

# The non-substitutability of local news?

## *Advertising and the decline of journalism's umbrella market model*

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### **Abstract**

This article addresses the challenges facing local newspapers as the digital economy transitions to artificial intelligence (AI). We interview five CEOs of Scandinavian newspaper corporations, representing small, mid-sized, and large newspaper chains. The analysis focuses on three main factors emerging from the interviews – technological transformations, digital advertising markets, and corporate enrolment – and how they relate to business model disruption and the non-substitutability of local news. The analysis is set within the framework of the digital transformation, which, for the purpose of this study, we argue consists of two phases: getting online (until about 2014), and algorithmic adaptation (the introduction of programmatic advertising and audience metrics from about 2014). The analysis concludes that as non-substitutability is lost on the advertising side of the market, this challenges the umbrella model of newspaper publishing.

**Keywords:** business model disruption, digitalisation, local newspapers, non-substitutability, two-sided market

### **Introduction**

Local newspapers find themselves in precarious times. While they were largely shielded from the effects of the first wave of digitalisation that saw news organisations move journalistic content online, the second, algorithmic wave has hit harder. Local newspapers in Scandinavia saw lower drops in circulation between 1995 and 2015 than regional and national titles (Medienorge, 2019), largely due to their subscription business models. Chyi and Tenenboim (2018) have therefore suggested that the future for local newspapers may not be digital at all, based on print and online readership developments in American markets (Chyi & Tenenboim, 2019a; 2019b). According to them, local media should be able to survive as print mediums within monopolistic market structures, as they have a unique value as non-substitutable products both in the advertising and audience markets. The problem with this assumption is twofold.

On the one hand, the introduction of algorithmic and programmatic processes in the advertising sector has shown itself to be particularly disruptive to the two-sided business

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Sjøvaag, H., & Owren, T. (2021). The non-substitutability of local news? Advertising and the decline of journalism's umbrella market model. *Nordicom Review*, 42(1), 1–14. <https://doi.org/10.2478/nor-2021-0001>

model in local markets (Ohlson & Facht, 2017). This challenges the umbrella model of newspaper publishing (Lacy, 1984; Rosse, 1975), which supposes the absence of competition in local market segments. While local newspapers may be alone in providing journalism to audiences, they no longer serve as non-substitutable channels for local advertising. The slow adaptation to online publishing that many low-circulation print titles in Scandinavia embraced in the first digital transition has left them poorly situated in the second one – the transition to artificial intelligence (AI), enabling programmatic advertising and algorithmic news curation, content creation, and management (Chan-Olmsted, 2019).

On the other hand, while national newspapers suffered heavy circulation losses in the move to digital platforms (Medienorge, 2019), their aggressive online-first strategies have positioned them well for paywall adaptation and digital subscription uptake (Olsen et al., 2020). Hence, they are now well placed to mobilise audience metrics, thus attracting programmatic advertising. Chain-owned newspapers have likewise had an advantage in this shift, able to capitalise on the scale-enabled analytic resources of corporate organisations (Kalsnes, 2019). As a result, we see a concentration in the Nordic region, with local chains and independently owned newspapers seeking corporate ownership to an increasing degree (Leckner et al., 2019; Sjøvaag, 2019), not least to attain control over advertising markets. The question we ask in this regard is how newspaper companies in Scandinavia address this business model disruption, and what the algorithmic turn entails for the non-substitutability of local news.

In order to ascertain reactions and responses to this shift, we interviewed five CEOs of Scandinavian newspaper corporations, representing small, mid-sized, and large newspaper chains in Denmark, Norway, and Sweden. Our questions focused on sustainability, risk, decision-making, and uncertainties about the future. Based on these issues, a thematic analysis revealed three topics – technological transformations, digital advertising, and corporate enrolment – informing a discussion regarding the non-substitutability of local news. Our analysis is thus focused on business model aspects, specifically the advertising market, leaving aside otherwise important questions regarding the role of production, content, and reception of local news in the umbrella model of local news publishing.

In the following, we first outline the literature on the digital transformation and the two-sided market model. For the purpose of this analysis, we consider this development in two stages, as a first and second wave of digitalisation, the change between them occurring sometime around 2014–2015. Next, the theoretical background outlines the theory of non-substitutability in the umbrella model, pinpointing the gaps produced herein by the algorithmic turn in news production, distribution, and consumption. We then describe our data and method before presenting the analysis, structured around the two-sided market model. The discussion engages with the impact of these challenges on the non-substitutability of local news, and the potential consequences for the umbrella model of newspaper publishing.

## **Digital transformations**

The digitalisation of news industries has been on the research agenda in journalism studies since the introduction of the Internet. While economic and industry perspectives on digital journalism are present in the research only to a limited extent (Steensen &

Ahva, 2015), early transformation studies were often contextualised in economic discourse, particularly as to how journalism will be financed in the digital age (Steensen et al., 2019). Questions about this transformation are often framed within a crisis narrative (Brüggemann et al., 2016), and largely revolve around revenues (Mensing, 2007) and business models (Kaye & Quinn, 2010). Studies have also probed different approaches to online revenues, including differentiation, versionality, and substitution (van der Wurff, 2011); readership and willingness-to-pay (Goyanes, 2014); paid content (Brandstetter & Schmalhofer, 2014), and advertising (Picard, 2008). Early transition studies typically had an organisational focus, looking at the introduction of new technology, convergence processes, and new modes of production (Berte & De Bens, 2008).

Most of these studies have been motivated by the news industries' loss of income in the audience and advertising markets. The disruption to journalism's business model has spurred research that problematises both sides of the two-sided market that journalism operates within. In two-sided markets, a firm produces two different commodities that can be sold to separate and distinct user groups (Doyle, 2013). For journalism, this amounts to the audiences that buy the news product on one side, and to the advertisers that seek these news reading audiences on the other. Two-sided markets are therefore characterised by network externalities (Rochet & Tirole, 2006). The more users are in the network, the more value to the users (Armstrong, 2006). For news industries, this especially pertains to the advertising side, which has tended to value large audiences over small, causing the circulation spiral effect (Rosse, 1980) that tends to lead to concentration and monopoly or duopoly situations in media markets. The platform connecting these two markets must design their price structure to bring both parties on board. Moreover, success on either side depends on good performance on the other. Local newspapers' network effect therefore resides with their ability to offer defined audience groups within valuable information environments. Programmatic advertising disrupts this effect through lower prices, precision targeting, and documentation of reach.

While news products created valuable network effects in the analogue era, the introduction of programmatic advertising has increased the possibility of precise targeting, whereby large-scale advertising has become less important. Advertisers now pay for direct access to the intended consumer, largely circumventing the platform function that news industries provide (Ohlson & Facht, 2017). Reactions to this development have been threefold: first, news media dramatically dropped advertisement prices, causing a loss in income on the advertising side of the market (Chyi, 2013); second, most news products have increased their price to sustain income in a declining subscription market (Chyi & Tenenboim, 2019a); and third, news organisations have begun to bring value back to their platforms by providing potential advertisers with audience metrics (Kalsnes, 2019). Crucially, in this last step, newspapers have begun refocusing on trust, quality, and professionalism to increase the value of their advertising environments.

To that end, studies of this second wave of digitalisation of the news industries have focused on ecosystem adaptation (Anderson et al., 2015), including cost adjustment to withstand income losses (Evens, 2018) and organisational restructuring to merge journalism and tech cultures (Küng, 2017). Efforts are also made to adapt the product and production to this new reality, including content adjustments such as the personalisation of content (Schlosberg, 2018), optimisation of content management (Chan-Olmsted, 2019) and robotisation of journalistic production (Bucher, 2018). The term most often

used to describe this shift is “post-industrialisation” (Deuze & Witschge, 2018). Here, news media find they need to expand the network externalities of their operations to include third-party intermediaries (Cawley, 2019) and social media platforms (van Dijck et al., 2018). There is more focus on partnerships and diversification of business models (Jenkins & Nielsen, 2018) as the news industries struggle to retain their value to customers in both markets.

If the first wave of digitalisation was about getting content online and moving towards online revenue, converging newsrooms, and coping with lower income, the second wave is about harnessing potentials for earnings based on the unique value of news in the networked economy. Here, AI performs much of the platform functionality of linking consumers with vendors that news media used to do in the past. Online news publishing moves from clicks to sales across this shift. Subscription becomes the goal, and converting casual browsers to loyal customers requires a different approach to content (Jenkins, 2020). Programmatic advertising does, however, offer the news industries a chance to retain their advertising markets, but only to the extent that they can provide advertisers with appropriate information about the end-user, and to the extent they get users to interact with advertising messages (Wang, 2018). Getting readers to subscribe (Lehtisaari et al., 2018), and getting subscribers to log in, is thus required to attain this user information. Moreover, getting audiences to engage – to allow advertisers to reach users at moments where behaviour predicts likely purchasing (Braun & Eklund, 2019) – requires knowledge about what users prefer (Bodó, 2019). To get the volume needed to allow the algorithms to learn and predict, to enable personalisation and automatic front-page curation, newspapers need scale. These are not conditions that small, independently owned, print-oriented local papers with one or two editions per week can easily provide.

Local news does, however, offer something of value to advertisers. Local newspapers still have a near monopoly on local information that no amount of amateur Facebook groups can provide (Nygren et al., 2018). Readers typically value their local newspaper because of the information and public connection they offer (Costera Meijer & Bijleveld, 2016). Local news is a source of community engagement (Gulyas et al., 2019) and social capital (Hess, 2015), and thus tends to be more trusted than other news sources (Newman et al., 2019). Local newspapers are therefore often associated with civic engagement (Lie, 2018) and external pluralism (Sjøvaag et al., 2019). A growing concern for local publishers is, however, that their readers are steadily getting older. These ageing reader segments tend to prefer the print edition (Wadbring & Bergström, 2017). Hence, when transitioning to the programmatic reality, local newspapers must be careful in two strategies in particular: the speed with which they move to digital first and the effect of this on the perceived value of the printed product, and the balance between gaining new, younger digital subscribers and keeping paying print customers happy.

## **Theoretical framework**

A relevant framework from which to analyse the situation is the concept of non-substitutability, accounted for in the umbrella model of newspaper publishing. Having largely fallen out of academic consideration in the research on business model disruption, non-substitutability is nevertheless at the heart of Chyi and Tenenboim’s (2018) much-cited research from the American context. The contribution of considering non-

substitutability within the framework of post-industrialisation is that it highlights the importance of network externalities, requiring good performance on both sides of the market. Mobilising the analogue model of newspaper publishing not only reveals how assumptions of non-substitutability sustain the umbrella model, it also challenges the model, asking to what extent this assumption still holds.

James Rosse introduced the umbrella model in 1975, describing the intra-layer competition of newspapers in metropolitan American markets. Rosse described local newspaper competition as consisting of four layers: metropolitan dailies providing regional coverage, satellite city newspapers more local in coverage, suburban dailies surrounding metropolitan areas and satellite cities, and weekly newspapers. Stephen Lacy later combined the second and third layers – the satellite city newspapers and suburban dailies – into one layer, introducing a national layer located above metropolitan dailies (Lacy, 1988). In Rosse's model, a newspaper would produce unique, non-substitutable products – local information – ensuring it could operate without direct competition within its layer, “handling the reader and advertiser need in the geographic area it served” (Bridges et al., 2002: 4). As newspapers on the same level would only have slightly overlapping geographic boundaries, competition would not take place here. Rather, competition over circulation and advertising along the fringes of the market would occur between the layers (Lacy, 1984). Hence, direct competition diminishes when the number of news providers declines, giving many local newspapers near monopoly (Picard, 2018), due in large part to advertisers' preferences for geographic segmentation (Krumsvik & Sundet, 2011). The new economic realities of digital news production have, however, introduced challenges to the model (Picard, 2018), not least because online news also reaches vertically (Chyi & Sylvie, 2001), suggesting ownership concentration in markets where vertical ownership means greater advertising market control (Berte & De Bens, 2008; Bridges et al., 2002).

The umbrella model has been applied to the Scandinavian news markets and their competitive characteristics through Høst and Severinsson's (1997) adaptation (Krumsvik & Sundet, 2011). Here, competition along the local layer has been described as rather stable, shifts mainly occurring when local trade and information patterns alter. In the first phase of digitalisation, chainification of retail and the concentration and centralisation of advertising gave more power to the advertising side of the market. The transition to programmatic advertising in the second phase means that these tendencies are greatly enhanced, particularly as advertisers have more channels to choose from. Moreover, AI enables precision targeting and data or documentation on advertising reach. Here, the potential for reaching overlapping consumers vertically along the layers of the umbrella model is greater for the advertiser than for the news provider, driving down prices for local advertising (Government of Norway, 2011). The mechanisms of the umbrella model thus describe how business model disruption can occur on both sides of the two-sided market, and along the different layers. As the model hypothesises non-substitutability in local news, this suggests major challenges to the local news industries, caused in large part by substitutions on the advertising side of the market (i.e., Google and Facebook), to which ownership concentration emerges as a typical solution for independent, local papers (Sjøvaag, 2019). To that end, if local newspapers can no longer offer non-substitutability on the advertising side of the market, the question is what this means for their network effect.

## Data and method

The population from which the sample is drawn is chain newspaper corporations in Scandinavia, defined as a group of newspapers with the same owner controlling more than three titles. The population thus consists of six corporations in Denmark, seven in Norway, and thirteen in Sweden. Our sample of semi-structured interviews consists of five CEOs, two of which are based in Denmark, two in Norway, and one in Sweden. The purposive sample is heterogeneous and represents 21 per cent of newspaper corporations in Scandinavia (33% of companies in Denmark and Norway and 8% in Sweden). As the population is sparse and CEOs are “elite” sources, obtaining access is often difficult (Kvale & Brinkmann, 2015). Informants were recruited via e-mail, either directly or through communications officers. During the recruitment process, we found stark differences in CEOs approachability and receptibility in the three countries. The purposive sampling was thus strategic. As Danish informants were more open to interview requests, we sampled representatives of large, dominant corporations from Denmark (owning more than 40 newspapers). Norwegian CEOs were less receptive, so we sampled CEOs of small operations (owning less than 10 papers) from Norway. Swedish CEOs were harder to reach, as corporations’ websites did not list e-mail addresses. While we tried to recruit Swedish CEOs through personal contacts, we only managed to reach one positive informant, representing mid-sized corporations (the fifth largest among Sweden’s 13 corporations).

The CEOs represent large dominant corporations in Denmark, small local corporations in Norway, and mid-sized regional corporations in Sweden. Hence, the sample is representative of the types of newspaper chains operating in the Scandinavian region. The sample also represents the two most common forms of ownership in the region: privately owned companies (Norway) and foundation-owned companies (Denmark and Sweden). The rationale for this heterogeneous sampling was to look for similar perceptions among CEOs concerning challenges for local newspapers in the Scandinavian news publishing industry, in light of their common and differing market characteristics (Ohlsson & Facht, 2017; Syvertsen et al., 2014). CEOs were chosen as they hold both key insight and influential positions, allowing for strong opinions, personal experiences, as well as professional perspectives that can reflect industry trends and concerns (Thurman, 2018). Moreover, news corporation CEOs in Scandinavia are the public face of the company, active in industry debates, and often also involved in policy formation processes affecting the overall industry.

In Denmark, we interviewed CEO of JP/Politikens Hus, Stig Ørskov, and CEO of Jysk Fynske Medier, Jesper Rosener. JP/Politikens Hus is owned by a foundation, Jyllandspostens Fond, and is Denmark’s largest media house, with four leading national titles and a consolidated chain of local newspapers. Jysk Fynske Medier is a privately-owned company with 13 daily newspapers, 56 weeklies, and four radio stations covering the regions of Fyn and Jutland. In Norway, we interviewed CEO of Norsjø Media, Ivar Rusdal, and CEO of Agderposten Medier, Nils Kristian Gauslaa. These are two of the smallest newspaper chains in the country. At the time of the interviews, they were both privately owned regional companies that have since been incorporated within larger national chains. Nordsjø Media was incorporated within the foundation-owned Amedia in February 2019, while Agderposten Media merged with the publicly traded Polaris Media (holding 51% of the company) on 1 January 2020, incorporating its six

local titles into a new company, Polaris Media Agder. In Sweden, we interviewed CEO of Hall Media, Mats Tidstrand. Hall Media is owned by the Hamrén foundation and has 17 local newspapers published in the regions of Småland and Västergötland.

In-depth semi-structured interviews are particularly suited to gain access to stakeholders' opinions, perspectives, and understandings (Kvale & Brinkmann, 2015). The value of analysing perceptions is that transitions in the newspaper industries are contextual, and as such, may mean different things to different people depending on their circumstances. As strategies are formed on the basis of institutional and organisational values and norms (Boholm, 2003), perceptions matter, at least to the extent that CEOs are in a position to affect decision-making within transition scenarios.

The interviews were conducted in person, primarily onsite at company headquarters, during 2019 and lasted between 1–1.5 hours. Particularly when the sample is small, the depth of the interview can make up for breadth (Rakow, 2011). The interview guide consisted of nine questions focusing on the situation for local newspaper chains in the current media landscape, long- and short-term risks, unknowns about the future, decision-making within uncertain landscapes, and the relationship between the business and editorial sides. Interviews were recorded, transcribed, and translated before being analysed, following Braun and Clarke's (2006) thematic analysis procedure. Thematic analysis was chosen because "issues" constitute developments that affect the ability of companies to reach their goals, perceived to have an impact on the organisation (Ekberg, 2020). Thematic analysis is thus driven by the research question, chosen for the analytical flexibility it provides and the straightforwardness of the approach, suited to our sample, which was limited to the extent that no software was needed. Coding was therefore done by hand. First, each interview was transcribed by a research assistant. Both authors checked the transcripts according to the recordings. Then, the authors independently coded each document (one per interview), colour-coding issues and themes before transferring findings to a separate document for further analysis, noting context in the process. We then moved corresponding statements into sections, noting patterns between issues and themes. Finally, as three main themes emerged, they were labelled as technological transformations, digital advertising markets, and corporate enrolment. Specific issues were compiled separately, to allow for an overview of differences as well as similarities.

## Results

The analysis reveals that the CEOs are primarily concerned with how local news organisations are able to keep up with technological developments and how they can sustain their value to advertisers and audiences. Nils Kristian Gauslaa, CEO of Agderposten Medier, ties this concern directly to the introduction of programmatic and analytic technologies, identifying 2014 as the year when the digital shift entered in full force. Then, "we really had to gear up to keep up". Before this shift, off-the-shelf software was enough to manage digital publication. Once you need custom-made solutions for everything – publication, production, subscription, payment, and login – costs rise. The solutions discussed by the CEOs are thus largely associated with the scale needed to sustain operations in times of declining income; where incorporating with larger enterprises emerges as a particular solution. Moreover, while the non-substitutability of

local news is emphasised as a competitive advantage, their non-substitutability for local advertising has all but disappeared. To discuss these features, we structure the analysis according to the two-sided market model and the question of non-substitutability on either side of the audience and advertising markets.

### *Non-substitutability in the two-sided market model*

Newspapers are becoming increasingly reliant on revenue from the audience side of the market (Newman et al., 2020). Over the past five–ten years, the income balance between subscriptions and advertising has shifted from a majority reliance on advertising to majority subscription income. Facebook and Google have taken half of advertising income in many markets (e.g., Medietilsynet, 2020), causing substantial losses in news industries overall. For our informants, the reader market is thus about two things: subscription revenue and loyalty. Mats Tidstrand, CEO of Hall Media, says they have “known for a long time that [advertising] will fail, and that reader revenue will become the main income for our business. But it’s moving faster than we thought”. Pace is a challenge because digital income uptake is slow for local newspapers, while the costs of development is high – and rising. Ivar Rusdal, CEO of Nordsjø Media, expresses this as follows:

Today the big challenge is the extent to which you have to come up with something new all the time. And when you want to come up with something new to attract readers and make them dependent, or faithful, or whatever word you want to use, the question is what does it cost?

Hence, efforts to retain value on both sides of the market rely heavily on technology investments. As advertising revenue continues to decline while technology costs rise, news organisations look to audience markets to offset losses. Higher income can be attained through increasing the price of subscription. This can also have a positive effect, as Tidstrand emphasises, in the form of nudging users onto the digital platform. However, there is also inherent risk in moving too fast. Transforming the product to digital risks losing older, print-friendly subscribers. De-investment in the printed paper risks decreasing the value of the product for the customer. Moreover, future willingness to pay among the younger generations is still uncertain (Moe & Bjørgan, 2019). Adjusting to lower subscription uptake means these companies must consider the scale of their operations. The question here is what kind of scale and scope is right for each company in their particular situation. Tidstrand expressed his opinion on having to adjust to less advertising revenue:

We have to become smaller, a bit sharper. [...] We need to have reader revenue as our base when we consider the size of the company. To answer your question, the solution is to adjust to a business that isn’t as reliant on advertising.

For Tidstrand, as well as others, this means making hard decisions about things like distribution reach and publication frequency. Scaling back on postal delivery and the number of editions per week reduces unit cost, but it also threatens to compromise the local community and information function of journalism in small, remote, and rural areas. As Jesper Rosener, CEO of Jysk Fynske Medier, remarks, size is also important to maintain credibility. More than anything, smaller newspapers are looking for ways to consolidate operations. Collaboration is becoming increasingly common between these



companies. Customisation is expensive, and it is better to share the burden of paying for all these services.

The non-substitutability of local news enters the discussion in full force when the competition from Google and Facebook is addressed. Google and Facebook are serious substitutes on the advertising side of the market, but CEO of Agderposten Medier, Nils Kristian Gauslaa, also emphasises the following:

We have something they don't have: unique local content. We're alone on that. And that's our gold really. So, we look at the future with optimism, but we have to manage the transition from the print-based economy, over-financed by advertising revenue, to an economy that relies more on digital distribution that is hopefully much cheaper, where we'll lose much of the advertising revenue.

There is thus a sense that there should be some value to the context of local journalism for advertisers. As one informant expresses it, local media markets are both ancient and stable, and the brands are strong. But it is unclear how to leverage that brand power. Here, Stig Ørskov, CEO of JP/Politikens Hus, points out that the loss of local advertising also means local newspapers are losing important content. They are losing an essential information function of connecting people with local businesses:

Aside from advertising income I think that advertising content has been hugely important for local and regional newspapers. Because the reason why you have local and regional newspapers isn't only a need for information about politics and culture, it's also been to find out about good offers in various shops. [...] Retail used to contact their local paper for advertising and to get a story in the paper about new stores opening in town. Not anymore.

The question of non-substitutability is thus related to both sides of the market. But for local newspapers, the loss of non-substitutability on the advertising side is partly self-inflicted, as Tidstrand admits:

Our advertising skills have been tied to the printed product. We should have been more proactive in moving to digital skills. [...] I wish we had more foresight in that area. We've hugged the printed product and held it so damn tight that we've lost ground on the digital. Because while we protected print, the digital competitors took hold of our business. And it's not just Google and Facebook, we also see local advertising agencies swooping in on our local customers.

As local newspapers lose their unique function towards local retail, their advertising services need to scale up if they are to provide income. Partnership and corporatisation – becoming part of the chain that retail seeks for its programmatic advertising messages – is one way to do that. This is a familiar story, but one that also signals that non-substitutability is about more than unique, local content.

## Discussion

Contrary to what Chyi and Tenenboim (2018) propose for the local American markets, remaining with print is not an option for these local news ventures – not as long as advertisers prefer their digital substitutes. The two-sided market model is premised on good performance on both sides of the market; when one side fails, it affects the

other. A shift toward subscription income (Newman et al., 2020) is testament to the extent to which this model is challenged. Local audiences may trust and value their non-substitutable local news brand (Newman et al., 2019). However, advertisers have ample choice in platforms for reaching consumers in local areas. The assumption that local newspapers are non-substitutable is based on the absence of competition. Once competition is introduced on the advertising side, market control can only be gained through ownership consolidation.

As Jenkins and Nielsen (2018) assert, the digital transition of local news is still in its early stages. The suggestion seems to be that this “digital backwardness” (Ali et al., 2019) threatens to crumble local journalism’s business model further unless local news media embark on digital strategies that fully embrace transitional features such as digital first, diversification of business models, cost reduction, and audience engagement (Jenkins & Nielsen, 2018). But the cost of this ecosystem adaptation (Anderson et al., 2015) is a steep one. Local newspapers in Scandinavia were generally slow in moving to the digital platform. Not only did users value the print product, press support (e.g., in Norway) was also tied to the print edition, slowing down digital conversion (Sjøvaag & Krumsvik, 2018). Many local newspapers therefore experience having to move directly into the second phase of digitalisation before having completed the first one.

The first wave of digitalisation was about clicks. For local newspapers, this meant they needed to gain traffic in the attention economy. Because they could not compete with large players on the upper layers of the umbrella model, there was no point in being online. Advertisers required more volume than local papers could offer. However, local news industries still had monopoly on local ads. Local papers could offer unique, non-substitutable information that attracted a unique, non-substitutable demographic, that in turn could be sold to advertisers. Entering the second phase, programmatic advertising means local retail can shift their ad distribution to cheaper platforms, moving from newspapers to Google and Facebook (Ohlsson & Facht, 2017). The audience – as journalism’s main product – can now be targeted more precisely, with documented effect. Hence, local newspapers have not only lost a unique, non-substitutable product (the audience), they have also lost their connection with local retail, cultivated through personal relationships over many years.

The mechanisms of the advertising market is arguably what helped create umbrella model markets. Because of price differentiation in competition markets, the circulation spiral effect (Rosse, 1980) enabled leading newspapers to grow, causing smaller papers to shift down the layers where they could cater to advertisers with less money to spend. As larger papers became too costly for small local retailers, a market emerged for papers on the lower levels. This is how network effects (Armstrong, 2006; Rochet & Tirole, 2006) work in umbrella model markets. The price a newspaper can command from the advertising market is dependent on the size of the audience on the other side of the market. When one side is lost, the network effect that sustains the model is also lost, causing the model itself to crumble.

Here, our informants are right about one thing: they need to increase the value of their local papers as good environments for advertising. The non-substitutability of local news could provide this, but more likely, this can rather be recaptured by providing a substitute to Google and Facebook – as trusted editorial platforms through ownership consolidation. The Norwegian companies included in this study – Nordsjø Media and

Agderposten Medier – both consolidated with larger chains to attain the network effects these companies can offer in audience and advertising markets. This especially refers to their skills in porting users to the digital platforms, their sophisticated algorithms feeding into editorial product development, and the audience metrics that cater to advertising agencies' need for data. While the ecosystem adaptation (Anderson et al., 2015) these local newspaper chains engage in is motivated by a desire to save local journalism, the digital transformation that faces these companies is too costly, sophisticated, and fast-moving to complete alone. To that end, it is clear that, as Jenkins and Nielsen (2018) have remarked, the digital transition is not over for the local news industries.

## Conclusions

In this article, we have discussed the main challenges facing local newspapers in Scandinavia in the digital transition to an AI-driven two-sided market model. Based on interviews with five CEOs of Scandinavian newspaper chains, three realities emerge in particular, relating in large part to the loss of advertising income, caused by the transition to programmatic advertising and audience metrics, to which corporate enrolment emerges as one solution to attain the scale needed in this ecosystem. As the non-substitutability of local news is lost on the advertising side, this disruption effectively removes local news industries' network effect in the two-sided market model. The umbrella market model is assumed on the absence of competition. Hence, the loss of non-substitutability in local news markets indicates that the model needs revision, possibly even dismissal. The implications of this insight should affect journalism theory, media policy analyses, and industry strategies alike. For one thing, theories about journalism's business model should no longer presume that the umbrella model still holds for assumptions about non-substitutability and network effects in the local news industries. Second, policy processes across Scandinavia should acknowledge the effect of this transition in market analyses used in official reports. And finally, local news industries should consider how to recapture the network effect once provided by this non-substitutability, building strategies that can leverage the trusted brand power of local journalism in the region.

### *Limitations and suggestions for further research*

There are inherent weaknesses with this analysis, the first being the limited number of informants. While the five CEOs interviewed here represent a significant share of Scandinavian news corporations – and they represent dominant ownership forms in the region – their perspectives are by no means universal. For one thing, the study is limited in time, and with open-ended questions, informants are largely focused on current problems relating to their own businesses. Moreover, informants should be considered strategic in their communication with us, the interviewers. The study is also limited in scope, being restricted to Denmark, Norway, and Sweden. The findings must therefore be seen in light of its Scandinavian focus, with its particular media systems characteristics that are not necessarily fully comparable with other markets. A further limitation in that respect is the limit to which the three countries and their local media systems are comparable. There are regional and local differences within the three countries, cross-border ownership, and variations in concentration patterns that warrant further research. To that end, future

studies should expand the pool of CEOs to include more perspectives from other companies, countries, and market situations, and should also consider expanding the pool of interviewees to include marketing managers and editors within the same organisations, to provide deeper insight into the problems facing both sides of the market. Further research should also interrogate the validity of the umbrella model across different markets and layers, producing new insight into the business model of local news.

## Funding

This research was supported by Anne-Marie och Gustav Anders stiftelse för mediaforskning (grant number 10626).

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