Gran, A.-B., Røssaak, E., & Kristensen, L.-B. K. (2019). Digital Infrastructure for Diversity—On Digital Bookshelf and Google Books. *The Journal of Arts Management, Law, and Society*, *49*(3), 171-187. doi:10.1080/10632921.2019.1581114

Digital Infrastructure for Diversity – on digital Bookshelf and Google Books

Anne-Britt Gran[a], Eivind Røssaak [b] and Linn-Birgit Kampen Kristensen [c]*

[a] *Department of Communication and Culture, BI Norwegian Business School, Oslo, Norway;* [b] *National Library of Norway, Oslo, Norway;* [c] *Department of Communication and Culture, BI Norwegian Business School.*

Linn-Birgit Kampen Kristensen, BI Norwegian Business School, NO-0442 Oslo, linn-birgit.k.kristensen@bi.no, +4746502375 *corresponding author

Anne-Britt Gran is professor of Culture and Arts Management, and director of the Centre for Creative Industries at BI Norwegian Business School. She has researched modern theatre history, postmodernism and post colonialism, cultural policy, cultural sponsorship, and digital cultural consumption and digitization. Professor Gran leads the 'Digitization and Diversity' research project.

Eivind Røssaak is Associate Professor at the Department of Research at the National Library of Norway. The most recent of his nine publications is an edited volume, *Memory in Motion: Archives,Technology and the Social* (AUP, 2017). Røssaak is one of the founding members of the 'Digitization and Diversity' research project.

Linn-Birgit Kampen Kristensen is a PhD candidate in media studies at BI Norwegian Business School. Kampen Kristensen is a part of the research team on the 'Digitization and Diversity' research project. This article is a part of her dissertation "Do They Want It or Not? The diffusion and communication of literature in Digital-Norway".

Funding details: This work was supported by the Research Council of Norway (project number 247602), The Programme on the Culture and Media Sector (KULMEDIA).

Digital Cultural Policy for Diversity – on digital Bookshelf and Google Books

Diversity is a core value of cultural policy, and the new global digital conditions for the creative industries mean new challenges for diversity at a national level. Internet has become a new infrastructure for services and platforms, and global actors as Google and Amazon are changing the play. This article is about the digitization of books, the collection of the National Library of Norway and cultural policy. It presents the results from two surveys on book and library consumption, qualitative interviews and document analysis, that capture five diversity dimensions. The results indicate the National Library's digital collection is contributing to diversity in terms of demography, content, purpose for usage, dissemination and techno-cultural aspects. For policy makers, libraries and researchers the study demonstrates a national digital service's contribution to expanded diversity.

Keywords: cultural policy, comparative digital cultural policy studies, digital infrastructure, diversity, national heritage, National Library of Norway,

Introduction

This study explores some of the effects of digitization in the book and library sectors in Norway, with special focus on the fate of diversity, a main objective in media and cultural policy in global times. The digital collection of the National Library of Norway is of particular interest in a global setting because of its comprehensiveness in cultural, legal and technical terms, and because it is an attempt by a small nation to stay alive while it faces a new global infrastructure, the Internet and its players, Google and Amazon among them. As such, this article is a contribution to "the promised land of comparative digital cultural policy studies", introduced by Roberge and Chantepie (2017, 295).

At the heart of the study is the National Library of Norway's (NLN) digitized book service *bokhylla.no* (henceforth "Bookshelf").[1] It contains the entire literary book heritage of Norway until 2001, and NLN became the first institution in the world to

[1] Today this service is integrated in the library's general search page: https://www.nb.no/search

digitize almost its entire national literary heritage. How was it made possible as a cultural policy project? How is it used today and by whom - compared to Google Books? We investigate how new public and private electronic services and book formats have transformed patterns of consumption and how they affect diversity in different ways.

To answer these questions, qualitative interviews with the actors establishing the Bookshelf and two web surveys were conducted. The surveys took place in the fall of 2016 and rely on a population survey of 1558 respondents, and a user survey of 966 Bookshelf respondents. In addition, document analysis is used to investigate cultural policies with regard to digitization and diversity in general and the Bookshelf in particular. The study has a typical exploratory research design both in terms of the surveys, statistical analyses and theoretical approaches.

Digital infrastructure and diversity – theoretical approaches

Faced with a new digital service like Bookshelf, we find it appropriate to approach the phenomenon interdisciplinary, relying on a variety of approaches from infrastructure studies, cultural policy studies, digital library studies, and studies of public and private partnership/innovation. Overall, we focus on the interconnections between digital infrastructure, cultural policy, and diversity. Digital culture has been in the periphery of cultural policy for years in European countries (Chantepie 2017), and linking cultural policy to *Internet as infrastructure* has not been widespread.

Public infrastructures are usually defined as structures, facilities, services and institutions essential for the economy and quality of life in a nation, region or city (Spacey 2017). Infrastructures make sure merchandize, people, information and values circulate, energy and resources are available, and garbage is taken care of. Within Critical Infrastructure Studies the effects of the curious "invisibility" of infrastructures on issues such as diversity and equal opportunity is highlighted (Mattern, 2014; Edwards et al., 2009). Infrastructures do not only take care of things; they also enable certain things to happen and shape society and its people into groups that reflect various habitual ways of living and thinking. The Internet is an infrastructure that glues all public infrastructures together, and consequently the flow, speed and shape of information in society is transformed and becomes literally networked.

Digitization implies a techno-cultural transformation of information and heritage material from the materiality of printed matters to the immateriality of bits and bytes (Røssaak 2010). This is the *sine qua non* of the Internet as infrastructure. With this, a new key cultural policy responsibility for the new millennium is securing the new digital infrastructure of networks, connections and clouds. Without the affordability of a digital infrastructure, a digital library would never realize its potential in terms of accessibility. As we will see in our study, as libraries become part of a digital infrastructure, this new infrastructure is also inevitably a global information infrastructure (Borgman 2000). This sudden and at times unexpected globalization – due to a new public infrastructure, the Internet – uprooted many of the commonalities of a national culture. The ecology of services and providers was suddenly interrupted. Now Norwegian digital providers and services coexist with international providers and services, such as Google Books, and the ecology is changed.

Infrastructures may lead to changes at several levels. As Shannon Mattern has argued, the library represents a specific spatial, technological, intellectual and social infrastructure in the education of citizens and people – also before the Internet. The ecology of these infrastructures is transformed to varying degrees as libraries go digital. As audience and user behavior changes, so will or should library services change as well (Mattern 2014).

A public management perspective on infrastructure, relevant for our purpose, is the one of *private public partnership* (PPP) or *public private innovation* (PPI). The public private topic of research came along with the New Public Management in many western countries in the 1970s, 1980s and 1990s, and today the research field is comprehensive and multidisciplinary, but somewhat fragmented (Rostgaard Evald, et al. 2014). The elements defining a public private partnership share are "a partnership between the public and private sectors; the public and private sectors work cooperatively towards shared or compatible objectives (e.g., providing infrastructure services); and it involves sharing of risks and responsibilities between the public and private sectors" (Kwak, Chih and Ibbs 2009, 52).

In our case, the public players are the Ministry of Culture (responsible for policy and financing) and The National Library (responsible for the funding, the book collection and human resources), and the private player is Kopinor (Reproduction

Rights Organization, responsible for collective agreements),[2] having members such as the Norwegian Publishers' Association (all important publishers are members) and five writer associations. At the core of this public private partnership is the extended collective license agreement between the National Library and Kopinor on the behalf of all authors.

Kwak, Chih and Ibbs (2009) identify five key elements for developing a sustainable and successful infrastructure with PPP, mainly infrastructure in the traditional sense, such as roads and railways, but we also find this relevant for Bookshelf as well. First of all, one needs to define success factors and barriers for the project. The government plays a crucial role with regard to credibility and competence for infrastructure development. The establishment of a regulatory framework that is well-defined, but not overregulated, is essential (Pongsiri 2002). Furthermore, the government should be involved actively in the life-cycle of the project and provide stimulus for private players to stick to the development. The third key element is the concessionaires' role. This embraces financial stability, technical competence and outstanding management of the process (Zhang 2004). All aspects of the greater good for society must be taken into consideration (Linder 1999). The fourth key lesson is that all risk involved in the project should be identified, hereunder political, financial, construction, operational and maintenance risks (Nisar 2007; Grimsey and Lewis 2002). The financial risk for PPP is higher than in other partnerships due to the fact that financial revenue on investment may be zero or small, but the revenue in terms of public access is the largest in these projects. The fifth key finding concerns the necessity of financial incentives to make the PPP successful in the future.

Based on the theories above, we view Bookshelf as a digital infrastructure for reading, education, research and entertainment. We investigate, in particular, the impact of this new infrastructure on diversity. We have identified five dimensions of diversity

[2] "Kopinor is empowered by its member organizations to negotiate and conclude collective agreements on photocopying and digital uses of copyright protected works in all areas of society." http://www.kopinor.no/en/about-kopinor/member-organisations

which are adopted as an analytical tool in this and other articles.[3] First, there is *a cultural identity dimension* – which concerns national, local, multicultural and demographic conditions for production, consumption and participation. The second dimension is about *user and consumer patterns and segments* – and it combines the cultural identity dimension, i.e., *who* they are (class, gender, nationality, age), with a more precise focus on *how* they use digital services. The third dimension is called the *aesthetic-expression* – a dimension closely related to freedom of expression – and addresses in particular the plurality of contents and forms in both the culture and media sectors. The fourth dimension is about *distribution and dissemination channels*, and it concerns diversity of both digital and traditional channels, both digital services such as the Bookshelf and Google Books, and physical environments, such as libraries and book stores. And finally, we have *the techno-cultural dimension* which concerns the diversity of formats, programs and metadata, etc.

Cultural policy and digitization

How does awareness of the transformation of public infrastructures and its consequences for cultural politics emerge? Here follows a brief review of the most important White Papers regarding digitization in Norway (Gran 2014). The purpose of this review is to pinpoint the *major objectives* that are at play in political discourse concerning digitization.

In the latest White Paper on cultural policy in Norway, no. 48 (2002-2003), *Cultural Policy to 2014*, digitization didn't set the agenda for cultural policy at all – more than ten years after the arrival of the Internet. The LAM sector (Libraries, Archives, and Museums), specifically, was in the forefront of cultural policy in generalbecause one saw the clear advantages of digital archiving, administration and communication. *White Paper no. 22 (1999-2000) Sources of knowledge and experience* - often referred to as the LAM paper. *Access for all* was a central objective for LAM activities, as it was for cultural policy in general.

---

[3] These dimensions where developed by the project initiators, Anne-Britt Gran and Eivind Røssaak at an early stage (www.bi.no/dnd) and are used in various ways in our publications. See among others (Gran, Vestberg, et al. 2018).

Another relevant public document, though more indirect, is White Paper no. 17 *(2006-2007) An information society for all,* from the Ministry of Government Administration and Reform. This paper is what would later be referred to as the ICT paper in Norway, and it has to do mainly with online access, grants for broadband and digital competence in the population. The development of a digital infrastructure is underscored.

The access discourse requires that a division is made between 1) digital access understood as *technological access* to the Internet and 2) digital access understood as *content-related access* to collections of books, art and cultural and historical objects. It is only the content-related access that is the domain of the Ministry of Culture. Both areas of access have to do with an inclusive democracy and sense of fairness – that everyone should be able to take part in the digital community.

In White Paper 24 (2008-2009) *National strategy for digital preservation and communication of our cultural heritage,* the access discourse is reopened, and the ICT document's concept of a digital community is renewed and re-clarified as a "digital art community". The major cultural political objective is still to advance simple and satisfying access to cultural heritage material. Nonetheless, it is not just a matter of access, but also of conservation and communication. Scope is also given for the fact that the different needs of different users (experts versus everyone else) demand more flexible communication, and that the new online sharing culture is changing the public's expectations regarding online platforms.

As concerns access, conservation and communication: these are not goals of themselves. They must be seen in the context of freedom of expression, democracy and identity; and, as such, digitization of the LAM area impacts a much greater societal sphere.

In White Paper no.23 (2008-2009) *The library-knowledge community, meeting place and cultural arena in a digital era* the library is now to be regarded as a knowledge community and it is part of a digital era. More than in any other Paper, the digitization perspective is emphasized here. We see an increasing consciousness of the Internet's interactive potential and user habits. "The development of new technologies, user-produced content and active participation also pose challenges for what the traditional library offers" (Norwegian Ministry of Culture and Church Affairs 2009a, 29). A more modest optimism on behalf of digital access *as such* is also to be noted in

this Paper: “The material is not accessible for use, just because it exists in a digital form at one or another webpage […] Digital content is virtually useless for the user without proper tools and services to help him/her find, filter and make use of it” (Norwegian Ministry of Culture and Church Affairs 2009a, 84). In this quote we see a shift in focus regarding digitization, from accessibility per se to focus on the users and their exploitation of digital services and the affordability of them – a specific techno-cultural dimension of digital information.

As national libraries have entered the era of digitization, a new and intensified focus on access has become apparent. Originally, the objective of a national library was preservation and conservation of the printed heritage of a nation, in addition to serving as a special library for research purposes. With digitization it has become more feasible for a national library to also play a key role with regard to promoting access to this heritage (Huang 2018).

The story of Bookshelf

Bookshelf was first envisioned by the National Library of Norway in 2004 and was completed in 2018. Its history is complex and went through four stages: the inspiration phase (international developments), the pilot phase, the first digital bookshelf and the second and final digital bookshelf.[4]

Stage 1; International inspiration - 2004

A crucial international event which pushed the dreams of a comprehensive digital library to another level was Google’s launch of a global digital library in 2004. In December of that year, it was presented as the Google Books Library Project, and it involved the scanning of several million books from library partners in the Anglo-American world. The first reactions came from France. Jean-Noel Jeanneney, director of the French National Library (BNF), published in *Le Monde* in January of 2005 an

[4] Based on interviews with some of the key historical players and developers connected to the Bookshelf: Vigidis Moe Skarstein (former National Librarian), Roger Jøsevold (Assistant Director, National Library of Norway), Trond Andreassen (former head of NFFO), Trond Haugen (research librarian), Øivind Berg (research librarian) and Svein Arne Brygfjeld (Senior Advisor at the National Library of Norway).

article entitled "When Google defies Europe". In this manifesto, which later gave birth to a book, he warns the European authorities against the propagation of the Anglo-Saxon interpretation of history represented by the American giant Google. This inspired Jacques Chirac, the President of France, to launch a European initiative. The canon of European literature should not be available online in English only. Together with five other European heads of state (Spain, Germany, Poland and Hungary), Chirac appealed in a letter to the European Commission's President to create a virtual European library, to make Europe's cultural heritage accessible for all. This became Europeana, the contours of which were outlined in the autumn of 2005 in the Commission's communication "i2010: Digital Library" (Navarrete 2014).

In 2004, the head of the National Library of Norway, Vigdis Moe Skarstein, and her assistant, Roger Jøsevold, developed a strategic document, and in 2006, the library launched its plan to digitize all their collections. The Google Books' launch precipitated more players to participate in the effort, such as the Norwegian Writers and Translators Union and LINO, a new organization dealing only with digital rights. Their support explicitly referred to Google's project and the EU's Commission's vision, "Digitize once, distribute widely," and argued for setting up a framework for a literary digital database within the National Library.

Stage 2; The pilot project - 2007

The pilot was called "The National Library's pilot project on the North". A crucial aspect of the Norwegian model as a contrast to Google's model – ("Better to be sorry than ask for permission") – is that the National Library and its partners insisted, at every stage of the process, to have all agreements concerning the use of copyrighted material in place *before* making material available online. It was actually one of the key tasks for the library to build trust between the library and its partners, the copyrights holders, through this initial small scale pilot. The copyright agreements where dealt with on the basis of individual licensing agreements with authors and publishers. Technically the books were "streamed"; the books could not be downloaded.

Stage 3; The first Bookshelf 2009

Their first strategic effort of the first Bookshelf was to make available every single book published during the four significant decades in Norwegian literary history, the 1690s,

1790s, 1890s and 1990s, approximately 50 000 books. It was also a risky endeavor as most of the books were from the 1990s, and they were copyright protected. Head of National Library suggested setting up a cross-disciplinary working group with participants from the copyright holders (Kopinor) and the Ministry of Culture to assess if the use of an extended collective licensing agreement could also be suitable for printed material (at that time, only used for audiovisual material in Norway). They concluded: yes. In other words, a highly effective, Nordic invention of a legal structure could be set up due to the unique organized unionism in Norway. Instead of resorting to the model of individual agreements with every author as in the previous pilot project, the National Library could now enter into a dialogue to realize the first ever extended *collective licensing agreement* between a national library and copyright holders. The agreement enabled sharing the printed literary heritage with the general audience for free, though the National Library paid the right holders for the usage. Kopinor represents copyright holders of published works in Norway, and normally they can license the use of copyright protected works on behalf of their members. The unique structure of such an extended collective license agreement, though, is that such an agreement covers *all authors in Norway*, not only the authors that are members of Kopinor. To enable the user free access to the books, the agreement stated that the National Library of Norway had to pay a remuneration to Kopinor of NOK 0.56 (approximately 0.06 Euro)[5] per page per book made available online every year (Skarstein 2010). For the years 2009-2011 this amounted to approximately NOK 9.9 million (approximately 900.000 Euro)[6].

Stage 4; the second and final Bookshelf - 2012

In 2012, the National Library signed a new agreement with Kopinor and their partners, which further expanded licensing to include all books published in Norway until 2001. Again, it was agreed that the library should pay a similar remuneration. As the volume of titles had increased, the library paid NOK 0.36 (approximately 0.03 Euro)[7] per page

[5] As of December 18th 2018

[6] As of December 18th 2018

[7] As of December 18th 2018

made available the first year and slightly less in the following years (Kopinor 2012).[8] From 2013-2017 this amounted to about NOK 30 million (approximately 3 million Euro)[9]. As the digitization of books was done at the library's facilities in Mo i Rana, for the most part automatically by scanning-robots, the actual price of Bookshelf (excluding remunerations) amounted to only a total of about NOK 64 million (approximately 6.4 million Euro)[10] during these years. By 2017 approximately 250, 000 books were made available online to Norwegian IP-address only. The latter limitation is due to the fact that many of the books were translations from foreign books which could not be spread outside Norway.

The agreement also included the option for individual publishers and authors to withdraw certain books from the agreement.[11] The writers' and publishers' unions were at times worried that the agreement might compete with sales in the book shops. However, their right to withdraw certain publications from the agreement calmed them.

The current Bookshelf Agreement is generally regarded as a permanent solution, but in reality, it was recommended that it should progressively be expanded every five years or so to include another five years of the collection. This has not been clarified yet. While Norway decided at an early stage to digitize all books regardless of quality and status, their Scandinavian counterparts approached the problem of selection seemingly differently. They were struggling to establish criteria for priority, something which might be a reason for their lagging behind Norway in terms of volume. The EU currently has plans for a strategy in which they encourage the LAM-sector to follow Norway's collective licensing model.

Service as a platform – techno-cultural attributes

Search terms work across different media such as books, newspapers, and photography. Each book is searchable individually. Books in the public domain are downloadable.

---

[8] It comes to about NOK 2.50 a year for each tax payer in Norway, which is relatively cheap for a huge online library accessible throughout the national broadband.

[9] As of December 18th 2018

[10] As of December 18th 2018

[11] Bookshelf Agreement §3. 2. Norwegian Copyright Act §16 a cf § 36.

Titles can easily be shared in social media through tags and references and are compatible with EndNote. A mobile user interface for these functions is also available.

The Bookshelf was inspired by Google Books, but it became very different from Google Books in the end. The Bookshelf makes sure that professional bibliographic standards and traces of the analogue survive in a digital world. This is of utmost importance with regard to the reliability of information, whereas global tech companies tend to relinquish these standards in the name of flow and speed. Unlike both Google Books and iBooks, the books in the Bookshelf were scanned in their original historical analogue layout.

Furthermore, the use of open APIs secures the role of the Bookshelf as an infrastructure for users who want to build new applications on top of the repository. Several research projects and individual public libraries in Norway have developed new services and applications connected to the Bookshelf (National Library of Norway 2018).[12] This opens the archive in new ways. To a large extent this can help us envision how a national library using a cloud model can become a new cultural infrastructure in a digital age. These developments are also aligned with the National Library's commitment to become an infrastructure for all, both research and public libraries in Norway (Norwegian Ministry of Culture 2015).

In this way we can say that the Bookshelf has become *a service as a platform* (SaaP) for others to build upon.[13]

Surveys on book consumption

The study of book consumption in the population is based on survey data (N=1558) from an online questionnaire distributed, between September 6th and October 3rd in 2016

[12] In the US the Institute of Museum and Library Services's National Digital Platform framework would fund and secure similar developments (Owens, et al. 2018).

[13] With the introduction of cloud technologies there is currently a big debate regarding how to define and redefine the relationship between service-functions and platform-functions online. We think it is useful to define the current developments of the Bookshelf as more than a service and in the direction of service as platform (SaaP). For more on this debate, see https://gigaom.com/2014/01/25/enough-paas-vs-iaas-the-cloud-is-really-about-services-as-a-platform/

to a national web panel consisting of 81 000 panelists aged 15 years and above. The questionnaire was designed to capture a range of information related to book consumption in Norway. The survey, which consisted of 48 open and closed-ended questions, measured respondents' book consumption in general: both online and traditional, both paid and free consumption (such as lending books from libraries). Data was weighted by gender, age, geographic location, and education to correct for deviation from the Norwegian population.

The user survey was conducted through the National Library of Norway. Respondents were users of the platform "The Bookshelf", and they were recruited through a pop-up on the website. The user survey was conducted between October 24th and November 1st in 2016. Nine hundred and sixty-six respondents completed the questionnaire, which gave a dropout rate of 38%. The survey consisted of 56 open and closed-ended questions about The Bookshelf in particular, but also about Google Books, Amazon and other digital services available in Norway.

Both surveys have been analysed using SPSS version 24. The significance test used was a bivariate analysis test of column proportions with crosstabs and a z-score test. The only exception from the z-score test is the comparison between Google Books and Bokhylla.no, which was tested with a Pearson Chi-square. The reason why is that this was paired nominal data, and was used in a 2*2 contingency table (Agresti 2002).

In the user survey of Bookshelf, respondents were recruited by self-selection, i.e., those who chose to click on the link. When samples are based on self-selection, they are likely to get the most dedicated and frequent users of a service or platform, the so called super users (Skov and Ingwersen 2014). The measurement of the share of Bookshelf users in the more representative population survey made it possible to identify the limitations of our own investigation regarding both the findings and the sample in the user survey. The methodological weaknesses of online user surveys are radically reduced when supplemented by data from population surveys.

When presenting the results from the user survey, we therefore make reservations regarding the super user selection.

Population survey – main findings

What digital book services are used in Norway? Figure 1 below shows the share of the Norwegian population using different digital book services:

Figure 1 shows share of population using different digital services for buying or borrowing books and e-books and audible books. N=1558.

The largest share, 62 percent, had not used any digital book services. Compared to music and film consumption, book consumption is still primarily analogue. Seven percent of the Norwegian population had used the Bookshelf. Given that the platform is not promoted in any way, we find the percentage of users to be surprisingly high. Bookshelf had a proportion of users at a higher level than Google Books (6 percent)

Cultural services often have a democratic imparity with regard to who use them according to the Statistical bureau of Norway (from now on SSB). Both gender, age, education, location and income have a significant influence on culture consumption, including library visits, reading patterns and book purchases. In particular, gender and education are decisive for book reading and library visits, while income is more important in theater and opera consumption, which is more expensive than lending books.

A key feature of our population survey is that Bookshelf had fewer demographic and social differences than found in SSB's surveys on cultural consumption (SSB 2017a). In SSB's latest survey of library visiting (for the previous 12 months) the female share is much higher than men's, 54 vs 39 percent for the past 12 months (SSB 2017a). The SSB's Media Barometer (SSB 2017b) showed that more women than men read daily (35 vs 16 percent). The youngest were the most frequent visitors of libraries (that group was not included in our survey which started at 15 years of age), while the elderly had the largest percentage reading a book on "an average day" (SSB 2017b).

In our survey, we found no significant difference between the share of women and men who used the Bookshelf platform (7 vs 8 percent). Nor were there major discrepancies in the use of bokhylla.no with regard to geographic location. Oslo, which often has a higher level of cultural consumption (reflects both the percentage of population with higher education and the proximity of culturally related venues) did not have a higher percentage of Bookshelf users (9 percent) than other areas of the country.

Education is the factor that has the greatest impact on cultural consumption. This is the case with bokhylle.no as well: those with higher education (four years +) had a

significantly higher percentage of users (13 percent) than those with only primary/secondary school (6 percent). There is nonetheless no significant difference between those with an undergraduate education (1-3 years) and those with only primary/secondary school.

As regards age, the percentage who used the service was higher among 20 to 30-year olds than 40-year olds, but otherwise there was no significant differences between the age groups. The percentage of users among 15- to 19-year olds was the same as the country average of 7 percent. We can conclude that the Bookshelf is used relatively broadly in terms of demographic characteristics, broader than both traditional library visits and book reading in general.

When comparing the use of Bookshelf with the use of Google Books in Norway, we see that the consumption patterns are different: significantly more men than women are using Google Books (9 versus 4 percent), and young people dominate the use of Google Books, which is not the case on the Bookshelf platform:

Figure 2 shows the share of the population using Bookshelf and Google Books, by age. Bookshelf N = 138. Google Books N=116.

The different consumption pattern between the two book services could partly be explained by language; young people are more familiar with the English language than older generations. However, language cannot explain the significant difference between men and women regarding the use of Google Books. Our purpose with this figure is to show the difference between a national and a global digital book service concerning who uses them.

User survey – main findings

We now turn to the survey conducted on the Bookshelf platform by the National Library of Norway. Respondents' characteristics show 70 percent of the sample using Bookshelf once a month or more frequently. As much as 38 percent answered that they used it weekly. This sample also has a strong overrepresentation of people with higher education compared to the actual education level in the Norwegian population. Contrary to what is usually found in book research on consumption, the super users in our

selection are dominated by men; 54.6 percent versus 45.4 percent women. In terms of age, the respondents are distributed fairly evenly between 20-, 30-, 40-, and 50-year-olds. The youngest age group is almost absent from our user sample, but we know from the population survey that this age group was represented among Bookshelf users.

What do the users use the Bookshelf for? Forty-eight percent of the users state they are using the Bookshelf for private purposes, 26 percent state work, 24 percent state studies in higher education and 3 percent answered school work. The high level of private use was surprising given the large proportion of users with higher education.

What we can determine from our survey, however, is a significant different purpose for use among men and women. Men are more likely to use the Bookshelf for private purposes, and woman are more likely to use the service for school, studies and work.

Figure 3 shows males' and females' different usage of Bookshelf. N=966.

Such significant differences in usage are also found between the Bookshelf and Google Books: Google Books has a higher share of work-related use than Bookshelf (34 versus 26 percent), while Bookshelf has a higher share of private use than Google Books (48 percent versus 40 percent). This can be seen in connection with the high level of education of the responders in the sample and that English books are more often purchased and read in a job context.

Figure 4 shows the share of different uses of Bookshelf and Google Books. Bookshelf N=966. Google Books N=292.

Discussion

Bookshelf is a result of public private partnership for digital infrastructure development, and with the extended collective license agreement, it could be called a public private innovation too. The story of Bookshelf is also the story of the benefits of housing all the

publishers' and authors' associations in the same organization, as Kopinor in Norway does.

Even though the agreement between the public and private parties was successful, in the sense that the Norwegian population now has access to a massive collection online for free, it is still not unproblematic. Publishers have been anxious about the financially sustainability of the agreement, and therefore removal of selected popular titles from the service is included in the agreement. The National Library, managing the remuneration of licensees to Kopinor, becomes financially vulnerable if the collection of Bookshelf is expanded for several years. However, an expansion is desirable from the National Library's point of view. As we know from the PPP research, the financial risk in such projects is high: the financial revenue from investments may be zero, but the revenue in terms of public access is large. If the Norwegian Ministry of Culture considers prioritizing such digital infrastructures as Bookshelf in the future (a new White Paper on culture is expected in the autumn of 2018), it is necessary to safeguard the financial operation of the infrastructure. Both improvements of the user interface and payment of remuneration to licensees are part of this operation.

We will now discuss Bookshelf's impact on such diversity dimensions as demography, actual use of the service, content, dissemination, and the techno cultural formats.

Demographic diversity;

Findings in the population survey showed greater demographic diversity among Bookshelf users than is the case for visitors of traditional libraries and reading patterns in Norway. Demographic diversity is one of the main goals in cultural policy, and we did not expect a rather unknown public service such as Bookshelf to demonstrate such diversity. This is an important finding for cultural policy in terms of which infrastructure - analogue and/or digital - the state should invest in to achieve more demographic diversity.

Private and professional use of the Bookshelf;

Results from the user survey showed diversity in actual use of Bookshelf: work related, private use and for studies. The private use of the service is comprehensive and higher than expected, given the absence of marketing for this service in the public domain (40

percent of the users, and significantly higher than for the use of Google Books – 30 percent).

***Content diversity*;**

It is evident that a complete collection of Norwegian books online, for free use, is a significant contribution to the diversity of content, forms and genres. The National Library had, for some time, relied on a slow and costly postal system for content distribution from its central hubs in Oslo or Mo i Rana. With digitization this system has been supplemented with the possibility of reading the same content instantly on any internet connected device in the country.

Dissemination and distribution diversity

Concerning dissemination, the digital Bookshelf represents diversity as a new distribution channel in itself, supplementing the physical National Library building. Online book collections, such as Bookshelf, move library consumption from visiting the analogue library arena to the private homes or other favourite places. Further, the digital infrastructure expands the contexts for consumption, as when a book is streamed (copyrighted books) or downloaded (public domain books). The not-site-specific and private home consumption attributes of a digital National Library is an alternative dissemination channel that may variously benefit disabled users and individuals that live far away from the National Library. The Bookshelf has attributes quite similar to universal design, which is a significant benefit of online infrastructure.

Techno-cultural diversity

This dimension includes both visible and invisible aspects of the innovative technology the institution uses to collect, preserve, store and make accessible and visible content for a wider audience. It includes protocols, formats, interface, and the choice of codes (open vs closed). We cannot go into all these technical aspects here, but we will highlight one visible techno-cultural contribution to diversity. Unlike the lay-out practice of Google Books and iBooks, the books in Bookshelf were scanned in their original analogue historical design and lay-out. Also, every page follows the pagination of its original publication, unlike books made available on the Kindle reader where the original pagination is most often lost or is arbitrary. In this way the document survives as a

distinct and historical heterogeneous entity in a digital world, where most digital entities are streamlined and made homogeneous. This solution amplifies diversity and reliability at the same time.

Conclusion

Internet has become a new infrastructure for the creative industries in general and for the library sector in particular; new services, platforms and services as platforms are created at a high pace. Bookshelf is analyzed as a new digital infrastructure for cultural heritage material and as a result of a public private partnership between The National Library, the Ministry of Culture and Kopinor.

Bookshelf was indeed inspired by international players, such as Google Books, but despite no attempts at promoting Bookshelf, our survey shows that its national penetration in terms of use is equal to Google Books', and in terms of a broader democratic outreach it outplays Google Books. In terms of cultural policy, Bookshelf has achieved some of its main aims concerning consumption. Bookshelf has broader demographic use than both traditional library visits and book reading in general in Norway, and is more democratically distributed with regard to gender, age, education and income. Bookshelf is used for all aspects of life – schoolwork, studies, work life and private life, and the share of private use is even higher than for professional use. Bookshelf contributes to all five diversity dimensions analyzed in our project: demography, the usage – h*ow* it is used, content, distribution/dissemination, and the techno-cultural dimension of formats and interface, etc. Digital services and platforms, including Bookshelf, challenge cultural policy on infrastructure issues. What type of infrastructure should the state prioritize in the near future – analogue, digital or both? What kind of digital infrastructure should nations initiate, and what should they leave to global players, such as Google and Facebook?

Our study points to some of the strengths of a national digital infrastructure for cultural heritage: improved democratic consumption and enhanced diversity embracing several dimensions.

Bibliography

Agresti, Alan. 2002. *Categorical Data Analysis.* 2nd. New Jersey: John Wiley & Sons, Inc.

Borgman, Christine L. 2000. *From Gutenberg to the Global Information Infrastructure: Access to Information in the Netweorked World.* Cambridge, Ma.: MIT Press.

Chantepie, Philippe. 2017. "The Shaping of France`s Digital Cultural Policy." *The Journal of Arts Management, Law, and Society* 47 (5): 313-321. doi:10.1080/10632921.2017.1394148.

Edwards, Paul N., Geoffrey C. Bowker, Steven J. Jackson, and Robin Williams. 2009. "Introduction: An Agenda for Infrastructure Studies." *Journal of the Association for Information Systems* 10 (5): 364-374. http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1508&context=jais.

Gran, Anne-Britt. 2014. "Digitale tider i kulturlivet. Om digitalt kulturforbruk, kulturpolitikk og kulturelle etterslep." *Sosiologi i dag* 44 (1): 13-38. http://ojs.novus.no/index.php/SID/article/view/1120/1111.

Gran, Anne-Britt, Nina Lager Vestberg, Peter Booth, and Anne Ogundipe. 2018. "A Digital muesum`s contribution to diversity - A user study." *Museum Management and Curatorship.* doi:10.1080/09647775.2018.1497528.

Grimsey, Darrin, and Mervyn K. Lewis. 2002. "Evaluating the Risks of Public Private Partnerships for Infrastructure Projects." *International Journal of Project Management* 20 (2): 107-118.

Huang, Yurong. 2018. «Public Digital Libraries: Observations and Prospects from the Chinese Experience.» *The Journal of Arts Management, Law, and Society* 48 (2): 122-132. https://doi.org/10.1080/10632921.2017.1377662.

Kopinor. 2012. "Avtale om Digital formidling av bøker (Bokhylla)." *Kopinor.* Accessed 03 16, 2018. http://www.kopinor.no/avtaletekster/bokhylla-avtalen.

Kwak, Young Hoon, YingYi Chih, and C. William Ibbs. 2009. "Toward a Comprehensive Understanding of Public Private Partnerships for infrastructure development." *California Management Review* 51 (2): 51-78.

Linder, Stephen H. 1999. "Comming to Terms With the Public-Private Partnership A Grammar of Multiple Meanings." *The American Behavioral Scientist* 43 (1): 35-51.

Mattern, Shannon. 2014. “Library as Infrastructure.” *Places journal.* Accessed 03 07, 2018. https://doi.org/10.22269/140609.

National Library of Norway. 2018. *Prosjekter Projects.* Accessed 03 07, 2018. https://bibliotekutvikling.no/prosjekter/.

Navarrete, Trilce. 2014. “Becoming Digital: A Dutch Heritage Perspective.” *The journal of Arts Management, Law, and Society* 44 (3): 153-168. https://doi.org/10.1080/10632921.2014.938385.

Nisar, Tahir M. 2007. “Risk Management in Public-Private Partnership Contracts.” *Public Organization Review* 7 (1): 1-19.

Norwegian Ministry of Culture and Church Affairs. 2009a. “St. Meld. nr. 23 Bibliotek - kunnskapsallmenning, møtestad og kulturarena i ei digital tid [White paper no. 23 (2008-2009) The library-knowledge community, meeting place and cultural arena in a digital era].” White Paper. https://www.regjeringen.no/no/dokumenter/stmeld-nr-23-2008-2009-/id555516/.

Norwegian Ministry of Culture and Church Affairs. 2009b. *St. Meld. nr. 24 (2008-2009) Nasjonal Strategi for digital bevaring og formidling av kulturarv [White paper no. 24 (2008-2009) National Strategy for digital perservation and communication of our cultural heritage]*. White Paper, Norwegian Ministry of Culture and Church Affairs. https://www.regjeringen.no/no/dokumenter/stmeld-nr-24-2008-2009-/id555254/.

Norwegian Ministry of Culture and Church Affairs. 2003. *St.meld. nr. 48 (2002-2003) Kulturpolitikk frem mot 2014 [White Paper no. 48 (2002-2003) Cultural Policy to 2014]*. White paper, Norwegian Ministry of Culture and Church Affairs. https://www.regjeringen.no/no/dokumenter/stmeld-nr-48-2002-2003-/id432632/.

Norwegian Ministry of Culture. 2015. *National Strategy for libraries 2015-2018.* Norwegian Ministry of Culture.

Norwegian Ministry of Culture. 1999. *St.meld. nr. 22 (1999-2000) Kjelder til kunnskap og oppleving [White Paper no. 22 (1999-2000) Sources of Knowledge and Experience]*. White Paper, Oslo: Norwegian ministry of Culture. https://www.regjeringen.no/no/dokumenter/stmeld-nr-22-1999-2000-/id192730/.

Norwegian Ministy of Government Administration and Reform. 2006. *St.Meld. nr. 17 (2006-2007) Eit informasjonssamfunn for alle [White paper no. 17 (2006-2007) An Information Society for all]*. White Paper, Norwegian Ministy of

Government Administration and Reform. https://www.regjeringen.no/no/dokumenter/stmeld-nr-17-2006-2007-/id441497/.

Owens, Trevor, Ashley E. Sands, Emily Reynolds, James Neal, and Stephen Mayeaux. 2018. “Digital Infrastructures that Embody Library Principles: The IMLS National Digital Platform as a Framework for Digital Library Tools and Services.” Chap. 5 in *Applying Library Values to Emerging Technology: Tips and Techniques for Advancing within Your Mission*, edited by P. Fernandez and K. Tilton, 73-88. Association of College and Research Libraries. https://www.imls.gov/publications/digital-infrastructures-embody-library-principles-imls-national-digital-platform.

Pongsiri, Nutavoot. 2002. “Regulation and Public-Private Partnerships.” *The International Journal of Public Sector Management* 15 (6): 487-495.

Roberge, Jonathan, and Philippe Chantepie. 2017. “The Promised Land of Comparative Digital Culture Policy Studies.” *The Journal of Arts Management, Law, and Society* 47 (5): 295-299. https://doi.org/10.1080/10632921.2017.1398584.

Rostgaard Evald, Majbritt, Helle Aarøe Nissen, Ann Højbjerg Clarke, and Kristin Balslev Munksgaard. 2014. “Reviewing Cross-Field Public Private Innovation Literature: Current Research Themes and Future Research Themes Yet To Be Explored.” *International Public Management Review* 15 (2): 32-57.

Røssaak, Eivind. 2010. “Introduction.” In *The Archive in Motion*, edited by Eivind Røssaak. Oslo: Novus Press.

Skarstein, Vigdis Moe. 2010. “The Bookshelf: Digitisation and access to copyright items in Norway.” *Program* (Emerald Insight) 44 (1): 48-58. https://doi.org/10.1108/00330331011019681.

Skov, Mette, and Peter Ingwersen. 2014. “Museum Web search behavior of special interest visitors.” *Library & Information Science Research* (Elsevier) 36 (2): 91-98. https://doi.org/10.1016/j.lisr.2013.11.004.

Spacey, John. 2017. “7 Examples of Public Infrastructure.” *Simplicable.* 15 02. Accessed 03 07, 2018. https://simplicable.com/new/public-infrastructure.

SSB. 2017a. *Norsk Kulturbarometer 2016 [Norwegian Cultural Barometer 2016]*. Oslo - Kongsvinger: Statistisk Sentralbyrå [Statistics Norway].

SSB. 2017b. *Norsk Mediebarometer 2016 [Norwegian Media Barometer 2016]*. Statistisk Sentralbyrå [Statistics Norway].

Zhang, Xueqing. 2004. “Concessionaire Selection: Methods and Criteria.” *Journal of Construction Engineering and Management* 30 (2): 235-244.