

Crisis-driven newsroom innovation

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ABSTRACT

Despite the extensive body of knowledge in innovation studies, there is a lack of literature that studies crisis-driven innovation in newsrooms. Whether the crises contribute to innovation or rather restrict it remains an under-researched topic. In this chapter, I study the factors that facilitate rapid innovation processes in news media outlets, using the news media business during the Covid-19 pandemic as a case study. Through qualitative semi-structured interviews with journalists, developers, data journalists, editors, and product managers at four Norwegian news outlets, I identify key factors that facilitate quick, crisis-driven innovations in newsrooms. I argue that there are four important factors that drive innovation in newsrooms during crisis: the need for information in the population; initiative among the news staff; existing technological expertise in the newsrooms; and collaboration among editorial developers and journalists.

KEYWORDS: crisis, innovation, innovation factors, innovation pace, news media

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Introduction

Social crises may take on different forms, including pandemics, earthquakes, and extreme events that pose a threat to society or organisations. The need for information becomes especially pervasive during these times, and journalists are more willing and open to innovate (Posetti et al., 2020). Bessant and colleagues (2015: 2) have highlighted how innovation may avoid negative consequences of a crisis, by introducing the concept of crisis-driven innovation. With the goal of analysing crisis-driven newsroom innovation, in this chapter, “crisis” is conceptualised as an event that 1) threatens high-priority values of the organisation, 2) presents a restricted amount of time in which a response can be made, and 3) is unexpected or unanticipated by the organisation (Hermann, 1963: 64). In journalism, crises and critical incidents can be defined as the events that result in the reconsidering of “the hows and whys of journalistic practice” (Zelizer, 1992: 67). For example, the Covid-19 crisis has instigated innovation in newsrooms in terms of finding new ways of gathering data and new ways of producing as well as consuming news (Cools et al., 2022). During the Covid-19 pandemic, “journalism has become more essential than ever to keep societies informed and to translate the impact of public policies on people’s lives” (García-Avilés, 2021: 1239). Quandt and Wahl-Jorgensen (2021: 1200) suggested that “journalists were also compelled to dramatically change the content of their reporting [during the pandemic] – the stories they tell and the way they are framed”.

In this chapter, I focus on innovation in newsrooms during a crisis in response to an increasing demand and need for information in the population. How the media industry addresses the pressing need for information, and hence innovation, during the crisis is not well understood. First, since a “crisis is fundamentally related to the idea of time” (Fleischer, 2013: 314), studying the factors that influence high-pace innovation is important. Belair-Gagnon and Steinke (2020) suggested that an understanding of the innovation in newsrooms and the factors that contribute to the failure and success of certain innovations is important in scholarly research. In this chapter, I seek to answer the following research question: What key factors facilitate newsroom innovation during a crisis? Using data from qualitative interviews, I identify four factors that facilitated fast innovation in Norwegian newsrooms during the Covid-19 pandemic: the need for information in the population; initiative among the news staff; existing technological expertise in the newsrooms; collaboration among technological and journalistic staff.

In this chapter, crisis is understood as the threat and danger to the media organisations that calls for change and immediate reaction. In line with the overall idea of this book, innovation is considered a tool with which to respond to crisis with resilience. Therefore, the factors identified in this study are important in building the resilience and creating value for news organisations. For example, creation of news items or news services during the

Covid-19 pandemic is considered as value creation for the organisation itself, for audiences, and for the democratic role of media in society. As outlined in the introductory chapter of this book, crisis can destroy organisations or oppositely encourage innovation and value creation. Therefore, I have studied the successful media outlets that have created value during the pandemic and which have offered new digital services to their audiences within the Norwegian context. Thus, this chapter is guided by a theoretical framework of innovation studies, and I utilise the “social shaping of technology” perspective to better understand the role of technology in the innovation processes. The following sections present the theoretical framework, followed by an account of the data and methods. Subsequently, empirical results are presented followed by a conclusion and implications for further research.

Theoretical framework

Innovation in the media industry is driven by both internal and external factors. Storsul and Krumsvik (2013: 198) have suggested that the factors driving media innovation can be grouped into four categories: media institutional factors, technological developments, sociocultural conditions, and power relations. Specific factors range from technology, market opportunities, regulation, and user and competitor behaviour to industry norms, company strategy, leadership and vision, but also organisational structure, capacity and resources, culture, and creativity. In addition, Storsul and Krumsvik (2013) pointed out that media organisations are driven by a norm of newness. Løvlie (2016: 81) highlighted the importance of working iteratively and quickly: “To address the need for speed and novelty developing new media products, we have developed a strong focus in our courses on idea generation and concept development in fast, iterative process”. Krumsvik and colleagues (2019: 201) found the following:

Innovations in media occur for a variety of reasons, take place within a variety of conditions, and take shape in different ways inside and outside of media firms. [...] In the innovation process, it is important to consider the roles and relations between all the people, organizations, and technologies involved.

Trappel (2015) suggested that scholars should explore the structural conditions that foster media innovation. This chapter answers those calls by elaborating on existing factors and identifying new factors involved in crisis-driven newsroom innovation.

Pavlik (2013: 190) pointed out that innovation is “the key to the viability of news media in the digital age”. That said, there is no consensus on the definition of newsroom innovation among scholars (Belair-Gagnon & Steinke, 2020; García-Avilés, 2021; Paulussen, 2016), though Schmitz Weiss and Domingo

(2010: 1158) defined the process of innovation in newsrooms as “new product features or new technological tools, that help in the distribution, acquisition, processing, display and storage of news and content that (online) journalists work with”. As implied by the quote, the idea of newsroom innovation and newsroom technology is interconnected. Inspired by that, this study is based on a perspective interested in the social shaping of technology.

The idea of the social shaping of technology is central to most studies on journalism and newsroom change. According to Paulussen (2016), a significant amount of the research on the innovations in the newsroom has used the “social shaping of technology” perspective. Here, technology is specifically understood as the software technologies used in newsrooms. Not only is it important to have capacity for technology in the newsroom, but skills, knowledge, and expertise also affect the pace and nature of innovation.

Wenk (1989: 6) stated that “the most powerful engines of change [in contemporary society] are a human invention, innovation, and the applications of scientific knowledge”. In this chapter, I attempt to understand the relation between knowledge and expertise in technological newsroom innovation.

Success in organisations does not necessarily depend on economic well-being – “having the money” – but on achieving technical solutions through a knowledge base in organisations. In other words, just having technologies available does not guarantee success; knowledge on how to implement and explore such technologies is important. Thus, this chapter outlines both the knowledge base and the implementation process as equally important in innovation in newsrooms. Fincham and colleagues (1995) stated that organisations have different perspectives and knowledge, which are needed to create new technologies. Collaboration and having similar perspectives on the innovation processes are assumed to be the keys to success. To study the implementation of technologies in newsrooms, Williams (1997: 5) has pointed out the importance of local knowledge, expertise, and experience in organisations:

First the importance of local expertise and experience – including knowledge of the user organization, its methods, and business context, and knowledge of the implementation process – which must be combined with more generic forms of knowledge (of computing techniques and artifacts) to create functioning information systems.

Williams (1997) suggested that we need to understand the interplay between technology and work organisation as a complex process, by focusing on the emergence, diffusion, and adaptation of technological tools within organisational settings. In the words of Roberts and Grabowski (1999: 159): “Organizational constructs give us important insights into the role of technology in organizations and highlight the importance of considering technology as a process as well as a product in our examination”.

Lievrow (2006) suggested that technology and society are undergoing mutual shaping, which effects technological adoption in newsrooms and which has economic, organisational, and cultural consequences. Therefore, researching the adoption of technological innovations is necessary to see the phenomenon in professional and organisational contexts, because journalists and news workers have an impact on how innovation is implemented (Paulussen, 2016). Innovation during a crisis is a rapid process that requires social forces and different interest groups with essential resources and technological expertise. This is why the “social shaping of technology” perspective is relevant for studying crisis-driven innovation, as it assists in identifying the capabilities at play in innovation as well as the actors and dynamics that shape it. Several studies have developed frameworks building on “sociotechnical systems” (Hughes, 1983), “sociotechnical constituencies” (Molina, 1989), and “sociotechnical ensembles” (Bikjer, 1987). The process of innovation is often characterised by “imperfect knowledge and bounded rationality” (Williams & Edge, 1996: 873).

Method and data

This study is a qualitative multiple case study using data generated from qualitative semi-structured interviews. Qualitative interviews were used as a method to gain insight into individual experiences, attitudes, and views (Singer et al., 2011). Interviewing enables the identification of “areas of broad cultural consensus and people’s more personal, private and special understanding” (Arksey & Knight, 1999: 4). The sample of informants is made up of twelve participants practising different professions in the newsrooms, such as developers, journalists, project managers, chief-developing executives, and interaction designers, in four news outlets in Norway:

- VG (national tabloid newspaper *Verdens Gang*)
- BT (local newspaper *Bergens Tidende*)
- *Aftenposten* (largest national print newspaper in Norway)
- NTB (news agency)

The newspapers VG, BT, and *Aftenposten* are owned by the Schibsted media group. Schibsted is one of the largest media holdings in Norway, and its turnover in 2021 was 1.5 billion euro (see, e.g., Konow-Lund et al. 2022; Konow-Lund, 2013; Barland, 2012). NTB is owned by Schibsted and other media groups. This news agency is known for its innovativeness, use of new technological tools, and robot journalism. The interview guide focused on the process of innovation in newsrooms and the participants’ involvement in it. Semi-structured interviews were carried out using the online software Zoom (seven) and in person (six). Interview duration ranged between 40

and 60 minutes, took place in 2021 and 2022, and the interviews were recorded and transcribed. For the purposes of this chapter, quotes have been translated to English. Open coding of the data enabled the identification of eight themes (collaboration, innovation, expertise, knowledge of technological tools, computational mindset, information need, pace, and timely response to the demand for information). By further analysis of those themes, four key factors driving news innovation were identified: the need for information in the population; initiative-taking among the news staff; existing technological expertise in the newsrooms; and collaboration among technological and journalistic staff.

Journalists and developers interviewed for this study were the individuals who have worked with innovations during the Covid-19 pandemic, providing the information that was needed to answer the research questions. To assure balanced results, not only journalists and developers who were directly involved in innovation processes were interviewed, but also individuals with different roles and professions in the newsrooms, in order to confirm the reliability of the findings. The informants were promised anonymity in their responses to assure the unbiased assessment of the phenomenon.

The results are grouped into the four factors identified as key in the development of timely innovations during the crisis: need for information; initiative taking; technological expertise; and collaboration. Results further show that the four factors spurring innovation in crisis were in one way or another connected to a fast pace, consequently identified as a central feature of crisis-driven innovation.

TABLE 5.1 Overview of informants

No.	Profession	Organisation/ Newspaper	Interview Date	Selection aim
1	Editorial developer/ Data journalist	Verdens Gang (VG)	Spring 2021	Has worked on Covid-19 live tracker
2	Editorial developer/ Data journalist	Verdens Gang (VG)	Spring 2021	Has worked on Covid-19 live tracker
3	Journalist/Reporter	Verdens Gang (VG)	Spring 2021	Has worked on Covid-19 live tracker
4	Journalist/Reporter	Verdens Gang (VG)	Spring 2021	Has worked on Covid-19 live tracker
5	Interaction designer	Schibsted	Autumn 2021	Participating and contributing to innovation processes

6	Product manager	Schibsted	Autumn 2021	Leading and organising innovation projects
7	Editor-in-chief	Verdens Gang (VG)	Summer 2021	Has taken decisions regarding Covid-19 live tracker
8	Product director/ Previous reporter and editorial manager	Verdens Gang (VG)	Summer 2021	Has taken decisions regarding Covid-19 live tracker
9	Editorial developer/ Data journalist	Bergens Tidende (BT)	Autumn 2021	Has worked with journalists to cover data-driven stories under crisis
10	Newsleader/Voice	Bergens Tidende (BT)	Autumn 2021	Supervised data journalists to cover data-driven stories under crisis
11	Editorial developer/ Data journalist	Aftenposten	Spring 2022	Has helped journalists to cover data-driven stories under crisis and Covid-19

Results

The emergence of a social crisis is directly linked to the information need in society. When information needs increase, journalists and reporters are willing to innovate and adapt to new methods of information gathering and reporting. Specifically, in the digital age, the information domain has altered, because it is represented not only physically, but digitally as well. Digital interfaces provide the opportunity to receive, process, and communicate information with different scales and scope, especially given the availability of huge datasets that result in the distribution and visualisation of data-driven stories. For example, in the case of Covid-19 reporting, the Covid-19 live tracker enabled the presentation of large statistical data to the audiences in real time. The live tracker was visualised as a dashboard that illustrated the information about the number of infected individuals. The creation of the live tracker was achieved through individual initiatives of journalists and data journalists in the newsroom, through the aid of in-house technological expertise, and collaboration between journalists and editorial developers.

The increased need for information during a crisis

In a crisis, the need for information is extremely high, and news workers need to adapt their practices according to the increased demand for information in society. Informants underlined that the most interesting innovations are created during crises. As one of the developers at *VG* pointed out, “good things” emerge in extraordinary situations, especially when there is a need to react immediately. A developer at *VG* underlined that “usually ‘good things’ are created while extraordinary events happen and when the extreme need for information and innovation arises, for example, such as during the Covid-19 pandemic”. Similarly, the former manager of the data journalism department at *BT* said:

When extraordinary situations happen, for example, terrorist attacks or fire, the task of data journalists is to find out what we can give to the reader to illustrate news events. And those are the instances when the best innovations are made.

In extraordinary situations and critical incidents, newsroom workers are challenged to be creative, work hard, and come up with new ideas. A developer at *VG* said: “The culture of news is oriented around drama. Thus, when such critical incidents happen, it’s like all hands on deck. We step up and create new things”. However, during the Covid-19 crisis, access to information was restricted, as was face-to-face work processes, as some employees had to work from home.

While developing new products and innovations is time-consuming, during a crisis, there is no time to wait. For example, in the case of the Covid-19 live tracker, developers used two days to create an interactive dashboard where Covid-19 data was registered and where the audience could get information about the numbers of infected by Covid-19. However, the first version of the live tracker was not optimal and required enhancement. Developers at *VG*, *BT*, and *Aftenposten* thus created prototypes of products, then refined them later. One developer at *VG* described how “the ways we work don’t allow us to create the new products rapidly, so we first create things immediately and afterwards work to improve and maintain them”.

However, the ability to create the products at a high pace is an advantage in newsrooms, specifically in breaking-news departments. While in other settings, journalists work with different projects, the Covid-19 pandemic was a longitudinal project for all the informants working on Covid-19 reportage. The prioritisation of news related to Covid-19 was, of course, a response to the pressing demand for information by the public. As a journalist at *VG* stated: “In times of crisis, journalists are forced to prioritise the crisis-related happenings”. She described how they started to work on the Covid-19 live tracker: “The chief developing editor called us and said, now we should have something special, and they told the developers, ‘Just leave what you were

doing and start doing this instead” . Time, resources, and the prioritisation of tasks were underlined by the former manager of data journalism department at *BT* as “the factors that lead to newsroom innovation. If data journalists have enough resources and time, they can solve all kind of tasks”.

The importance of individual initiative in innovation processes

Newsroom innovations can be crisis-, leadership-, or employee-driven. Hence, in the interviews, I also sought to identify who takes initiatives during the crisis-driven innovations – management or employees, journalists, or developers. There is little research on initiatives on innovation processes in newsrooms. As the developers said during the interviews, journalists as well as developers come up with good ideas. The leader of a data journalist department at *BT* said that innovation is often initiated bottom-up, not from managers, but from the data journalists or developers. The journalistic mission is to critically question not only sources but also data. Journalists could be initiators of innovations, and, with collaboration and technical expertise, these innovations emerged in newsrooms. For example, while describing the work process for developing the Covid-19 live tracker, a journalist at *VG* said: “It was me and one of the developers who fought for this. It was me who was the driving force for prioritising this project”. Prioritisation is an important aspect in the media industry, and data journalists, as well as developers working within the newsroom, should be able to prioritise correctly. The interviews show that idea-generation is expected from everyone in the editorial team; sometimes, journalists take initiative, and sometimes developers. As a developer at *VG* put it:

We see the opportunity, we know what can be and is possible to create/build. Sometimes journalists come and suggest creating something new. But there is a difference. Some journalists understand the developers more, which means that some journalists often have experience in collaborating with developers from previous projects, so they have the right expertise to help us create new products.

However, there is a difference between the younger and older generation of journalists, specifically those who have worked with both paper and digital formats. Informants pointed out that the younger generation understand technological tools better, and they underlined the difference in mindsets.

Another aspect brought up in the interviews is synergies when working in diverse teams. As a developer in *VG* said:

Sometimes journalists come up with very good ideas that I would never think of. It’s difficult to say who is more innovative, journalists or developers, in newsrooms. [...] Machines can’t innovate but can help to release the time that humans can use to innovate and be creative.

Creativity is about coming up with good ideas, and the informants pointed out that in newsrooms, creativity is connected to everyday tasks – there is no need for extraordinary or special creativity. Though journalists with computational mindsets may come up with good ideas and see opportunities better than others, creativity is expected from both journalists and developers, because both professions are always seeking something new, such as news stories to tell and new ways of telling them.

In-house technological expertise and knowledge

All informants agreed on the central role of technological expertise and knowledge needed in the newsroom for staff to take initiative and to be able to collaborate successfully during a crisis. And it was not only the developers who had to understand the technology, but also journalists. In this sense, expertise, knowledge, and experience are the factors identified as practically affecting the innovation practices and facilitating the immediate reaction to the crisis.

The chief development editor at NTB pointed out that the people with technological expertise are the most expensive resource for organisations. However, editorial resources such as news production are also important. As the product manager at Schibsted explained:

Technological resources are crucial. You can have an innovative idea and solution for something, but not be able to execute it if you don't have technical resources. But editorial resources are also required for news products, and then you need input factors from both sides.

Technological expertise is connected to the ability to code and help journalists to find, analyse, and visualise large datasets, but technological innovation in newsrooms is also dependent on the ability to understand journalistic logic and principles. Developers are expected to create new products in a short time (and iterate them continuously), demonstrating a need for technological literacy in newsrooms that was crucial during the Covid-19 pandemic; specifically the reporting of large infection numbers would not have been possible using only traditional journalism methods. Developers in newsrooms can hence be regarded as one of the most valuable resources in a newsroom; however, employees who are extremely skilled technological experts are few and far between, according to the informants. As the product manager at Schibsted outlined: “The more support and resources you have, the more chances you have of succeeding. But you also see several examples of success in small units if you have the right people”.

To sum up, technological tools and expertise in the form of human resources are obvious success factors within newsroom and media organisations in times of crisis. In the words of the product manager at Schibsted: “The most important success factors are solving user needs and having a business model. You must have technology and competent staff”.

Developer–journalist collaboration

Another factor identified as driving newsroom innovation in crisis is collaboration between journalists and developers. As outlined above, both technological and editorial resources are needed to create successful innovations. But these two competencies also need to work together to achieve results. As the chief development editor at NTB stated: “If we put developers and journalists who understand the programming together, I think that we’ll be able to create lots of good products”. Furthermore, he stated that “the majority of the projects we have built up were due to successful collaboration between journalists and developers”.

Developers help journalists with data collection and analysis as well as data visualisation. In newsrooms, besides developer–journalist collaboration, developer–developer collaboration is a common way of organising work processes. For example, in the case of the Covid-19 live tracker, one developer started work on the tracker, and later, it was iterated by another developer. In addition, sometimes developers take on journalistic tasks. For example, one of the developers described how he contacted hospitals to obtain readable formats for the infection numbers and the Norwegian Labour and Welfare Administration to obtain numbers of vacant positions over a period of ten years to understand the situation and capacity of hospitals during Covid-19. An important criterion for collaboration among journalists and developers is understanding and “speaking the same language”.

Norwegian newsrooms have established departments that often combine editorial technologists and journalists. The developers in newsrooms are often individuals who can code and have studied journalism, or vice versa, journalists who have learned to code. Developers assist journalists in presenting journalism in new formats, such as graphs and maps. Developers also assist journalists in everyday tasks, such as research, data gathering, analysing, and visualisation. As one developer at VG said: “What we do is to help journalists to become more productive, specifically during investigative projects. For example, in analysing the dataset, cleaning the dataset, and mainly working with data”. The chief development editor at NTB outlined that the key to developing new products in the future is based on successful collaboration between journalists and developers. However, he said: “It is difficult to find journalists who can code, but it is much easier to find developers who can understand the logic of journalism”.

The common denominator of newsroom innovation in crisis:

Fast pace

Innovation and consumer needs are interrelated. In the words of chief editor of VG, “it’s vital to determine customer needs as soon as possible”. The question of time and pace was the most mentioned theme in the empirical

data. Interestingly, the interviews show how developers' modes of operation have been changed and adapted to fit the pace of journalistic logic in newsrooms. While in other settings, innovation and the development of IT products lasted weeks and months, the newsroom setting requires innovation (such as new products or services) to emerge within days, or even hours. The chief editor at VG said that the developers in the breaking-news team are drivers of innovation at a fast pace and pointed to the fact that the collaborations with developer teams not accustomed to working in newsrooms were unsuccessful. The reason for this was the slow pace of collaboration and creation. As the chief editor said: "We tried along the way to expand this Covid-19 live tracker with some other components. We tried to do this with other teams that sat further from the editorial office, and it took much longer time". Collaborating with developers in other departments "was harder because they didn't know each other. There were different work processes and different ways of working, different ways of approaching the issue, that prevented the pace that is necessary when delivering within breaking news", continued the chief editor. In times of crisis, journalists as well as developers are expected to innovate and iterate immediately. The product manager at Schibsted described how "in the case of Covid-19 live tracker, for example, we just had to iterate and work from gut feeling because you don't have time to go through all those procedures of the process". Furthermore, a developer at VG pointed out that "while in other companies the pace was much slower, in the newsroom environment, developers react fast in extraordinary situations".

The importance of rapid innovation is highlighted as the main feature of innovation during the Covid-19 pandemic. As the chief development editor underlined: "I think that we should be more prepared to innovate at high paces and according to customer need". However, not all media companies are able to be as timely as the user need demands. The chief development editor at NTB explained: "We do lots of things that we call innovation. However, the pace of innovation is not as fast as it should be". The chief development editor explained that high-pace innovation requires prior strategical planning and preparation:

Information needs such as that which arose during the coronavirus crisis creates new customer needs, and then creates new products in a couple of days. Because you have to think far ahead for a long time before that. Because if you get a customer demand and you haven't taken the time to think through possible future scenarios then it takes a long time to understand what you are going to deliver.

Taking the time to be a visionary and to think far ahead is hence necessary to be able to innovate as quickly as needed when a crisis emerges.

Discussion and conclusion

This study is an example of how exogenous factors, in this chapter, the Covid-19 crisis, drive innovation in newsrooms. The findings point to a special characteristic of innovation in crisis: fast pace. A quick pace is inherent in newsroom culture, and the constant need to produce news places demands on news workers to work at high speed. Similarly, innovation processes are adapted to the newsroom logics and culture. Consequently, the process of innovation is sped up in the context of crisis. Thus, this study highlights the need for fast innovation in crisis and identifies factors facilitating newsroom innovation.

As outlined in the result section, four key factors drive innovation in newsrooms during crisis. Here, I pointed out that the pressing need for information arises during crisis or extraordinary situation. For example, the findings from VG suggest that when Covid-19 was spreading in Norway, news leaders instructed the teams of developers and journalists working within breaking-news departments to create “something special”, later labelled as “Corona Special”. In this sense, the crisis and the need for information calls for innovation, and hence value creation, for organisations and for audiences.

Initiative-taking is another key factor that plays crucial role in innovation processes. As the findings suggested, initiative might come from different groups of newsroom staff – sometimes from journalists and sometimes from editorial developers or data journalists. In the case of Covid-19, developers together with journalists have initiated and created the Covid-19 live tracker to report the news about Covid-19. In-house technological expertise and collaboration between journalists and developers have played a crucial role in this case. Having previous experience and technological expertise is important, for example, at VG, that influenced the fast pace of the creation of the live tracker. The expertise and knowledge that is accumulated in the newsroom are important factors not only driving innovation, but creating the innovation. As outlined by Wenk (1989), the most powerful engine of change lies within human invention, innovation, and knowledge. Therefore, success is dependent on the knowledge and expertise of humans: in this case, developers and journalists in newsroom. Similarly, Williams (1997) underlined the importance of local knowledge, expertise, and experience in organisations, which is evident in the findings of this chapter. Indeed, journalists and developers possess the technological skills, understanding of technological logic, as well as principles of journalism, who base their expertise on experience. The journalists and data journalists in this study outlined that they have been working on similar projects before, for example, while reporting the election results. Therefore, it is argued that the in-house technological expertise and collaboration between journalistic and technological staff drive innovations in newsrooms.

In addition, the findings indicate that technological development is not the only factor driving innovation (as suggested by Storsul & Krumsvik, 2013) in newsrooms. Also technological capacity, which is understood as technological software and hardware, as well as competent staff with special technological skills and knowledge, is necessary to bring about innovation in newsrooms. Not all media organisations possess such skilful staff, therefore they lack the technological expertise to promote innovation.

The ability to collaborate across departments is also necessary for innovation, as outlined by previous studies (Fincham et al., 1995; Fleck, et al., 1990). The collaboration between journalists and developers can be seen through the model of “innofusion” (Fleck, 1988) in the context of newsrooms, where journalists and developers learn and create together with the aid of technological tools. As the findings show, the process of technological innovation in newsrooms is influenced by customer and information needs (social), initiated and constructed by social actors and their technological expertise. This points to the importance of local knowledge and expertise and experience, as suggested by Williams (1997). Studying innovations in newsrooms shows that the interplay between technology and social actors within an organisation is a complex process with a central role of knowledge and expertise. Moreover, this study shows that different media organisations, and even departments within the same media organisation, possess different knowledge and expertise (Fincham et al., 1995).

Løvlie (2016) has also underlined the pressing need to react quickly and addresses this speed as an important aspect while creating media products. This study, too, addresses fast reactions and fast innovation as a characteristic of crisis-driven innovation. However, the fast innovations might not be as viable as the innovations in regular times; therefore, future research must seek to understand the broader implications of quick-paced crisis-driven innovations (Pavlik, 2013). Moreover, future research can address the economic, organisational, and cultural consequences of media innovations during crisis (Lievrouw, 2006). However, one might argue that the biggest outcome of innovations during crisis is the experience that news workers gain through collaboration, which is vital for future crises. The findings show how crisis might become a catalyst of innovation and quicken the process of creation of novelty in newsrooms. The ability to transform, iterate, and innovate in times of crisis can be assumed as the resilience exercised by news media organisations.

This chapter focuses on internal stakeholders such as journalists, editors, developers, and programmers participating directly or indirectly in innovation and value creation during crisis. Journalists and developers managed to utilise existing resources and competence within newsrooms to create products and services according to audience needs. In this case, the crisis could be regarded as an opportunity to create and innovate and hence create value for different stakeholders. To sum up, in this chapter, I have attempted to highlight and

point out key factors behind innovation processes in the media industry in a Norwegian context during the Covid-19 pandemic.

The results are organised into four factors identified as key in the development of timely innovations during crisis: the need for information; initiative-taking; technological expertise; and collaboration. The findings show that the four factors spurring innovation in crisis were in one way or another connected to a fast pace, consequently identified as a central feature of crisis-driven innovation. This chapter utilises the Norwegian news media business during the Covid-19 pandemic as a case study. I suggest that future research should concentrate on studying the pace of innovation processes in detail to understand the impact of it through different contexts and settings.

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