

# Omni-channel Overtures

## Defining the concept and its applicability in public sector channel management

Willem Pieterse<sup>1</sup>, Christian Østergaard Madsen<sup>2</sup>, Wolfgang Ebberts<sup>3</sup>

<sup>1</sup> Pieterse Strategic, London, UK.  
willem@pieterse.com

<sup>2</sup> Research Centre for Government IT, Department of Computer Science, IT University of Copenhagen, Denmark,  
chr@itu.dk

<sup>3</sup> Erasmus School of Social and Behavioural Sciences, Department of Public Administration and Sociology, Erasmus University Rotterdam, the Netherlands  
ebberts@essb.eur.nl

**Abstract.** The channel landscape and citizens' channel behaviors are continuously evolving. This challenges how governments manage service delivery and their available service channels. To address these challenges, a new type of strategy has surfaced in the literature on private sector channel management; omni-channel management. But could the omni-channel concept be applied in the public sector context as well? More importantly: could it address the current challenges in the channel landscape? Currently no comprehensive studies exist that examine omni-channel management in a public sector setting. Therefore, we present relevant developments in the channel landscape and discuss how an omni-channel approach could be applied in the public sector.

**Keywords:** service delivery, channel management, omni-channel, channel strategy, e-government.

## 1 Introduction

Public sector service delivery is continuously evolving. Technological developments continuously create new public service delivery channels[1]. Subsequently, these changes are reflected in a) how citizens and other public sector clients adopt and use different channels [2] and b) how governments incorporate these changes in their channel and service delivery strategies [3].

While several models and frameworks outlining such channel strategies for public sector organizations have been published in the last decades e.g. [4]–[6], fewer publications have emerged recently. Moreover, in a review of the literature, Madsen and Hofmann [3] conclude that the majority of the literature in eGovernment and public administration in general has focused on either a) barriers towards channel strategies (e.g., legal, structural, and/or organizational, or b) the adoption of and migration

towards digital channels (e.g., websites and self-service applications). Main question this paper asks is whether existing channel approaches that focus on so-called ‘multi-channel management’ are sufficient today. This is especially relevant as an increasing number of studies, most notably in the context of private sector sales and service delivery, focus on a new type of channel strategy: omni-channeling [7]–[9]. Furthermore, the channel landscape is evolving rapidly, the number of available channels is still increasing [1] and citizens’ channel behaviors are evolving [2]. The goal of this paper is to address this main question. Specifically, we address the following research questions:

- RQ1. What have been the key changes in the channel landscape and channel behaviors in the past decades?
- RQ2. What types of channel strategies have been developed that address these developments and to what extent do these strategies suffice in the current landscape?
- RQ3. To what extent is an omni-channel approach applicable for public sector service delivery and what are the key elements of such an approach?

We answer these questions using existing publications on channel behavior and channel management. We collected these publications using a process inspired by a hermeneutic literature review [10]. In section 2, we briefly discuss this method. Subsequently, in section 3, we discuss the key changes in the channel landscape, thus seeking to answer the first research question. Section 4 provides an overview of various channel strategies and discusses several associated key challenges, thereby answering the second research question. Section 5 discusses definitions of omni-channel management from the literature, provides a public sector appropriate definition of the concept and discusses key elements of the omni-channel concept. Building on this analysis, we present an agenda to create a framework for omni-channeling in the public sector as well as the main conclusions and points of discussion in section 6.

## 2 Method

Our search for papers on omni-channel management in digital government research is inspired by the hermeneutic literature review process [10]. This regards a literature review as an iterative process, whereby researchers gradually develop an understanding of a body of literature. Moreover, it recognizes that researchers may have existing knowledge of the area in question. The authors have studied channel choice (CC) and multichannel management (MCM) for more than fifteen years and published extensively on this topic. Our previous work includes three literature reviews on CC and MCM [3], [11], [12]. We began by revisiting the pool of papers for the previously published literature reviews. We supplemented this pool with a new search for papers in January 2022. The search was conducted using Publish or Perish with Google Scholar as an underlying search engine [13]. The benefit of this approach is the wide range of results it yields. We used the following keywords: omni-channel (and ‘omnichannel’), digital government and e-government. Of the initial forty papers identified with omni-channel in the title, only three concerned omni-channel management in digital

government [14]–[16]. We did, however, identify multiple papers, which presented the omni-channel concept in a private sector setting. Finally, we downloaded the latest version (17.5) of the Digital Government Reference Library (DGRL) [17] and conducted a keyword search using “omni-channel” as well. This search did not yield any additional results.

We began our reading and synthesis of the literature by focusing on papers in a digital government setting. Guided by our research questions, we sought to capture and describe (1) the historical development in the channel landscape and citizens’ channel behavior, and (2) the historical development in public organizations’ channel strategies and the associated key challenges. Next, we focused on capturing how the omni-channel concept is presented in the extant literature. Here, we included papers from both a public sector and private sector setting. More specifically, we searched for (1) definitions of the omni-channel concept, and (2) key features according to the literature. Having presented our research approach, we now turn to our findings.

### **3 Background: a changing channel landscape**

Next, we focus on key developments in the channel landscape. This concerns technological developments and the rise of new channels and subsequently changes in citizens’ channel behaviors. Thus, this section seeks to answer the first research question.

#### **3.1 Changes in the channel landscape**

The channel landscape has continuously evolved in the past decades, with new channels added to the ways citizens and public organizations interact [1]. Historically, the public encounter, i.e. the “interaction of citizens and [government] official as they communicate to conduct business” [18, p. 4] occurred via traditional channels: In person meetings (office or counter), telephone conversations and physical letters [1], [18].

In the 1990’s, the world wide web offered a means to present information visually on websites. As the websites matured, they also allowed citizens to both retrieve and submit information ideally without any help from public officials [19]. Hereby, the technical foundation for digital self-service was in place. Finally, two more digital channels, electronic mail, and chat, became popular.

In the 2000s, social media such as social networking sites, blogs and wikis appeared. While these were mostly used by private companies and citizens, public organizations began to use social media to present information to citizens and to engage with them online for consultation or co-creation purposes [20].

The 2000s also saw the increased adoption of smartphones, which added additional channels and features to the government-to-citizen interaction. This interaction had historically taken place in government offices, and then moved into citizens homes with the electronic channels. Now, smartphones afforded citizens even more freedom with regards to when and where they could interact with public organizations. Further, smartphones added additional channels such as SMS text messages (which often serve

as reminders of upcoming meeting or a source of receipts), and mobile apps for specific services, including the handling of digital ID.

Finally, recent years have seen a rise in a new type of channels, fueled by the development in artificial intelligence and robotization. These channels offer direct interaction and support to citizens without the inclusion of a traditional caseworker or other type of public sector employee. Pieterse et al. [1] classify this generation of service channels in three groups. *Software agents* include chat bots (text), conversation bots (spoken language), and intelligent agents, which can both respond to inquiries and solve various tasks. The remaining two groups are *virtual robots*, which have a visual appearance for instance on a website, and physical *social robots*, which can either have a humanoid or non-humanoid form. These robotic channels are potentially able to substitute for some of the costlier interaction citizens have with frontline staff and caseworkers. The emergence of these new channels and the public demand to interact through different means have increased the interaction complexity and made governmental multi-channel management even more important [5].

### 3.2 Changes in channel behaviors

The remarkable increase in the number and types of communication channels available have given citizens a greater choice of channels. For public organizations, however, the increase in channels also creates new tasks and additional costs, as they must develop these channels, and present and harmonize their content across multiple channels. Further, there may be costs related to training staff and adjusting business processes.

Recent empirical studies have studied how the shifting channel landscape has influenced citizens' CC and offer several important findings. First, a study from the Netherlands showed that Dutch people's needs and expectations regarding public organizations' service provision has shifted towards digital channels [2]. Similarly, official EU statistics show a clear increase in citizens' use of digital channels in recent years [21]. Second, recent studies also show that citizens and businesses rarely substitute new channels for the old ones. Rather the traditional channels, especially the telephone, is still the preferred channel for complex problems. For instance, citizens may call to ensure that they have understood information on a website correctly, or that a public organization have received information submitted via a self-service application [2], [22]. Third, since the introduction of electronic channels, studies show an increase in both the amount and types of channels citizens and businesses use to interact with public organization [5], [21], as well as the total volume of traffic across channels [12]. Fourth, citizens' needs are shifting. For example, citizens need clarity about how to communicate with whom and why, e.g. because messages increasingly run the risk of being 'lost', especially when governments communicate through digital channels [23].

While previous CC studies mostly focused on CC as a discrete event, i.e., citizens' choice of a single channel for a specific task, newer CC studies find that citizens may use a variety of channels either sequentially or simultaneously, and across both private companies and public organizations throughout a public encounter [2], [24]. The increase in the complexity of citizens' channel use and expectation may be partly caused by their experiences with services offered by private companies [25], but also by the

fact that citizens are increasingly expected to solve tasks through self-service applications that were previously conducted for them by public organizations [19]. Further, governments often seek to create seamless user journeys across public organizations with point of departure in specific life events [26].

To summarize, we see an increasing fragmentation of populations in their channel behaviors and this creates customer journeys that occur across channels and organizations in flexible and different configurations for different types of customers [27].

## 4 Channel strategies

Governments deploy various channel strategies to deal with the different behaviors and demands of citizens [4]–[6], [28]. With the changing channel landscape and demands and channel behaviors of the population these strategies have evolved over time from relatively rudimentary approaches to sophisticated strategies dealing with channels, their relations and beyond. Following new technological breakthroughs, different generations of channel strategies appear. Below, we summarize these generations and discuss shortcomings of existing approaches vis-à-vis the changes discussed above.

### Generations of (multi)channel strategies

Pieterse and Van Dijk [29] provide an overview of different perspectives on channels and how they could be positioned. They argue that the basic forms of channel management entail very little management; channels can either exist in parallel to each other, where most services are offered via different channels in parallel, or channels can replace each other where the functionality of one channel entirely replaces another.

When the channel landscape started changing in the late 1990s (see [12]), both practitioners and scholars started to rethink their approaches towards channel management. For government organizations, digitalization brought opportunities, but also new challenges related to managing public service encounters across multiple channels and organizations [28]. Furthermore, the growth of digital technologies resulted in a drastic increase in the number of channels [1] and in longer and more varied customer journeys [24]. This gave rise to a shift in thinking from ‘multiple channels’ (where several channels are managed independently) to ‘multi-channel’ approaches, where the ‘supplemental characteristics’ of channels are being stressed [12, p. 58]. In this, channels can refer to each other or be used for different purposes, depending on their characteristics. These multi-channel strategies themselves have evolved over time in three generations:

#### 1. Basic/supplemental multi-channel strategies

The underlying idea for these strategies is that different channels have different properties that render them suitable for different tasks. This builds upon communication theories such as Media Richness Theory [30] that suggest that channels, and media, vary in their properties thus rendering them suited for different types of problems. In the private sector such channel strategies were suggested by various authors [31], [32] and several government agencies followed or suggested supplemental strategies in the early 2000s, such as in the UK, and Australia.

## 2. Integrated multi-channel strategies

While the idea of channels supplementary value seems logical, there are challenges. These include the need to switch channels and flaws in channel choice decision making [12], citizens habits that could hamper the best channel choice [22] and legal requirements to offer channels to all citizens thus sacrificing task-channel fit for accessibility [12]. To deal with these obstacles, more integrated channel strategies were developed. In its basic form this points to the referral between channels and the possibilities to guide citizens from one channel to another, thus facilitating their customer journeys. The integrated multi-channel management model developed by Ebbers, Pieterse and Noordman [4] is an example of such an integrated approach.

## 3. Blended/advanced multi-channel strategies

Integrated multi-channel strategies also have drawbacks. One challenge is that it focuses on channel integration, but not on the underlying elements that are required to make channel integration succeed, such as (organizational) coordination, as well as content and systems integration. Third generation multi-channel strategies focus on integration with other elements of the service delivery space. For example, Gagnon et.al [6] focus on the importance of meeting client needs expectations using the available channels while added more contextual variables, such as personnel, technology, cooperation, and regulations. The Wirtz and Langer [5] framework analyses strengths and capabilities of a large set of channels and adds elements of the organization (e.g., levels of centralization). This could facilitate, for example, concurrent channel usage. Kernaghan [28], finally, presents the integrated channel delivery continuum along which organizational integration can occur, from informal relationships (cooperation), to coordination, collaboration, convergence and finally consolidation, the complete “uniting and harmonizing” of the organization [28, p. 125].

Thus, multi-channel strategies have clearly evolved over time and have increased in scope and depth to keep up with changes in the channel landscape. However, the question remains whether current strategies are sufficient to deal with the latest changes. The answer, in our view, is no. In the next section, we address the key challenges to the successful deployment of multi-channel strategies.

### 4.1 Key challenges

The following are these key challenges:

- Channel multiplexity

All models tend to treat contacts as independent incidents (e.g., I have a question and choose channel X). As mentioned above, empirical studies [24] show that many contacts are highly interdependent and of a *multiplex* nature. This interdependence requires such things as a *memory* in transfer between channels, so that citizens don't have to repeat their questions. Further, a *link* is required between contacts across channels when subsequent contacts are part of one customer journey (e.g., when I call to enquire about a form I just submitted online, the agent must see that I submitted this and where I am in my journey). Thus, the growth in channels has resulted in longer and more varied customer journeys [24], necessitating the need to approach

channel management from a customer journey perspective, rather than a ‘contact incident’ perspective.

- **Static channel features**  
All models discussed in this publication take a relatively static approach towards channel characteristics and task channel fit [4]–[6]. They assume that channel properties are ‘fixed’ and that therefore certain channels are better suited for certain tasks than others. This ignores that channel characteristics are evolving, for example when users gain more experience with the use of a channel and that the combination of channels could augment their use (e.g., through blending and applications such as co-browsing). Thus, rather than being discrete and static entities, the current reality of channels is one of ‘fluidity’ and current channel management models do not account for this.
- **Increasingly fragmented population**  
As discussed in the previous section, the number of channels increases and citizens have started diverging in their (digital) skillsets, behaviors, and channel expectations [1], [2]. As a result, different customer segments might have different preferences for different channels in different parts of the customer journey. Thus, a static ‘one size fits all’ model of task-channel fit might not satisfy the need of today’s dynamic and varied population needs. Channel management models typically rely on the idea of task-channel fit (e.g. [4]–[6]) and do not account for variety among different segments of the population.

The notion that existing channel approaches are insufficient is not completely new, but still recent and not targeted as the challenges presented in this contribution. In the private sector literature, academics in the mid 2010 started to argue that channel management should focus on the “synergetic management of the different channels and touch points“ [7, p. 176] and improve service delivery following the realization that more integrated (and fluid) approaches are needed. More recently, Madsen and Hofmann [3] in a review of the public sector literature argued that newer channel strategies are needed to deal with the high number of channels. In our view newer strategies need to address all key challenges.

## **5 An omni-channel approach**

In this section we discuss the core of such a new type of channel strategies: omni-channel management. While this concept is gaining ground in the private sector, it has not been extensively used in public sector contexts. In this section we discuss definitions of the concept before presenting a definition tailored to public sector service delivery. Subsequently we discuss key elements of such an omni-channel strategy, and we discuss the applicability of key elements to the public sector and an agenda to create a model for the public sector.

### 5.1 Defining the omni-channel concept

So, what is omni-channel management? The word ‘omni’ itself is a Latin word meaning “all” and “universal”. Various definitions in the (mostly marketing and/or sales) literature of the concept exist. The following are examples:

- “an integrated sales experience that melds the advantages of physical stores with the information-rich experience of online shopping” [33, p. 65]
- “a unified approach that manages channels as intermingled touch points to allow consumers to have a seamless experience within an ecosystem.” [8]
- “the synergetic management of the numerous available channels and customer touch points in such a way that the customer experience across channels and the performance over channels is optimized” [7].

While these definitions differ in certain areas, they are similar in most. They emphasize the need to unify or integrate channels fully and to manage these as ‘synergetic’ as possible [34]. This suggests that, rather than seeing channels as separate entities, they need to be regarded from a symbiotic or holistic point of view. This entity of channels is used to manage client interactions and the touchpoints between client and organization take place using a non-predefined collection of communication cues [35].

While the definitions above focus on ‘customers, often ‘sales’ or ‘retail’, they are clearly aimed at private sector (sales) settings. The public sector context, obviously, is different (see [12] for a discussion). For example, citizens (as opposed to private sector clients) often have no choice between providers and governments have an obligation to serve all clients. This has some implications for the potential of omni-channel strategies. Private sector organizations can typically target select segments of the population [36] and thus choose to deploy a limited set of channels to target their audiences. This makes the design and management inherently simpler than for governments that need to serve *all* citizens via an appropriate set of channels. Furthermore, typically citizens have more roles in their relationship with governments than just being ‘consumers’ of public services. They also have duties and obligations, vote and they could participate in policy processes and typically the same set of channels is used for a multitude of purposes [37]. This further complicates channel management in the public sector and necessitates inclusion as an element of a definition of omni-channel service delivery in the public sector. Given this and based on the definitions above, we propose the following definition of omni-channel management in the public sector:

*“Omni-channel management is the holistic management of all available service channels in which all channels are fully integrated and allow the seamless delivery of all services to all segments of the population”.*

### 5.2 Key features of the omni-channel concept

But how exactly is this different from existing multi-channel strategies? To answer this question, we need to study the features of omni-channel strategies. The public sector literature in this area is scarce. As mentioned above, our review has only yielded three studies [14]–[16]. None of these provide a definition of the concept tailored to the



public sector. Two of the publications build upon the private sector literature in explaining the concept [15], [16], the third is a work in progress paper [14] that does not provide a definition. However, this publication does mention features of omni-channel management in the public sector, based on a non-academic report [35]. The publication argues that the success of omni-channel management depends on integration on four levels: a) organizational, b) services and processes, c) IT systems and d) data. The private sector literature provides more insights. Shi et al. [38] provide an overview of five dimensions that define the omni-channel experience of retail customers:

1. Connectivity. The extent to which the cross-channel service content and information are linked and interconnected
2. Integration. The extent to which customer perceives all information systems and management operations are unified and integrated well across channels.
3. Consistency. The extent to which customers experience both content and process consistency of interactions across channels.
4. Flexibility. The extent to which customers are provided with flexible options and experience the continuity when migrating tasks from one channel to another channel.
5. Personalization. The extent to which a customer perceives that the omni-channel retailer provides its customers with individualized attention.

In addition, Burford and Resmini [39] found that information coherence and cross-channel experience are the two most essential aspects in omni-channel design. Saghir et al. [40] focus on integration and see the concept as a truly integrated approach across the whole retail operation that delivers a seamless response to the consumer experience through all available channels, thus emphasizing both integration and the seamless nature of the customer journey. This ‘seamless’ aspect of omni-channeling appears often in the literature. The underlying reason appears to be twofold. First, omni-channel customers tend to move freely between the different channels, all within a single transaction process [41]. These customers expect a seamless purchasing experience across channels and touch points [7]. Second, different customer segments use different configurations of channels. ‘Mono channel’ users, for example, use one channel throughout their journey, while other users engage in ‘showrooming’ or ‘webrooming’ and finally some users frequently switch between channels in every stage of the process [9].

From this brief overview, several key features of an omni-channel approach emerge that are relevant for the public sector:

- All channels are strongly linked (connected) so that all content is in-sync and interconnected. This facilitates a consistent experience throughout the customer journey
- Channels and the underlying organization, systems, processes, and data-sources are highly integrated to facilitate the interconnectedness of channels.
- There is a high level of flexibility; citizens have options to choose relevant entry points and they are transferred or migrated seamlessly across channels and/or phases of their journey. This flexibility should also facilitate high levels of personalization and requires integration on the behavioral level; we need to fully understand the diversity in behaviors of the different segments of the population.

These features depart from the existing multi-channel strategies. None of the multi-channel approaches discussed above emphasize the full integration and connection between channels, the integration of aspects such as data, and the levels of flexibility needed to create seamless customer journeys.

## 6 Conclusions & discussion

This study was guided by three research questions. Regarding RQ 1, we saw that the channel landscape and channel behaviors are constantly evolving. We have more channels than ever to manage, and channel behaviors are increasingly complex. Citizens use different channels for different service delivery processes and may also display *multiplex* behaviors of using various channels simultaneously or consecutively in one service interaction. Regarding RQ 2, we presented and discussed different types of channel strategies and three generations of multi-channel strategies. We noted how current strategies are ill suited to deal with today's channel landscape and multiplex channel behaviors.

Lastly, regarding RQ 3, we discussed approaches to omni-channeling from the private sector and presented a suitable definition for the public sector. We presented key elements from the literature that comprise an omni-channel approach and differentiate it from existing multi-channel strategies. These are a) the links between channels and synchronization of content, b) high levels of integration of the underlying organization, systems, processes and data, and c) high levels of flexibility to create seamless customer journeys either through citizen choice or through channel migration.

However, several key challenges must be addressed to develop a working concept:

- Public sector agencies must serve their entire population. With the increase in the complexity of citizens' channel behaviors, developing an omni-channel approach that works for everyone becomes a massive challenge, especially if the customer journeys must be seamless. Work is needed to develop omni-channel models that combine the behaviors of different segments in the population with the available channels or communication cues and different parts of the customer journey.
- While most publications agree that high levels of integration across various areas (e.g., organization, process, data, and behavior) are needed, few address *how* this integration can be achieved. With factors such as siloing and resistance to change, the organizational challenges alone will be big. Thus, realistic omni-channel strategies should not just describe what the strategy entails, but also how to achieve it.
- The complex nature of channel behaviors combined with channel multiplexity and fragmentation in the population make it a necessity to develop some level of organizational memory. Only if the organization measures and remembers how their clients are interacting with them can it migrate clients successfully and create more pro-active and personalized customer journeys. Thus, a mechanism to create memory must be built into any omni-channel framework.
- The continuously evolving channel landscape teaches us that there is little use for static approaches towards channel features and channel strategies. If we want to develop robust and somewhat future proof omni-channel strategies, we must develop

and build in the appropriate mechanisms to a) continuously improve customer journeys and b) update channel strategies.

Our main recommendation is to build upon this review and take the key conclusions and observed challenges into the development of new omni-channel strategies. These new omni-channel strategies are by no means a silver bullet that will solve all existing challenges in service provision, but represent a step forward towards more inclusive, efficient, and effective public service delivery.

## 7 References

- [1] W. Pieterse, W. Ebbers, and C. Ø. Madsen, *New channels, new possibilities: A typology and classification of social robots and their role in multi-channel public service delivery*, vol. 10428 LNCS. 2017. doi: 10.1007/978-3-319-64677-0\_5.
- [2] W. J. Pieterse and W. E. Ebbers, “Channel choice evolution: An empirical analysis of shifting channel behavior across demographics and tasks,” *Government Information Quarterly*, vol. 37, no. 3, 2020, doi: 10.1016/j.giq.2020.101478.
- [3] C. Ø. Madsen and S. Hofmann, “Multichannel Management in the Public Sector: A Literature Review,” *The Electronic Journal of e-Government (EJEG)*, vol. 17, no. 1, pp. 20–35, 2019, [Online]. Available: <https://is-suu.com/academic-conferences.org/docs/ejeg-volume17-issue1-article538/1>
- [4] W. E. Ebbers, W. J. Pieterse, and H. N. Noordman, “Electronic government: Rethinking channel management strategies,” *Government Information Quarterly*, vol. 25, no. 2, 2008, doi: 10.1016/j.giq.2006.11.003.
- [5] B. W. Wirtz and P. F. Langer, “Public Multichannel Management – an Integrated Framework of Off- and Online Multichannel Government Services,” *Public Organization Review*, vol. 17, no. 4, pp. 563–580, Dec. 2017, doi: 10.1007/s11115-016-0356-0.
- [6] Y. C. Gagnon, E. Posada, M. Bourgault, and A. Naud, “Multichannel Delivery of Public Services: A New and Complex Management Challenge,” *International Journal of Public Administration*, vol. 33, no. 5, pp. 213–222, 2010, doi: 10.1080/01900690903405535.
- [7] P. C. Verhoef, P. K. Kannan, and J. J. Inman, “From Multi-Channel Retailing to Omni-Channel Retailing: Introduction to the Special Issue on Multi-Channel Retailing,” *Journal of Retailing*, vol. 91, no. 2, pp. 174–181, Jun. 2015, doi: 10.1016/J.JRETAI.2015.02.005.
- [8] X. L. Shen, Y. J. Li, Y. Sun, and N. Wang, “Channel integration quality, perceived fluency and omnichannel service usage: The moderating roles of internal and external usage experience,” *Decision Support Systems*, vol. 109, pp. 61–73, May 2018, doi: 10.1016/J.DSS.2018.01.006.
- [9] M. Cortiñas, R. Chocarro, and M. Elorz, “Omni-channel users and omni-channel customers: a segmentation analysis using distribution services,”

- Spanish Journal of Marketing - ESIC*, vol. 23, no. 3, pp. 415–436, Dec. 2019, doi: 10.1108/SJME-06-2019-0031/FULL/PDF.
- [10] S. K. Boell and D. Cecez-Kecmanovic, “A Hermeneutic Approach for Conducting Literature Reviews and Literature Searches,” *Communications of the Association for Information Systems*, vol. 34, no. 1, p. 12, Jan. 2014, doi: 10.17705/1CAIS.03412.
- [11] C. Ø. Madsen and P. Kræmmergaard, “Channel Choice: A Literature Review,” in *Electronic Government: Proceedings of the 14th IFIP WG 8.5 International Conference, EGOV 2015*, 2015, pp. 3–18.
- [12] W. Pieterse, *Channel choice: Citizens’ channel behavior and public service channel strategy*. Enschede: University of Twente, 2009. doi: 10.3233/978-1-58603-973-8-50.
- [13] A. W. K. Harzing and R. van der Wal, “Google Scholar as a new source for citation analysis,” *Ethics in Science and Environmental Politics*, vol. 8, no. 1, pp. 61–73, Jun. 2008, doi: 10.3354/ESEP00076.
- [14] A. Kosenkov, I. Pappel, and G. A. Giannoumis, “Omnichannel Public Engagement: from Theory to Practice,” in *Proceedings of Ongoing Research, Practitioners, Posters, Workshops, and Projects of the International Conference EGOV-CeDEM-ePart 2019*, 2019, pp. 237–240. Accessed: Mar. 16, 2022. [Online]. Available: <https://biblio.ugent.be/publication/8626904/file/8626906#page=251>
- [15] M. Rey-Moreno and C. Medina-Molina, “Omnichannel strategy and the distribution of public services in Spain,” *Journal of Innovation & Knowledge*, vol. 1, no. 1, pp. 36–43, Jan. 2016, doi: 10.1016/J.JIK.2016.01.009.
- [16] B. Schenk, M. Dolata, C. Schwabe, and G. Schwabe, “What citizens experience and how omni-channel could help—insights from a building permit case,” *Information Technology and People*, 2021, doi: 10.1108/ITP-06-2020-0374/FULL/XML.
- [17] H. J. Scholl, “Digital Government Reference Library (DGRL) Version 17.5,” Mar. 17, 2021. <https://faculty.washington.edu/jscholl/dgrr/> (accessed Mar. 17, 2022).
- [18] C. T. Goodsell, *The public encounter. Where state and citizen meet*. Bloomington: Indiana University Press, 1981.
- [19] C. Ø. Madsen, I. Lindgren, and U. Melin, “The accidental caseworker – How digital self-service influences citizens’ administrative burden,” *Government Information Quarterly*, vol. 39, no. 1, p. 101653, Jan. 2022, doi: 10.1016/J.GIQ.2021.101653.
- [20] S. Hofmann, D. Beverungen, M. Räckers, and J. Becker, “What makes local governments’ online communications successful? Insights from a multi-method analysis of Facebook,” *Government Information Quarterly*, vol. 30, no. 4, pp. 387–396, 2013, doi: 10.1016/j.giq.2013.05.013.
- [21] Eurostat, “ICT usage in households and by individuals,” 2022. <https://ec.europa.eu/eurostat/web/digital-economy-and-society/data/database> (accessed Mar. 17, 2022).

- [22] C. Ø. Madsen and P. Kræmmergaard, “How to Migrate Citizens Online and Reduce Traffic on Traditional Channels Through Multichannel Management: A Case Study of Cross-Organizational Collaboration Surrounding a Mandatory Self-Service Application,” in *Innovative Perspectives on Public Administration in the Digital Age*, IGI Global, Ed. 2018, pp. 121–142.
- [23] W. E. Ebbers and L. A. L. van de Wijngaert, “Paper beats ping: On the effect of an increasing separation of notification and content due to digitization of government communication,” *Government Information Quarterly*, vol. 37, no. 1, pp. 101396 [1–8], 2020, doi: 10.1016/j.giq.2019.101396.
- [24] C. Ø. Madsen, S. Hofmann, and W. Pieterse, *Channel Choice Complications: Exploring the Multiplex Nature of Citizens’ Channel Choices*, vol. 11685 LNCS. 2019. doi: 10.1007/978-3-030-27325-5\_11.
- [25] H. Margetts, “Public Management Change and E-Government: The Emergence of Digital Era Governance,” in *Routledge Handbook of Internet Politics*, A. Chadwick and P. N. Howard, Eds. London; New York: Routledge, 2009, pp. 114–128.
- [26] H. J. Scholl and R. Klischewski, “E-Government Integration and Interoperability: Framing the Research Agenda,” *International Journal of Public Administration*, vol. 30, no. 8, pp. 889–920, 2007.
- [27] C. Ø. Madsen and L. R. Christensen, “Integrated and seamless? Single Parents’ Experiences of Cross-Organizational Interaction,” in *Selected Papers for of the IRIS*, 2019, vol. 9, no. 9.
- [28] K. Kernaghan, “Changing channels: Managing channel integration and migration in public organizations,” *Canadian Public Administration*, vol. 56, no. 1, pp. 121–141, Mar. 2013, doi: 10.1111/CAPA.12006.
- [29] W. Pieterse and J. van Dijk, “Governmental Service Channel Positioning: History and Strategies for the Future,” in *Electronic Government. Communication Proceedings of the Fifth International EGOV Conference 2006*, Å. Grönlund, H. J. Scholl, K. Viborg Andersen, and M. A. Wimmer, Eds. 2006, pp. 53–60.
- [30] R. L. Daft and R. H. Lengel, “Organizational Information Requirements, Media Richness and Structural Design,” <http://dx.doi.org/10.1287/mnsc.32.5.554>, vol. 32, no. 5, pp. 554–571, May 1986, doi: 10.1287/MNSC.32.5.554.
- [31] A. Payne and P. Frow, “The role of multichannel integration in customer relationship management,” *Industrial Marketing Management*, vol. 33, no. 6, pp. 527–538, Aug. 2004, doi: 10.1016/J.INDMARMAN.2004.02.002.
- [32] S. A. Neslin and V. Shankar, “Key Issues in Multichannel Customer Management: Current Knowledge and Future Directions,” *Journal of Interactive Marketing*, vol. 23, no. 1, pp. 70–81, Feb. 2009, doi: 10.1016/J.INTMAR.2008.10.005.
- [33] D. K. Rigby, “The Future of Shopping,” *Harvard Business Review*, 2011, Accessed: Mar. 05, 2022. [Online]. Available: <https://hbr.org/2011/12/the-future-of-shopping>

- [34] Z. W. Y. Lee, T. K. H. Chan, A. Y. L. Chong, and D. R. Thadani, "Customer engagement through omnichannel retailing: The effects of channel integration quality," *Industrial Marketing Management*, vol. 77, pp. 90–101, Feb. 2019, doi: 10.1016/J.INDMARMAN.2018.12.004.
- [35] W. Pieterse, "Multi-channel management in PES: from blending to omnichannelling," Luxembourg, 2017. doi: DOI: 10.2767/73549.
- [36] M. Mintrom, "Market Organizations And Deliberative Democracy: Choice and Voice in Public Service Delivery," <http://dx.doi.org/10.1177/0095399702250346>, vol. 35, no. 1, pp. 52–81, Jul. 2016, doi: 10.1177/0095399702250346.
- [37] W. Pieterse, "Citizens and service channels: Channel choice and channel management implications," *International Journal of Electronic Government Research*, vol. 6, no. 2, 2010, doi: 10.4018/jegr.2010040103.
- [38] S. Shi, Y. Wang, X. Chen, and Q. Zhang, "Conceptualization of omnichannel customer experience and its impact on shopping intention: A mixed-method approach," *International Journal of Information Management*, vol. 50, pp. 325–336, Feb. 2020, doi: 10.1016/J.IJINFOMGT.2019.09.001.
- [39] S. Burford and A. Resmini, "Cross-channel information architecture for a world exposition," *International Journal of Information Management*, vol. 37, no. 6, pp. 547–552, Dec. 2017, doi: 10.1016/J.IJINFOMGT.2017.05.010.
- [40] S. Saghir, R. Wilding, C. Mena, and M. Bourlakis, "Toward a three-dimensional framework for omni-channel," *Journal of Business Research*, vol. 77, pp. 53–67, Aug. 2017, doi: 10.1016/J.JBUSRES.2017.03.025.
- [41] J. C. Kim and S. H. Chun, "Cannibalization and competition effects on a manufacturer's retail channel strategies: Implications on an omni-channel business model," *Decision Support Systems*, vol. 109, pp. 5–14, May 2018, doi: 10.1016/J.DSS.2018.01.007.