SCM
Studies in Communication and Media

FULL PAPER

The ecosystem of editorial product innovation: A systematic literature analysis on internal factors and external actors in journalistic media organisations.

Das Ökosystem redaktioneller Produktinnovationen: Eine systematische Literaturanalyse zu internen Faktoren und externen Akteuren in journalistischen Medienorganisationen

Cornelia Wolf, Rosanna Planer & Alexander Godulla

Cornelia Wolf (Prof. Dr.), Universität Leipzig, Institut für Kommunikations- und Medienwissenschaft, Nikolaistraße 27-29, 04109 Leipzig, Germany. Contact: cornelia.wolf@uni-leipzig.de. ORCID: https://orcid.org/0000-0003-2832-9521
Rosanna Planer (Dr.), Universität Leipzig, Universität Leipzig, Institut für Kommunikations- und Medienwissenschaft, Nikolaistraße 27-29, 04109 Leipzig, Germany. Contact: rosanna.planer@uni-leipzig.de. ORCID: https://orcid.org/0000-0001-7044-7172
Alexander Godulla (Prof. Dr.), Universität Leipzig, Universität Leipzig, Institut für Kommunikations- und Medienwissenschaft, Nikolaistraße 27-29, 04109 Leipzig, Germany. Contact: alexander.godulla@uni-leipzigd.de. ORCID: https://orcid.org/0000-0002-1011-0639

FULL PAPER

The ecosystem of editorial product innovation: A systematic literature analysis on internal factors and external actors in journalistic media organisations.

Das Ökosystem redaktioneller Produktinnovationen: Eine systematische Literaturanalyse zu internen Faktoren und externen Akteuren in journalistischen Medienorganisationen

Cornelia Wolf, Rosanna Planer & Alexander Godulla

Abstract: As a result of digitalisation, journalistic media organisations are confronted with product innovation at an increasing pace. The pressure to innovate is driven not only by competition between media organisations, but also characterised by internet intermediaries introducing and controlling hardware, software and platforms, and thereby access to large audiences. Furthermore, enablers, such as agencies, accumulate relevant production knowledge. Hence, to survive, innovation management in media organisations is vital. Due to the strong focus on specific new products published by journalistic media organisations, a systematic overview of internal factors influencing organisational innovation structures and processes of innovation management is missing. In addition, little is known about the functions of external actors for innovation structures and processes. By means of an interdisciplinary systematic literature review, this paper therefore maps the state of research. As a result, several external actors are identified that influence the innovation structure and process. In addition, internal factors were derived which positively or negatively influence the innovation structure and process. The literature analysis also indicates research gaps and implications for future research.

Keywords: Digital journalism, enablers, innovation management, innovation structure, innovation process, internet intermediaries, product innovation.

Zusammenfassung: Durch die Digitalisierung sind journalistische Medienorganisationen mit immer schnelleren Produktinnovation konfrontiert. Der Innovationsdruck wird nicht nur durch den Wettbewerb zwischen Medienunternehmen angetrieben, sondern ist auch dadurch gekennzeichnet, dass Intermediäre Hardware, Software und Plattformen einführen und kontrollieren und dadurch Zugang zu einem großen Publikum erhalten. Darüber hinaus akkumulieren Enabler, wie z. B. Agenturen, relevantes Produktionswissen. Um zu überleben, ist das Innovationsmanagement in Medienunternehmen daher unerlässlich. Aufgrund des starken Fokus auf einzelne neue Produkte, die von journalistischen Medienorganisationen veröffentlicht werden, fehlt ein systematischer Überblick über die internen Faktoren, die organisatorische Innovationsstrukturen und Prozesse des Innovationsmanagements be-

einflussen. Darüber hinaus ist wenig über die Funktionen externer Akteure für Innovationsstrukturen und -prozesse bekannt. Mittels einer interdisziplinären systematischen Literaturrecherche wird daher in diesem Beitrag der Stand der Forschung abgebildet. Als Ergebnis werden mehrere externe Akteure identifiziert, die die Innovationsstruktur und den -prozess beeinflussen. Darüber hinaus wurden interne Faktoren abgeleitet, die diese positiv oder negativ beeinflussen. Die Literaturanalyse zeigt auch Forschungslücken und Implikationen für zukünftige Forschung auf.

Schlagwörter: Digitaler Journalismus, Enabler, Innovationsmanagement, Innovationsstruktur, Innovationsprozess, Internet-Intermediäre, Produktinnovation.

1. Introduction: The complex ecosystem of journalistic product innovations

The integration of innovation into editorial products of journalistic media organisations is not a new phenomenon: Legacy media organisations have always been subject to change (Küng, 2013; Wolf & Hohlfeld, 2012). However, the digital transformation, "a process where digital technologies create disruptions triggering strategic responses from organizations that seek to alter their value creation paths" (Vial, 2019, p. 118), has led to a state of constant innovation (Küng, 2013; Royal, 2016). One reaction of media organisations to this changing environment is a diversification of (digital) products (Royal, 2020).

On the one hand, innovation in journalism can be seen as a "strategic value for media organizations and society" (Meier et al., 2022, p. 700), which is crucial to survive (Pavlik, 2013). On the other hand, innovation must be inspected critically: While the buzzword encompasses a positive connotation, often referred to as "pro-innovation bias" (Rogers, 1983), not every (aspect of) innovation provides said value for media organisations. Hence, this can undermine the necessary normative discussions, if journalism will still achieve democratic goals, and an "obsessive pursuit of technology in the absence of clear and research-informed strategies" (Posetti, 2018, p. 7).

However, while research on product innovation in journalism must be aware of these aspects, it must also keep an eye on the fast-pacing developments in the field. As Royal (2020) points out, media organisations working on a variety of products face the challenge of coordinating, developing, managing, and supporting them. This in mind, it seems important to – in a first step – understand internal factors that influence the emergence of product innovation within media organisations. Product innovation takes place both inside and outside the newsroom: Technology- and innovation-focused research and development units (R&D), separate from the editorial offices, have been established in a range of large media organisations (Evans, 2018; Hogh-Janovsky & Meier, 2021). Therefore, new roles working on the intersection between journalism and (product) management emerged, shaping and influencing newsroom practices (Kosterich, 2021). Some newsrooms also try to integrate start-up culture by establishing intrapreneurial units (Boyles, 2016; Briggs, 2012). Last but not least, media organisations also experience an experimentation of digital-savvy editors (Godulla & Wolf, 2017; Planer & Godulla, 2020) parallel to editorial day-to-day business. Data on this growing field reflect the varying location of product innovation within media organisations (News Product

Alliance, 2022; Royal, 2020). Furthermore, job titles and job descriptions vary: Beside explicit product roles, "the community also includes data scientists, news executives, journalists, technologists and others" (Royal, 2020, p. 2). In fact, due to the alignment of understanding audience needs and data analysis with goals and resources of the organisation, the increase of professional product management helps to overcome innovation biases (Royal & Kiesow, 2021).

Although journalism research has tracked the integration of product innovations from websites to virtual reality (VR) and artificial intelligence (AI) applications, it can be noted that, at the time of this study, the academic discourse rarely deals with more than one specific product innovation. Relevant innovation structures in organisations, which refer to the "properties of an organisation, not those of its members" (Rogers & Argawala-Rogers, 1976, p. 78) and the innovation (management) process behind these single innovations are often neglected (George & Schmitz Weiss, 2012). If they are considered, there is a focus on single media and countries (Wood Adams, 2008) and research is often based on case studies (Hogh-Janovsky & Meier, 2021; Zaragoza-Fuster & García-Avilés, 2020).

Thereby, factors influencing such product innovations can be classified into "media institutional factors, technological developments, and sociocultural conditions and power relations" (Krumsvik et al. 2019, p. 202). According to Reese and Shoemaker, such factors influencing media content can be assessed at five different levels, namely "individual characteristics of specific newsworkers, their routines of work, organizational-level concerns, institutional issues, and larger social systems" (Reese & Shoemaker, 2016, p. 396). The first three levels – individual characteristics, work routines, and organisational aspects – are what this paper refers to as internal factors, which shall be investigated within this first step.

In view of the massively changed environments, this article considers, in a second step, the external ecosystem influencing product innovations. Hence, actors engaged in the remaining two levels (institutional issues and social systems) are also focused on (Reese & Shoemaker, 2016, p. 396). For example, the pressure to innovate is intensified by the fact that "information and/or content intermediaries" (Voci et al., 2019, p. 40) such as Google or Meta not only drive technological innovations, provide important hardware and software for journalistic media organisations, and own central platforms like social networks, but also control access to these offerings. Those actors actively push the diffusion and adaptation of their innovations by offering media organisations products, training programmes, and partnerships. Thereby, they are increasingly penetrating the journalistic media landscape and value chain, influencing content production and distribution, and ultimately shaping public opinion (Nielsen & Ganter, 2018). In addition, further external actors, such as service providers and agencies, also play an important role as enablers of innovative media products. They acquire the know-how needed to use these often-complex technologies such as VR-production or AI applications early on and thus also become important cooperation partners for journalistic media organisations in the context of content production (Caswell & Dörr, 2018).

Nevertheless, journalism research rarely considers the role of external actors for innovation structures, i.e., relevant resources, such as the provision of hardware, or their role for innovation processes, e.g., by outsourcing certain parts of a product

(Dörr, 2016; Stalph & Borges-Rey, 2018). Hence, the range of internal factors and external actors, which together build the innovation ecosystem journalistic media organisations are confronted with, are hardly focused so far. The aim of this article is therefore to review and systematise the academic discourse on internal factors (on the level of individual characteristics, work routines and organisational aspects) and external actors (on the level of institutional issues and social systems) influencing organisational structures and processes of product innovation in journalistic media organisations. By the means of an interdisciplinary systematic literature analysis (N = 90) the article combines findings from both journalism research as well as media management research since the topic at hand cannot be assessed without one or the other. As a result, an innovation ecosystem framework is proposed. By mapping the ecosystem based on the state of research, implications for further research are derived.

2. Product innovation and innovation management in media organisations

Following Voci et al. (2019, p. 45), journalistic media organisations are understood as "media companies in a narrow sense" that include: (1) content sourcing, (2) content aggregation, and (3) content dissemination. The term "content" focuses on journalistic information, entertainment, and their hybrid forms (Voci et al., 2019). The outlined definition also incorporates digital-only media organisations such as the *Huffington Post* or *Krautreporter*.

While the offline media landscape used to operate in established product categories such as newspapers or television broadcasts, the digital media landscape offers a continuously increasing and changing set of media products. Product innovations in journalism include a range of different new media applications, formats, services, and platforms (Dogruel, 2015), such as "the organization's website, special project and event sites, mobile applications, data visualizations, podcasts, newsletters, bots, artificial intelligence projects, and other applications" (Royal et al. 2020, p. 597) which take advantage of new technologies. Within the field of innovations in journalism, this paper therefore focuses on the research strand dealing with product innovations (Dogruel, 2015; García-Avilés et al., 2018; Storsul & Krumsvik, 2013).

These product innovations are the result of an innovation process "whereby an individual or a social system accepts, develops, and implements new ideas" (Kim, 1980, p. 226) over time. This process is influenced by certain individual and organisational characteristics or contextual factors (Kim, 1980; Reese & Shoemaker, 2016). Some authors explored such internal factors in organisations in different innovation contexts, mentioning factors like strategy, culture, leadership, flexibility or skills (Cormican & O`Sullivan, 2004).

Internal factors also influence the organisation's innovation structures which provide the environment and resources for an innovation process (Rogers & Argawala-Rogers, 1976). In this context, legacy media organisations, which, in contrast to digital natives, generally have a long history, are characterised by a principle of inertia: "The structures, routines, systems and processes that ensure survival and growth in stable environments, coupled with the self-identity and self-confidence that successful firms develop, can stifle the ability to change when the environment changes" (Küng, 2013, p. 11). However, with the "constant influx

of emerging, potentially disruptive technologies" (Saksena & Hollifield, 2002, p. 75) in the age of digitalisation, the environmental conditions are changing ever faster. Innovators play an important role, as successful product innovations are often imitated by other media organisations (Wolf, 2014).

Hence, large legacy media organisations, have established (temporary) experimental labs for specific technologies and applications, but also technology- and innovation-focused R&D units, intrapreneurship units as well as product manager roles that explore "how emerging technologies can be applied in service of journalism" (The New York Times, 2020). Parallel to this, content production in editorial offices also benefits from digitally savvy editors who are themselves increasingly experimenting on their own initiative – often learning-by-doing or in positions with varying designations created with the advent of new technologies, such as Mobile Reporter or lately AI Director (Wolf, 2014; Godulla & Wolf, 2017; Seward, 2024; Virta & Malmelin, 2017).

The combination of organisational independence and closeness to the newsrooms "appears to offer a high degree of innovation potential" (Hogh-Janovsky & Meier, 2021, p. 361). New units and roles introduce "energy from startup culture, an ethos that is more adaptive to change" (Boyles, 2016, pp. 229–230) and might lead to professional functions of product management less liable to pro innovation-bias (Royal & Kiesow, 2021).

While this function is located inside the media organisation, product innovations involve a whole range of further actors that are located in the external ecosystem of the media organisation. When assessing the external level of institutional issues and larger social systems (Reese & Shoemaker, 2016), innovation nowadays is often driven from the edges of journalism or sometimes by new actors such as internet intermediaries as well as service providers and agencies who have significantly greater expertise in new hardware, software, and platforms (or who manufacture these themselves). The ecosystem of journalism has fundamentally changed due to these new players "that have come to occupy central positions in the media environment" (Nielsen & Ganter, 2018, p. 1602). Today, legacy media organisations no longer control access to their audience; rather, many platforms and media products are owned by big tech companies. They influence the development of journalistic formats by introducing publishing standards on their platforms (Nielsen & Ganter, 2018), but also in terms of hardware, for example with the iPhone and iPad introduced by Apple (Wolf, 2014). In addition, internet intermediaries are also affecting innovation in journalism through other initiatives, such as innovation funds or editorial training (Junro & d'Andréa, 2020; Mesquita et al., 2023). Hence, when focusing on the innovation ecosystem in journalism, internet intermediaries must be considered as relevant actors.

The same holds true for outsourcing tendencies in content production: Rapid technological change and the sometimes-high technical demands placed on new journalistic products such as apps, AI or VR applications mean that external expertise has to be incorporated into production. For data journalism, Stalph and Borges-Rey (2018) state: "In many cases the skills required to produce data outputs are not found in-house, and news organisations have had to outsource professional expertise" (pp. 1084–1085). In addition to technological and production-specific skills, some of these enablers also perceive themselves as journalistic organisations

(2470.media, n.d.; Vragments, 2020). The virtual reality service provider Vragments, for example, postulates, "We are developers, journalists and storytellers" (Vragments, 2020). In addition, AI companies are also creating journalistic content in an automated way with the help of natural language generation (NLG) and generative AI, thus potentially changing the processes and results of content production (Caswell & Dörr, 2018; Gutiérrez-Caneda et al., 2023). These collaborations are also potentially accompanied by a knowledge deficit and dependency for media organisations.

This dependency in turn makes a systematic approach to innovation management in journalism organisations even more important which becomes a critical success factor for the organisation (Day & Schoemaker, 2000; Wood Adams, 2008). Systematic innovation management tracks "innovations to understand their implications" (George & Schmitz Weiss, 2012, p. 183), engages in experimentation with new structures and processes and decides about the implementation of new journalistic products. Only these systematic approaches are designed to prevent failure of the adoption process and can also lead to a reasoned decision not to introduce an innovation (Rogers, 2003). Thus, the function of innovation management is also to enable ambidexterity, which helps balance the contradiction between stability and change (Virta & Malmelin, 2017). Nevertheless, both internal factors and external actors influencing product innovation processes and structures in journalism have not yet been systematised.

3. Changing the focus from singular product innovations to the internal and external innovation ecosystem

While the design and the content of product innovations in digital journalism (often in comparison to established offline products) as well as related actions of journalists have been the subject of journalism research continuously since the advent of the internet (Boczkowski, 2004a; Himelboim & McCreery, 2012; Neuberger et al., 2018; Schmitz Weiss, 2018; Wolf & Hohlfeld, 2012), the underlying internal innovation processes and structures often go unnoticed (Evens, et al., 2018). Few studies identify factors of successful innovators for media organisations, mostly focusing on single aspects of different degrees of abstraction (Lischka, 2015; Westlund & Lewis, 2014). García-Avilés et al. (2018, p. 30) divide the complex innovation process into four stages to form an index of media innovation: the concrete product and the production and distribution process, the nature of the media organisation, and commercial strategies, thus indicating that management and editorial processes are interlinked, at least for the Spanish market.

Research also indicates that approaches of systematic innovation management play a minor role in the practical field (Boyles, 2016): Wood Adams (2008) concluded for online editions of U.S. weekly newspapers that adoption processes were not subject to any strategic innovation management. Evans' (2018) interviews with employees and experts at various radio stations showed that structural and administrative changes made at the management level for the purpose of editorial innovation were largely exploratory. Based on qualitative guideline interviews with industry representatives and scientists, Posetti (2018, p. 7) diagnosed a "Shiny Things Syndrome" and "random acts of innovation" – namely the compulsive

pursuit of technology in the absence of clear, scientifically sound and long-term innovation strategies. The current state of research does not allow statements about whether this is due to a lack of structural framework conditions or other factors.

The majority of publications in journalism research deals primarily with changed actions of journalists in editorial offices due to innovations like news websites (Himelboim & McCreery, 2012), mobile TV (Wolf & Hohlfeld, 2012), social media, multimedia and data visualisation (Engebretsen, et al., 2018; Russial, 2009), newsgames (Wolf & Godulla, 2018), digital long-forms (Planer & Godulla, 2020; Planer et al., 2022), Big Data (Lewis & Westlund, 2014), AI or VR (Godulla et al., 2021; Jones, 2017).

However, goal-oriented innovation management is considered to be a strategically relevant competence (Posetti, 2018). Sometimes its importance is interpreted as equal to the actual core competence of producing journalistic content (Küng, 2013). In summary, some authors note a research gap for the question of how and whether established media organisations develop and maintain innovative capabilities (Lischka, 2018), and whether and how structures and actions of innovation management promote or prevent change (Boyles, 2016; Lischka, 2018). Only lately, product-adjacent roles have been focused. Royal and Kiwsow (2021) draw on bridging functions within a media organisation since the established journalistic core work needs to be combined with new technologies and products. Most prominently, the role of product managers has emerged as a "prime example of the reengineering of journalism's institutions" (Kosterich, 2021, p. 1). Product managers constantly have business demands, new upcoming products as well as related audience needs in mind (Kosterich, 2021, p. 23). Hence, "product management introduces a potentially profound shift in the mission of journalism" (Royal & Kiesow, 2021, p. 1561), and is one relevant pillar when assessing the ecosystem of product innovations in journalism.

Overall, journalism research rarely deals with more than one product innovation from a larger perspective focusing innovation structures and processes in media organisations. In these rare cases, however, there is a focus on individual media as well as individual countries (Evans, 2018; Wood Adams, 2008). Moreover, Lewis and Westlund (2015, p. 20) note that the academic discourse focuses mainly on internal editorial activities, neglecting "socio-technical objects and information technology specialists, particularly when such technologies and technologists operate beyond the boundaries of the organisation". Hence, the increasing influence of digital intermediaries on changes in journalism has been largely absent from research (Nielsen & Ganter, 2018).

To sum up, journalism research has not yet focused on the whole ecosystem. Putting together individual findings, however, might form an overall picture of internal factors and external actors. This leads to the following research question:

> *RQ: What internal factors and external actors influencing structures and processes of product innovation in journalistic media organisations are identified in the interdisciplinary literature?*

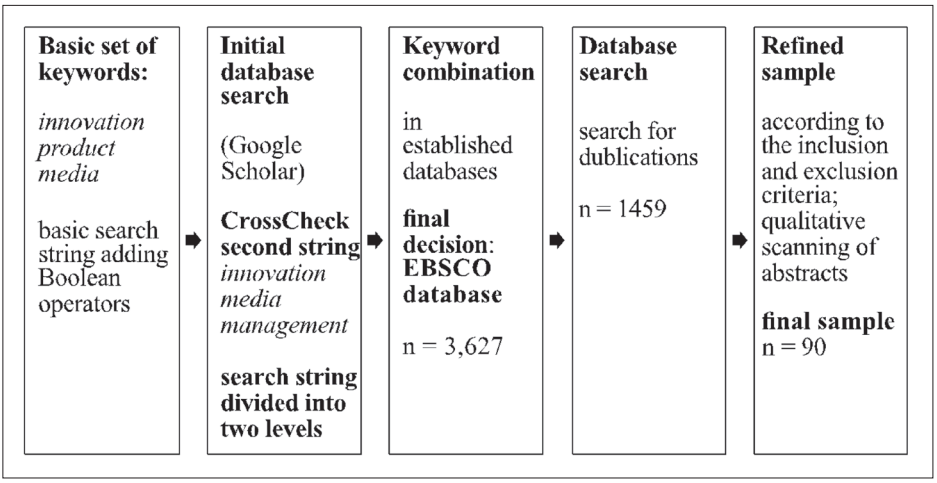
4. Methodology: Systematic literature analysis

To answer the research question, an interdisciplinary systematic literature review (N = 90) (Booth, et al., 2016) was conducted. The systematic review of current

literature is a suitable method as the academic discourse is fragmented in individual studies. The analysis considers both formal aspects of the research as well as the literature reviews, theoretical frameworks, results, and implications of the articles within the sample.

A transparent process of data collection, selection, and analysis is fundamental to conducting a systematic literature review (Grant & Booth, 2009). As illustrated in *Figure 1*, the review process was structured in five main steps following established procedures used in the field (e.g. Pittaway et al. 2004; Victor, 2008).

Figure 1. Data collection and sampling process



(1) First, a *basic set of keywords* was defined based on preliminary work that formed the theoretical foundation of the study (see chap. 2). The set includes the terms "innovation," "product," and "media." These keywords were assembled into an initial and basic search string, adding Boolean operators to connect keywords and asterisks to search for different endings of the root word (Booth, et al., 2016).

(2) Using this string, an *initial database search* was performed on Google Scholar to identify other related keywords, particularly synonyms. Here, a cross check with already known literature led to the integration of a second, broader AND search word combination ("innovation," "media," "management"). To fully cover the research interest of this review and to take into account the different ways in which scientific articles are keyworded, the applied search strategy was divided into two levels: On the first level was the analysis of product innovations in media organisations and, according to the research question, the narrowing down to "journalism" as well as "management," while on the second level the terms "structure," "process," "enabler," "actor," "intermediaries," and "agent" were relevant. The keywords within this level were linked with the Boolean operator OR. The final search strings were (journalism OR management OR structure OR process OR enabler OR actor OR intermediaries OR agent) AND (innovation AND product AND media) and (journal-

ism OR product OR structure OR process OR enabler OR actor OR intermediaries OR agent) AND (innovation AND media AND management).

(3) *Comparisons of databases* show that there is usually little difference in results (Gusenbauer & Haddaway, 2018). In this study, the decision was made in favour of the EBSCO database because of its particularly broad base of literature in journalism research and media management. To cover interdisciplinary literature, Business/Economics, Communication/Media, Library/Information Science, Multidisciplinary, and Sociology were included. The database search yielded 3,627 hits.

(4) In a next step, the results of the two search runs were *checked for duplications* due to the two different search strings.

(5) The n = 1,459 remaining articles were then reviewed using the previously defined *inclusion and exclusion criteria*: The systematic literature search focused on English-language peer-reviewed international journal articles in areas related to the research questions. Thereby, a direct relation to aspects of product innovation as defined in section 2 in journalistic media organisations needed to be identifiable already in the abstract; innovations in the media culture industry, such as television, music, cinematic innovations, etc., were not included. The reference country needed to be in Europe, the Americas, or Asia due to comparable technological development and media economy. The sample is limited to international academic journal articles, as these are of high importance for the dissemination of scientific knowledge and academic discourse. Moreover, these articles are subject to scientific quality control through peer review processes. Since the aim of the study was to provide a comprehensive overview of the research, the period of publication was not restricted. After excluding all articles that did not meet these criteria based on *abstract and title screening*, N = 90 journal articles remained.

Analysis was performed using a codebook and MAXQDA data analysis software in spring 2021. General codebook dimensions were derived from the literature referred to in chapter 2 and 3 considering innovation structure and processes (e.g. Cormican & O'Sullivan, 2004; Evens, et al., 2018; García-Avilés et al., 2018; Kim, 1980; Reese & Shoemaker, 2016; Rogers & Argawala-Rogers, 1976) as well as the guiding research question. Hence, to capture the ecosystem, the sample was analysed for 1) *internal factors* mentioned to influence a) innovation structures and b) the innovation process, and 2) *external actors* influencing a) innovation structures or b) the innovation process in media organisations. Such factors and actors were noted and mentioned influences were summarised to sub-categories inductively from the material. Furthermore, formal information was also noted as well as information on, for example, definitions, locations, and designation of the innovations treated in the examined papers.[1]

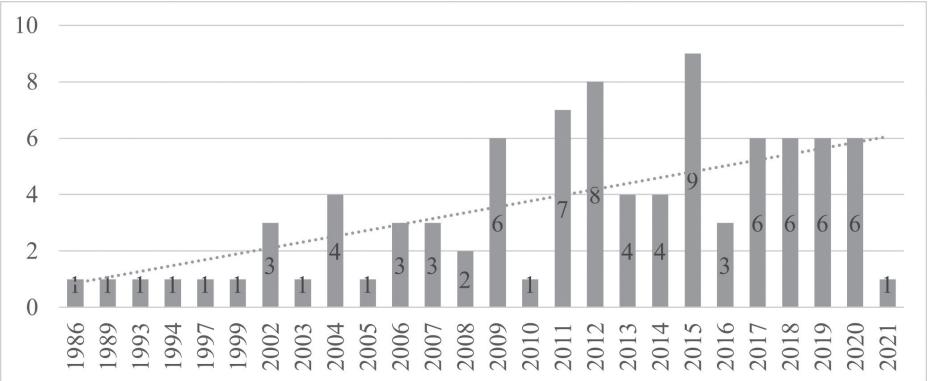
1 The following deductive and inductive main categories were used to perform the analysis: Authors; year of publication; title of the article; journal the article was published in; research design; quantitative or qualitative approach; method of data collection; research subject; research interest; country of reference; underlying theory; definition of innovation; organisational unit the innovation is located in; designation of the concrete innovation; nature of the innovation; use of the innovation; effects achieved through the innovation; causes/motives for the innovation; enabling and hindering factors influencing structures; enabling and hindering factors influencing processes; required competencies for the innovation; required knowledge management; integration of users; actors positively and negatively influencing structures; actors positively and negatively influencing processes; central results; implications for research; implications for the practical field.

5. Results: Internal factors and external actors in the product innovation ecosystem

5.1 The Sample: Qualitative research and interviews on specific products dominate

The articles were published from 1986 to 2021. Over time, there is an increase: While there was one article per year in the 1980s and 1990s, the most articles per year appeared in 2015 with nine publications. Two thirds of the articles examined were published from 2011 onward (Figure 2).[2]

Figure 2. Number of publications per year



While the EBSCO search was structured interdisciplinary and the papers examined are published in 54 different academic journals,[3] a focus on both media management research (e.g. The International Journal on Media Management, *n* = 9; Journal of Media Business Studies, *n* = 7) and journalism studies (Journalism Studies,

2 The data for the year 2021 is not comprehensive, since the analysis took place early in 2021 and articles that have been published afterwards have not been considered.

3 The International Journal on Media Management; Journal of Media Business Studies; Journalism Studies; Journalism Practice; Newspaper Research Journal; Convergence; Communication & Society; Information, Communication & Society; International Journal of Innovation Management; Journalism; Nordicom Review; Pub Res Q; Communicacao e Sociedade; Creativity and Innovation Management; European Management Journal; European Planning Studies; Information Economics and Policy; International Journal of Product Development; International Communication Association (ICA) Conference; International Journal of Business Communication; International Journal of Human-Computer Studies; International Journal of Information Management; International Journal of Innovation and Technology Management; International Journal on Media Management; International Journal of Technology Management; Intervention Research; Journal for Communication Studies; Journal of Business Strategy; Journal of Communication; Journal of Historical Pragmatics; Journal of Management Studies; Journal of Manufacturing Technology Management; Journal of Marketing Management; Journal of Marketing Trends; Journal of Media and Religion; Journal of Media Economics; Journal of Media Practice; Journal of Software: Evolution and Process; Literary Journalism Studies; Mass Communication and Society; Media History; New Media & Society; New Review of Hypermedia and Multimedia; Observatorio (OBS*) Journal; Revista Latina de Comunicación Social; Strategic Direction, Strategy & Leadership; Technology Analysis & Strategic Management; The Information Society; The International Journal of Organizational Innovation; The Journal of Popular Culture; The Radio Journal – International Studies in Broadcast & Audio Media; The Web Journal of Mass Communication Research.

n = 7; Journalism Practice, *n* = 5) can be observed. That the majority of papers can be assigned to these fields is hardly surprising, since innovation management research is a field at the intersection between media management and journalism.

In line with the range of journals, theories underlying the studies are diverse, although most theories can be assigned to the areas of management (*n* = 19) and economics (*n* = 10). In 16 cases, the diffusion of innovation theory was chosen (e.g. Wood Adams, 2008; Atkin, et al., 2015), and in four cases each, media convergence and resource-based approaches (e.g., Holle et al. 2015) were applied. However, many articles do not refer to any explicit theory.

Empirical studies dominate (*n* = 70). In contrast, only 20 conceptual articles without empirics are included in the sample. There are also differences within empirical research designs: Qualitative studies are most common (*n* = 45), followed by mixed method approaches (*n* = 14) and quantitative research (*n* = 11). Regarding methods applied in the 70 empirical papers, most popular are interviews (*n* = 45) and secondary case studies (which often also included interviews) (*n* = 27). In addition, surveys (*n* = 19) and quantitative or qualitative content analysis (*n* = 16) were conducted. Occasionally, literature reviews (*n* = 4) and observations (*n* = 3) are applied. Only one network analysis is represented in the sample.

The geographical focus of the studies also shows differences. It is important to mention that the origin or affiliation of the author(s) was not examined here, but in which country the study was conducted (interview sample, case, data source, etc.). For the 70 empirical papers, one or more countries focused on in the study were mentioned. The USA is most common (*n* = 25), followed by the UK (*n* = 14), and Germany (*n* = 11). Overall, studies conducted on the European continent dominate. One study each included data from Mexico and Brazil.

The dominant object of study is individuals within media organisations, mostly at the hierarchical level of leadership/management (*n* = 31; e.g. Holle et al. 2015; Schaarschmidt & Kilian, 2014; Villi et al., 2019) or editors/journalists (*n* = 26; e.g. Lawrence, et al., 2018; Lowrey, 2011; Mills, et al., 2017). Specific media products or documents were studied in 15 cases, companies or entire departments in eleven, and consumers in five cases. In each case, there is a strong concentration on the journalistic media organisations and internal actors within. Studies consulting external actors (e.g. industry experts, policy makers; Sinozic & Tödtling, 2015) directly as data sources are scarce.

In line with the research focus on product innovation, the organisational areas described as affected by the innovation are primarily the *editorial office, newsroom,* and *journalists* (*n* = 45; e.g. Lacy, 1993; Lawrence, et al., 2018) followed by *production & development* departments (*n* = 17; e.g. Ducey & Fratrik, 1989), and *management & leadership* (*n* = 15; e.g. Wood Adams, 2008). However, *R&D* units, for example, are only addressed by three papers (Figure 3).

Figure 3. Organisational area affected by innovation

The majority of innovations covered in the literature reviewed are either specific products (n = 29), such as the introduction of new apps or newsgames (e.g. Nozal Cantarero, et al., 2017; Plewe & Fürsich, 2020) or technological innovations (n = 25) in terms of platforms such as social media, devices such as mobile phones or tablets, or technologies such as augmented and virtual reality (e.g. Cacho-Elizondo, et al., 2018; Manfredi-Sánchez, et al., 2015; Marciá-Barber, 2014). In comparison, innovation structures, such as the need for R&D or convergence incorporating new media into existing structures, are rarely considered (n = 6; e.g. Aitamurto & Lewis, 2013; Ducey & Fratrik, 1989; Singer, 2004). However, in some cases two (n = 19) or all three (n = 9) of these levels (products, technologies, innovation structures) are considered.

5.2 Finances, hierarchies, human resources: Internal factors influencing the innovation structure

The reviewed literature indicates facilitating and hindering factors for both innovation structures and innovation processes within journalistic media organisations. Internal factors influencing the innovation structure can be divided into *financial & intangible resources, hierarchies & responsibilities, human resources, technological equipment,* and *organisational characteristics*.

Financial & intangible resources can both hinder (n = 28; Evans, 2018) and facilitate an innovation (n = 19). Hence, "budget size plays a crucial role" (von Rimscha et al. 2018, p. 260), with smaller media organisations in particular struggling to establish the necessary structures like R&D departments or budgets to promote innovation (Lawrence, et al., 2018; Villi et al., 2019). Correspondingly, based on the literature it can be stated that sufficient financial resources, and also

hybrid funding sources, allow "greater flexibility" (Ranaivoson, et al., 2013, p. 32). However, it is also intangible resources such as talent and intellectual change (Sylvie & Gade, 2009; Villi et al., 2019), as well as brand value, that foster innovation.

Furthermore, typical *hierarchies & responsibilities* (n = 27) in media organisations set "many limits on digital innovation: business units are independent and even somewhat isolated, and focus on their own profitability and development and there is a hierarchy" (Ellonen & Karhu 2006, p. 94). The research therefore underlines the "need for a special development unit with adequate resources" (Ellonen & Karhu, 2006, pp. 94–95) as well as the implementation of new and sometimes experimental structures (Evans, 2018). However, *hierarchies & responsibilities* can also support (n = 45) innovativeness, if they foster collaboration across business units, fast decision-making, and standardised decision-making processes, especially if employees are empowered and further qualification is initiated. However, this only holds true, if aspects such as conflicts of interest and product, onerous bureaucracy, and irritation due to competence overrides are inhibited (Sylvie & Gade, 2009; Wenzel, et al., 2009).

Sufficient *human resources* (n = 7) favours the innovation process, while a lack of skilled and specialised workers and of the means to recruit them hinders the process (n = 17; e.g. Larrondo Ureta, 2020). Limited staff also decreases the potential for innovation as "employees do not have the time or resources to add on the work of developing a new project or idea" (Evans, 2018, p. 15).

If the *technological equipment* (n = 9) required is missing, the necessary infrastructure for the production or distribution of innovations is not available (Cacho-Elizondo, et al., 2018; Turner, 2014). The literature review also discusses technological equipment as a driver (n = 8): If media organisations manage to obtain or adopt the technical equipment that fits their transformation process, then they are "ready to take advantage of new, unforeseen opportunities in the marketplace" (Turner, 2014, p. 391).

Organisational characteristics are also discussed in the literature as a factor. For example, greater organisational size and age combined with established staff increases organisational inertia (n = 8; von Rimscha et al., 2016), while smaller or less established organisations are "often more adept at taking risks, less bureaucratic in chain of command, and more imaginative" (Buzzard, 2002, p. 289), thereby fostering innovation (n = 11).

5.3 Organisational culture and strategy: Internal factors influencing the innovation process

The literature also describes organisational, intangible aspects of journalistic media organisations that influence the innovation process, such as *organisational culture & employee attitudes, management & strategy, competencies & skills, internal communication & collaboration, customer & market orientation,* and *agility & flexibility.*

Organisational culture & employee attitudes may be a barrier to the innovation process (n = 39). If the organisational culture is dominated by "fear of new tech-

nologies and ideas" (Ellonen & Karhu, 2006, p. 92), or employees are subjected to perceived extra work with little appreciation and there is no employee loyalty, this is a hindrance to the innovation process (Singer, 2004). Organisational culture and associated attitudes and mindsets favour the innovation process (n = 32) when feedback is considered, space for experimentation is created, trust, courage and individual attitudes are cultivated and respected, and when there is a willingness to compromise (Blum-Ross et al., 2013; Ellonen & Karhu, 2006).

Management & strategy is derived as another factor negatively (n = 34) or positively (n = 54) influencing the innovation process. On the one hand, as indicated by Ellonen and Karhu (2006), if the change of vision or commitment is too fundamental, the strategy is too restrictive or the management too dependent on external forces, an innovation process can fail. On the other hand, as the literature states, clear objectives, visions and strategies, management support and understanding as well as flexibility and proactiveness, foster a successful innovation process (Ellonen & Karhu, 2006; Joseph, 2011).

Since new technologies require the combination of numerous *competencies & skills* there is often an absence of an adequate talent pool and specialists (n = 14, Cacho-Elizondo, et al., 2018). Hence, some media organisations "tend to buy the new knowledge and capabilities needed from outside the company and allow the subcontractors to take a major role in running the projects, and thus their own capabilities do not evolve over time with new online innovations" (Valanto, et al., 2012, p. 14). On the other hand, acquired competencies & skills (n = 19) such as knowledge about potentials and best practices, and the capacity for sound judgement in external knowledge and outsourcing, allow organisations to "focus on the core competencies" (Thackray, 1997, p. 145).

Internal communication & collaboration can slow down or hinder the innovation process (n = 9) due to factors such as a lack of coordination within the team or encouragement to work together, especially if there is an increase in process complexity with a higher number of participants (Ellonen & Karhu, 2006; Plewe & Fürsich, 2020). In addition, internal competition, a lack of interest in cooperation, and spatial distance within the project team are mentioned as having a negative impact (Singer, 2004). The literature also indicates ways in which *internal communication & collaboration* positively affect the innovation process (n = 39). This includes measures such as early but also regular and spontaneous meetings during the innovation process, group building through the usage of shared physical space, the definition of a shared language, or the establishment of ongoing dialogue (Plewe & Fürsich, 2020; Zaragoza-Fuster & García-Avilés, 2020). Furthermore, an "iterative innovation process ensures that the best ideas are developed and executed" (Ellonen & Karshu, 2006, 95), and "a willingness to compromise was essential for successful teamwork" (Plewe and Fürsich, 2020).

In the best case, *customer & market orientation* (n = 19) ensures that the company is aware of its customers' needs, can act with foresight and considers usability aspects (Ellonenen & Karhu, 2006; Holle et al., 2015). However, too strong an orientation towards customer needs and market research (n = 7) can also prevent the company from experimenting on its own terms (Schaarschmidt & Kilian, 2014).

When applied positively, *agility & flexibility* can ensure flexible workflows, proactivity, and consideration of technology cycles (*n* = 16; Fredberg, 2007; Usher 2012; Zaragoza-Fuster & García-Avilés, 2020). "Yet companies often can't organize themselves to move faster. Too often, companies that are highly compartmentalized can become immobilized when it comes to fast turnaround times given the entrenchment of existing department and area silos" (Gershon 2011, p. 25). Hence, a lack of *agility & flexibility* (*n* = 5) is discussed as leading to long development times and creating a conflict between cost-effective standardisation and necessary competence (von Rimscha et al., 2016).

5.4 Distribute, drive, demand: External actors influencing the innovation structure

Although rarely the subject of direct research, six *external actors* contributing to the innovation structure of journalistic media organisations can be deduced from the 90 articles: *Competitors & co-operators, regulatory institutions, hard-/software & platform providers, advertisers, audiences & customers, and research & academia*. Although the numbers of mentions vary, each of these actors should be considered equally relevant.

Competitors & co-operators (*n* = 40) include both other journalistic media organisations (e.g. other newspapers, but also competition between public and private media or the press system) and "new media and micro-media companies" (Manfredi-Sánchez et al., 2015, p. 78), as well as big tech companies, such as Google (e.g. with offerings like Google News) because "disruptive innovations in media industries have also been initiated by players from other industries" (Sjøvaag & Krumsvik, 2018, p. 1214).

Regulatory institutions (*n* = 17) include the state, but also foundations or other regulations or organisational settings, for example, overseeing ethical, legal, or financial standards in journalism (Atkin et al., 2015; Krumsvik, 2012).

Hard-, software & platform providers (*n* = 30; e.g. Sabatier & Fitzelle, 2011), which include big tech organisations such as Google, Apple, Meta or Sony, not only provide access to platforms, hard- and software, they furthermore establish "product ecosystems" (Holle et al., 2015, p. 317) that are either open or closed to third parties. Platform providers (who offer and control access to social networking sites or app stores) establish new publishing structures each time "the supply/demand balance" changes (Docters et al., 2011, p. 4). Furthermore, social media platforms "are important in driving audiences to websites and tablet apps" (Sabatier & Fitzelle, 2011, p. 7).

Advertisers (*n* = 5) were less frequently discussed. As a structural actor in the innovation ecosystem they shape trends like marketing automation, digital marketing or content marketing that can also exert influence on editorial product innovation (Villi et al., 2019).

Audiences & customers (*n* = 5) influence the innovation ecosystem due to changing behaviours and preferences. Through convergent or fragmented usage environ-

ments, they create specific structures in which innovations can either successfully establish themselves or fail (Lacy, 1993; Lawson-Borders, 2003).

Research & academia (n = 4) provide different opportunities to collect relevant information on trends but also to act as a driver of innovation, for example, by the thematic orientation of funding programmes, conferences, publications, and alliances (Boczkowski, 2004b; Turner, 2014; Zaragoza-Fuster & García-Avilés, 2020)

These actors fulfil specific functions. First, research indicates that they facilitate *distribution and demand* (n = 32; Dowling, 2017; Rachinger et al., 2019). Hence, the role of platforms and content providers is to offer and use the media product, but also to provide an ecosystem that creates demand (by intermediaries, social media platforms, and the audience itself). For instance, social networks "provide for the promotion of contents, the establishment of a channel of conversation with readers and other similar functions" (Manfredi Sánchez et al., 2015, p. 76). Structurally relevant actors are also mentioned as *drivers or motivators* for innovation and creativity (n = 21). For example, when competitors from the same or other media sectors launch an innovation on the market they lead to imitation from other competitors (Lowrey, 2011). Public media also drive innovation through democratisation and their financial strength, for example, when launching a new product available to all and thereby setting a trend; additionally, the high cost of appropriate rights and licenses also drives media houses to be creative and innovative when they have to find ways to work around such investments (Fredberg, 2007). In addition, structural actors' function of *regulation* of the market space (n = 15), for example through political or governmental guidelines or industry standards, but also the positive effects of deregulation (Dogruel, 2015), are discussed as an important part of the innovation ecosystem in the literature under review. Furthermore, actors can set the framework in *providing appropriate hardware* necessary (n = 9) to use the specific media product, such as eBooks, iPads (Sabatier & Fitzelle, 2011), or VR headsets (Mills, et al., 2017).

5.5 Compensate and complement: External actors influencing the innovation process

In addition to the actors relevant for the appropriate innovation structure, the literature also discusses external actors that play a key role primarily in the innovation process. However, again in most cases these were not directly researched in the studies under review, but deduced through the analysis. Four external actors were derived from the literature – *enablers, competitors, audience & customers,* and *research & academia*. Again, differences can be seen in the frequency with which these receive attention, and in total they are less frequently discussed in the literature than actors defining the innovation structure. However, these actors should all be included equally in the consideration of the innovation ecosystem on a process level.

Enablers (n = 26) such as market research agencies, developer networks, content creation agencies, service providers, production companies, marketing service

providers or other subcontractors (Aitamurto & Lewis, 2013) are involved in different phases of the value chain. This also includes individual actors, such as freelance journalists or graphic designers with specific skills (Plewe & Fürsich, 2020; Wenzel, et al., 2009). Cooperation with *enablers* includes, for example, "participants' recruitment and logistics" (Gruner & Power, 2017, p. 1077) for crowdsourcing activities, or the "co-production of webdocs and the hiring of external companies specialized in virtual reality and 360º video" (Zaragoza-Fuster & García-Avilés, 2020, p. 55). It is also stated, however, that "companies need business partners' know-how and technologies to develop BMs [business models] through digitalization" (Rachinger et al., 2019, p. 1153). Thereby, different types of networks relevant for the innovation process evolve (Sinozic & Tödtling, 2015) which play a key role in this process due to knowledge transfer and complementary skills.

Competitors (n = 11) also play a role in the process of innovation development. They can be either in the same (e.g. different print media) or a different media sector (e.g. print and broadcasting organisations) (Sinozic & Tödtling, 2005). By involving niche providers and other media organisations with expertise in the process, collaboration and co-opetition with *competitors* also helps to neutralise rivalry in the market (Evans, 2018; Lawson-Borders, 2003).

Audience & customers (n = 11) can be strategically involved in the innovation process through crowdsourcing or co-creation practices (Blum-Ross et al., 2013; Klass, 2020). This "stimulates market learning during idea generation and selection and helps firms gather information about product-related problems from the customers' point of view and solve those problems" (Gruner & Power 2017, p. 1061).

Research & academia (n = 2) allows the analysis of new skill sets needed and partnerships with universities may help "to develop targeted programs aimed at developing such skills" (Cacho-Elizondo, et al., 2018, p. 98).

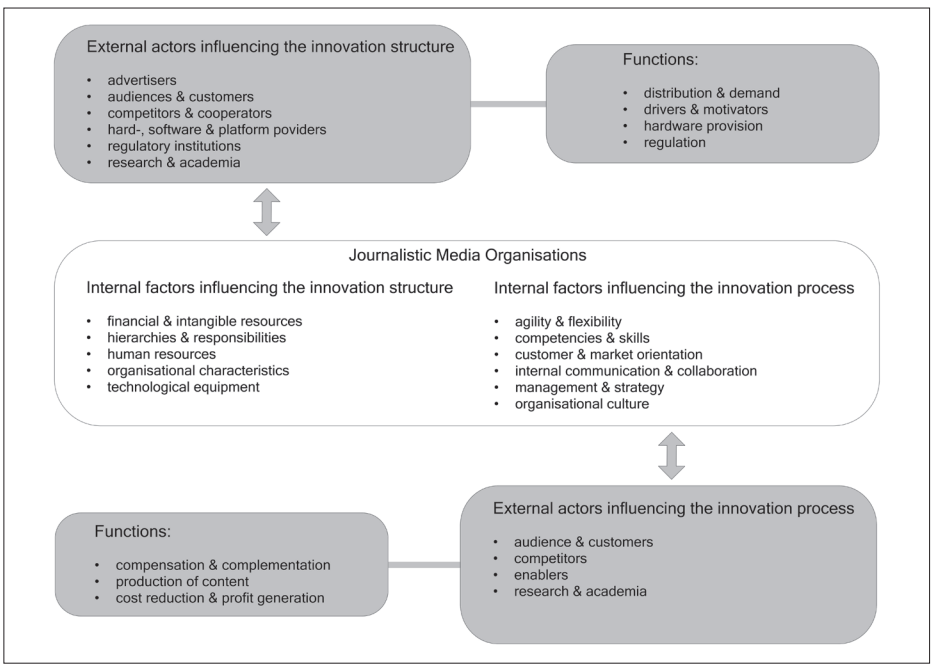
The functions of these external actors in influencing the innovation process are closely related to the production of the innovation itself by journalism media organisations: It is above all a matter of *compensation & complementation*. By contributing expertise and pooling knowledge about an appropriate technology and its development, the necessary resources, and the expectations of customers, media organisations are more likely to be able to produce potentially successful innovations (n = 37; Cacho-Elizondo, et al., 2018). In addition, the relevant actors in the innovation process are involved in the actual *production of content* and the corresponding final product (n = 16; Dogruel, 2015). Economically, reasons for the cooperation with external actors can be seen in the possible *cost reduction & profit generation* (n = 4; Holmström Olsson & Bosch, 2020).

6. Discussion: The product innovation ecosystem

The goal of the literature review was to systematically summarise the factors and actors mentioned in the interdisciplinary state of research as influencing product innovation structures and processes in journalistic media organisations. Based on the described findings, the *Innovation Ecosystem Map* (*Figure 4*) visualises the state

of research and provides input for better understanding the often mentioned but to date not holistically depicted complexity of today's innovation ecosystem.

Figure 4. Product innovation ecosystem: Internal factors and external actors



The literature review indicates several internal factors which also influence the innovation structure (*financial & intangible resources, hierarchies & responsibilities, human resources, organisational characteristics, technological equipment*) and process (*agility & flexibility, competencies & skills, customer & market orientation, internal communication & collaboration, management & strategy, organisational culture*). In addition, the state of research suggests that media organisations are confronted with six actors (*advertisers, audiences & customers, competitors & cooperators, hard-, software & platform providers, regulatory institutions, research & academia)* influencing innovation structures which create the complex environment. This is where the diffusion of product innovations is possible and demand for them is built, as external actors provide the necessary hardware and act as the main drivers and motivators for innovation. Second, based on the articles examined, four actors (*audience & customers, competitors, enablers,* and *research & academia*) play a role in the innovation process as they offer *compensation & complementation, production of content,* and *cost reduction & profit generation*.

Due to the focus of the research on media organisations, *competitors & cooperators,* which includes other media organisations, seem to be the most relevant structural actor, followed by *hard-, software & platform providers*. In relation to this, creating *distribution & demand* as well as acting as a *driver & motivator* are most crucial. Thus, there is a strong focus on the competitive environment in terms

of other media organisations maintaining competitiveness on the one hand and providing impulses for further development on the other.

Overall, the papers studied look much less frequently at external actors in the innovation process. The state of research clearly shows that co-operations are entered into, and external competencies are integrated in order to meet the competition, with the focus mainly on enablers as well as competitors and customers. Other actors such as *market research & marketing service providers, research & academia* as well as *advertisers* only appear sporadically. Here too, the functions mentioned, such as *production or compensation & complementation*, may not reflect the totality.

The arrows in the *Innovation Ecosystem Map* indicate that the factors and actors mentioned are interrelated and influence each other, which shall be explained with a handful of examples: *Research and academia* can, for example, generate important insights into the status quo and any deficits in practice, which in turn lead to changes in curricula at universities or in journalism training. This could be, for example, the demand for increased project management competencies (Planer et al., 2022). Likewise, the changed role and increased involvement of *audiences* and *customers* as well as the temporary cooperation with *competitors* (co-creation, co-opetition) can have an impact on *organisational culture* (Evans, 2015; Klass, 2020). Furthermore, *hard-, software and platform providers* can affect *human resources* in various ways, for example, when new staff is required to manage a new platform (and thus, new roles emerge), or positions get cancelled because certain *skills and competencies* are outsourced to *enablers* integrated into the innovation process. Likewise, the *skills and competencies* of the newsworkers can influence which soft-, hardware and platforms are focused on and how they are operated with. Additionally, the internal *flexibility and agility* of a media organisation can increase their competitive advantage on the media market. If competitors are less flexible and agile to change and innovate, they might be outgrown. Similarly, media organisations can borrow best practices from *competitors*, such as tools for internal communication or strategies to stay competitive. Hence, journalistic media organisations cannot be considered in isolation, and the ecosystem map helps in assessing the more holistic change in the media environment.

All in all, this literature review located in the intersection of journalism and media management research shows that both areas of research can – and, depending on the topic, maybe even have to – be considered together. For journalism research, the findings of this study enrich the body of work on singular product innovations and add another abstraction level by considering the broader field and surroundings of these (singular) innovations. For media management research, the interrelations between managerial aspects and product-specific aspects of innovation processes become clearer. Through recognizing the variety of factors and actors involved in innovation processes and structures, the ecosystem map also implies that innovation in journalism is a highly complex undertaking which should not be underestimated or too easily glorified.

If a journalistic company seeks to implement a new product, the *Innovation Ecosystem Map* could serve as a guideline or checklist to review which aspects have been considered and which might need more attention. It also helps in assess-

ing the hindering and beneficial factors within the innovation process. Although the *Innovation Ecosystem Map* has been created as a summary of the review results and is thus a broad overview, it simultaneously serves as a personalisable tool for journalistic companies and their innovation aspirations, potentially guiding them to select which aspects to focus on.

This holds true not only for the journalistic companies, but also for further actors involved in the processes; tech companies, software providers, virtual reality specialists, and the like might assess the journalistic innovation process more closely and thus provide even more targeted services to journalism.

The mentioned changes also raise the concern of journalism increasingly taking place in the peripheries or outside of the newsroom, and the danger of journalistic core work fading into the background. People working in new, product-adjacent roles, however, often possess journalism degrees and thus have a journalistic background (Royal & Kiesow, 2021). On the one hand, this can be seen as a sign for journalism developing and further specialising in the digital world, while on the other hand, one might assume a weaker focus on traditional journalistic work as well as blurred boundaries between editorial, tech, and management (Kosterich, 2021). Nevertheless, although the essence of journalistic work – its mission to inform and educate – should not be neglected, in today's digital, fast-paced environment, journalism is also shaped by technological advances and innovation, and thus needs to adjust. And journalism studies need to adjust along with it, considering "the permanent instability inside the news industry as well as the structural and structured nature of people committing acts of journalism outside of it" (Deuze & Witschge, 2018, p. 177).

The RQ can therefore be answered as follows: The literature review reveals a complex and challenging ecosystem and network of interrelated actors within which the ability of journalistic media organisations to cooperate with relevant actors without losing know-how and access to relevant innovation structures and processes must be negotiated individually in each case. In addition, journalistic media organisations face internal structural and procedural barriers they need to overcome to be innovative.

7. Limitations & conclusion

Conducting the systematic literature review is considered valuable. First, the number of published articles per year has increased over time, which suggests a certain relevance. Second, the review yielded a larger picture on the ecosystem of product innovations in journalistic media organisations. When interpreting the findings of the literature review, it is important to bear in mind that they cannot be considered representative. The focus on peer-reviewed journals and the exclusion of other forms of publication, such as monographs or articles in edited volumes, represents a limitation. Furthermore, although a two-stage search strategy was applied, additional synonyms may not have been included, as Google Scholar search results change based on previous search histories and individually applied keywording criteria of different journals and authors may have led to an exclusion of relevant articles. Although the systematic content analysis was designed to be interdiscipli-

nary, the research on the topic is mainly found in the fields of media management and journalism. Moreover, a systematic literature review can only consider existing evidence and thus cannot rule out the possibility that the generated internal factors or external actors are not complete. The ecosystem map can therefore only be validated and supplemented by future empirical data collection that addresses the complexity of product innovations. The fact that a range of external actors could be identified from the literature, however, should not hide the fact that they have rarely been the focus of research as direct objects of study. As research is mostly conducted with a focus on the journalistic media organisations themselves, the complexity of the ecosystem cannot be adequately described with empirical data on all actors.

The mapped ecosystem of external actors and internal factors affecting the innovation structures and processes in journalism are therefore considered to be helpful for future research. For example, categories may be used in quantitative designs to evaluate the influence of actors or the relevance of factors. More in-depth studies may help to map and draw specific connections between the identified actors. In this way, structural and process-related factors that promote and inhibit innovation can be expanded to include information on the role of external actors. Since the ecosystem map is not product-specific but aims at covering the nature of product innovation processes in journalism in general, it might also be a guidance for further studies on singular innovative products as it shows which aspects need to be considered.

Furthermore, the mapped ecosystem aims to be a timeless and abstracted model for further analyses of current developments and phenomena in the journalistic media landscape. The further expansion of international platforms, the changing role of legacy media, and the increasing globalization of production processes, not least through the usage of artificial intelligence, are only a few of the examples which could be applied to the ecosystem.

For example, a media organisation introducing a new product can be influenced by a software provider such as OpenAI for their innovative purposes. Through considering the ecosystem map, the media organization can become aware of the respective functions this software could be used for in the innovation process, which gives the media organisation the chance to handle the innovation process proactively (and not reactively). Considering an adaptation of internal factors, such as competencies and skills or human resources, can help to cooperate with this development. An internal workshop explaining the uses and challenges of ChatGPT, as well as educating an internal expert on the program could serve a proactive handling of the situation, improve the innovation process and facilitate staying ahead of the developments.

The literature review was finalized in June 2021; since then, additional studies have addressed the structures and processes of product innovation in journalism, which continue to demonstrate the relevance of the topic. However, it can still be seen that most publications focus primarily on the editorial offices and newsrooms of media organisations and their individual products. Therefore, future studies could cover the phenomenon of product innovation in journalism in a more holistic way by including other actors inside the media organisation (such as intra-

preneurship or R&D units and project roles). In turn, media organisations with innovation aspirations can benefit from this to design the management processes behind product innovations more systematically and efficiently. Furthermore, the factors derived can be used both in preparation for and in evaluating product innovation structures and processes.

Since the literature analysis also reveals that thus far science and research have seldom been included in the innovation process, there is a need for action here, in particular for meaningful cooperation between academia and practice.

References

Aitamurto, T., & Lewis, S. C. (2012). Open innovation in digital journalism: Examining the impact of open APIs at four news organizations. *New Media & Society*, *15*(2), 314–331. https://doi.org/10.1177/1461444812450682

Atkin, D., Hunt, D., & Lin, C. A. (2015). Diffusion theory in the new media environment: Toward an integrated technology adoption model. *Mass Communication and Society*, *18*(5), 623–650. https://doi.org/10.1080/15205436.2015.1066014

Boczkowski, P. J. (2004a). *Digitizing the news: Innovation in online newspapers*. The MIT Press.

Boczkowski, P. J. (2004b). The mutual shaping of technology and society in videotex newspapers: Beyond the diffusion and social shaping perspectives. *The Information Society*, *20*(4), 255–267. https://doi.org/10.1080/01972240490480947

Booth, A., Sutton, A., & Papaioannou, D. (2016). *Systematic approaches to a successful literature review.* SAGE.

Boyles, J. L. (2016). The isolation of innovation. *Digital Journalism*, *4*(2), 229–246. https://doi.org/10.1080/21670811.2015.1022193

Blum-Ross, A., Mills, J., Egglestone, P., & Frohlich, D. M. (2013). Community media and design: Insight journalism as a method for innovation. *Journal of Media Practice, 14*(3), 171–192. https://doi.org/10.1386/jmpr.14.3.171_1

Briggs, M. (2012). *Entrepreneurial journalism: How to build what's next for news*. CQ Press.

Buzzard, K. (2002). The peoplemeter wars: A case study of technological innovation and diffusion in the ratings industry. *Journal of Media Economics*, *15*(4), 273–291. https://doi.org/10.1207/s15327736me1504_4

Cacho-Elizondo, S., Álvarez Lázaro, J.-D., & Garcia, V.-E. (2018). Exploring the adoption of augmented and virtual reality in the design of customer experiences: Proposal of a conceptual framework. *Journal of Marketing Trends*, *5*(2), 91–102.

Caswell, D., & Dörr, K. (2018). Automated journalism 2.0: Event-driven narratives. *Journalism Practice*, *12*(4), 477–496. https://doi.org/10.1080/17512786.2017.1320773

Cormican, K., & O'Sullivan, D. (2004). Auditing best practice for effective product innovation management. *Technovation*, *24*(10), 819–829. https://doi.org/10.1016/s0166-4972(03)00013-0

Day, G. S., & Schoemaker, P. J. H. (2000). A different game. In G. S. Day, P. J. H. Schoemaker, & R. E. Gunther (Eds.), *Wharton on managing emerging technologies* (pp. 1-23). Wiley.

Deuze, M., & Witschge, T. (2017). Beyond journalism: Theorizing the transformation of journalism. *Journalism: Theory, Practice & Criticism*, *19*(2), 165–181. https://doi.org/10.1177/1464884916688550

Docters, R., Tilstone, L., Bednarczyk, S., & Gieskes, M. (2011). Pricing in the digital world. *Journal of Business Strategy*, *32*(4), 4–11. https://doi.org/10.1108/02756661111150927

Dogruel, L. (2015). Innovation research in media management and economics: An integrative framework. *Journal of Media Business Studies*, *12*(3), 153–167. https://doi.org/10.1080/16522354.2015.1069478

Dowling, D. O. (2017). Toward a new aesthetic of gigital literary journalism: Charting the fierce evolution of the 'supreme nonfiction'. *Literary Journalism Studies*, *9*(1), 100–116.

Dörr, K. (2016). Mapping the field of algorithmic journalism. *Digital Journalism*, *4(6)*, 700–722. https://doi.org/10.1080/21670811.2015.1096748

Ducey, R. V., & Fratrik, M. R. (1989). Economic policy essay: Broadcasting industry response to new technologies. *Journal of Media Economics*, *2*(2), 67–86. https://doi.org/10.1080/08997768909358186

Ellonen, H., & Karhu, P. (2006). Always the little brother? Digital-product innovation in the media sector. *International Journal of Innovation and Technology Management*, *3*(1), 83–105. https://doi.org/10.1142/s0219877006000673

Engebretsen, M., Kennedy, H., & Weber, W. (2018). Data visualization in Scandinavian newsrooms: Emerging trends in journalistic visualization practices. *Nordicom Review*, *39*(2), 3–18. https://doi.org/10.2478/nor-2018-0007

Evans, S. K. (2018). Making sense of innovation. *Journalism Studies*, *19*(1), 4–24. https://doi.org/10.1080/1461670x.2016.1154446

Evans, S. K. (2015). Defining distinctiveness: The connections between organizational identity, competition, and strategy in public radio organizations. *International Journal of Business Communication*, *52*(1), 42–67. https://doi.org/10.1177/2329488414560280

Fredberg, T. (2007). Real options for innovation management. *International Journal of Technology Management*, *39*(1-2), 72–85. https://doi.org/10.1504/ijtm.2007.013441

García-Avilés, J. A., Prieto, M. C., De Lara González, A., & Robles, F. A. (2018). Developing an index of media innovation in a national market. *Journalism Studies*, *19*(1), 25–42. https://doi.org/10.1080/1461670x.2016.1161496

Gershon, R. A. (2011, May 26-30). *Media innovation: Three strategic approaches to business transformation* [Conference presentation]. ICA 2011, Boston, MA, United States.

Godulla, A., Planer, R., Wolf, C., Lück, A., & Vaaßen, F. (2021). An immersive journey through flawed technology: Users' perceptions of VR in journalism. *Journalism and Media*, *2*(3), 454–468. https://doi.org/10.3390/journalmedia2030027

Godulla, A., & Wolf, C. (2017). *Digitale Langformen im Journalismus und Corporate Publishing. Scrollytelling – Webdokumentationen – Multimediastorys* [Digital long forms in journalism and corporate media. Scrollytelling – web documentaries – multimedia stories]. Springer VS. https://doi.org/10.1007/978-3-658-17556-6

Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, *26*(2), 91–108. https://doi.org/10.1111/j.1471-1842.2009.00848.x

Gruner, R. L., & Power, D. (2017). What's in a crowd? Exploring crowdsourced versus traditional customer participation in the innovation process. *Journal of Marketing Management*, *33*(13–14), 1060–1092. https://doi.org/10.1080/0267257x.2017.1325389

Gusenbauer, M., & Haddaway, N. R. (2020). Which academic search systems are suitable for systematic reviews or meta-analyses? Evaluating retrieval qualities of Google Scholar, PubMed, and 26 other resources. *Research Synthesis Methods*, *11*(2), 181–217. https://doi.org/10.1002/jrsm.1378

Gutiérrez-Caneda, B., Vázquez-Herrero, J., & López-García, X. (2023). AI application in journalism: ChatGPT and the uses and risks of an emergent technology. *Profesional De La información*, *32*(5), 1–16. https://doi.org/10.3145/epi.2023.sep.14

Himelboim, I., & McCreery, S. (2012). New technology, old practices. *Convergence*, *18*(4), 427–444. https://doi.org/10.1177/1354856511429648

Hogh-Janovsky, I., & Meier, K. (2021). Journalism innovation labs 2.0 in Media organisations: A motor for transformation and constant learning. *Journalism and media*, *2*(3), 361–378. https://doi.org/10.3390/journalmedia2030022

Holle, D., Hüsig, S., Dowling, M., & Mohr, N. (2015). Success factors of product concepts for convergence products in the telecommunications, internet, media, and entertainment industries. *International Journal of Product Development*, *20*(4), 304. https://doi.org/10.1504/ijpd.2015.071401

Holmström Olsson, H. H., & Bosch, J. (2020). Going digital: Disruption and transformation in software-intensive embedded systems ecosystems. *Journal of Software: Evolution and Process*, *32*(6). https://doi.org/10.1002/smr.2249

Jones, S. (2017). Disrupting the narrative: Immersive journalism in virtual reality. *Journal of Media Practice*, *18*(2–3), 171–185. https://doi.org/10.1080/14682753.2017.1374677

Joseph, A. (2011). How soon is now? Best practices changing quarterly, media management must keep up. *International Journal on Media Management*, *13*(3), 211–216. https://doi.org/10.1080/14241277.2011.576971

Jurno, A. C., & d'Andréa, C. F. de B. (2020). Between partnerships, infrastructures and products: Facebook journalism project and the platformization of journalism. *Brazilian Journalism Research*, *16*(3), 502–525. https://doi.org/10.25200/BJR.v16n3.2021.1306

Kim, L. (1980). Organizational innovation and structure. *Journal of Business Research*, *8*(2), 225–245. https://doi.org/10.1016/0148-2963(80)90012-0

Klass, N. (2020). Open innovation in media innovation research – A systematic literature review. *Journal of Media Business Studies*, *17*(2), 190–218. https://doi.org/10.1080/16522354.2020.1724498

Kosterich, A. (2021). Reengineering journalism: Product manager as news industry institutional entrepreneur. *Digital Journalism*, 1–30. https://doi.org/10.1080/21670811.2021.1903959

Krumsvik, A. H. (2012). Impact of VAT on portfolio strategies. *Journal of Media Business Studies*, *9*(2), 115–128. https://doi.org/10.1080/16533254.2012.11073547

Krumsvik, A. H., Milan, S., Bhroin, N. N., & Storsul, T. (2019). Making (sense of) media innovations. In M. Deuze & M. Prenger (Eds.), *Making media: production, practices, and professions* (pp. 193–206). Amsterdam University Press. https://doi.org/10.1515/9789048540150-014

Küng, L. (2013). Innovation, technology and organisational change. Legacy media's big challenges. An introduction. In T. Sorsul & A. H. Krumsvik (Eds.), *Media innovations. A multidisciplinary study of change* (pp. 9–12). Nordicom.

Lacy, S. (1993). Understanding & serving readers: The problem of fuzzy market structure. *Newspaper Research Journal*, *14*(2), 55–67. https://doi.org/10.1177/073953299301400208

Larrondo-Ureta, A. (2020). Scope and difficulties of the transmedia practice. A case study on the Spanish PSM system. *Journalism Practice*, *14*(8), 991–1007. https://doi.org/10.1080/17512786.2019.1679036

Lawrence, R. G., Radcliffe, D., & Schmidt, T. (2018). Practicing engagement. *Journalism Practice*, *12*(10), 1220–1240. https://doi.org/10.1080/17512786.2017.1391712

Lawson-Borders, G. (2003). Integrating new media and old media: Seven observations of convergence as a strategy for best practices in media organizations. *International Journal on Media Management*, *5*(2), 91–99. https://doi.org/10.1080/14241270309390023

Lewis, S. C., & Westlund, O. (2014). Big data and journalism. *Digital Journalism*, *3*(3), 447–466. https://doi.org/10.1080/21670811.2014.976418

Lewis, S. C., & Westlund, O. (2015). Actors, actants, audiences, and activities in cross-media news work. *Digital Journalism*, *3*(1), 19–37. https://doi.org/10.1080/21670811.2014.927986

Lischka, J. A. (2015). *Pressure and organisational change in the digital age: Strategy transformation in response to changing environmental conditions in Swiss and UK legacy news organisations over the past decade (Working Paper*). Reuters Institute for the Study of Journalism. https://reutersinstitute.politics.ox.ac.uk/sites/default/files/research/files/Pressure%2520and%2520Organisational%2520Change%2520in%2520the%2520Digital%2520Age.pdf

Lischka, J. (2018). Nachrichtenorganisation. Umbrüche durch Konvergenz, Crossmedialität, Multikanal- und Innovationsfähigkeit [News organization. Upheavals through convergence, creossmediality, multi-channel and innovation capability]. In C. Nuernbergk & C. Neuberger (Eds.), *Journalismus im Internet* (pp. 273–293). Springer VS. https://doi.org/10.1007/978-3-531-93284-2_10

Lowrey, W. (2011). Institutionalism, news organizations and innovation. *Journalism Studies*, *12*(1), 64–79. https://doi.org/10.1080/1461670x.2010.511954

Manfredi Sánchez, J. L., Rojas Torrijo, J. L., & Herranz de la Casa, J. M. (2015). Entrepreneurial journalism: Sports journalism in Spain. *Revista Latina de Comunicación Social*, *70*, 69–90.

Marciá-Barber, C. (2014). New challenges for an enduring code of journalistic ethics: The news media business model in the face of ethical standards and citizen participation. *Communicacao e Sociedade*, *25*, 97–109. https://doi.org/10.17231/comsoc.25(2014).1862

Meier, K., Schützeneder, J., García-Avilés, J. A., Valero-Pastor, J. M., Kaltenbrunner, A., Lugschitz, R., Porlezza, C., Ferri, G., Wyss, V., & Saner, M. (2022). Examining the most relevant journalism innovations: A comparative analysis of five European countries from 2010 to 2020. *Journalism and media*, *3*(4), 698–714. https://doi.org/10.3390/journalmedia3040046

Mesquita, L., de-Lima-Santos, MF., & Muthmainnah, A.N. (2023). Google news initiative innovation challenge: Technological innovation triggers by Google grants. In Godulla, A. & Böhm, S. (Eds.), *Digital disruption and media transformation. Future of business and finance* (pp. 55–70). Springer. https://doi.org/10.1007/978-3-031-39940-4_5

Mills, J., Pellanda, E. C., & Pase, A. F. (2016). New interactions. *Journalism Practice*, *11*(8), 980–999. https://doi.org/10.1080/17512786.2016.1224679

Neuberger, C., Nuernbergk, C., & Langenohl, S. (2018). Journalism as multichannel communication. *Journalism Studies*, *20*(9), 1260–1280. https://doi.org/10.1080/1461670X.2018.1507685

News Product Alliance (2022). *The future of news is product*. https://newsproduct.org

Nielsen, R. K., & Ganter, S. A. (2018). Dealing with digital intermediaries: A case study of the relations between publishers and platforms. *New Media & Society*, *20*(4), 1600–1617. https://doi.org/10.1177/1461444817701318

Nozal Cantarero, T., González-Neira, A., & Valentini, E. (2017). Newspaper apps for tablets and smartphones in different media systems: A comparative analysis. *Journalism: Theory, Practice & Criticism*, *21*(9), 1264–1282. https://doi.org/10.1177/1464884917733589

Pittaway, L., Robertson, M., Munir, K., Denyer, D., & Neely, A. (2004). Networking and innovation: A systematic review of the evidence. *International Journal of Management Reviews*, *5-6*(3-4), 137–168. https://doi.org/10.1111/j.1460-8545.2004.00101.x

Planer, R., & Godulla, A. (2020). Longform journalism in the USA and Germany: Patterns in award-winning digital storytelling productions. *Journalism Practice*, *15*(4): 566–582. https://doi.org/10.1080/17512786.2020.1742771

Planer, R., Godulla, A., & Wolf, C. (2022). Changing the focus in multimedia story production: Experiences from high budget and low budget production settings. *Studies in Communication Science*, *2*(1), 119–127. https://doi.org/10.24434/j.scoms.2022.01.2992

Plewe, C., & Fürsich, E. (2020). Producing newsgames beyond boundaries: Journalists, game developers, and the news business. *Convergence*, *26*(3), 486–502. https://doi.org/10.1177/1354856520918076

Posetti, J. (2018). *Time to step away from the 'bright, shiny things'? Towards a sustainable model of journalism innovation in an era of perpetual change*. Journalism Innovation Project. Reuters Institute for the Study of Journalism. https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2018-11/Posetti_Towards_a_Sustainable_model_of_Journalism_FINAL.pdf

Rachinger, M., Rauter, R., Müller, C., Vorraber, W., & Eva, S. (2019). Digitalization and its influence on business model innovation. *Journal of Manufacturing Technology Management*, *30*(8), 1143–1160. https://doi.org/10.1108/jmtm-01-2018-0020

Ranaivoson, H., Farchy, J., & Gansemer, M. (2013). Differentiated strategies for digital innovation on television: Traditional channels vs. new entrants. *Observatori (OBS*)*, *7*(4), 23–44.

Reese, S. D., & Shoemaker, P. J. (2016). A media sociology for the networked public sphere: The hierarchy of influences model. *Mass Communication and Society*, *19*(4), 389–410. https://doi.org/10.1080/15205436.2016.1174268

Rogers, E. M. 1983. *Diffusion of innovations*. Collier Macmillan.

Rogers, E. M., & Agarwala-Rogers, R. (1976). *Communication in organizations*. The Free Press.

Royal, C. (2020). The state of the news product community 2020. *Texas State University.*

Royal, C., Bright, A. C., Pellizzaro, K., Bélair-Gagnon, V., Holton, A. E., Vincent, S., Heider, D., Zielina, A., & Kiesow, D. (2020). Product management in journalism and academia. *Journalism & Mass Communication Quarterly*, *97*(3), 597–616. https://doi.org/10.1177/1077699020933872

Royal, C. (2016). Managing digital products in a newsroom context. *ISOJ Journal*, *7*(1), 45–66. http://isoj.org/research/managing-digital-products-in-a-newsroom-context/

Royal, C., & Kiesow, D. (2021). From boundary to bridge and beyond: The path to professionalization of product roles in journalism. *Journalism Studies*, *22*(11), 1546–1565. https://doi.org/10.1080/1461670x.2021.1944277

Russial, J. (2009). Growth of multimedia not extensive at newspapers. *Newspaper Research Journal*, *30*(3), 58–74. https://doi.org/10.1177/073953290903000305

Sabatier, L. A., & Fitzelle, E. (2011). Managing the progressive publishing company during market and technology transitions. *Publishing Research Quarterly*, *27*(3), 220–229. https://doi.org/10.1007/s12109-011-9223-6

Saksena, S., & Hollifield, C. A. (2002). U.S. newspapers and the development of online editions. *International Journal on Media Management*, *4*(2), 75–84. https://doi.org/10.1080/14241270209389984

Schaarschmidt, M., & Kilian, T. (2014). Impediments to customer integration into the innovation process: A case study in the telecommunications industry. *European Management Journal*, *32*(2), 350–361. https://doi.org/10.1016/j.emj.2013.04.004

Schmitz Weiss, A. (2018). Location-based news in mobile news apps: Broadcast leads in geolocated news content, newspapers lag behind. *Newspaper Research Journal*, *39*(1), 42–54. https://doi.org/10.1177/0739532918765469

Seward, Z. M. (2024). AI news that's fit to print: The New York Times' editorial AI director on the current state of AI-powered journalism. *NiemanLab*. https://www.niemanlab.org/2024/03/ai-news-thats-fit-to-print-the-new-york-times-editorial-ai-director-on-the-current-state-of-ai-powered-journalism/

Singer, J. B. (2004). Strange bedfellows? The diffusion of convergence in four news organizations. *Journalism Studies*, *5*(1), 3–18. https://doi.org/10.1080/1461670032000174701

Sinozic, T., & Tödtling, F. (2014). Adaptation and change in creative clusters: Findings from Vienna's new media sector. *European Planning Studies*, *23*(10), 1975–1992. https://doi.org/10.1080/09654313.2014.946641

Sjøvaag, H., & Krumsvik, A. H. (2017). In search of journalism funding. *Journalism Practice*, *12*(9), 1201–1219. https://doi.org/10.1080/17512786.2017.1370972

Stalph, F., & Borges-Rey, E. (2018). Data journalism sustainability. *Digital Journalism*, *6*(8), 1078–1089. https://doi.org/10.1080/21670811.2018.1503060

Storsul, T., & Krumsvik, A. (2013). *Media innovations. A multidisciplinary study of change*. Nordicom. https://doi.org/10.13140/2.1.1328.9284

Sylvie, G., & Gade, P. (2009). Changes in news work: Implications for newsroom managers. *Journal of Media Business Studies*, *6*(1), 113–148. https://doi.org/10.1080/16522354.2009.11073481

Thackray, B. (1997). News from information house. *International Journal of Information Management*, *17*(2), 145–146. https://doi.org/10.1016/s0268-4012(97)83198-2

The New York Times (2020). *R & D*. https://rd.nytimes.com

Turner, M. (2014). Reinvention, revolution and revitalization: Real life tales from publishing's front lines. *Publishing Research Quarterly*, *30,* 388–400. https://doi.org/10.1007/s12109-014-9380-5

Usher, N. (2012). Reshaping the public radio newsroom for the digital future. *The Radio Journal – International Studies in Broadcast & Audio Media*, *10*(1), 65–79. https://doi.org/10.1386/rjao.10.1.65_1

Valanto, V., Kosonen, M., & Ellonen, H. (2012). Are publishers ready for tomorrow? Publishers' capabilities an online innovations. *International Journal of Innovation Management*, *16*(01), 1250001. https://doi.org/10.1142/s1363919611003362

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, *28*(2), 118-144. https://doi.org/10.1016/j.jsis.2019.01.003

Victor, L. (2008). Systematic reviewing. *Social Research Update*, (54), 1–4.

Villi, M., Grönlund, M., Lindén, C., Lehtisaari, K., Mierzejewska, B. I., Picard, R. G., & Röpnack, A. (2019). "They're a little bit squeezed in the middle": Strategic challenges for innovation in US metropolitan newspaper organisations. *Journal of Media Business Studies*, *17*(1), 33–50. https://doi.org/10.1080/16522354.2019.1630099

Virta, S., & Malmelin, N. (2017). Ambidextrous tensions: Dynamics of creative work in the media innovation process. *The Journal of media innovations*, *4*(1), 44–59. https://doi.org/10.5617/jmi.v4i1.2410

Voci, D., Karmasin, M., Nölleke-Przybylski, P., Altmeppen, K., Möller, J., & Von Rimscha, M. B. (2019). What is a media company today? Rethinking theoretical and empirical definitions. *SCM*, *8*(1), 29–52. https://doi.org/10.5771/2192-4007-2019-1-29

Von Rimscha, M. B., Verhoeven, M., Krebs, I., Sommer, C., & Siegert, G. (2016). Patterns of successful media production. *Convergence*, *24*(3), 251–268. https://doi.org/10.1177/1354856516678410

Vragments (2020). Vragments about. *Vragments*. https://vragments.com/about/

Wenzel, C., Siegmund, I., & Will, A. (2009). Production-enabling projects in German public broadcast organizations. *Journal of Media Business Studies*, *6*(4), 141–157. https://doi.org/10.1080/16522354.2009.11073499

Westlund, O., & Lewis, S. C. (2014). Agents of media innovations: Actors, actants, and audiences. *The Journal of media innovations*, *1*(2), 10–35. https://doi.org/10.5617/jmi.v1i2.856

Wolf, C. (2014). *Mobiler Journalismus: Angebote, Produktionsroutinen und redaktionelle Strategien deutscher Print- und Rundfunkredaktionen* [Mobile journalism. Products, production routines and editorial strategies of German print and radio editorial offices]. Nomos.

Wolf, C., & Godulla, A. (2018). Newsgames in journalism. Exploitation of potential and assessment by recipients. *Journalism Research*, *1*(2), 2–21.

Wolf, C., & Hohlfeld, R. (2012). Revolution in journalism? Mobile devices as a new means of publishing. In C. Martin & T. von Pape (Eds.), *Images in mobile communication. New content, new uses, and new perspectives* (pp. 81–99). Springer VS.

Wood Adams, J. (2008). Innovation management and U.S. weekly newspaper web sites: An examination of newspaper managers and emerging technology. *International Journal on Media Management*, *10*(2), 64–73. https://doi.org/10.1080/14241270802000454

Zaragoza-Fuster, M., & García-Avilés, J. A. (2020). The role of innovation labs in advancing the relevance of public service media: The cases of BBC News Labs and RTVE Lab. *Comunicacion Y Sociedad*, *33*(1), 45–61. https://doi.org/10.15581/003.33.1.45-61

2470media. (n.d). 2470.media. *2470media*. https://www.2470.media