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Consumers' willingness to share personal data: implications for newspapers' business models

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Abstract

As people's willingness to pay for digital news remains low, this paper investigates whether people would be willing to share personal data as a new currency for accessing news. Increasingly, news organisations collect personal data and track cross-media consumption to build detailed knowledge about and (re)connect with digital news consumers. This paper presents the results of an industry-driven big data project that allows news organisations to engage with their audience more deeply by suggesting personalised content recommendations, serving targeted advertising and/or improving the user experience. It presents the concept of the datawall, where the user pays with their data, and delivers new insights into the challenges facing data-driven business models.

Key words:

Big data, business model innovation, datawall, single sign-in, newspapers, consumer acceptance, persona data, privacy

Big data represents one of the biggest opportunities in media and is expected to become one of the cornerstones of media organisations' future business models (Stone, 2014). Utilising big data analytics, media organisations can engage with their audience more deeply by suggesting personalised content recommendations. The aim of these recommendations is often twofold: provide targeted advertising and improve the news consumers' user experience. The possibility of user-targeted services is of particular interest to news organisations because technology is undermining business models that have been successful for decades (Picard, 2010). As consumers view news as having relatively low value, they are unwilling to pay for access to digital content. As a result, news organisations are finding it more difficult to create news and capture value. Furthermore, audiences are 'inherently cross-media' users who increasingly utilise alternative information sources, such as social media and blogs (Schrøder, 2011). This evolution requires news organisations to follow their readers across different

platforms, measure cross-media news consumption, build customer relationships and provide personalised offerings based on extensive profiling of consumer data. As news organisations often have no detailed information about the consumption patterns and identity of their consumers, data collection may help to improve the user experience and reconnect with digital news consumers. In this context, operational excellence in data analytics, with the aim of securing a profound, real-time understanding of media consumers, is no longer a luxury but a core competency for media organisations if they wish to win back competitive advantage in the digital economy.

News organisations are finding it difficult to monetise digital news services, and they are struggling with implementing new business models. Many studies have looked at the introduction of paywalls and readers' willingness to pay for news content. Some of these found that people's willingness to pay was rather low and that a business model built on digital subscriptions was not sustainable (Chyi, 2012; Kammer et al., 2015). Neither digital-only subscriptions, which represent roughly 10% of the total circulation/publication revenues of news companies, nor metered paywalls seem to be sustainable models for increasing revenue levels (Myllylahti, 2014). In contrast to hard paywalls, softer paywalls provide free access to news content after readers have registered and agreed to share personal data with the newspaper's website (Dekavalla, 2015). As consumers' willingness to pay for digital news is low, personal data is considered the main currency of the digital economy. Large data-driven companies, such as Facebook, Twitter and Google, show how data drive the monetisation of the digital space: Their platforms track and sell consumer data, and the value of the companies increase with every like, share, search or post. Instead of charging consumers, news organisations could start requiring readers to share personal data and pass a 'datawall', an analogy with paywalls, to secure access to a selection of (free) personalised news. The datawall would enable media organisations to collect personal data and track online behaviour across online platforms and services. As the willingness to pay for digital news remains low, and advertising income has declined because of growing advertising avoidance by users, newspapers could implement datawalls to extract value from personalised offerings and benefit from the opportunities of big data analytics.

However, the success of the datawall ultimately rests on consumers' willingness to share personal information, and, hence, pay with personal data. Issues of data protection and privacy, for example, may undermine consumer acceptance of datawalls and hinder the implementation of big data strategies. The goal of this paper is to provide a better understanding of consumer acceptance of datawalls and people's willingness to share personal data with news organisations. It does so by presenting the results of the big data project 'Media ID', supported by all the main newspaper publishers in Flanders (home to the Dutch-speaking population of Belgium), that aims to regain control of the media-customer relationship in today's cross-media society. Media ID is a federated identity

management tool, which was developed by news organisations to transform anonymous readers into registered readers. The aim of Media ID is to obtain better insights into (cross-)media consumption and target readers with personalised offerings. Media ID includes a 'single sign-in' identification tool. With this tool, users can register, free of charge, on any Flemish newspaper website and use a unique identification for the online and mobile services of over 37 media brands. Although this paper focuses on the case of Media ID, conclusions can be drawn for similar strategies employed by news organisations in other countries.

The paper is structured as follows. First, a literature review presents the theoretical foundations of the datawall as a new business model for digital news. It brings together recent insights on business model innovations in the newspaper industry, elaborates on knowledge management that sees data as a valuable company resource and discusses the strategy of customer intimacy that focuses on creating intimate customer relationships via, among others, value-added, personalised offerings. Second, the research design is presented, with a particular emphasis on the Product Specific Adoption Potential (PSAP) segmentation technique used to structure the data analysis. Third, the results of the empirical research, which consisted of an online survey across a representative sample of 981 Flemish Internet users, are presented and discussed. In the final section, the limitations of the study and future work are discussed.

Literature review

Business model innovation in the newspaper industry

In recent years, much scholarly attention has been paid to the dynamics of news media organisations, especially the challenges they face in managing the transition to trustworthy providers of digital news, securing revenues for journalism and implementing effective distribution strategies (e.g., Doyle, 2015; Franklin, 2012; Küng, 2015; Picard, 2008). An important strand of the literature has focused on new revenue models for digital news media and how they can secure funding for high-quality journalism in the digital era. Particular attention has been paid to revenue models, including paywalls (e.g. Goyanes, 2015; Goyanes & Dürrenberg, 2014; Myllylahti, 2014; Yang et al., 2015), micropayments (Graybeal & Hayes, 2011; Sindik & Graybeal, 2011), crowdfunding (Carvajal et al., 2012) and online advertising (Evans, 2009). Most of the literature has focused on the importance of new revenue models and (multiplatform) distribution strategies the newspaper industry rather than on the process of business model innovation, which has attracted research attention only recently. News organisations have moved online and integrated social media features into their value proposition, but they have failed to restructure the business model and develop new capabilities needed to be able to reap the full benefits of the interactions with their consumers (Wikström &

Ellonen, 2012). With regard to business models, it is important to conclude that, to be successful, the collection of personal data and implementation of datawalls must be accompanied by a process of total business renewal and organisational transformation.

A previous study found that although most news media organisations continuously introduced innovations in particular elements of their business models (e.g. mobile apps as new distribution channel), their various innovation approaches often remained uncoordinated (Günzel and Holm, 2013). That study concluded that news media organisations disregarded the multifaceted nature of business models, concentrating on changing particular elements of the business model instead of the entire business model logic. Focusing on the provision of personalised offerings demands extra investment in supporting infrastructure and data-analytical competencies. However, an earlier study asserted that newspapers implemented relatively unstructured strategies to create digital revenue streams (Casero-Ripollés & Izquierdo-Castillo, 2013). The same study claimed that newspaper organisations developed new business models in response to competitors' strategies and that they were thus conservative and defensive in nature. In contrast, business model innovation should be driven by the search to expand business horizons as part of a digital transformation process. As part of the innovation process, not only technological opportunities but also changing customer requirements regarding the value of news should be the main instigators of business model change. As business model innovation is driven by evolving customer needs, a profound insight into users' consumption habits, preferences and demographics is needed when experimenting with finding value-creating business opportunities (Uliyanova et al., 2013).

Knowledge management and customer intimacy

In the strategic management literature, the knowledge-based view of the firm (Grant, 1996; Teece, 1998) holds that organisations can create value by converting data (observations) and information (data in context) into knowledge. Therefore, knowledge management becomes of primary importance for media organisations. Knowledge management, which refers to the process of capturing, developing, sharing and effectively using organisational knowledge, allows organisations to be faster, more efficient or more innovative than their competitors (Greiner et al., 2007). The rise of big data has made knowledge management increasingly common in business organisations, and it is an essential dimension in the learning ability of these organisations. Knowledge management competencies were reported to be positively associated with organisational performance, and a fit between business and knowledge management strategies was reported to lead to improved financial performance (Zack et al., 2009). An earlier analysis suggested that media organisations with analytics capabilities outperformed less data-driven competitors on many levels (Colombani et al., 2014). By tapping into

data insights and integrating multiple data flows into daily operations, media organisations can better understand customers and respond to their changing needs and requirements. Investing in big data may help news organisations to compete more effectively with online aggregators, which are far ahead as regards advanced technology and analytical expertise.

Customer intimacy, one of Treacy and Wiersema's (1993) value strategies, is based on a detailed understanding of individual customers in order to build a long-term personal relationship with the customer. By leveraging big data analytics, organisations may gain a better understanding of their customers, making them able to anticipate and fulfil stated and latent customer needs, so as to provide tailored solutions for individual customers. Using datawalls and retrieving user profiles, both personal data and cross-media tracking behaviour, news organisations may want to become intimate with the evolving needs of their readers and create more personalised offerings, such as recommended news articles, profiled subscription formulas, targeted advertising and personalised web store offerings. Hence, customer intimacy enables news organisations to build a loyalty-based relationship with their readers. This is of crucial importance because the business literature suggests that strategic control of the customer relationship is one of the keys to a successful business model (Ballon, 2007). Datawalls are built on the value strategy of customer intimacy: Newspapers can provide more personalised value propositions tailored to consumers' interests and reading behaviour. However, the introduction of business models based on customer intimacy as a competitive strategy may not appeal to consumers who are concerned about the impact of the collection of personal data and provision of hyper-personalised news services. Therefore, the successful implementation of datawalls as a new business model crucially depends on consumers' acceptance of sharing personal data with the news organisations.

Consumer acceptance and privacy concerns

As suggested previously, business model innovation rests on a profound insight into changing consumer needs and requirements in order to deliver the optimal value proposition (Uliyanova et al., 2013). To succeed in the market, consumer acceptance of new product/service strategies and business models is of utmost importance. Consumers that oppose the value proposition, revenue model or customer relationship type will abandon the product/service, thereby ultimately leading to business model failure. With regard to datawalls, the collection of personal data and tracking of (cross-)media consumption behaviour triggers major concerns about data protection and privacy. The desire to better serve consumers and build intimate relationships with them can have adverse consequences when companies fail to adopt a privacy-led approach to customer data collection. Following changes in Facebook's privacy policy and practices, which raised serious concerns about the collection and use

of personal information, data protection is high on the agenda of national and European policymakers and privacy authorities. Notwithstanding these concerns, the number of Facebook users has grown to over 1.5 billion because the social media platform has successfully transformed its massive database into personalised commercial offerings and content recommendations. This contradictory interplay between reason and action is referred to as the 'privacy paradox' (coined by Barnes, 2016): Although users are concerned about their privacy, they will freely give up personal information to access services (of which social networks are the most obvious example).

The take-home message from existing studies on personal information collection and privacy is that consumers are willing to share personal information, as long as the perceived benefits (personalised offerings) exceed the perceived costs (privacy). Hence, consumers make a trade-off between the value of personalisation and concern for privacy. Chellappa and Sin (2005) found that the perceived trustworthiness of the platform positively influenced people's willingness to share personal data. Consumers are more loyal to, and willing to share data with, brands they trust. As trust is considered a cornerstone in a long-term, intimate relationship between consumer and brand, news organisations need to invest in their reputation as trustworthy providers of high-quality news and information. Trust was reported to be greatest in the strongest, most visible media brands because they served as a well-known beacon that users could rely on in a fragmented digital (news) environment (Starkey, 2013). Long-standing news organizations were also reported to be the dominant and most trustworthy brands (Gans, 2010). Therefore, based on the literature, the introduction of a datawall as a news business model may likely be successful for news media organisations with a long legacy.

Another study suggested that people's willingness to share personal data was related to the extent to which they had control of their own data (The Boston Consulting Group, 2012). Consumers that were able to manage and protect their privacy were up to 52% more willing to share personal information than those who were not able to do so. Hence, news organisations need to consider user data controls and authorisation frameworks that allow consumers to adapt their data sharing to their individual preferences in a transparent, yet convenient way. Such controls and frameworks are particularly important for personally identifiable information, which people are less willing to share because personal data are often sold to third parties. Thus, the literature highlights the tremendous challenge faced by datawalls: providing value-added personalised services to authenticated users while maximising data protection and privacy.

The present research was conducted in the context of the industry-driven research project Media ID, which aims to help news organisations implement a datawall. The objective of the project is to develop a secure and easy-to-use personal login and payment tool that allows access to all websites,

apps and services of Flemish media brands. This paper focuses on the results of an analysis of user requirements and reports the results of a quantitative online questionnaire ($N = 981$). The results will provide a better understanding of consumer acceptance of single sign-in applications, in terms of the size, profiles and preferences of the different adopter segments.

Methodology

A survey of Internet users in Flanders aged 16 and older was conducted between October 29 and November 28, 2013. Quota sampling was used to collect representative sample data on 981 Internet users in the Flemish market. In contrast to simple random sampling, quota sampling yields a representative sample from a selection of individuals reproducing the distribution of specific variables identical to the distribution of the studied universe. Age, gender and economic status were selected as the relevant and interlocked variables to the object of our study. The quota sample was selected from census studies and official government information on the Flemish Internet population. The iMinds-iLab.o panel, which consists of over 21,000 dedicated respondents, collected the data. Given the technology-minded profile of the panel, technology bias, in addition to self-selection bias, cannot be avoided.

To avoid overestimating the potential of the Media ID tool, the PSAP scale was applied to obtain a reliable segmentation forecast in terms of the size and profiles of future adopter and non-adopter segments of the Media ID service. PSAP is an intention-based survey method, where the respondents are allocated to adopter segments based on answers to three intention-based questions (for an overview of this classification algorithm, see De Marez & Verleye, 2004)). First, a general intention question (*To what extent are you interested in registering with Media ID?*) was asked. Second, the innovation was presented, and the users were asked to list their requirements for that innovation. Next, two respondent-specific questions gauged people's optimal (matched all the customer's requirements in terms of price, features and content etc.) and suboptimal offerings (e.g. costlier, less accessible services). In contrast to established innovation scales, which traditionally use general single-question scales to measure intention, PSAP includes three intention questions, which are tailored to individual user requirements, based on the previous answers of each survey respondent. As argued previously, predictions of purchase intentions based on more than a single intention question provided the most accurate estimations (Armstrong et al., 2000). Thus, the addition of the two respondent-specific questions in PSAP can be expected to increase the accuracy of the scale. However, PSAP cannot correct for self-selection and technology-biases that are typical of (online) panel surveys.

The PSAP method has been applied to a wide range of media innovations and technologies, including digital TV, mobile TV, mobile Internet and smart home systems (De Marez et al. 2011), and

it very useful in the context of the research objective. The PSAP method is essentially a segmentation technique, which relies heavily on the diffusion of innovation theory (Rogers, 2003). According to this theory, the introduction of a new innovation always follows a bell-shaped distribution pattern, and its adopters can be categorised as innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%) and laggards (16%). Diffusion theory assumes typical demographic and psychographic profiles for each adopter segment. For example, the innovators and early adopters are typically male, young and highly educated, whereas the other segments are typically older and lower educated. Innovators and early adopters are assumed to have a higher perception of relative advantage and a lower complexity perception than the other segments. Therefore, they adapt more readily to new technology. However, innovators and early adopters differ in why they adopt new technology: Innovators are more adventurous and often adopt technology simply because it is new, whereas early adopters are more concerned about exploiting the benefits of the technology. In contrast to diffusion theory, which assumes that the size and profile of these adopter segments are fixed for every technology, the PSAP method assumes that the segment sizes and profiles differ for each innovative technology. Therefore, they are product specific.

In the sample of Internet users aged 16+ in Flanders, men ($n = 570$, 58.7%) were better represented than women ($n = 401$, 41.3%). People aged between 25 and 54 constituted 51.8% of the sample, and about 30% of the respondents were older than 55. The age of the respondents ranged from 16 (minimum age to complete the survey) to 90 ($\bar{x} = 44.2$, $m = 45$, $SD = 16.8$). The age variable was recoded into groups, with 16.4% ($n = 160$) in the 16–24 cohort, 16.7% ($n = 162$) in the 25–34 cohort; 16.6% ($n = 162$) in the 35–44 cohort, 18.5% ($n = 180$) in the 45–54 cohort, 15.8% in the 55–64 cohort ($n = 154$) and 15.9% ($n = 155$) in the +64 cohort. In the sample population, 13.4% were students, and 29.2% were unemployed or retired. In terms of household status, about 38% of respondents in the sample population had children, and they were either single ($n = 35$, 3.7%) or married/living together ($n = 327$, 34.2%). In the study, 18.6% ($n = 129$) of the population had no partner and no children, and 12.8% ($n = 123$) lived with a parent. As the sample data has been checked with official government information, it can be considered representative on the 16+ Internet population in Flanders.

Results

Willingness to share personal data with news organisations

By applying the PSAP segmentation forecast method to the stated intentions of 981 respondents, a consistent view on the size and profiles of the different potential Media ID adopter segments was obtained. The results revealed that a substantial number of the sample was eager to create a Media ID account, with 38.3% of the 16+ population of Internet users in Flanders very interested in registering

with media websites and very willing to create a Media ID account in the near future (within 2–3 years). Figure 1 indicates that the innovator (5.2%) and early adopter (33.1%) segments for Media ID use were relatively large. However, the service did not appeal to the entire population of Internet users, with the early majority (28%) segments relatively less enthusiastic about Media ID. If Media ID is to become part of the business model of the newspaper industry, attracting the early majority segments is crucial, as the late majority and laggard segments, with a combined market size of 33.6%, base their decisions about the service on the recommendations of the early majority group, including friends and family. This finding implies that news organisations need to consider the specific requirements of the more reluctant segments and not focus only on the early adopter segments when implementing single sign-in applications.

[INSERT FIGURE 1]

As shown in Figure 1, the innovator and early majority segments for Media ID (black bars) are considerably larger than the segment sizes (grey bars) obtained using Rogers' theoretical model. It can be concluded that Media ID would operate successfully in the market and that the benefits of having an account, especially the ease of signing into an account, appeal to a substantial proportion of the population in Flanders.

Flemish newspaper websites are among the most popular websites in Flanders: HLN.be attracts 884,141 unique visitors per day. On these news websites, users are used to the presence of a log-in option. In the present study, 49.8% of the respondents indicated that they had at least one account with a Flemish newspaper website. Table 1 shows the most important reasons why readers register with a newspaper's website: access to more news content, access to competitions and included in a regular subscription. The results of a chi-squared test revealed statistically significant differences between the various adopter categories. For the innovators, and to a lesser extent the early adopters, the incentives for signing up were access to digital news sections, entry to competitions and receiving newsletters. There were no significant differences between the other adopter segments in incentives to create a login, although the differences between the early and later adopter segments remained substantial.

[INSERT TABLE 1]

Emergence of the 'datawall' business model

In search of an advertising-driven business model for digital news, Flemish newspaper groups began providing most news free of charge many years ago. Although there has been little decline in circulation and the popularity of news websites has increased the reach of the brand, advertising

revenues have fallen dramatically, with leading publisher Mediahuis reporting a 19.1% drop in advertising income between 2008 and 2014. The 'free' strategy has attracted large audiences, without cannibalising newspaper sales. However, the increase in online traffic has only been marginally monetised via digital advertising.

Media ID, jointly owned by all major news media organisations, forms an important aspect of newspapers' new digital strategy and allows them to build a sustainable online business model. The ability to collect personal data and track (cross-)media behaviour can help news organisations to regain control of the customer relationship. As people are less willing to share personalised logins, in contrast to computer-generated passwords, more readers may be enticed to create an individual account using Media ID. The more readers login with their Media ID account, the more newspapers are able to follow cross-media news consumption patterns and the more data they collect about their readers. Based on these data, news organisations can then provide more personalised offerings and increase the user experience.

[INSERT TABLE 2]

Newspaper organisations have allowed the public to freely access large volumes of news in the past. The implementation of Media ID is likely to affect the way digital news sections will be presented and to what degree these sections will be freely accessible. Media ID provides an opportunity for publishers to experiment with soft paywalls (i.e. a metered system). With such a system, readers have to register their personal data using the Media ID application to ensure further (free) access to a selection of (personalised) digital news.

The survey respondents were presented with three possible scenarios for access to the digital news sections of newspapers in the future and asked to select the one they favoured: (1) no registration required, access to limited news sections; (2) free registration, access to larger news sections; and (3) paid registration, full access to all news sections and archives. Unsurprisingly perhaps, the respondents tended to prefer the scenario in which registration gave them free access to a fair amount of digital news (Table 2), providing further evidence of a strong demand for the Media ID application. This means the Media ID application will function as a datawall (personal data as currency) and can be seen as the first step towards a full-subscription model (paywall).

Personal data as the new currency

The datawall business model implies that all readers will need to share personal data with news organisations to obtain free access to a particular selection of digital news. In today's big data era, online platforms, such as Facebook and Google, in return for free services, utilise consumers personal

data to optimise personalised offerings. However, in reality, the services are not free because the data are sold to advertisers. As a result, personal data is considered a new currency in many digital business models. As users become more aware of the value of their data and possible threats to their privacy, the question arises as to what sort of personal data consumers will be willing/reluctant to share. Table 3 shows that the respondents had few problems with sharing basic demographic data, such as gender, name, date of birth, interests, job status and even e-mail addresses (although the address was generally not that of their primary e-mail account). They were more reluctant to share contact details and financial details, such as net income, and credit card details required to make one-click payments or impulse purchases in newspapers' online stores. The results of the survey also highlighted concerns about how media organisations would use personal data, with 77.7% of all respondents expressing concern about personally identifiable (name, address) data and 67.8% of all respondents expressing concern about non-identifiable (gender, age) data. Hence, news organisations need to provide full transparency about the possible use of personal data.

[INSERT TABLE 3]

To convince as many readers as possible to create a Media ID account, news media organisations have to create 'value for data', as opposed to value for money. When personal data are used as a new currency, consumers obviously want something in return. News organisations need to ensure that the perceived benefits of signing up are higher than the perceived costs. The survey respondents were presented with four perceived benefits of the Media ID service: (1) privacy (personal data will not be sold to third parties); (2) ease of use (single sign-in for multiple websites, always logged in); (3) transparency with regard to how personal data are deployed by media organisations; and (4) access to a wider selection of news. As shown in Figure 2, overall, the respondents valued privacy the most, and they appreciated the ease of use of a single sign-in service. The results of chi-squared tests revealed statistical differences between the various adopter segments. Innovators and early adopters were significantly less concerned about privacy ($N = 699, \chi^2 = 24,908, p = 0.015$) and data transparency ($N = 698, \chi^2 = 38,419, p = 0.00.000$) than the later adopter segments and placed more importance on ease of use ($N = 702, \chi^2 = 29,875, p = 0.003$) and access to more digital news ($N = 701, \chi^2 = 31,999, p = 0.001$) than did the other adopter groups. These findings have some practical implications: Newspapers have to emphasise (1) the ease of use and (2) additional access to digital content to encourage take-up of the service by innovators and earlier adopters. Once large numbers of innovators and early adopters are utilising the service, newspapers can shift the communication focus to the protection of privacy and data control, so as to convince later adopters to join.

[INSERT FIGURE 2]

Discussion and conclusion

The newspaper business is in turmoil state of flux, with digital technology and online gatekeepers eroding the established business model: revenue and circulation are in decline, and younger readers are turning to social networking sites to satisfy their appetite for news. News organisations are losing crucial consumer touch points and therefore the control of the customer relationship. Against the backdrop of increasing competition from online platforms, news organisations need to enrich the services they offer to their readers. Big data analytics can play a role in the provision of such services by providing detailed knowledge of their consumers and serving them in a more personalised, almost individual, manner. The media industry considers big data as the new gold and believes that it can tap into an attractive pool of value-enhancing business opportunities. However, to build intimate customer relationships, media organisations must start collecting personal data and tracking the (cross-)media behaviour of their readers. Therefore, the willingness of their users to share personal data is critical.

Based on the particular case of Media ID, a single sign-in application that aims to transform anonymous readers into registered readers, this paper investigated whether and to what extent consumers were willing to share personal data with news organisations. The results indicated that a substantial proportion of the research population was willing to share personal data with news organisations in order to access more news content, enter competitions and win prizes. This is an important finding because authentication is likely to become a fundamental component of newspapers' business models in the future. Instead of charging a fee to consumers, news organisations may start requiring consumers to share personal data and demand that they pass the datawall before accessing a selection of (personalised) news content. However, the collection of personal data poses enormous challenges with regard to data protection and privacy, and consumers may only agree to share personal data and to be tracked if the perceived benefits exceed the perceived costs.

The relevance of the present paper, both practically and theoretically, is that it considers the collection of personal data and tracking of (cross-)media consumption behaviour at the heart of the future of digital news provision. As the literature suggests that people's willingness to pay for digital news remains at low levels, personal data is likely to become the currency that makes the monetisation of digital content possible and that underpins digital business models. To convince consumers to entrust their personal data to media organisations, the latter will need provide value for 'data', an analogy with value for 'money', and a compelling user experience for authenticated users. In addition to paywalls, which will remain at the top of the digital business model pyramid, newspapers will need

to use datawalls to unlock access to value-added, personalised news services, so as to maximise the user experience.

The ideas that personal data will become the main digital currency and that transparent privacy policies will be a fundamental component of media providers' business models might not be new (see Libert & Pickard, 2015), but the implications for newspapers have hardly been addressed in the media management literature so far. We believe that the application of big data in media industries often remains vague, and that real-life cases help to illustrate the massive opportunities afforded by big data strategies, in this case for news organisations. It is important to go beyond the overly techno-optimist view described in business magazines and assess the critical role of the consumer in the collection of personal data. Much media management research has focused on traditional paywalls. This paper has introduced a new sort of paywall, the datawall (pay with personal data) and tried to deliver new insights in the challenges for data-driven business models. The successful implementation of datawalls may enhance user experiences and ultimately seduce readers to take a full (digital) subscription. Hence, big data strategies are instrumental in building digital business models.

However, much work is needed to determine the impact of big data in the development of new business models for media organisations. The results of the present paper limited only to a particular case (single sign-in) and industry (digital news). They are also overly descriptive and do not allow for an extensive evaluation of the datawall as a future business model. As the Media ID application will be effectively rolled out in 2016, future work can address its sustainability and extend research on consumer behaviour and requirements. The way in which the application is marketed in the future and the perceived benefits for authenticated users will ultimately dictate its success. Furthermore, future research could address how datawalls can entice consumers to consider a full subscription and spend money to buy access to premium versions. It is important to view all revenue models as part of a continuum, instead of considering them in isolation. With this in mind, newspapers will need to consider multiple business models before selecting the one that optimally responds to consumers' evolving tastes and requirements. Without doubt, big data analytics can provide a powerful tool in this value-creating process.

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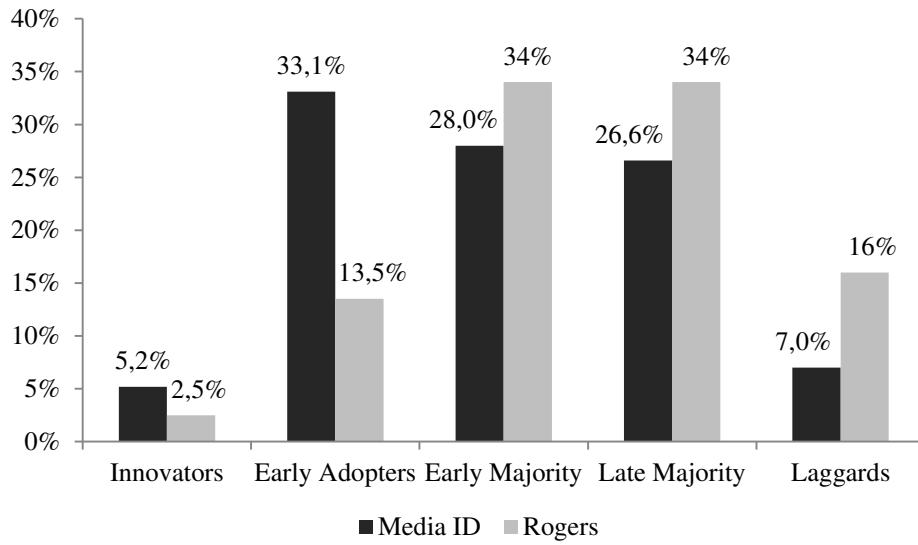


Figure 1. Adoption potential segmentation forecast (N = 775)

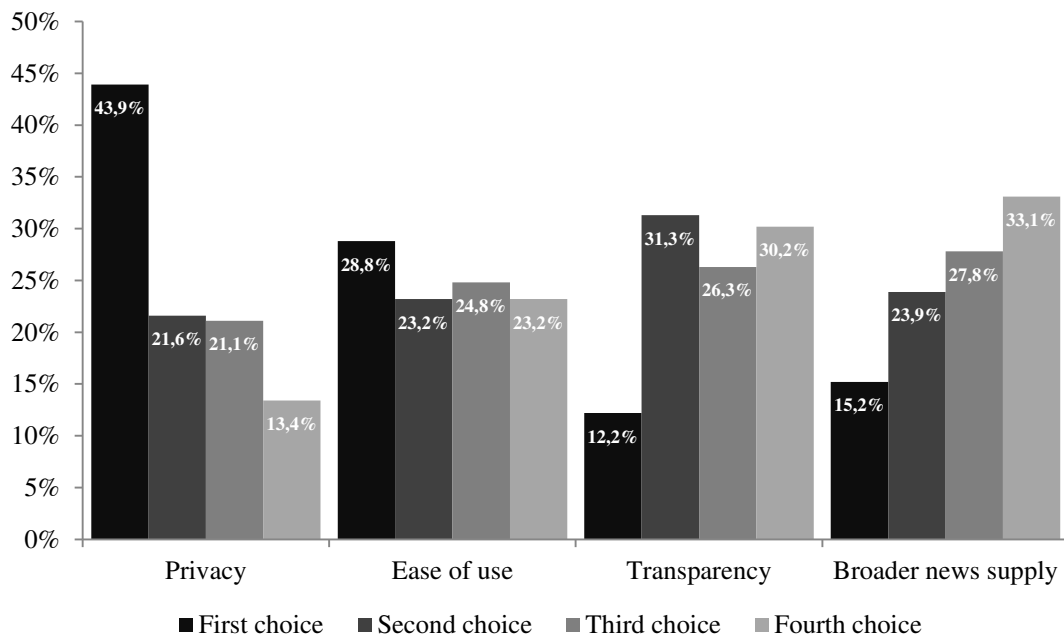


Figure 2. Perceived benefits of Media ID (N = 864)

Table 1. Reasons to create an account across Media ID adopter segments*

	I	EA	EM	LM	L	Total
Access to more digital news content	39%	35.4%	32.7%	20.9%	14.8%	29.5%
<i>N</i> = 775, $\chi^2 = 20,133$, <i>p</i> < 0.000						
Enter competitions, win prizes	45.4%	29.6%	29.5%	20.4%	14.5%	26.5%
<i>N</i> = 775, $\chi^2 = 17,074$, <i>p</i> = 0.002						
Included in subscription	25.1%	25.7%	21.7%	20.9%	7.4%	22%
<i>N</i> = 774, $\chi^2 = 9,117$, <i>p</i> = 0.058						
Access archival content	19.5%	23%	20.7%	14.6%	12.7%	19.2%
<i>N</i> = 776, $\chi^2 = 7,012$, <i>p</i> = 0.135						
Receive newsletters	31.7%	19.8%	18%	13.1%	3.7%	17%
<i>N</i> = 775, $\chi^2 = 16,85$, <i>p</i> = 0.002						
Comment on news articles	20%	12.8%	10.6%	7.8%	16.7%	11.5%
<i>N</i> = 774, $\chi^2 = 7,704$, <i>p</i> < 0.103						

* I = Innovators, EA = Early adopters, EM = Early majority, LM = Late majority, L = Laggards

Table 2. Consumer preference for a business model of digital news (*N* = 972)

	No registration, limited free access	Free registration, wider free access	Paid registration, full access
First choice	17%	76.4%	6.6%
Second choice	60.3%	17.4%	22.2%
Third choice	22.7%	6.2%	71.1%

Table 3. Types of personal data to share (*N* = 929)

	Will never share	Prefer not to share	No problem with sharing
Gender	6.2%	8.5%	85.3%
Name/surname	7.2%	20.4%	72.4%
E-mail address	6.1%	23.2%	70.6%
Date of birth	9.1%	23.4%	67.5%
Interests	9.2%	25.4%	65.3%
Job status	13.4%	29%	57.6%
Address	21%	50.1%	28.9%
Telephone number	28.4%	53.2%	18.4%
Name family members	45%	42.5%	14.5%
Net income	54.6%	38.2%	7.2%
Credit card details	55.9%	38.3%	5.8%