwide) (accessed 30 June 2021).
- available at: [www.worldbank.org/en/news/opinion/2021/04/02/the-impact-of-covid-19-on-education-recommendations-and-opportunities-for-ukraine](http://www.worldbank.org/en/news/opinion/2021/04/02/the-impact-of-covid-19-on-education-recommendations-and-opportunities-for-ukraine) (accessed 17 September 2021).
- available at: <https://data.unicef.org/resources/child-labour-2020-global-estimates-trends-and-the-road-forward/> (accessed 30 June 2021).
- available at: <https://news.un.org/en/story/2021/06/1093682> (accessed 30 June 2021).
- available at: <https://fortune.com/2020/09/28/covid-buisnesses-shut-down-closed/> (accessed 30 June 2021).
- available at: [www.smh.com.au/business/companies/how-one-covid-case-upended-toyota-s-just-in-time-supply-chain-20210902-p58o3j.html](http://www.smh.com.au/business/companies/how-one-covid-case-upended-toyota-s-just-in-time-supply-chain-20210902-p58o3j.html) (accessed 17 September 2021).
- available at: <https://illinois.touro.edu/news/applications-and-examples-of-big-data-in-healthcare.php> (accessed 17 September 2021).
- available at: [www.itgovernance.co.uk/blog/data-breaches-and-cyber-attacks-quarterly-review-q1-2021](http://www.itgovernance.co.uk/blog/data-breaches-and-cyber-attacks-quarterly-review-q1-2021) (accessed 30 June 2021).
- available at: [www.cdnetworks.com/cloud-security-blog/the-5-industries-most-vulnerable-to-cyber-attacks/](http://www.cdnetworks.com/cloud-security-blog/the-5-industries-most-vulnerable-to-cyber-attacks/) (accessed 17 September 2021).
- available at: <https://london.ac.uk/news-opinion/london-connection/feature/how-covid-triggered-start-up-boom> (accessed 8 October 2021).
- available at: [www.msf.org/european-union-more-empty-promises-about-global-covid-19-vaccine-equity](http://www.msf.org/european-union-more-empty-promises-about-global-covid-19-vaccine-equity) (accessed 8 October 2021).
- available at: [www.wired.com/story/why-chip-shortage-drags-on/](http://www.wired.com/story/why-chip-shortage-drags-on/) (accessed 14 November 2021).
- available at: [www.unicef.org/press-releases/g20-members-have-received-15-times-more-covid-19-vaccine-doses-capita-sub-saharan](http://www.unicef.org/press-releases/g20-members-have-received-15-times-more-covid-19-vaccine-doses-capita-sub-saharan) (accessed 14 November 2021).

**Corresponding author**

Susanne Durst can be contacted at: [susanne.durst@taltech.ee](mailto:susanne.durst@taltech.ee)

---

For instructions on how to order reprints of this article, please visit our website:

[www.emeraldgrouppublishing.com/licensing/reprints.htm](http://www.emeraldgrouppublishing.com/licensing/reprints.htm)

Or contact us for further details: [permissions@emeraldinsight.com](mailto:permissions@emeraldinsight.com)