

Multichannel Management in the Public Sector: A Literature Review

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Abstract: The multichannel management field (MCM) of e-government focuses on how government organizations select, prioritize and integrate public service channels in a multichannel environment as well as migrate citizens and other stakeholders from one channel to another to increase efficiency and user satisfaction. MCM scholars collaborate with practitioners, conduct field experiments and study government-to-citizen interaction in real-life settings. MCM studies have led to important empirical findings, theory building and field-tested practical recommendations. Despite such valuable contributions to both scholars and practitioners, there are no up-to-date, comprehensive literature reviews which synthesize the knowledge from the MCM literature.

We therefore present a systematic and comprehensive literature review of MCM in e-government. Our review follows established guidelines and covers three main areas. (1) We identify lead scholars and outlets, concepts analyzed and the main methods and theoretical lenses applied. (2) We synthesize results and suggestions for future studies from the papers. (3) Finally, we identify knowledge gaps and propose research approaches to addressing these gaps.

Keywords: Multichannel management, multi-channel management, literature review, channel strategy, government organizations

1. Introduction

For government organizations, digitalization brings opportunities for efficiency gains and service improvement but also new challenges related to managing public service encounters across multiple channels and organizations (Kernaghan, 2013). Recent years have seen a widespread adoption of digital channels such as websites, online self-service applications, social media and mobile apps for government-to-citizen interaction. Still, the use of traditional channels such as telephone, mail and the counter remains high (Madsen and Kræmmergaard, 2016; Statistics Denmark, 2016). Madsen & Kræmmergaard (2016) present a study of a mandatory self-service application, which was widely used by citizens. Despite a high adoption rate, the application was initially economically unsuccessful because many citizens also called the public authority for guidance on how to use the service. After in-depth user studies, the communication surrounding the self-service application was harmonized across all channels and improved according to the identified problems. This was followed by a 40 % drop in telephone calls to the respective section of the public authority. This case demonstrates the necessity of knowing more about how channels are used in public service encounters and how government organizations can manage multiple channels to ensure efficient service provision and high user satisfaction.

The multichannel management (MCM) field of e-government studies how government organizations can improve public services by selecting, prioritizing and integrating public service channels in a multichannel environment as well as by migrating citizens and businesses from traditional toward digital channels (Pieterse, 2010; van Veenstra & Janssen, 2010; Kernaghan 2013). MCM scholars offer recommendations to government organizations, related to citizen collaboration, employee engagement, channel management strategies and instruments for executing these. The MCM literature includes theory development and empirical studies utilizing participatory methods, field experiments and in-depth contextual examinations of actual user journeys. However, important constituents of MCM studies such as methods, theory, concepts and findings have not yet been synthesized and analyzed and there are no recent and comprehensive literature reviews of the MCM literature within e-government.

We contribute to MCM studies in e-government by offering an up-to-date, extensive and systematic review following acknowledged methods for literature reviews by Webster & Watson (2002) and Schlichter & Kraemmergaard (2010). Further, we conducted a qualitative analysis of the papers by applying King's template

analysis technique (2012). Webster and Watson argue that “*Highlighting the discrepancy between what we know and what we need to know alerts other scholars to opportunities for a key contribution.*” (2002, p. xix). Therefore, we present the state-of-the-art knowledge in the MCM field, identify knowledge gaps and set the agenda for future MCM studies. The research questions we seek to answer are:

1. How is MCM studied within e-government research?
2. What is the existing knowledge from MCM studies in e-government?
3. What do we need to know from future MCM studies?

Having presented the purpose and research questions guiding our study, we define our key concepts in section two. Section three presents the methods applied for finding and analyzing the papers. In section four, we present the results of our analysis, by: (1) identifying existing MCM studies within e-government, including lead authors, outlets and countries of origin, (2) analyzing how the MCM studies were conducted identifying the applied methods, types of data, unit of analysis, concepts and underlying theoretical frameworks and (3) synthesizing existing knowledge in MCM studies and connecting this knowledge to underlying theoretical frameworks, thereby offering explanations for the findings. Afterwards, in section five, we formulate the knowledge gaps in MCM and propose strategies for closing them. In section six, we offer concluding remarks and discuss the limitations of our study.

2. Related Work on Multichannel Management

Apart from Madsen and Kræmmergaard (2015), whose review we use as a basis, a systematic overview of research on MCM in the public sector is missing. In contrast, research on MCM in the private sector has been thoroughly systematized (cf. e.g. the literature reviews by Neslin et al., (2006), Neslin & Shankar (2009)). The emergence of multiple channels through which customers can interact with companies has challenged the traditional purchasing processes based on one interaction channel – typically the counter (Neslin et al., 2006). Multichannel customer management is understood as “*the design, deployment, coordination, and evaluation of channels through which firms and customers interact, with the goal of enhancing customer value through effective customer acquisition, retention, and development*” (Neslin et al., 2006, p. 95). The considered channels typically include face-to-face contacts in a store, the Internet, telephone e.g. via call centers, sales force, third party providers etc. (Neslin and Shankar, 2009). Multichannel customer management is a customer-centric marketing function with the goal of increasing a company’s revenue by laying emphasis on the customer. It is closely linked to customer multichannel behavior (Pozza, 2014). Whereas customer multichannel management takes a company’s perspective, customer multichannel behavior deals with the factors influencing *customers’* channel choice and use.

Building on the concepts from the private sector, the same division can be found in the public sector with multichannel management (MCM) referring to public organizations’ internal perspective and channel choice (CC) referring to citizens’ behavior. A (service delivery) channel in the public sector is “*a means whereby governments deliver services of an informational or transactional nature to citizens, and citizens communicate with governments about the services they need or want*” (Kernaghan, 2013, p. 123). Similar to the private sector, channels in the public sector can be on site (e.g. face-to-face meetings at the municipal office), on paper (e.g. letters and reports), on phone (e.g. call centers and hotlines), on air (e.g. TV or radio), online (e.g. websites or e-mail), or on the go (e.g. mobile or video messages). We distinguish between inbound channel traffic, i.e. interactions that are initiated by citizens, and outbound channel traffic, denoting interactions that are directed from government towards citizens (Madsen and Kræmmergaard, 2016).

(Multi)channel management in e-government refers to a government’s “*selection, rationalization and integration of service delivery channels*” (Kernaghan, 2013, p. 124) as well as channel migration (ibid.). Kernaghan (2013) outlines these concepts. First, governments select the channels they provide to citizens (selection). Channels are prioritized according to their cost efficiency and the effectiveness of service delivery (rationalization). Next, in order to provide a seamless service delivery across multiple channels, these different channels are linked (integration). Finally, governments can take action in order to move citizens from one channel, i.e. typically traditional offline channels, to another, often electronic channel, which is mostly driven by the aim of reducing costs and providing better services (migration) (Kernaghan, 2013; Madsen and Kræmmergaard, 2016)

Whereas MCM deals with decisions and activities at the organizational level, the channel choice (CC) research stream sheds light on citizens' individual behavior in a multichannel environment (Madsen and Kræmmergaard, 2015). The overall concept of citizens' (multi)channel behavior (Pieterse, 2009; Teerling and Pieterse, 2011) consists of three steps: (1) citizens' channel choice (which concerns selecting a channel), (2) channel usage (using a specific channel for interacting with government) and (3) channel evaluation (assessing the CC after use).

As part of the results of this review, we identify and define the most frequently applied concepts in the MCM field of e-government (see section 4).

3. Material and Methods

This section presents the methods we applied to find and analyze the pool of MCM papers in our review. We first present our selection criteria and the search process, followed by the literature review framework and the coding process. Figure 1 present an overview of the research process, inspired by Schlichter and Kraemmergaard (2010).

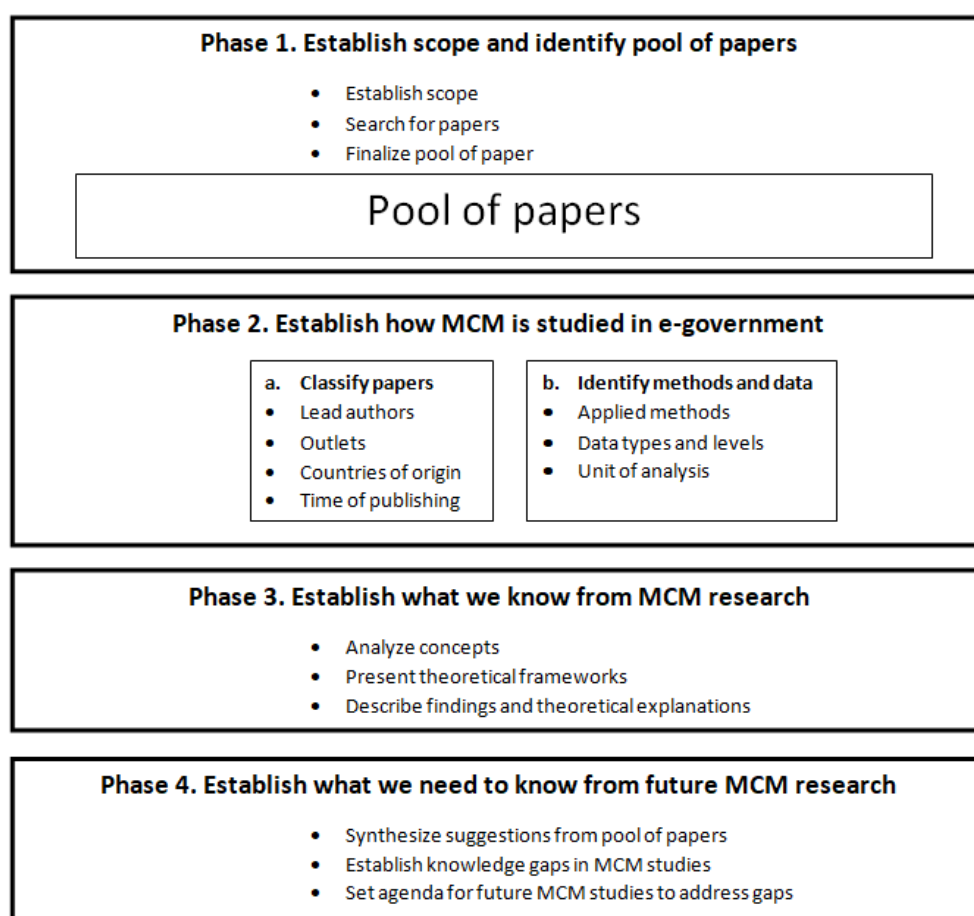


Figure 1: Overview of the research process

3.1 The Search for Papers

Our search for papers took place in August 2017 following Webster and Watson's three steps for a structured literature review (2002).

Table 1 presents an overview of the search process. We did not set a temporal restriction on the search. Our selection criterion included research or theoretical papers, which:

- Focus on MCM, i.e. study public authorities' management of at least two types of communication channels
- Are written in English

Table 1: The search for papers

	Step 1. Keyword search	Step 2. Database search using EGRL	Step 3. Backward and forward searches
Initial papers found	239	74	68
Papers added to pool	10	7	12

Step 1. Search for papers in selected journals and conference proceedings

First, we conducted keyword searches in the proceedings of the EGOV conference and in the nine core e-government journals: Government Information Quarterly, Information Polity, International Journal of Electronic Government Research, International Journal of Public Administration in the Digital Age, Transforming Government: People, Process and Policy, Journal of Information Technology and Politics, Electronic Government, an International Journal and Electronic Journal of Electronic Government. We conducted the keywords search using Harzing's Publish or Perish version 5.29 for Windows (Adams, 2017). Publish or Perish uses Google Scholar as an underlying search engine and searches entire papers; titles, abstracts, keywords, the text itself and references. The keywords were found through an iterative process. We supplemented our initial keywords with recommendations of five leading experts in the MCM field and results from papers found, an approach inspired by a previous study (Hofmann, Räckers and Becker, 2012). We used seven keywords: channel integration, channel management, channel marketing, channel strategy, integrated service delivery, multichannel and multi-channel. The keyword search yielded 239 papers. After reading the abstracts, we omitted 212 papers which did not fit our selection criterion. We read and discussed the remaining 27 papers and included 10 in the review. We agreed that these 10 papers all had MCM as their primary focus. The high number of omitted papers is the result of the aggressive in-depth search which Publish and Perish conducts. If any of the keywords appeared anywhere in the text, including the reference section, it appeared as a result.

Step 2. Database search

Webster and Watson (2002) recommend that scholars search databases as the second step. We downloaded a bibTEX file containing the entire E-government Reference Library version 13.0 from March 2017. This library, which is now called the Digital Government Reference Library, contains references, titles and abstracts of 9,287 peer-reviewed English language e-government papers (Scholl, 2017). We imported the files into the reference software Mendeley Desktop for further analysis. We used the same keywords for searching through EGRL in Mendeley as in step 1. This search initially yielded 74 papers. Of these, 12 were already found in step 1. Of the remaining 62 papers, three were conference versions of journal papers already included. We omitted another 52 after reading abstracts or full papers. This left seven papers, bringing the total pool to 17 papers.

Step 3. Backward and forward searches

Finally, we used Google Scholar to find additional papers that either referenced or were referenced by the papers found in Step 1 and 2. This yielded 68 papers, of which one was unavailable. After reading and discussion, we added 12 papers bringing the total pool to 29. The 29 MCM papers in the review are marked (*) in the reference section.

3.2 Review Framework and Coding Process

We analyzed the papers in three steps. We collected the papers' bibliographical information and classified the applied research methods. Then, we identified the papers' main concepts and the theories, which explain the relationship between these concepts. Finally, we summarized and synthesized the papers' results and suggestions for future studies.

Bibliographic information, research methods and data level

First, we collected the papers' bibliographic information such as the *author(s)*, *publication year*, *the papers' outlet* and the *country of data collection*. Then, we analyzed the papers according to the applied *research methods*, which also serve as an indicator for the underlying research paradigm (Heeks & Bailur, 2007). The classification of methods is based on Schlichter and Kræmmergaard's framework for a literature review of the enterprise resource planning field (2010), which we adjusted according to our needs (see Table 2). Case studies are frequently applied within e-government studies. However, the term 'case study' is often blurrily defined (Yin, 2014). We therefore follow Blaikie (2015) and Yin (2014), who define a case study as a research inquiry or strategy, which may include several methods to consider a phenomenon from a holistic perspective. Hence,

we have omitted case studies from Schlichter and Kræmmergaard 's (2010) method classification and coded the specific methods that these papers applied instead. Furthermore, we have added the methods observation and document analysis based on Recker (2013).

Table 2: Classification of research methods

Category	Description
Descriptive	Papers solely describing or arguing for a phenomenon, often very practically oriented
Design science	Papers that construct systems and/or tools
Document analysis	Papers which use internal or external documents as data source
Experiment	Papers using either laboratory or field experiments
Focus group	Papers which collect data via focus groups
Interview	Papers which collect data via interviews
Observation	Papers using researchers' direct or participatory observations
Survey	Papers that gather data by means of questionnaires
Theoretical	Papers analyzing existing theory, typically with the aim of developing new theory

To verify Heeks and Bailur's criticism (2007) of most e-government studies suffering from a lack of 'real world' data, we reviewed the *level of the analyzed data*, the existence of actual *channel traffic*, the *stakeholder involvement* as well as the *time span* of the studies. The level of the analyzed data is based on Blaikie's typology (2015, p. 161, see Table 3). We coded a paper as containing channel traffic if it presented empirical numbers on the frequency of channel usage. The stakeholder involvement indicates if and how government practitioners and citizens have been involved in the process of data collection. Finally, the category time span denotes if a study is a cross-sectional or a longitudinal study, with the latter being defined as "a study extended in time" (Blaikie, 2015, p. 201).

Table 3: Levels of Data

Category	Description
Primary	Data generated by the researcher
Secondary	Data generated by another researcher
Tertiary	Data analyzed by another researcher

Conceptual and theoretical analysis

Webster and Watson state that a suitable literature review framework "helps to define the topic area, such as types of variables examined, level of analysis, gaps in the literature, or other important theoretical issues" (2002, p. xviii). Therefore, we coded the papers according to their level of analysis, concepts and theoretical frameworks. For the level of analysis we initially distinguished between the individual, group and organizational level following Webster and Watson (2002). However, some of the papers revolved around communication channels rather than organizations or citizens. Therefore, we added channels as a level. The channel level can be regarded as an interim level since channels are a means of interaction between citizens and organizations. Next, we applied Webster and Watson's concept matrix approach (2002). In contrast to author-centric frameworks, which summarize each analyzed paper individually, concept-centric approaches are appropriate for synthesizing literature as they group concepts across papers. Webster and Watson do not define concepts or offer explicit guidance for how a conceptual analysis can be conducted. However, Blaikie offers the following definition of concepts and their relationship to theories.

"A concept is an idea that is expressed in words or as a symbol. Technical concepts in any discipline form the language by means of which it deals with its subject matter. They range in generality from the very specific to the highly abstract, and from the simple to the complex. Concepts are regarded as the building blocks of social theories. Theories, in turn specify the relationships between concepts, and why these relationships exist." (Blaikie, 2010, pp. 111–112)

Our conceptual analysis occurred in three steps. Following Blaikie, we first identified 43 main concepts in the papers (step 1). Next, we removed duplicates and concepts that were not related to MCM and therefore outside the scope of our review (step 2). This reduced the number of concepts to 27. Finally, we created a visual representation of how the concepts were related and grouped them into five main clusters (step 3).

The next part of the review concerns the theories applied in MCM, which explain how and why the concepts are related. This is important because identifying the theoretical frameworks applied by MCM scholars and the potential blind spots herein contributes to highlighting the difference between what we know and what we need to know (Webster and Watson, 2002). Identifying theory thereby helps us to outline the direction for future studies. Moreover, theory application and building is a contested topic within the e-government field. Scholars have criticized early e-government studies for neither building on previous studies nor applying theory (Heeks and Bailur, 2007; Norris and Reddick, 2013). Recently, Bannister and Connolly (2015) found that while many e-government studies do apply theoretical frameworks, they mostly import theory from other areas rather than building native e-government theories.

Intercoder reliability

To prepare for in-depth discussions, both authors coded all 29 papers according to the review framework using an Excel spreadsheet and a Word template following King's template analysis (2012). We began by coding 10 papers, and then adjusted the review framework to the final set of categories. To ensure a common understanding of the analyzed papers, we discussed our findings during several face-to-face meetings. We calculated the inter-coder reliability following Heeks and Bailur (2007). We used 21 quantitative coding categories, multiplied by 29 papers, this leaves 609 possible points of (dis)agreement. We agreed in 567 cases, resulting in an inter-coder reliability of 93%.

4. Results: Current MCM Research

We now present the results of our analysis to answer our first two research questions of how MCM is studied within e-government research (RQ1) and what the existing knowledge from MCM studies in e-government is (RQ2). We start with an overview of the papers' bibliographic information (1), followed by the papers' research designs (2). Then we present the conceptual analysis (3), the applied theoretical frameworks (4) and finally the findings from the papers (5).

4.1 Bibliographic Information

Figure 2 presents the distribution of published papers on MCM from 2005, when the first paper was published, until August 2017.

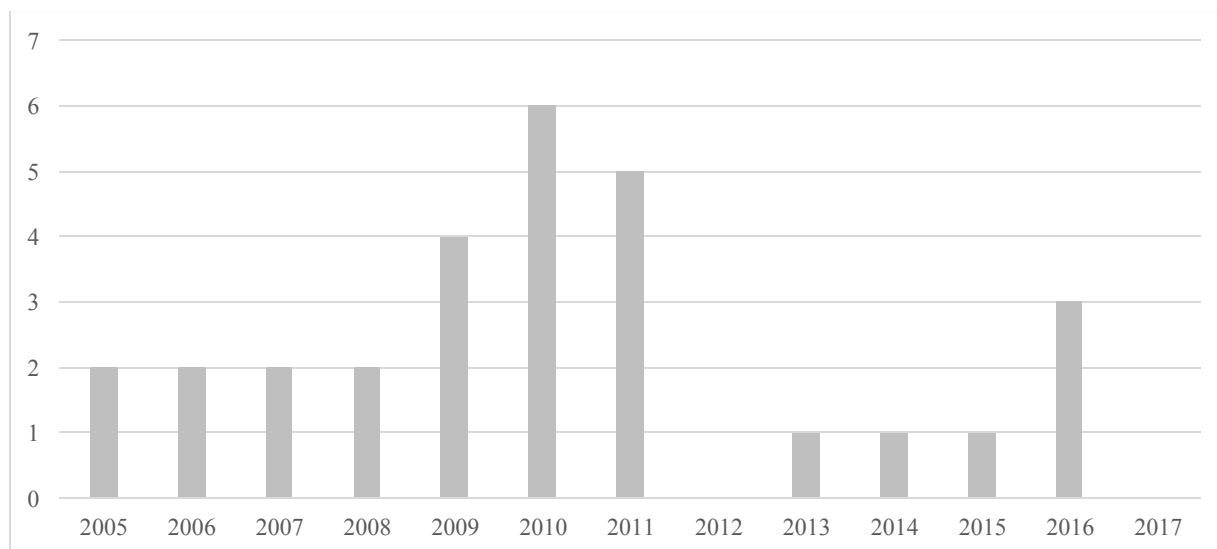


Figure 2: Papers in the pool published over time

On average, 2.3 papers were published per year, with a maximum of six papers in 2010. The most frequent *outlets* for MCM papers are Government Information Quarterly and Electronic Journal of e-Government (four papers each), followed by the International Review of Administrative Sciences (three papers), the International Journal of Electronic Government Research and the IFIP EGOV Conference Proceedings (two papers each).

Overall, 39 different *authors*, of whom 32 have (co-) authored only one paper, have published the 29 papers in our review. A small group of scholars have written the majority of papers, with five authors having (co-) authored 18 out of the 29 papers (see Table 4). The high levels of papers from Netherlands are partly due to

the *Channels in Balance* project, a collaboration on CC and MCM between academic researchers and Dutch government organizations (van de Wijngaert, Pieterse and Teerling, 2011).

Table 4: Most frequent authors and their country of work in the pool of reviewed papers

Author	Country of work	Number of papers
Pieterse, W.	Netherlands	7
Janssen, M.	Netherlands	5
Kernaghan, K.	Canada	5
Teerling, M. (with Pieterse)	Netherlands	4
Klievink, B. (with Janssen)	Netherlands	3

The authors' *country of work* and the *country of data collection* further emphasize the concentration of MCM research in a few areas. Canada is the most frequent country of data collection (10 papers), followed by the Netherlands (9 papers), and Australia (3 papers).

4.2 Research Designs

In Table 5, we summarize the classification of papers according to their *research methods*. Interviews are by far the most frequent method (14 papers), followed by survey (9 papers) and document analysis (9 papers).

Table 5: Papers classified according to their research methods

Research method	Number of papers
Interviews	14
Survey	9
Document analysis	9
Focus group	6
Descriptive	5
(Participatory) observation	3
Design	2
Field experiment	2
Theoretical	2

The number of methods applied in one study indicates how comprehensive a phenomenon is studied. Of the 29 papers in the review, eight papers apply just one method, 14 papers use two methods and five papers combine three or more methods whereas two papers do not present their applied method at all.

Concerning the highest *level of analyzed data*, 20 papers base their findings on primary data such as interview transcripts or survey data, one paper uses secondary, six papers use tertiary data and two papers do not refer to data at all. Five papers present actual data on *channel traffic*. Except for one source, however, the data is over a decade old. The majority of the studies are cross-sectional. Only two papers have conducted a *longitudinal* analysis. Regarding *stakeholder involvement*, government practitioners have participated in data generation for 20 papers, mostly through interviews and workshops, and six papers involve citizens, typically as survey participants. This multiplicity of real-world data collection contradicts Heeks & Bailur's criticism of e-government scholars not leaving their offices to conduct research (2007).

4.3 Conceptual Analysis and Findings from the Pool of Papers

During the conceptual analysis, we identified 27 sub-concepts, which we clustered into five main concepts. Table 6 presents the results of the conceptual analysis. The table also displays the level of analysis which the concepts are studied at: the organizational level (O), the individual level (I), the group level (G) and the interim channel level (C).

Table 6: Main and sub-concepts and levels of analysis in MCM studies

Main concept	Sub-concepts	Papers
Multichannel strategy (O)	Channel strategies	(Pieterse and van Dijk, 2006; Ebbers, Pieterse and Noordman, 2008; Gagnon <i>et al.</i> , 2010; Pieterse, 2010; van Veenstra and Janssen, 2010; Kernaghan, 2013; Madsen and Kræmmergaard, 2016; Rey-Moreno and Medina-Molina, 2016; Wirtz and Langer, 2016)
	Channel integration	(Kernaghan, 2005, 2013; Flumian, Coe and Kernaghan, 2007; Pieterse and Teerling, 2009)
	Channel migration	(Ebbers, Pieterse and Noordman, 2008; Teerling and Pieterse, 2010; Mundy, Umer and Foster, 2011; van de Wijngaert, Pieterse and Teerling, 2011; Kernaghan, 2013, 2015)
	Service integration	(Kernaghan, 2005, 2009; Flumian, Coe and Kernaghan, 2007; Roy, 2009; Bharosa <i>et al.</i> , 2010)
	Organizational integration	(Flumian, Coe and Kernaghan, 2007; Roy, 2007; Kernaghan, 2009, 2013; Klievink and Janssen, 2010; Wirtz and Langer, 2016)
	Intermediation	(Frey and Holden, 2005; Janssen and Klievink, 2009)
	Offline-channel reduction	(Madsen and Kræmmergaard, 2016)
	Organizational characteristics	(van Veenstra and Janssen, 2010)
	Organizational barriers	(Kernaghan, 2005, 2009, 2013; Flumian, Coe and Kernaghan, 2007; van Veenstra and Janssen, 2010)
Multichannel Instruments (O, I)	Community engagement	(Kernaghan, 2009)
	Instruments influencing citizens' MCM behavior	(Bharosa <i>et al.</i> , 2010; Teerling and Pieterse, 2010, 2011; van de Wijngaert, Pieterse and Teerling, 2011; Kernaghan, 2013; Madsen and Kræmmergaard, 2016)
	Instruments for government employee engagement	(Bharosa <i>et al.</i> , 2010)
	Instruments for organizational change	(Kernaghan, 2005; Roy, 2007, 2009; Janssen and Kuk, 2010)
Channels (C)	Channel types and characteristics	(van Deursen and Pieterse, 2006; Ebbers, Pieterse and Noordman, 2008; Pieterse and Teerling, 2009; Kernaghan, 2013, 2015; Wirtz and Langer, 2016)
	Channel modes	(van Deursen and Pieterse, 2006; Ebbers, Pieterse and Noordman, 2008)
	Channel costs	(Andersen, Medaglia and Henriksen, 2011)
	Channel traffic	(van Deursen and Pieterse, 2006; Roy, 2007, 2009; Ebbers, Pieterse and Noordman, 2008; Andersen, Medaglia and Henriksen, 2011; Madsen and Kræmmergaard, 2016)
Citizens' multichannel behavior (I)	Citizens' multichannel behavior	(Teerling and Pieterse, 2011; van de Wijngaert, Pieterse and Teerling, 2011)
	Citizens' channel preferences	(Pieterse and Teerling, 2009)
	Citizens' characteristics	(Teerling and Pieterse, 2011; Kernaghan, 2015; Rey-Moreno and Medina-Molina, 2016; Wirtz and Langer, 2016)
	Citizens' channel choice	(Ebbers, Pieterse and Noordman, 2008; Pieterse, 2010; Andersen, Medaglia and Henriksen, 2011)
	Citizens' channel usage and frequency	(van Deursen and Pieterse, 2006; Pieterse and Teerling, 2009; Pieterse, 2010; Teerling and Pieterse, 2010; Andersen, Medaglia and Henriksen, 2011; Madsen and Kræmmergaard, 2016; Rey-Moreno and Medina-Molina, 2016)
	Citizens' channel evaluation and satisfaction	(Pieterse and Teerling, 2009; Rey-Moreno and Medina-Molina, 2016)
	Citizens' preference for multichannel instruments	(Ebbers, Pieterse and Noordman, 2008; Teerling and Pieterse, 2010, 2011)
	Citizens' barriers and requirements for multichannel behavior	(Roy, 2009; Mundy, Umer and Foster, 2011; Teerling and Pieterse, 2011; Kernaghan, 2015; Madsen and Kræmmergaard, 2016)
Employees' multichannel practice (I + G)	Perception of multichannel management across levels in government	(Nygren, Axelsson and Melin, 2014)

Multichannel strategy is the most common concept in the papers. It is mostly studied at the organizational level of analysis and often used synonymously with channel strategy and MCM. It covers public organizations' *"selection, rationalization and integration of service delivery channels."* (Kernaghan, 2013, p. 124). The main purpose of multichannel strategies is to increase the public sector efficiency by guiding or migrating citizens from traditional towards e-government self-service channels. *"(...) channel migration, refers to the movement of users from one channel to another to reduce costs or improve service, or both."* (Kernaghan, 2013, p. 124). Pieterse and van Dijk use the term 'multichanneling', defined as *"the use of multiple service channels within one public service delivery process or the use of different channels for different service delivery processes."* (2006, p. 57). Madsen and Kræmmergaard (2016) present offline-channel reduction, the reduction in traffic to traditional channels, as another goal besides migration.

Integration is a key concept and a frequently mentioned goal in MCM. Oxford Learner's Dictionary defines integration as *"the act or process of combining two or more things so that they work together"* (2019). We have identified three related types of integration in the papers. Service integration or integrated service delivery, is defined as *"bringing together and fitting together related government services so that citizens can access them in a single seamless experience based on their wants and needs"* (Kernaghan, 2005, p. 120). Channel integration *"entails linking service delivery channels to provide seamless cross-channel service."* (Kernaghan, 2013, p. 214). Thus, integration at both the service and channel level refers to citizens' experience of cross-organizational interaction. The goal is to create an effortless interaction for citizens and remove any 'bureaucratic cracks' between the service providing organizations, so the citizens perceive it as if they were interacting with a single coherent organization. Organizations seek to achieve service and organizational integration by providing a single point of entry, i.e. web-portals, and present the information according to citizens' life events. Another way is by sharing information so citizens do not have to present the same information twice. Finally, organizational integration is a consequence of organizations' efforts to increase efficiency and harmonize and improve services.

Kernaghan (2013) 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 organizations (Kernaghan, 2013, p. 125, Figure 3). By presenting these 'integration mechanisms' as strategic choices organizations may pursue rather than unavoidable stages caused by technological development, Kernaghan escapes the technological determinism, which previous web-stage models are heavily criticized for (Heeks and Bailur, 2007; Norris and Reddick, 2013).

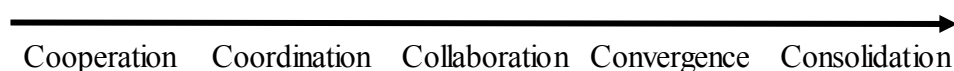


Figure 3: The integrated channel delivery continuum from Kernaghan (2013). Reprinted with permission

Cross-organizational collaboration is not limited to government institutions, however. MCM can lead to various conflicts such as the relationship between governments and former intermediaries with the latter becoming obsolete (Frey and Holden, 2005). Klievink and Janssen define 'intermediaries' as *"any public or private organization facilitating the coordination between public service providers and their users [citizens, businesses or other public organizations]."* (2009, p. 38, insertion ours). To succeed with MCM, several organizational barriers must be overcome. These include political, structural, operational, managerial and cultural, organizational, legal as well as individual characteristics, which shape the integration and management of channels (e.g. Flumian et al., 2007; Kernaghan, 2005; Nygren et al., 2014). Furthermore, the location of a government organization be it urban or rural seems to influence their integration of e-government channels (Pieterse and van Dijk, 2007).

The studies acknowledge that government integration on various levels such as service or channel integration is still at an early stage (Roy, 2009). Rather than causing offline channel reduction, electronic channels increase the overall channel traffic. However, integration strategies are an important task for achieving a successful MCM (Pieterse and van Dijk, 2006). In general, few papers present results that cover several concept clusters such as multichannel strategies positively influencing citizens' multichannel behavior (Pieterse and Teerling, 2009).

Multichannel instruments refer to the tools and actions government organizations can employ to succeed with their multichannel strategy, such as guiding citizens towards digital channels – but also employees' multichannel behavior. To increase citizens' use of online channels, improved information and communication about these services (Teerling and Pieterse, 2010, 2011; van de Wijngaert, Pieterse and Teerling, 2011; Madsen and Kræmmergaard, 2016) and enhancing service channels is important (Teerling and Pieterse, 2011; Madsen and Kræmmergaard, 2016). Teerling and Pieterse (2011) present four different types of marketing instruments: communication, legal, and economic, and finally the service itself, while (Bharosa, Janssen, Klievink, van Veenstra, & Overbeek (2010) present methods for engaging government employees.

Channels. Only few papers deal with channels and their characteristics. According to Kernaghan (2013, p. 213) "A service delivery channel is a means whereby governments deliver services of an informational or transactional nature to citizens, and citizens communicate with governments about the services they need or want". The main channels are physical letters, office visits, telephone calls, and websites (Kernaghan, 2013). Ebbers, Pieterse and Noordman (2008) apply and expand a framework by Bordewijk and van Kaam (1982) on interaction between a central organization and its users to present five different 'channel modes' (interaction forms) between citizen and government. Bordewijk and van Kaam term these modes *allocation*, *consultation*, *registration* and *conversation*. They define them according to who initiates the interaction and who controls the information exchanged. Ebbers et al. (2008) add a fifth mode, *transaction*, which covers in- or outbound payments between government organizations and citizens.

Channel traffic refers to the sum of interactions of a given channel at an aggregated level: website visits, telephone calls, counter visits or outbound letters. Despite the importance channel traffic has for achieving efficiency gains within MCM, only six of the 29 papers include this concept. Surprisingly, we found that this concept is underdeveloped in most of these papers. For instance, few authors distinguish between in- and outbound channel traffic or incoming versus answered telephone calls. Moreover, 'Internet traffic' composes e-mail traffic, website visits and use of self-service applications although these interaction forms are different and have completely different costs associated with them. Further, only two papers include channel costs as a concept, resulting in the finding that email communication is less expensive compared to telephone (Andersen, Medaglia and Henriksen, 2011) and that self-service solutions are expensive to develop (Pieterse and van Dijk, 2006).

Citizens' multichannel behavior describes government-to-citizen interaction as a three-step process: channel choice, channel use and channel evaluation (Pieterse, 2010; Teerling & Pieterse, 2011, Figure 4). Whereas most MCM studies focus on the organizational level, citizen multichannel behavior is mostly studied at the individual level of analysis. The papers studying citizen CC appear grounded in a positivistic research philosophy and study 'citizen behavior' as an observed, external phenomenon, based on regression analysis of survey data.

Papers analyzing citizens' multichannel behavior acknowledge that although the use of digital channels has increased, traditional channels are still used. Thus, introducing new channels has rather led to supplementation than to replacement of offline channels (van Deursen and Pieterse, 2006; Pieterse, 2010; Madsen and Kræmmergaard, 2016). Variables that influence citizens' CC are widely discussed and range from socio-demographic factors such as age and gender to task and situational characteristics (Ebbers, Pieterse and Noordman, 2008; Teerling and Pieterse, 2010, 2011). However, no clear picture can yet be drawn with different results contradicting each other, and the underlying settings also differ.

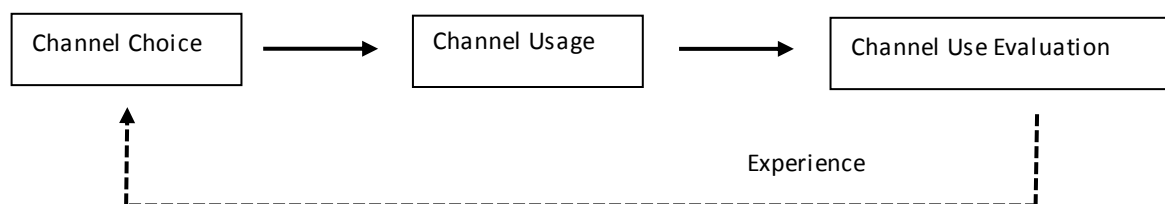


Figure 4: Citizen multichannel behavior. Adapted from Teerling & Pieterse (2011)

Employees' multichannel practice is an understudied area in the MCM papers. It concerns government employees' practices for carrying out an organization's multichannel strategy. An important sub-concept

covers the employees' perception and awareness of the organizations' MCM strategy, which varies considerably across different hierarchy levels in the organization. We only found this concept in a single study (Nygren, Axelsson and Melin, 2014), which stands out, however, as it occurs on the individual and group level rather than the organizational level of analysis. Moreover, it is the only example of critical realism within the pool of papers. The results suggest that employees on different hierarchy levels have a different understanding of channels and their importance for interacting with citizens (Nygren, Axelsson and Melin, 2014).

4.4 Theory in MCM studies

This section presents the theories, which are applied and built by MCM scholars in e-government. We identified clear references and theory application in 13 of the 29 papers. Table 7 presents the identified theories in MCM studies in order of frequency.

Table 7: Identified theories in MCM studies

Theory	Papers
Medium richness theory	(van Deursen and Pieterse, 2006; Ebbens, Pieterse and Noordman, 2008; Pieterse, 2010; Teerling and Pieterse, 2010, 2011; Madsen and Kræmmergaard, 2016)
Channel positioning strategies	(Pieterse and van Dijk, 2006; Ebbens, Pieterse and Noordman, 2008; Pieterse and Teerling, 2009; Pieterse, 2010)
Channel expansion theory	(van Deursen and Pieterse, 2006; Pieterse, 2010; Teerling and Pieterse, 2011)
Intermediation theory	(Frey and Holden, 2005; Janssen and Klievink, 2009)
Transaction cost theory	(Frey and Holden, 2005; Janssen and Klievink, 2009)
Technology acceptance model	(Pieterse, 2010; Teerling and Pieterse, 2010)
Social presence theory	(Ebbens, Pieterse and Noordman, 2008)
Structuration theory	(Nygren, Axelsson and Melin, 2014)
Social influence model	(van Deursen and Pieterse, 2006)
Strategic diversification	(Wirtz and Langer, 2016)
Critical success factors	(Janssen and Kuk, 2010)

As Table 7 shows, two theories are particularly relevant to MCM studies. Medium Richness Theory (MRT) is frequently used by MCM scholars and is applied on different levels of analysis and in relation to four of the five main concepts. The channel positioning strategies are important because they form a native theory iteratively developed and tested throughout the MCM studies in the pool of papers. We present these two theories in more detail below.

Medium Richness Theory

MRT is a variance theory developed in organizational studies to explain why managers choose certain media for information related tasks (Daft and Lengel, 1986). MRT classifies media from rich to lean based on four factors: *the medium's capacity for immediate feedback, the number of cues and channels utilized, personalization and language variety*" (Daft & Lengel, 1986, p. 560). Rich media provide more and different kinds of information compared to lean media and allow for direct interaction. For instance, a telephone conversation affords hearing each other's tone of voice and interrupting to provide feedback or ask questions. This is not possible in letters or static text. The second concept is task complexity, which is measured according to lack of information (information uncertainty) and possible conflicting interpretations of the information (information equivocality). According to MRT, lean media are suitable for tasks where information uncertainty is high, while rich media are suitable for tasks with high information equivocality.

MRT is applied to explain and predict citizens' multichannel behavior. However, it is also used as a theoretical basis for offering recommendations for how organizations can manage their channels in relation to the task at hand. Critics of MRT note that it has poor predictive power, regards media's capabilities as being fixed and disregards that other factors, such as people's experience with the medium in question and organizational implementation, also influence a medium's perceived richness (Carlson and Zmud, 1999). Some of this criticism is accommodated with the Channel Expansion Theory (Carlson and Zmud, 1999), which posits that

people's experience with a channel influences the level of richness they perceive, and their willingness to choose the channel again.

Channel positioning strategies

MCM scholars have also contributed to theory building in e-government. Through several papers, Dutch scholars have developed a multichannel strategy for public organizations, which combines elements from MRT and interactivity theory with empirical data on channel traffic and channel modes. According to this strategy, government organizations should guide citizens or employees to the most efficient channels for the given task. Simple requests should be handled online while complicated issues should be dealt with on the phone or over the counter. The channel positioning strategies fulfill all the requirements of a theory (Gregor, 2006). They describe and analyze the development in government organizations' channel strategies and they explain and predict the best channel-task relationship. Moreover, they predict the development in channel strategies. Finally, they prescribe how public organizations should manage their channels for the optimal efficiency. The strategies' recommendations regarding channel integration and migration have been empirically tested and validated.

The theory is a major contribution to MCM studies and a rare example of native theory within e-government. However, it also has limitation. First, it only regards the telephone, counter and Internet. Newer channels such as social media, smartphones and robots are not included. Second, it only covers inbound traffic and regards each interaction in isolation as discrete events. Thereby, it ignores the potential relationship between governments' outbound and the resulting inbound traffic. Moreover, it draws heavily upon MRT by explaining events occurring at a single point in time, through cross-sectional analysis. Therefore, the strategy is ill-suited for interaction which spans multiple channels, either sequentially or simultaneously. Here, the concept of citizens' multichannel behavior appears more useful.

5. What do we need to know from future MCM studies?

Based on the discussed results, we here present the results of our literature review: The identified gaps in the MCM literature, our suggestions for how to close these gaps, and the contribution such studies will offer (see Table 8). Although we have identified certain gaps several times, e.g. both in relation to research design and suggestions for future studies, the gaps are presented only once.

Considering the *bibliographic information* of the analyzed papers, it is striking that only highly developed countries are considered and that only voluntary settings are covered, thus calling for more research in non-OECD countries as well as in mandatory settings. Analyzing the *research designs* of the papers, we find that most studies rely on interviews, surveys and document analysis and are cross-sectional. Furthermore, the citizens' perspective is not included in the research collaboration, and in cases channel traffic is used, this data is quite old. Therefore, we see the need to conduct studies that are based on field experiments, that are longitudinal, that include citizens and that use up-to-date channel traffic. Regarding the *conceptual analysis, level of analysis and results*, we recognize that applied concepts are often underdefined, that new channels such as social media are not covered in the studies, that there is no clear understanding of MCM making certain stakeholders obsolete and that – although often proclaimed – there is no analysis of the effect of communication about e-channels. We argue for a clearer definition of the concepts in MCM, for including more recent channels, for analyzing the effect of MCM on the involved stakeholders and for a deeper investigation of the effect of communication. From the point of view of *theoretical frameworks*, we find that if they apply theories, most studies refer to MRT and are cross-sectional and variance based. Furthermore, when using native channel strategies, the studies are limited to one organization. In addition, the studies in our sample neglect the relationship between in- and outbound traffic and do not provide a theorization of the organizational aspects concerning MCM. Therefore, we suggest studying channel behavior as a time-spanning process, considering cross-organizational MCM strategies, exploring the relationship between in- and outbound traffic and conducting theory-based studies on the organizational challenges in MCM. Based on the *suggestions for future studies* from the papers, we have identified the need for conducting studies in group settings with social intermediaries as well as to analyze data on the costs and benefits of MCM.

Table 8: Suggested future MCM studies in e-government

Bibliographic information		
<i>Gap</i>	<i>How to close gap</i>	<i>Contribution</i>
MCM studies are conducted in high-income, high-trust, welfare countries	Conduct MCM studies in new settings: low and middle-income, non-OECD countries	Improved external validity, knowledge of how trust influences MCM, MCM for mobile application settings
MCM studies cover voluntary settings only	Conduct MCM studies in mandatory settings	Knowledge and prescriptive theory for MCM in mandatory settings
Research design		
<i>Gap</i>	<i>How to close gap</i>	<i>Contribution</i>
Mostly interviews, surveys, document analysis	Conduct more field experiments on channel strategies and instruments	Improved explanatory and predictive MCM theory. Improved prescriptive theory for the current channel landscape
Mostly cross-sectional studies and pilot projects	Conduct longitudinal studies, and study organizational implementation	Knowledge of long-term effects of channel strategies, and how to implement and scale-up pilot projects after researchers leave
Most data on channel traffic is over a decade old	Collect new data on channel traffic from post-adoption environment	Insight into current channel use. Better basis for cost and benefit calculations
Citizens are not included in research collaboration and design	Include citizens in design studies of multichannel services, conduct joint experiments with citizens and caseworkers	Better insight into citizens' channel practices, needs and wants and how caseworker behavior affects their actions
Conceptual analysis, level of analysis and results		
<i>Gap</i>	<i>How to close gap</i>	<i>Contribution</i>
Concepts are underdefined or black-boxed and the relationship between concepts is unknown	Define and harmonize key concepts in MCM field, and analyze relationship between key concepts	Improve comparisons and generalizability of results. Theory development and evaluation of instruments
New channels are understudied	Study social media, mobile applications, robots	MCM practices and strategies for current channel landscape
It is unclear if MCM will lead to internal and external stakeholders becoming obsolete	Identify the effects of MCM on various stakeholder groups	Knowledge on how MCM affects stakeholders such as intermediaries and employees and how to overcome their barriers
The effect of communication about e-channels is understudied	Study how targeted information influences citizens' channel choice	Identification of communication instruments for channel migration channels, prescriptive theory on channel instruments
Theoretical frameworks		
<i>Gap</i>	<i>How to close gap</i>	<i>Contribution</i>
Most knowledge of CC comes from MRT based cross-sectional, variance studies	Study channel behavior as a process, include channel switching and supplementing	Data, theory and MCM strategies for complicated interactions and actual citizen channel behavior
Channel strategies focus on single organizations	Study and develop cross-organizational MCM strategies	MCM strategies and prescriptive theory, reflecting cross-organizational setting
The relationship between in- and outbound traffic and between channel modes is understudied	Explore and explain the relationship between in- and outbound traffic, and channel modes	Knowledge of sequential multichannel interaction and more complicated user journeys
Organizational aspects concerning MCM is under theorized	Theory-based studies on different organizational challenges to MCM	Improved MCM theory – higher explanatory power and more valuable prescriptive theory

Suggestions for future studies from papers		
Gap	How to close gap	Contribution
Social intermediaries	Conduct studies on MCM in group settings with social intermediaries	Knowledge of CC as a social process, better prescriptive theory reflecting actual use situations and facilitating social learning for digital self-service channels
Cost and benefit calculation of MCM	Collect and analyze data on MCM costs and benefits	Improved knowledge of the economic effects of MCM

6. Conclusion

We have conducted an extensive and thorough literature review of 29 MCM papers in e-government. Our goal was to synthesize the existing knowledge in this field to answer the first research question ‘*What is the existing knowledge from MCM studies in e-government?*’. We evaluated the research design, the conceptual analysis and the findings, recommendations and suggestions for future work presented in the papers. Additionally, we focused on the applied theories that are prevalent in MCM studies. By critically assessing these findings, we identified numerous knowledge gaps within five key areas to answer our second research question ‘*What do we need to know from CC and MCM studies in the future?*’. We believe our findings can serve as an agenda for future research. However, a literature review is never complete. We may have missed relevant papers because either we regarded them out of scope or they were inaccessible.

MCM research has found that multichannel management and integration in government organizations still lacks maturity. Scholars mainly focus on barriers towards MCM such as legal, structural and organizational factors. The MCM field is dominated by qualitative research and conceptual analysis on the organizational level. We also acknowledge the development of a native theory in shape of the channel positioning strategies. However, we find that these strategies were written when the main goal was to migrate citizens from traditional to digital channels, especially website and digital self-service applications. Moreover, they focus on simple isolated interactions, not complicated sequential user journeys, which span multiple channels and organizations. Therefore, it is time to develop channel strategies for a post-adoption environment. These strategies and future MCM research could include areas such mobile apps and social media, cover both in- and outbound traffic, sequential or simultaneous channel use and cross-organizational interaction.

References

- Adams, D., 2017. *Publish or Perish on Microsoft Windows*, Harzing.com. *Research in International Management*. Available at: <https://www.harzing.com/resources/publish-or-perish/windows> (Accessed: 27 March 2017).
- Andersen, K. N., Medaglia, R. and Henriksen, H. Z., 2011. ‘Frequency and Costs of Communication with Citizens in Local Government’, in Andersen, K. N. et al. (eds) *Electronic Government and the Information Systems Perspective. EGOVIS 2011*. Berlin, Heidelberg: Springer, pp. 15–25.
- Bannister, F. and Connolly, R., 2015. ‘The great theory hunt: Does e-government really have a problem?’, *Government Information Quarterly*. Elsevier Inc., 32(1), pp. 1–11.
- Bharosa, N., Janssen, M., Klievink, B., van Veenstra, A. F., Overbeek, S. (2010. ‘Guiding Integrated Service Delivery: Synthesizing and Embedding Principles Using Role-Playing Games’, *Electronic Journal of e-Government*, 8(2), pp. 83–92.
- Blaikie, N., 2010. *Approaches to social inquiry*. 2nd edn. Cambridge, UK: Polity.
- Blaikie, N., 2015. *Designing Social Research. The Logic of Anticipation*. 2nd edn. Cambridge, UK: Polity.
- Bordewijk, J. L. and van Kaam, B., 1982. *Allocutie: Enkele gedachten over communicatievrijheid in een bekabeld land. [Allocation: Some thoughts on freedom of communication in a cable wired country]*. Baarn: Bosch en Keuning.
- Carlson, J. R. and Zmud, R. W., 1999. ‘Channel expansion theory and the experiential nature of media richness perceptions’, *Academy of Management Journal*, 42(2), pp. 153–170.
- Daft, R. L. and Lengel, R. H., 1986. ‘Organizational Information Requirements, Media Richness and Structural Design’, *Management Science*, 32(5), pp. 554–571.
- van Deursen, A. and Pieterse, W., 2006. ‘The Internet as a service channel in the Public Sector’, *ICA Annual Conference*.
- Ebbers, W. E., Pieterse, W. J. and Noordman, H. N., 2008. ‘Electronic government: Rethinking channel management strategies’, *Government Information Quarterly*, 25(2), pp. 181–201.
- Flumian, M., Coe, A. and Kernaghan, K., 2007. ‘Transforming service to Canadians: the Service Canada model’, *International Review of Administrative Sciences*, 73(4), pp. 557–568.
- Frey, K. N. and Holden, S. H., 2005. ‘Distribution channel management in e-government: Addressing federal information policy issues’, *Government Information Quarterly*, 22(4), pp. 685–701.

- Gagnon, Y.-C., Posada, E., Bourgault, M and Naud, A., 2010. 'Multi channel Delivery of Public Services: A New and Complex Management Challenge', *International Journal of Public Administration*, 33(5), pp. 213–222.
- Gregor, S., 2006. 'The nature of theory in information systems', *MIS Quarterly*, 30(3), pp. 611–642.
- Heeks, R. and Bailur, S., 2007. 'Analyzing e-government research: Perspectives, philosophies, theories, methods, and practice', *Government Information Quarterly*, 24(2), pp. 243–265.
- Hofmann, S., Räckers, M. and Becker, J., 2012. 'Identifying Factors for e-Government Acceptance - a Literature Review', in *Proceedings of the International Conference on Information Systems (ICIS 2012)*. Orlando, Florida.
- Janssen, M. and Klievink, B., 2009. 'The Role of Intermediaries in Multi-Channel Service Delivery Strategies', *International Journal of Electronic Government Research*, 5(3), pp. 36–46.
- Janssen, M. and Kuk, G., 2010. 'Critical success factors for multi-channel service delivery (MCSD)', *16th Americas Conference on Information Systems 2010, AMCIS 2010*, pp. 2179–2187.
- Kernaghan, K., 2005. 'Moving towards the virtual state: integrating services and service channels for citizen-centred delivery', *International Review of Administrative Sciences*, 71(1), pp. 119–131.
- Kernaghan, K., 2009. 'Moving towards integrated public governance: improving service delivery through community engagement', *International Review of Administrative Sciences*, 75(2), pp. 239–254.
- Kernaghan, K., 2013. 'Changing channels: Managing channel integration and migration in public organizations', *Canadian Public Administration*, 56(1), pp. 121–141.
- Kernaghan, K., 2015. 'Serving seniors: Innovation and public sector service delivery', *Innovation Journal*, 20(2), pp. 1–18.
- King, N., 2011. 'Doing Template Analysis', in Symon, G. and Cassell, C. (eds) *Qualitative Organizational Research: Core Methods and Current Challenges*. London: Sage Publications, pp. 426–450.
- Klievink, B. and Janssen, M., 2010. 'Coordinating e-government service delivery', *11th Annual International Conference on Digital Government Research (dg.o 2010)*, pp. 209–216.
- Madsen, C. Ø. and Kræmmergaard, P., 2015. 'Channel Choice: A Literature Review', in Tambouris et al. (eds) *Electronic Government: Proceedings of the 14th IFIP WG 8.5 International Conference, EGOV 2015*. Thessaloniki, Greece: LNCS Springer.
- Madsen, C. Ø. and Kræmmergaard, P., 2016. 'How to succeed with multichannel management. A case study of cross-organizational collaboration surrounding a mandatory self-service application for Danish single parents', *The International Journal of Public Administration in the Digital Age*, 3(4), pp. 94–110.
- Mundy, D., Umer, Q. and Foster, A., 2011. 'Examining the Potential for Channel Shift in the UK Through Multiple Lenses', *Electronic Journal of e-Government*, 9(2), pp. 203–213.
- Neslin, S. A., Grewal, D., Leghorn, R., Shankar, V., Teerlin, L., Thomas, J. and Verhoef, P., 2006. 'Challenges and Opportunities in Multichannel Customer Management', *Journal of Service Research*, 9(2), pp. 95–112.
- Neslin, S. A. and Shankar, V., 2009. 'Key Issues in Multichannel Customer Management: Current Knowledge and Future Directions', *Journal of Interactive Marketing*. Direct Marketing Educational Foundation, Inc., 23(1), pp. 70–81.
- Norris, D. F. and Reddick, C., 2013. 'Local E-Government in the United States: Transformation or Incremental Change?', *Public Administration Review*, 73(1), pp. 165–175.
- Nygren, K. G., Axelsson, K. and Melin, U., 2014. 'Multi-Channel Service Management in Public Sector – Three Interpretative Frames Illustrating E-government and Work Practice in a Swedish State Agency', *Electronic Journal of e-Government*, 12(1), pp. 112–125.
- Oxford Learner's Dictionary, 2019. *Integration noun*. Available at: <https://www.oxfordlearnersdictionaries.com/definition/english/integration>.
- Pieterse, W., 2009. *Channel Choice. Citizens' Channel Behavior and Public Service Channel Strategy*. University of Twente.
- Pieterse, W., 2010. 'Citizens and Service Channels: Channel Choice and Channel Management Implications', *International Journal of Electronic Government Research*. IGI Global, 6(2), pp. 37–53.
- Pieterse, W. and van Dijk, J., 2006. 'Governmental Service Channel Positioning: History and Strategies for the Future', in *Electronic Government. EGOV 2006*, pp. 53–60.
- Pieterse, W. and van Dijk, J., 2007. 'Channel choice determinants. An exploration of the factors that determine the choice of a service channel in citizen initiated contacts', *8th Annual International Conference on Digital Government Research (dg.o 2007)*, 228, pp. 173–182.
- Pieterse, W. and Teerling, M., 2009. 'Channel Integration in Governmental Service Delivery: The Effects on Citizen Behavior and Perceptions', *Electronic Government: Proceedings of the 8th [IFIP WG 8.5] International Conference, EGOV 2009*. Edited by M. A. Wimmer et al. Linz, Austria: LNCS, 5693(2007), pp. 222–233.
- Pozza, I. D., 2014. 'Multichannel management gets "social"', *European Journal of Marketing*, 48(7/8), pp. 1274–1295.
- Recker, J., 2013. *Scientific Research in Information Systems. A Beginner's Guide*. Berlin, Heidelberg: Springer.
- Rey-Moreno, M. and Medina-Molina, C., 2016. 'Omni-channel strategy and the distribution of public services in Spain', *Journal of Innovation & Knowledge*. Journal of Innovation & Knowledge, 1(1), pp. 36–43.
- Roy, J., 2007. 'Electronic service delivery in a multi-channel public sector: an assessment of the government of Canada', *International Journal of Information Technology and Management*, 6(2/3/4), p. 148.
- Roy, J., 2009. 'E-government and integrated service delivery in Canada: the Province of Nova Scotia as a case study', *International Journal of Electronic Governance*, 2(2/3), pp. 223–238.
- Schlichter, B. R. and Kræmmergaard, P., 2010. 'A comprehensive literature review of the ERP research field over a decade', *Journal of Enterprise Information Management*, 23(4), pp. 486–520.
- Scholl, H. J., 2017. *The E-government Reference Library v. 13.0*.

- Statistics Denmark, 2016. *It-anvendelse i befolkningen 2016*. Copenhagen, Denmark.
- Teerling, M. L. and Pieterse, W., 2010. 'Multichannel marketing: An experiment on guiding citizens to the electronic channels', *Government Information Quarterly*, 27(1), pp. 98–107.
- Teerling, M. L. and Pieterse, W., 2011. 'How to improve e-government use: An empirical examination of multichannel marketing instruments', *Information Polity*, 16(2), pp. 171–187.
- van Veenstra, A. F. and Janssen, M., 2010. 'Migration Strategies for multi-Channel service provisioning in public agencies', *Electronic Journal of e-Government*, 8(2), pp. 409–416.
- Webster, J. and Watson, R. T., 2002. 'Analyzing the Past to Prepare for the Future: Writing a Literature Review', *MIS Quarterly*, 26(2), pp. xiii–xxiii.
- van de Wijngaert, L., Pieterse, W. and Teerling, M. L., 2011. 'Influencing citizen behavior: Experiences from multichannel marketing pilot projects', *International Journal of Information Management*, 31(5), pp. 415–419.
- Wirtz, B. W. and Langer, P. F., 2016. 'Public Multichannel Management – an Integrated Framework of Off- and Online Multichannel Government Services', *Public Organization Review*. Public Organization Review.
- Yin, R. K., 2014 *Case Study Research. Design and Methods*. 5th edn. Los Angeles: Sage Publications, Inc.