

The Internet as a Service Channel in the Public Sector

A substitute or complement of traditional service channels?

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Abstract

The Internet has been used as a channel for public service delivery since the mid 1990's. During the first years of its existence it was believed to be the service channel of the future, making all other channels obsolete. But until now, the telephone and face-to-face contact remain being used more frequently and are rated higher. By comparing various studies that have recently been conducted in a number of countries, this paper suggests that the characteristics of the channel make it a suitable channel for basic transactions and simple information provision, and that the telephone and face-to-face contact remain prevalent for at least ambiguous and complex tasks. Therefore the Internet might be a complementary channel rather than a substitute of traditional channels. Research findings are interpreted by means of Media Richness Theory, the Social Influence model and Channel Expansion Theory.

1 Introduction

In the 1980's, the term *New Public Management* was introduced (Osborne & Gaebler, 1992). The focus of this public sector management approach was the relationship between governments and their citizens. Citizens were no longer seen as subjects of the state, but had to be treated as clients. In new Public Management, the emphasis of the way governments influence their citizens shifted from reinforcement of the law towards service provision. A more service oriented approach would not only improve the relationship between citizens and governments, but should also lead to higher levels of compliance to the law. The impact of New Public Management was great and the concept spread around the Western world during the course of the 1980's and 1990's. In the second half of the 1990's, most Western countries followed a strategy to improve their public services based on the ideas of New Public Management (Duivenboden & Lips, 2001).

During this period the Internet diffused rapidly around the world. First in Northern America, followed by Europe and the rest of the world. Given the (technical) characteristics of the Internet and inspired by the commercial success of the private sector during the dot-com hype, it is no surprise that the public sector rapidly embraced the Internet as *the* means to improve public service delivery (Bekkers, 2000) using the term e-government, derived from e-commerce. In the Netherlands for example, the national government worked for several years on a project to provide all citizen services using a one stop (physical) counter (Programmabureau Overheidsloket 2000). During the Internet-hype the focus of this project shifted from providing services using a physical counter towards a counter on the Internet. The expectations of the possibilities of e-Government were great:

Electronic services are efficient for the organizations (less citizens coming to counters), effective (citizens' effort requirements decrease, since they do not have to travel and it is possible to customize services) and citizen friendly (no more constraints in time and place) [translated] (Programmabureau Overheidsloket 2000, 2000, p. 11).

Now, six years later, the progress in e-Government from the perspective of the supply side has been enormous; most governmental agencies on all levels have websites that contain information, have possibilities to communicate or offer transaction services. But has this progress led to higher levels of citizen's satisfaction and to a substantial decrease in the use of other service channels like counters, telephone and print channels? This appears not to be the case. At the Dutch tax and customs administration, for example, the number of phone calls has not declined since the introduction of the organization's website in 1995 (www.belastingdienst.nl) (Belastingdienst, 2005c). Accenture (2005) concludes in their yearly e-government benchmark that the telephone prevails to be the dominant service channel in the countries that were studied. 63 Percent of the respondents had used the telephone in 2004 for service interactions with governments, in contrast to 31% using the Internet. In Switzerland, people still prefer to have face-to-face contact with the authorities (Berner Fachhochschule & Unisys, 2005). Although the Internet usage in Switzerland increases, this only leads to a decrease in the use of print and written means, not to face-to-face and telephonic services.

The examples described above raise the question how people view the Internet. Is it really the channel making all other channels obsolete? Or is it 'just' another channel in the mix of service channels that have always been available? An answer to this question is relevant for future developments and applications of e-Government. Should all effort be waged in the development of the Internet? Or should we apply multi-channel management approaches and focus on how to take best advantage of the characteristics of each channel and the way these characteristics are experienced by the public? Aim of this paper is to gain some of the insight necessary to answer this question, by carrying out exploratory research. The main question we try to answer in this paper is:

How do citizens in Western countries use and evaluate public service channels in general and for specific tasks?

First, this article defines and explains the core concepts of the research question: services and channels. This section will discuss the various types of services and the characteristics of different service channels based on theoretical insights from, amongst others, Media Richness Theory. Second, the research methodology is explained, followed by the section presenting the main findings of the exploratory study. Next, conclusions regarding the research question are drawn and finally the research findings, as well as the research itself are discussed and some suggestions for future research are made.

2 Channels and Services

2.1 Service channels

Citizens have various possibilities for their service interaction with governments. Depending on the type of service options might be the telephone, using a physical counter to obtain forms, downloading these forms from a website or perhaps, even making transactions using SMS. Although various means of interaction exist, in general four different types of service channels are distinguished:

- Personal (e.g. counter)
- Electronic (e.g. the World Wide Web or e-mail)
- Printed or written (e.g. letters and faxes)
- Telephone

These service channels differ in their characteristics; for example the central means of interaction. Personal service delivery relies on face-to-face communication, the telephone on telephony interaction, written services rely on written media and electronic services use multiple means: websites and e-mail are written media, but for example web-conferencing makes use of both audio and video and is therefore similar to video conferencing. One of the most prominent theories describing differences between means of communication – and therefore differences between service channels – is the Media Richness Theory (Daft & Lengel, 1984, 1986).

2.1.1 Media Richness Theory

Media Richness Theory (MRT) was formulated by Daft and Lengel (1984, 1986) to describe information processes in organizations. It has, however, become a more general theory describing the differences between communication media and the tasks they are suited for (for general applications and tests of MRT, see Jackson & Purcell, 1997; Suh, 1999; Trevino *et al.*, 1990).

The main difference, according to MRT, between communication media is that they vary in the capacity to process rich information (Daft & Lengel, 1984, 1986). The reason for these differences is that media vary in their capacity for *immediate feedback*, the *number of cues* and channels used, *personalization*, and *language variety* (Daft & Wiginton, 1979).

Immediate feedback means that one is able to respond immediately to a message, making it possible to check the messages' interpretation. The number of cues mean that there are different ways in delivering the message, via sound, video, but also via non-verbal communication or intonation. The degree of personalization applies to the possibility to adjust a message to the receiver, to increase understanding and to reduce equivocality, especially via non-verbal forms of communication. Language variety, finally, applies to the possibility to change choice of words and language for the receiver.

The differences on these four characteristics make media vary in richness. A 'rich' medium is capable of giving immediate feedback, a high number of cues, a high level of personalization and is capable of language variety. The only medium that possesses all these characteristics is face-to-face communication. 'Poor' media are not capable of giving feedback immediately, provide less cues, cannot be personalized and are unable to vary in language. An example is a written memo. Daft & Lengel (1986) ranked the following (at that time most common) media in order of decreasing richness:

1. Face-to-face
2. Telephone
3. Personal documents
4. Impersonal written documents
5. Numeric documents

In 1987, Daft, Lengel and Trevino (1987) first spoke about the 'new media' in relation to media richness, whereby in their view, new media refers to 'communications technology'. Examples of the new media they gave are electronic messaging, video displays and teleconferencing. In 1990, electronic mail was retroactively fitted into the richness ranking (Trevino *et al.*, 2000). Electronic mail systems vary somewhat in terms of media richness as Trevino *et al.* (p. 76) argue. Most electronic mail systems have the capacity to provide rapid (but not immediate) feedback and use natural

language, however, it lacks cues such as voice inflection and tone. Electronic mail should therefore be positioned just below the telephone, but higher than letters and notes.

Jackson & Purcell (1997) discussed the richness of the World Wide Web, arguing that it is difficult to assess the richness of the World Wide Web for the reason that "Hypertext on the Web is too malleable to be anchored at any one place on any of these - immediacy of feedback, number of cues, personalization, and language variety - dimensions" (p. 225). However, the World Wide Web may be considered as an average rich medium since the immediacy of feedback generally is low. The number of cues may be quite high, but levels of personalization and language variety on most websites are low. This might however change in the future as tools like user profiling may be used more and more to make websites dynamic and personal (see Pieterse *et al.*, 2005).

Daft & Lengel (1986) also linked the richness of media to the tasks that media are suited for. They present two main forces that require information processing: Uncertainty and equivocality. Although equivocality seems to be the same as uncertainty, in fact they're not. Uncertainty can be seen simply as the absence of information (Shannon & Weaver, 1949), or "the difference between the amount of information required to perform the task and the amount of information already possessed by the organization" (Galbraith, 1973). Equivocality means that there may be more than one interpretation of task related information. Here, simply adding more information, as with uncertainty, may lead to even more ambiguity. Equivocality means ambiguity, the existence of multiple and conflicting interpretations about an organizational situation (Daft & Lengel, 1986; Weick, 1979).

Although MRT originally was developed as a theory to describe the use of media in organizations, during the course of the years it shifted towards becoming a general theory of media choice and use (Dennis & Kinney, 1998). One of the main points of criticism on MRT is the idea that people choose media in rational ways and that the characteristics of media are fixed (Webster & Trevino, 1995). MRT assumes that people are able to choose the medium that best matches the task. For a simple generic task, characterized by uncertainty (like passing data), people should choose a lean medium in order to communicate effectively and efficiently. For solving a complex task, characterized by ambiguity, (such as problem solving) people should choose a rich medium. However, research has shown that people often don't choose rationally (Fulk *et al.*, 1990). Apparently ambiguity and equivocality are not the only factors that influence the choice of a medium. Two theories that expand the field of MRT by not only taking the objective characteristics of media into account, are the Social Influence Model (Fulk *et al.*, 1990) (stressing the importance of social factors) and Channel Expansion Theory (Carlson & Zmud, 1994) (emphasizing the importance of the perceived characteristics of media).

2.1.2 Social Influence Model

The Social Influence Model argues that social influences can strongly shape individual behavior towards technology in ways that may be independent of the technology features (Fulk *et al.*, 1990). Rather than focusing on the objective and fixed features of media, the social influence model uses the concept 'Perceived Media Richness'. Hereby it suggests that the concept 'media richness' does exist, but rather as a perception being different for everyone and being influenced by others (the 'social influence'), instead of a fixed property. According to the Social Influence Model the use of media is strongly determined by the use of media by others around us. This explanation of the richness concept could explain a lot of the mixed research findings that do not focus on the objective but rather on the social, subjective and intersubjective characteristics of media.

Evidence for the Social Influence Model is delivered by Markus (1994) who found that senior managers put pressure on lower level managers to reply quickly to emails, thus suggesting that media use is socially constructed rather than based on media and task features. Schmitz and Fulk (1991), Fulk (1993) and Carlson and Zmud (1999) also found positive relationships between social influence and perceived media richness. Non-supportive evidence also exists (see for example (R.E. Rice, 1993; R. E. Rice & Aydin, 1991)).

2.1.3 Channel Expansion Theory

Carlson and Zmud (1994) propose the Channel Expansion Theory, as a means to improve MRT. They state that when experience with a medium increases, its richness increases as well. This is what they call the 'channel expansion effect'. The Channel Expansion Theory (CET) is a logical theory in the line of reasoning of first MRT and second the Social Influence model. Creators of both theories always argued that their approaches are complementary, rather than opposing views. CET incorporates both theoretical approaches in one model so that one of the main points of critique in MRT, that richness is a more social and mentally variable rather than a fixed property, is accounted for.

Channel Expansion Theory received little empirical attention so far. Carlson and Zmud (1999) tested the Channel Expansion Hypothesis and found general support. Their research, consisting of two studies among personnel and students of a university, yielded support considering the experience with the organizational context and the experience with the communication co-participants. Support for the two other types of experience (channel and message topic) was only marginal. Their study only involved e-mail as a communication channel. Despite the fact that the Channel Expansion Theory has not been tested for other media, it is a promising direction for future research offering a supplementary view of the other known perspectives.

2.1.4 Service channels summarized

In general, four types of service channels exist: Personal, printed, electronic and telephone. Based on the Media Richness Theory, the Social Influence Model and Channel Expansion Theory, we can first say that the various channels differ in richness, with personal services being most rich followed by telephone, electronic and written channels. Second, the difference in richness makes channels appropriate for different tasks, with personal channels being suitable for equivocal (complex) tasks, written channels for relatively simple tasks and telephone and electronic channels being somewhere in between. Third, the use of channels may depend on the task (or service involved), as Media Richness Theory predicts, but also on social influences and the perceptions towards the channels.

It is argued above, the use of a certain channel may be dependent on the task that is involved in the service delivery. Therefore, the following section will discuss differences in services.

2.2 Services

In order to describe the characteristics of electronic services a framework is needed. Four manifestations of electronic services are distinguished here:

1. Information services.

These services are characterized by the distribution of information over individuals. Two different types of information services are allocation and consultation. In the case of allocation a central government institution decides when and what certain information is displayed. Consultation suggests that individuals ask for information.

2. Registration services.

Here a government institution asks an individual for certain information. The main aspect is that citizens provide information for the benefit of the government. These services are slightly more complex than information services, because they require a citizen to interpret the question of the government. With information services, citizens just get information (allocation) or answers to questions they formulated themselves (consultation). With registration services, they have to interpret the question correctly and provide the correct answer.

3. Transaction services.

Transaction services are directed at the realization of agreements between citizens and government institutes, characterized by the delivery of a product.

4. Communication services.

Communication services are aimed at the realization of interaction between public servants and citizens. The first type is conversation, where individuals communicate on the same level supported by their own memory. Here the reactions of public servants is not automated and therefore differs from standard reactions. The second type is deliberation, characterized by an exchange of opinions.

Based on the theories described in this section and the fact that different types of services exist, we expect to see differences in the channels used for certain types of services. Services that are characterized by greater ambiguity, such as complex transactions and communication tasks may require richer channels than information services. We therefore expect to see different purposes for using certain service channels. Also, we expect differences in channel usage in general. The Internet remains to be a relatively new channel and not all people will have large amounts of experience with this channel. As channel expectancy theory suggests, experience is one of the key determinants for medium use. We therefore expect the levels of Internet use to lag somewhat behind the use of other channels, especially for communication tasks with high levels of ambiguity.

3 Method

To answer the research question and gain insight in the levels of usage, perceptions and evaluations of services, we analyzed different studies on the use of services and service channels. This analysis is based on a number of international studies and on data received from a number of governmental organizations in the Netherlands.

To provide a general overview we will start with comparing studies that have been conducted in a number of countries around the world. These are shown in Table 3.1.

Country	Studies used
The Netherlands	Bongers <i>et al.</i> (2004)
Switzerland	Berner Fachhochschule & Unisys (2005)
Australia	Australian Government (2005)
Canada	Erin Research Inc (2003)

Table 3.1: Countries and studies used

In order to compare the different countries, we selected those that are rather similar in their development on the field of e-Government. Also, all countries are comparable on aspects like levels of education and income. Concerning the development of e-Government, most of the countries are reasonably well developed (although this depends on various specific benchmark criteria). Although different benchmarks rank the four countries differently, all four countries perform well and have similar levels of e-Government performance, which make them comparable concerning 'eGovernment readiness' (Accenture, 2005; The Economist's e-readiness rankings, 2005; Global E-Government Readiness Report, 2004).

Furthermore, we studied the use of services in the Netherlands to develop a more in-depth view. Data on service and service channel usage from three types of organizations were gathered. The first organization is the Tax and Customs Administration which is responsible for one of the largest administrative processes in the Netherlands, the process of household income taxes. In the near future The Dutch Tax and Customs Administration will also be responsible for other non-tax related tasks like child support and rent subsidy. Data were collected from public sources: The 'Fiscale Monitor 2004' (Belastingdienst, 2005b), the yearly citizen satisfaction study of the Dutch Tax and Customs administration, the year report 2004 (Belastingdienst, 2005c) and the 'Beheerverslag 2004' (Belastingdienst, 2005a), a report of the operating results of 2004.

The second organization is the Informatiebeheer Groep (IB-Groep), which is responsible for grants and subsidies in education. The IB-Groep is one of the vanguard organizations regarding the implementation of electronic services in the Netherlands: it won the 'Webwijzer' award for best website in the Netherlands in 2005 and it was also nominated for the eEurope award 2005. Since the IB-Groep seems very successful in its e-Government strategy, we consider it relevant for this study. The data used in this paper are collected from the year report 2004 and the public relations department of the IB-Groep.

Finally, we collected data from Dutch municipalities which vary substantially in size, to present a complete picture of usage, evaluation and service perception on the local level.

On both national and international level we collected reports containing the following data:

- the actual usage of the different channels and developments in use; to describe what channels in general are used for governmental services;
- specific service and channel used; to specify whether people use 'richer' channels for more complex, ambiguous tasks, as proposed by the theory discussed previously;
- levels of satisfaction of both the service encounter and the channels used for the encounter; to see whether different service channels are differently evaluated.

In order to provide an international picture of service channel usage, findings from the four countries are clustered around the three aspects mentioned above. The cases from the Netherlands will be

presented and discussed separately, to offer a detailed description about service channel usage in specific (organizational) contexts.

4 Findings

4.1 International level; results from four countries

It appeared difficult to compare the selected studies in Switzerland, Canada, Australia and the Netherlands, because of the different research approaches. Only one of the three aspects discussed in the previous section, actual usage of the different channels, was measured in all four countries (see Table 4.1). Therefore it was only possible to compare this aspect directly between the four countries in the same table.

4.1.1 Actual use and developments in use

Channel*	Country**			
	Switzerland	Canada	Australia	The Netherlands
Personal	55%	48%	46%	33%
Telephone	54%	55%	28%	28%
Post (and/or Fax)	24%	25%	13%	24%
The Internet	14%	30%	19%	13%

* Percentages may exceed 100% when added up, due to the fact that people may have more than one service encounter per year

** Data used originate from different years: Switzerland and Australia, 2005; The Netherlands, 2004; Canada, 2003.

Table 4.1: Usage levels of service channels for service interactions in Switzerland, Canada, Australia and the Netherlands (percentages referring to the level of usage for each channel)

As Table 4.1 shows, the personal channel remains the most prominent means of interaction in three out of four countries. Only in Canada, the telephone is being used more frequently. In two countries (Canada and Australia) the Internet ranks third, whereas in Switzerland and the Netherlands the Internet takes fourth position.

Two of the four studies compare current channel use and past channel use. The Swiss study provides a comparison of usage between 2004 and 2005, which shows that the use of the personal channel didn't change, the use of the telephone remained almost the same (54% in 2005, versus 53% in 2004), the use of the Internet increased (14% in 2005 versus 12% in 2004) and usage of the written channel (Post and/or Fax) decreased from 26% (2004) to 24% (2005). The Dutch study compares 2001 with 2004 and found that usage of the personal channel and the telephone changed only slightly: personal, 33% (2004) versus 36% (2001); telephone, 28% (2004) versus 26% (2001). The use of the Internet increased to a larger extend, showing a rise from 7% (2001) to 24% (2004), while the use of written channels decreased from 31% (2001) to 13% (2004).

4.1.2 Channels used for specific services

To measure the purpose of use of the different channels, in Switzerland, Canada and the Netherlands respondents were asked for what purposes they used the Internet for governmental services. In Australia they measured both the information exchange for each channel, as well as transaction services using the Internet and the Telephone.

The following table shows the top 5 purposes for visiting governmental websites in Switzerland, Canada and the Netherlands.

Top 5 Purposes of visiting governmental websites	Switzerland	Canada	The Netherlands
Gathering information	66%	87%	42%
Downloading forms	40%	34%	23%
Fill in tax explanation	32%		
Transmit inquiries	22%		
No use	18%		
Curiosity		37%	
Find links to other sites		32%	
Fill out an application		15%	13%
Ask questions			16%
Give personal information			6%

Table 4.2: Levels of usage of service channels for service interactions in Switzerland, Canada and the Netherlands in 2005

Although each country has different purposes in their top five, the most important factor in all three countries is gathering information from the website, followed by downloading forms (in two out of three countries).

The Australian study explores the relationship between the type of channel and the purpose for which it is used in more detail. This study distinguishes information related services (which we call information, registration and communication) and transaction services. Table 4.3 shows which channel respondents use for what kind of service.

Channel	Information	Registration	Communication
Personal	30%	41%	52%
Telephone	36%	28%	26%
Post (and/or Fax)	0%	20%	13%
The Internet	33%	16%	15%

Table 4.3: Channels used for different tasks in Australia in 2005

As the table shows, the 'rich' channels (personal and to a lesser extend telephone) are increasingly used when services get more complex. When communication is involved, more than half of the respondents use personal channels. The 'poor' channels are used less when services get more complex

The Australian study compares the Internet and the Telephone on a variety of transaction services. On relatively standard and simple transactions, like taxes, respondents prefer the Internet over the Telephone. Services involving family and children are dealt with by telephone. Unfortunately, the other channels have not been taken into account in this study.

Transaction services, Internet and Telephone compared	Internet	Telephone
Income or personal tax	16%	7%
Land rates or tax	10%	9%
Car, boat, vehicle registration and licenses	8%	5%
Family benefit, child allowance or childcare benefits	3%	13%
Parking permits or fines	3%	
Building permit or planning applications		4%

Table 4.4: Levels of channels used for transaction services in Australia in 2005

4.1.3 Channel satisfaction

Channel satisfaction has been measured for all four channels in Canada and The Netherlands. In Canada, respondents were asked whether or not they were satisfied with the use of the service channel, using percentages based on the responses. In the Netherlands, satisfaction was measured on a scale from 1 to 10. See Table 4.5.

Channel	Canada	The Netherlands
The Internet	68%	7,2
Personal	62%	6,8
Telephone	56%	6,6
Mail	55%	6,1

Table 4.5: Channel satisfaction in Canada and the Netherlands

In both countries the channels are ranked in the same order, with the Internet being the most satisfactory channel, followed by personal service interactions, telephone and mail.

4.2 Cases in the Netherlands

4.2.1 Informatiebeheer Groep (IB-Groep)

One of the most successful institutions regarding electronic governmental services is the IB-Groep. The IB-Groep is responsible for the execution of several acts and regulations, such as student grants and information management. With the use of the 'My'-domain principle 'My IB-groep' on their website, they integrate all four levels of service delivery discussed in section 2.2. The amount of Internet use by IB-group customers increases every year. The website www.ib-groep.nl counted 4.3 million visitors in 2004, which is a huge increase compared to earlier years. One third of the visitors use the module with frequently asked questions (almost doubled compared to 2003). Also, in 2004 122.000 orders for brochures and forms came in. The 'My IB-groep'-domain counted 100,000 new customers in 2004. 'My IB-groep' users logged in 378,000 times to consult or alter their personal information. These and other data are summarized in Table 4.6. This table contains information regarding the use of different channels the IB-Groep uses for service delivery to their customers.

	2001	2002	2003	2004
Telephone contacts	2.800.000	2.470.000	2.360.000	2.550.000
Send in forms by paper	2.600.000	2.400.000	2.100.000	2.080.000
Counter visits	374.000	331.000	321.000	342.000
E-mail	204.000	227.000	237.000	260.000
Internet visits	1.500.000	2.100.000	3.000.000	4.300.000
Modifications using the by Internet	37.000	77.000	123.000	187.000
Question and answer module	232.000	538.000	859.000	1.480.000
My IB-Groep new users	-	17.600	72.000	100.000
My IB-Groep consultations	-	23.000	184.000	378.000

Source: Informatiebeheer Groep

Table 4.6: Number of users of the different channels of the IB-Groep

Despite the expansion of electronic services in 2004, Table 4.6 also shows an increase in customer contacts by telephone and counter visits. Compared to 2003 the increase is 5.8 en 4.4 percent respectively. One of the causes is the increase of students and the fact that new students tend to have a higher contact frequency. Although there is no hard evidence, another explanation might be the rise of the complexity of the services offered by the Internet. The more complex a service, the more reassurance people need. This is a capacity that the Internet as a channel lacks. One conclusion that definitely can be drawn from table 4.6 is that traditional channels still play a very significant role. Contacts by telephone and counter both increased and are of such large amounts that replacement is

out of the question. Also, we have to keep in mind that the IB-Groep's customers are mainly students, which typically have the most advanced digital skills.

4.2.2 Belastingdienst (Tax and Customs administration)

The Belastingdienst is the Dutch Tax and Customs administration and can also be considered as a success story regarding electronic service delivery. Using a push strategy The Belastingdienst managed to reach a total of 69 percent of citizens that declare their tax electronically. From 2003 to 2004 the electronic declarations increased with 0.2 million to a total of 4.9 million. Table 4.7 shows that especially the declarations by modem have increased (+27%). Declarations by disk decreased (-16%).

	2000	2001	2002	2003	2004
Total number of Tax Declarations	1600	1870	3900	4691	4948
Via Disk	416	823	2300	2340	1966
Via modem	1184	1047	1600	2351	2981

Source: Belastingdienst

Table 4.7: number of electronic Tax declarations

As the following table shows, the same pattern of service channel use as with the Ib Groep can be seen at the Tax and Customs Administration. The rapid increase in the total number of channel interactions from 2004 to 2005 is partly due to the fact that the Tax and Customs administration has been responsible for a growing number of tasks since 2005, like rental subsidies. Nevertheless, these figures make clear that, despite the popularity of the website, the other service channels remain vivid.

Numbers (x1000)	2002	2003	2004	2005
Telephone	8.700	8.550	8.225	11.325
Counter	875	870	884	924
Internet	4200	5000	8000	17.900

Table 4.8: number of channel interactions at the Tax and Customs Administration

4.2.3 Municipalities

The status of e-government on the municipal level varies enormous. Although the government puts a lot of effort in the development of e-services, still many municipalities lack online service delivery. But, there are also municipalities, mainly the bigger, that offer advanced websites. From the point of view in this study, it is important to highlight the amount of online use of citizens. Some municipalities that had data available are discussed below.

Rheden is one of the middle sized (45.000 citizens) municipalities that keeps track of their customer contacts over different channels, summarized in Table 4.8. This table illustrates that e-mail traffic has tripled in one year, but does not influence the number of telephone calls and counter visits: these too increased. According to the municipality, the increase in phone traffic is caused by the introduction of a telephone team since January the first, where citizens can complain or ask questions.

	2003	2004	% increase
Counter	7838	9520	21
Telephone	24175	31055	28
E-mail	849	2750	223

Source: Municipality of Rheden

Table 4.8: Channels used for service interactions in the municipality of Rheden

The municipality of Enschede used a sort of push strategy by giving citizens financial discounts when ordering birth registers online. By doing this, they created the impression to shift traditional service

delivery to electronic channels. However, not all the electronic services (even the products with the highest use frequencies) are successful. Table 4.9 contains three products that have the highest service level, transaction. Although these services are used electronically, the traditional ways outnumber these frequencies.

	Electronic channel	Traditional channel
Reporting births	426	2454
Reporting divorces	34	276
Birth register certificates	1130	18991

Source: Municipality of Enschede

Table 4.9: Comparing electronic and traditional channels for high volume transactions in the municipality of Enschede in 2004

The four most popular online services in another large municipality (100.000+ citizens) are presented in Table 4.10. This table shows that 35 percent of the 'passing removals service' is settled electronically. Over 20 percent of the reports regarding public space, one out of three report regarding dirt, and over 20 percent of the birth register certificate are handled electronically.

	Electronic channel	Traditional channel
Number of dirt reports	8450	17700
Number of reports regarding public space	2276	17736
Number of address changes	3144	6692
Number of certificates	1451	10514

Source: Municipality of Delft

Table 4.10: Comparing electronic and traditional channels for high volume transactions in the municipality of Delft in 2004

The data above demonstrate that the use of the electronic services that municipalities offer don't substitute the use of traditional channels. One of the biggest municipalities conducted a survey amongst their citizens which revealed that from the citizens who were familiar with the municipal website, only three percent often paid a visit (at least once a week), 19 percent sometimes, 40 percent less than once a month and 28 percent never. Taking all their citizens into account (Internet users en non-users), only eight percent ever used electronic services. A large part has a hesitant attitude toward electronic service delivery. The enthusiasm to use the municipal Internet site didn't increase in the last two years (van Dijk & van Deursen, 2005).

Two municipalities that experimented with political deliberation between civil servants and citizens are Dongen and Hoogeveen. In Hoogeveen public servants conducted a digital office hour where citizens were given the opportunity to ask questions. The original goal was to organize this three till six times a year, led by a governor of the municipality. In 2001 the maximum number of visitors was 40, but the number of people that did actually interact was smaller. From October 8th 2003 the digital office hour was no longer active due to a lack of interest. The same goes for the municipality of Dongen. Here a weekly chat session with the mayor of the municipality was enthusiastically reported in a Dutch E-Government report (Advies Overheid.nl, 2005). In December 2004 the chat is still mentioned on the front page of the website, but after clicking through it becomes clear that the chat has expired for over half a year. On the website the presented log file of the last session from march 30th 2004 contains as first sentence: 'Good evening and welcome' and as second and last sentence: 'I will close now'.

The result of surveys in two large municipalities indicate that the main reason for using governmental websites is searching information. Often, this information is as simple as consulting opening hours.

One survey found that the most important reasons for visiting municipal websites is searching information followed by reading news. Only two percent of the respondents mentioned the digital office. Digital services that respondents use, are mainly registering removals and requesting forms. The other survey found that 18% of the citizens used the municipality's website in 2003, mainly for information seeking, followed by making appointments.

A large part of the citizens don't know the possibility to use a municipal website. A survey in the municipality of Zwolle, conducted at physical counters, found that eight out of 10 visitors didn't know that their municipality offered the same product online. Respondents that did know were asked why they still visited the office. 27 Percent responded that they preferred personal contact, 24 percent didn't have online access and seven percent indicated not to succeed online. Other responses were that it took too long to wait five days for a product.

5 Conclusions

The results from our study show that, although there is an increase in Internet usage for service interactions, the telephone and the counter are the most frequently used service channels. In three out of four countries, the personal channel is the most used service channel. In one country the telephone is the most used. See Table 4.1. The Internet and mail are used to a much smaller extent. The results from the Netherlands and Switzerland clarify that there has been a large increase in Internet use over time. This increase in Internet usage seems to mainly affect the print and written channels.

However, the total number of service interactions does not decrease. The case studies from the Netherlands show that in the past years the total number of service interactions with governmental organizations increased. As the results from for example the Belastingdienst show, the introduction and diffusion of the Internet since the mid 1990's has not led to a decline in the total number of service interactions. And as Table 4.8 clearly shows, also on municipal level there is an increase in the total number of service interactions.

Conclusion that can be drawn from all results, both the international comparisons and the Dutch case studies, is that the Internet, concerning the total usage of service channels, is not replacing the other channels, since the total amount of service interactions certainly did not decline in the past years. As our results indicate, channels are not substitutes as proponents of the Internet might believe, but are complementary, with some channels being appropriate for specific tasks and other channels suited for other tasks. On channel level we might draw the conclusion that the Internet replaces print and written communication (the mail) to some extent, but certainly doesn't replace other traditional channels. Since the advent of the Internet, there has been a decline in the use of written communication. But as described in section 4.1.1, during the recent years the usage levels of the telephone and the personal channels didn't decline. We therefore hypothesize that this situation remains unchanged in the future.

This conclusion is in line with the expectations of Media Richness Theory. The original theorists ranked the richness of new media as quite similar to those of written communication, so therefore it is no surprise that the Internet is replacing mail. Given the richness of telephone and face-to-face contact it is no surprise that the use of these channels is not affected by the Internet. The Swiss study shows

that respondents expect no major change of channel use in the future; they expect to use personal channels for most services. Based on the ideas of the Channel Expansion Theory, it is likely that one of the reasons for the increase in Internet usage is the growing experience people have in using this medium. The increase of Internet usage, however, only affects the use of post and fax, which declines. Telephone and face-to-face contact remain to be used as much as before the advent of the Internet.

We can define a number of explanations for the increase in the total amount of service interactions. First, it is likely that the Internet replaces other sources of information, that we don't normally address when discussing service channels. Where people used the printed yellow pages to search a telephone number in the past, they may now use the Internet. Second, one of the drawbacks of for example information retrieval on the Internet, is that clients have to know what they are looking for. The Internet doesn't help you in searching for answers. The personal channels (phone and counter), in contrast, do provide this help. We know that people find it hard to formulate the right question when searching the web (Woerkum *et al.*, 1999) and we know from research on online search behavior that people often use the wrong terms in search engines (van der Geest, Klaassen & Karreman, 2006), which leaves their question unanswered. So one of the possible reasons for the increase in service encounters is that people try to search for information (or perform another task on the Internet), while being unable to do so. This results in switching to the Telephone or the counter. A related issue, depicted by Cole (2003), is that although people indicate that the Internet is the most important information source, they also find the information on the Internet unreliable. So, it may well be possible that people don't trust the information they find online and decide to double-check it via the phone or the counter.

A related issue that we derive from media richness theory is that some of the services offered online, are too ambiguous to be dealt with electronically, given the relatively low richness of the Internet. No research to date addresses this issue, so no strong conclusions can be drawn. The following related point is the fact that the Internet offers low levels of accountability. Accountability is a relationship between two parties in which an individual or agency is held to answer for a performance that involves some delegation of an authority to act (Ling, 2002). The Internet is a channel without a 'face', there is no human being that can be held responsible for information found and interpreted. When searching information on the Internet, for example, nobody tells you that the information you find is correct and applicable to your situation, whereas using the telephone and face-to-face contact, the answer can be verified. So the low level of accountability may cause people to switch to traditional channels after searching the web. The aspects mentioned above are more or less permanent characteristics of the Internet, which suggests that the persistence of traditional channels as compared to electronic channels is not a temporary phenomenon. This strengthens our thought that the Internet is a complement rather than a substitute of traditional service channels. However, this hypothesis needs to be tested in future research.

Besides differences in general use between the channels we also found that people use different channels for different purposes. We found that the Internet is mainly used for information services or downloading forms. Further, we found that Internet usage is lower for more complex services, like many communication and transaction services. Although communication and transaction services are in general more complex than information services, services on all levels vary in complexity, meaning that there are relatively complex information services and relatively simple transaction services as well

as simple information services and complex transaction services. On the level of transaction services, the Internet is mainly used for simple, standard transactions like changing an address. In general we can conclude that the Internet is being used for relative simple tasks characterized by *uncertainty*, whereas the personal channel is best suited for complex tasks characterized by *ambiguity* and the telephone is somewhere in between. So, the Internet is suited for different purposes than the other channels and may therefore replace the traditional channels for some specific purposes. We hypothesize that the Internet will replace traditional channels for some information gathering tasks, simple forms of communication and simple transactions. But, for all purposes the Internet cannot replace other traditional channels. This leads again to the conclusion that the Internet is a complement rather than a substitute.

Our study explored the use and evaluation of service channels. Based on our findings we expect that the telephone and the physical channels will remain the prevalent channels for government-citizen service encounters now and in the future. Besides this, we clarified that people generally use different service channels for different purposes and therefore suggest that governments should not “place all their bets” on the Internet as the service channel of the future. Service channels are complementary rather than substitutes and governmental agencies should better focus on multi-channel approaches. Our study found tentative support for Media Richness Theory’s central notions of richness and task-medium fit, although one important point of discussion cannot be explained with the theory. Media Richness Theory supposes that tasks have a fixed kind of ambiguity or uncertainty. Based on our conclusions however, we suggest that the ambiguity of a task is a perception of an individual, rather than a fixed property. As we found, on the Internet people need to have a clear picture of what they want to know. If people don’t really know how to find the information, or don’t know exactly how to define their question, it may be likely they switch to another channel. This might imply that, although tasks are, e.g. objectively simple, people perceive them as ambiguous because they don’t really know what they want to know. Thus, the characteristic of a task is a perception rather than a fixed property.

6 Discussion and future research

First point of discussion is that it is difficult to compare between countries, organizations and even services. All have different characteristics. Due to the nature of the organization for example, the general relationship people have with tax organizations is quite different than the relationship people have with organizations providing e.g. child subsidies. These differences may influence the service people require and the channel people select for that service. Differences between organizations, people, tasks and channels all influence the service interaction. Since little is known about the interaction of those elements it is difficult to make comparisons. More research is needed to explore those relationships.

Second point of discussion concerns the theories used in this paper. We found a relationship between the characteristics of service channels and the purposes for which the channels are used. This is in line with the expectations we had, based on media richness theory. Richer channels are used by citizens for more ambiguous tasks, whereas the poorer channels are being used for simple tasks characterized by uncertainty. However, media richness theory cannot explain all our findings. First the theory is unable to explain why the number of total contacts over all channels increased. In the conclusion section we already argued that one explanation for the increase in contacts is the

hypotheses that people start their information search on the Internet. When they don't succeed in finding the information, they switch to the telephone and perhaps the counter. Media richness theory cannot explain this, in this way revealing one of the limitations of this theory in general. Media richness theory is a use theory, rather than a choice theory (Dennis & Kinney, 1998), meaning that the theory has descriptive rather than prescriptive powers (Suh, 1999). Second, the theory cannot explain the fact that the Internet replaces (on channel level) the written media (post/fax). According to media richness theory, both channels should be of equal richness, and based solely on this richness of media, one would expect the channels to be used roughly the same number of times. Media richness theory doesn't provide an explanation for this fact. Other factors, such as the accessibility of the channel may have caused the shift from post/fax to the Internet, but research studying the motives for channel choice is non existing at this point in time.

Finally, some points of discussion about this study itself can be formulated. First of all, the data we collected are very fragmented; we could only use data from a number of countries and a number of organizations in the Netherlands. Besides this, we cannot give a complete overview of service use, channels employed and satisfaction between organizations and countries, simply because not all of the cooperating organizations could provide us with these data. Due to these reasons it is impossible to provide an exact picture of service channel usage and evaluation globally or even in the Western world. Second, we collected our data from public sources and from a number of cooperating governmental organizations. We could only use data were already packed into schemes, tables and figures etc. We therefore were unable to do statistical analysis and hypothesis testing. Since most of the data were collected by others, mainly governmental organizations, nothing can be said about the validity of the data and the results we found should be regarded as tentative. Although the validity is questionable, we do believe the level of validity is not too low. The organizations collecting the data used reliable methods of data collection (such as logging systems for website use and number of telephonic contacts) and the research material we used to compare the four countries all consisted of a large sample, representative for the populations of the various countries. Future research is required to empirically validate the results.

The aim of our study was not the testing of hypothesis, but was meant to explore the relationships between types of services and service channels. Future research is required to explore this relationship in more detail. Also, future research is needed to test the findings, especially our hypothesis that the telephone and the physical contact remain the most important service channels and that different channels are suited for different purposes.

More research is also required about the Internet as a service channel in general. Although the Internet exists for a number of years, it is still relatively young. Especially the public sector has little experience with the possibilities the Internet offers for services. As we saw, Internet use still rises and we may expect this increase to continue in the future. We do not know yet what the consequences of this increase will be for other channels. Channel Expansion Theory predicts that, as people gain more experience with media, the perceived richness increases. We don't know yet if this applies to the Internet as well. The low empirical support for Channel Expansion Theory makes the prediction from this theory very uncertain.

Besides the predictions from the theory, technical developments such as user profiling may have the potential to increase the richness of the Internet, at least in theory. Therefore we might expect the

Internet to grow to the disadvantage of traditional channels, but there are no signals that this already happens or will happen in the near future. Also, as the Swiss research shows, people expect a continuous use of traditional channels in the future. Our findings suggest that channels are complements rather than substitutes which means that traditional channels will remain important.

Some aspects we found in theory and in our research are relatively unexplored, such as the influence of social aspects on channel behavior and the influence of accountability on service interactions. Our study has not explored those factors, but as we stated in our conclusions and discussion, these might be of great importance and need therefore to be addressed in future research.

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