Benefits sought by citizens and channel attitudes for multichannel payment services: Evidence from Italy

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"Developments with modern technology over the last two decades, especially as they relate to the Internet, have provided revenue bodies with an array of potentially more efficient methods—hereafter referred to as channels' in line with industry practice—to deliver services and provide information to taxpayers. With a greater array of channels available for use and a diverse range of clients to deal with, it is obviously important for revenue bodies to have a systematic and structured process to plan for making best use of available service delivery channels, taking account of all relevant considerations"

[OECD, 2012 p. 5]

1. Introduction

Low levels of user acceptance of e-Government services are recognized as a huge, incumbent problem for policy makers, Public Administration (PA) managers, and the community as a whole: in fact, despite the huge investments by governments in the introduction of online services to link government networks to citizens, the penetration of these services are unsatisfactory and do not provide adequate returns on investment (e.g., Hung, Chang, & Yu, 2006).

In Italy, in particular, two concurrent factors, among the others, are suggesting Italian government to investigate how to push the penetration of electronic services among citizens: (i) Italy has been a significant investor in e-Government services: since 2000, over 3 billion euro have been invested – out of which some 740 million euro have been invested in by local bodies – in the development of e-government solutions (Assinform, 2012) and other 3 billions have been allocated to a series of digitalization initiatives including the Public Sector (the so-called "Agenda Digitale" — cf. Barone, 2012); nonetheless, e-government penetration is largely underdeveloped compared to European best-in-class countries: the penetration of e-government among the population requiring public services amounted to slightly less than the 60%, compared, while Spain registered roughly the 70% and Denmark and UK exceeded the 90% (European Commission, 2013); (ii) the economic dowturn, which has particularly affected the Italian economy in the last decade, is forcing government to cut budgets and improve efficiency in Public Administration (PA) in order to save resources; in this respect, a significant and growing attention has been paying to the ways through which making public investments more cost-effective and efficient (European Commission, 2013).

With respect to the latter point, in particular, Italian government, moving from the assumption that the more a e-government service is used, the higher the benefits for the PA, is exploring a peculiar approach to favor e-government: multichannel service provision (cf. Italian Ministry for PA & Innovation, 2012). Multichannel service provision consists of making PA services available outside the PA offices, making it possible for citizens to achieve an ideally ubiquitous access to services, enabled by ICTs. This means, of course, service provision through the

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Internet, but also from other access points where third parties may support citizens in the access to online services through ad hoc interfaces or platforms. These third parties may be supermarkets, post offices, tobacconists, pharmacies, or ideally whatever physical or virtual party authorized by the government to provide public services. The rationale behind this attention to multichannel provision is that digitalizing the Public Sector is an advantage for the PA in itself, independently from the specific access point by citizens to services, and observing how Italian citizens are prone (also because it is quite historically rooted in Italian tradition) to interact with PAs through third parties (e.g., tobacconists — that are official retailers of stamps), growing attention to the possible deployment of service provision in places (physical or virtual in nature) different from public offices is emerging. Indeed, seminal initiatives for providing payment services, certifications and other public services through different channels (post offices, banks, pharmacies, etc.) have been implemented by some local bodies. For instance, the possibility to pay the car taxes or fines at tobacconist was enabled some years ago in an experimental way, and is becoming an important, when not pre-eminent, payment channel for citizens all over the country. Other initiatives such as the payment of some healthcare taxes in pharmacies or at supermarkets, as well as the payment of the house or waste taxes at tobacconists' have been introduced, with positive results in terms of penetration (Politecnico di Milano, 2011). The success of these initiatives is increasing the attention paid by the Public bodies in the development of the initiatives, so that several calls for an enlargement of the alternative channels for payments and other services are in play. Yet, organizational and financial costs for developing interfaces and modifying procedures in order to broaden the set of access point are not irrelevant for PAs. Resource shortage is hence forcing Public bodies to select the channels to enable according to the possibility to actually have returns on the investment in terms of efficiency (Agostino, Arena, Azzone, Dal Molin, & Masella, 2012). And this, in turn, strengthens the emphasis on detecting the channels that are the most attractive for citizens in order to favor the penetration of services.

Nonetheless, while literature on citizen acceptance of "direct" (i.e., purely PA2C) e-Government services is bourgeoning (e.g., Aladwani, 2013; Nasi, Frosini, & Cristofolini, 2011; Susanto & Goodwin, 2013) much less is known about the citizens' attitude towards different channels of service provision. In this paper we explore this very topic, trying to understand two paramount issues: (i) the key-benefits pursued by citizens when approaching public services (with a special focus on payment services), and (ii) the potential channels of interaction perceived as suited to provide such benefits. In this way we will identify the attitudes of citizens towards different channels of e-Government services provision and will provide both theoretical and practical implications for policy makers. Our empirical exercise is articulated in two studies: first, we conducted exploratory focus groups with profiled samples of Italian citizens aimed at reframing the set of e-Government benefits advanced in previous studies as e-Government acceptance antecedents in a comprehensive, but parsimonious way; second we conducted an extensive survey on a sample ($n = 1000$) that is representative of Italian population aimed at understanding expected benefits with reference to payment services and attitudes towards the different channels. Through statistical elaboration, we identified segments of users with homogeneous needs and benefits sought and the attitudes of these segments towards the different channels of interaction.

Such an analysis, besides the immediate impacts on the Italian situation, tackles a top priority issue at an international level: OECD (2012) highlights how providing information and services to citizens through multiple channels is a troublesome issue for PAs all over the world, raising a call for managerial tools suited to pursue cost effectiveness in multichannel government. Providing a possible segmentation scheme for multichannel payment services, hence, may represent a valuable tool for better identifying the potential "markets" of each channel,

supporting PA planning and decision making when approaching the decision about whether to open a new channel or not.

The remainder of this article is organized as follows. Section 2 presents a review of previous e-Government studies aimed at identifying the framework of key benefits that determine propensity to accept an e-government service. Sections 3 and 4 present the method and the results of the first study aimed at testing the benefits framework obtained through literature review with suited samples of Italian citizens, leading to the definition of the punctual research questions. Section 5 introduces the outcomes of the study on citizen segmentation and attitudes towards e-Government channels. Section 6 discusses the results and the implications of the study, and, finally, Section 7 presents the conclusion and implications of findings.

2. Literature review and research framework

In this section we will introduce the state-of-the-art literature on user adoption of e-government services in order to introduce a taxonomy of potential benefits that represent the cornerstone of our empirical exercise.

Literature has widely debated the potential benefits and risk perceived by citizen in interacting with a PA. Several of these contributions aimed at studying acceptance, rather than attitudes, contextualizing the problem in the framework of established behavioral theories such as the Theory of Reasoned Action (TRA) (e.g., Warkentin, Gefen, Pavlou, & Rose, 2002), the Technology Acceptance Model (TAM) (e.g., Gao, 2013) and the Theory of Planned Behavior (TPB) (e.g., Horst, Kuttschreuter, & Gutteling, 2007). Nonetheless, these studies aim at understanding the factors leading to the adoption of a e-government services once it is available, while the objective of this paper is to explore the beliefs and the attitudes of citizens towards *potential* channels of service delivery. In this respect, hence, rather than discussing how beliefs interact with subjective norms and service-level variables such as easiness to use, we will focus on the contributions aimed at providing an answer to the question: what are the possible benefits of the adoption of e-Government services?

In this respect, literature is generally fragmentary, but quite rich, and provides a number of possible areas of benefit potentially impacting on the acceptance by citizens. Previous research has focused mostly on two main areas: on the one hand, the ability by the e-government services to provide citizens with relative benefits compared to offline service provision; on the other hand, the perceived "security" perceived by citizens when switching to online channels. In the first stream, several contributions, within broader theoretical models of technology acceptance, have highlighted issues such as increased perceived efficiency (e.g., Carter & Belanger, 2004), perceived usefulness (Horst et al., 2007) or quality of the information provided (e.g., Colesca & Dobrica, 2009). In the second stream, a strong emphasis has been put on the concept of "trust" in e-government services by citizens (e.g., Colesca, 2009; Warkentin et al., 2002; Welch, Hinnant, & Moon, 2005), underlining how citizen are prone to adopt e-government whereas they have evidence of a proper level of security. These two macro-streams of research, despite the specific declinations, when combined highlight a very reasonable view of e-government acceptance: first, e-government is adoptable whereas it is able to demonstrate citizens that it can provide the same level of service, and also of security, offered by offline services or traditional channels. Second, it is actually adopted when citizens perceive that using e-government induces a relative advantage, related to usefulness, convenience or other diminished costs/increased benefits.

Partly moving from these assumptions, Benedetti, Ghezzi, Lamberti, and Russo (2009) provide a comprehensive model of benefits potentially sought by citizens when approaching e-government that is grounded in extant literature. Given its comprehensiveness, we will endorse this framework in the first part of our research. Its underlying

idea is that the benefits sought by citizens when approaching e-government may be led back to 12 main dimensions:

1) *Cost savings*, i.e., the possibility to obtain the same service attainable at PA offices with a reduced effort (e.g., diminished need for transportation — Venkatesh, Chan, & Thong, 2012) or with reduced fees (e.g., Lean, Zailani, Ramayah, & Fernando, 2009)
2) *Time savings*, i.e., the possibility to reduce the time spent by the citizen for obtaining the service (e.g., Susanto & Goodwin, 2010)
3) *Unconstrained access*, i.e., availability of flexible access points to and opening times of the interaction with the PA, up to 24/7 access (e.g., Gilbert, Balestrini, & Littleboy, 2004).
4) *Multichannel accessibility*: possibility to access the *on-line* channel via several technologies (e.g., Internet, mobile) and *devices* (e.g., computer, smartphone, television, etc.) (e.g., Vassilakis, Lepouras, & Halatsis, 2007).
5) *Security*, i.e., reduction of the perceived risk according to two dimensions:
   a. *Operation security*, i.e. check of the data entered by the user, generation of precise and timely *feedbacks* and data protection (e.g., Lambrinoudakis, Gritzalis, Dridi, & Pernul, 2003)
   b. *Information security*, i.e. information reliability, correctness and timeliness (e.g., Smith & Jamieson, 2006)
6) *Democracy*, i.e., the possibility to (i) access every PA service and carry it out through each channel, (ii) access to formerly inaccessible or difficult-to-access information, increasing citizen's visibility on public processes (e.g., Layne & Lee, 2001).
7) *Transparency*, i.e., the possibility for the user to monitor the flow and the archive of its files through standard procedures (e.g., Thomas & Streib, 2003).
8) *User friendliness*, i.e., possibility for the user to have an easily understandable information flow and interaction experience with the PA (e.g., Carter & Bélanger, 2005).
9) *Quality*, i.e., possibility for the user to gather, from the PA websites, correct information and procedures (e.g., Teicher, Hughes, & Dow, 2002).
10) *Interactivity*, i.e. the possibility for citizens to establish a bidirectional communication with the PA and other users, obtaining accurate and timely replies (e.g., West, 2004).
11) *Customization*, i.e., possibility for the user to have an interaction with the PA customized according to its needs (in terms of interface, information presentation or other)(e.g., Tat-Kei Ho, 2002).
12) *System integration*, i.e., the ability of the system to interface with other information and IT systems – provided not only by the PAs, such as home banking functionalities – in order to gather on the same platform the widest range of functionalities (e.g., Andersen & Henriksen, 2006).

Such benefits have been proffered as drivers for citizen acceptance or adoption of e-government services in which there is a direct interaction between the citizen himself and PA websites.

In this study, though, we limit the scope of the analysis to payment services, hence, in order to get a parsimonious framework of benefits, we need to reframe this classification with citizens before testing them as a segmentation base for identifying homogeneous clusters of potential e-Government users. The empirical exercise for such a validation is described in the following section.

3. Framework validation

3.1. Method

The benefit framework was refined and preliminarily tested through focus groups. Focus group is a research methodology which "*collects data through group interaction on a topic determined by the researcher*" (Morgan, 1996). Focus group methodology is considered to be able to generate complex information, to gain a wide range of insights of participants' attitudes, opinions, and perceptions about the research issue, through natural social interaction among the participants in a permissive and non-threatening environment (e.g., Liamputtong, 2011). The advantages of focus group derive from the interaction: through query each other and explain oneself to each other, researchers can not only explore what participants have to say, but also could they gain deeper insights that are more than the aggregation of individual interviews; convergence and divergence could merge during the discussion in focus groups, which is a unique strength of focus group methodology; furthermore, researchers/moderators have the opportunity in focus groups to directly ask the participants to demonstrate or to compare their opinions, rather than aggregating and speculating individual data (Liamputtong, 2011; Morgan, 1996). Moreover, it is suggested that participants would feel more secured and comfortable to express their opinions in a group since, unlike individual interview, they are not required to respond to a particular question, encouraging spontaneous response when the participants have a definite point of view (Stokes & Bergin, 2006). In this, focus groups privilege social interaction than in depth investigation of phenomena, typical of interviews and case studies (e.g., Chiesa, Frattini, Lamberti, & Noci, 2009).

Focus groups are applied in this study because its advantage in hearing what the participants have to say and gaining deep insights from their interaction is consistent with the nature and the scope of the study. With virtually no previous studies on citizens perceptions about the potential benefits of multichannel payment service provision by the PA, we aimed at collecting a broad range of views from the participants and subsequent to identify possible patterns, convergences and divergences with respect to the e-government potential benefits framework presented above. Moreover, by interacting directly in a semi-structured way with citizens, we enhanced stakeholder participation in the construction of the research framework, potentially increasing the ability of our final results to respond to citizens' actual needs (e.g., Lamberti, Noci, Guo, & Zhu, 2011).

Four focus groups were carried out in four Italian cities: two large cities (Milan and Bologna) and two smaller towns (S. Giovanni in Persiceto and Anzola nell'Emilia). Within each group, eight participants were recruited in collaboration with the municipalities, randomly selecting them from a list of the citizens that lived reasonably close to the place where focus groups were to be held (in order to avoid an income differentiation in Milan and Bologna, the room where focus groups were held was placed neither downtown nor in the suburbs). Out of a list of 200 citizens, recruitment followed a saturation approach: the aim, in each group was to recruit, in each focus group, at least one and less than 4 observations in each income and age class identified. No more than 5 participants per gender in each focus group was a supplementary constraint in sampling (see Table 1). We chose this approach in order to have the greatest diversity in the sample, so to be able to draw onto a large set of perspectives on the phenomena investigated. Both the number of groups and the group size are in accordance with common standard of focus groups methodology (Morgan, 1996).

Each focus group, lasting on average 90 minutes, tape-recorded and conducted by one of the authors with another author recording non-verbal issues such as animosity, irony or other perceived states of mind, has followed the same, semi-structured checklist articulated into three main issues:

1) Interaction with the PA: habits and channels of interaction. At the outset of the focus group, participants were asked to tell the kind of Public payment services generally used and the channel of provision adopted.
2) Benefits sought in e-government enabled payment service provision. After a brief description of what e-government payment services are, moderators asked interviewees to express the benefits that could encourage the adoption of alternative channels instead of traditional off-line or PA-provided services.

Table 1
Sample for focus groups.

Initials	M	F	18–29	30–44	45–64	65+	Marital status	< 15K	15–25K	25–50K	> 50K	Education	Job
Focus Group 1 (Bologna)													
T. I.	x		x				Single (living with parents)	x				Secondary School	Student
G. C.		x		x			Married (no children)			x		Master Degree	Freelance professional
V. S.		x		x			Married (with children)		x			Secondary School	Employed
G. A.	x				x		Married (with children)				x	Secondary School	Entrepreneur
Z. N.	x		x				Single (living alone)			x		Secondary School	Employed
S. I.		x			x		Married (with children)			x		Secondary School	Employed
T. V.	x					x	Married (grown-up sons)				x	Primary school	Entrepreneur
D. T.		x				x	Widowed		x			Secondary School	Retired
Focus Group 2 (Milan)													
R. Z.	x		x				Single (living alone)			x		Secondary School	Employed
N. Z.	x		x				Single (living with parents)	x				Bachelor Degree	Student
O. P.		x		x			Single (living alone)		x			Secondary School	Employed
M. E.		x		x			Married (with children)				x	Master Degree	Freelance professional
B. O.	x		x				Married (with children)			x		Secondary School	Employed
P. L.	x				x		Married (no children)		x			Secondary School	Employed
P. R.	x				x		Single (living alone)			x		Secondary School	Retired
N. D.		x				x	Married (grown-up sons)				x	Primary school	Entrepreneur
Focus Group 3 (S. Giovanni in Persiceto)													
O. N.	x				x		Widowed		x			Primary school	Employed
V. U.		x		x			Married (no children)				x	Secondary School	Employed
F. M.		x	x				Single (living with parents)		x			Bachelor Degree	Employed
I. D.	x				x		Married (with children)			x		Master Degree	Freelance professional
N. B.	x				x		Single (living alone)			x		Secondary School	Employed
G. S.		x				x	Married (grown-up sons)				x	Secondary School	Freelance professional
F. R.		x	x				Married (no children)		x			Secondary School	Employed
T. I.	x			x			Married (no children)	x				Master Degree	Unemployed
Focus Group 4 (Anzola nell'Emilia)													
I. L.		x	x				Single (living alone)		x			Bachelor Degree	Working Student
I. U.		x		x			Married (no children)	x				Secondary School	Unemployed
S. F.		x			x		Married (grown-up sons)			x		Master Degree	Freelance professional
R. R.	x				x		Married (with children)			x		Secondary School	Freelance professional
B. M.		x		x			Married (with children)				x	Secondary School	Entrepreneur
V. N.		x			x		Married (with children)		x			Master Degree	Employed
S. G.	x					x	Widowed			x		Secondary School	Retired
D. I.	x		x				Single (living with parents)		x			Master Degree	Employed

3) Desired offline and online channels of interaction for payment services. The moderator stimulated participants about the physical and virtual channels through which accomplishing payments towards the PA (e.g., taxes, fines, fees, etc.) they would like to have and why.

Information gathered through the focus groups were processed before being analyzed. In particular, we applied a content analysis (e.g., Goulding, 2005): the coding process was undertaken by two coders with a solid expertise in content analysis under the supervision of an academician. Their role was to extrapolate the main concepts expressed during the focus group and to verbalize the overall outcome of the debate (full agreement, partial agreement, disagreement among participants, etc.). To enhance the reliability of the analysis, written guidelines for coding were prepared in order to lead back answers to the same questions, stimuli and to code with shared stardards the expected benefits (e.g., Leonidou & Leonidou, 2011). Also unexpected outcomes were to be formalized and later to be discussed and jointly codified with other experts. After each of the coders delivered the interpretations independently, the academician analyzed inter-reliability, i.e. the extent to which individual interpretations where consistent to each other. In case of disagreement (quite infrequent, as it involved just two cases in the whole set of data), tape records were listened back by the three experts to come to an agreement.

3.2. Findings

For the objectives of this study, evidence gathered during focus groups will be presented with respect to two issues: (i) benefits sought when approaching a e-government service; (ii) interaction channels for approaching e-government services. In the following the outcomes will be summarized.[1]

3.2.1. Benefits sought when approaching a e-government service

3.2.1.1. Results. The focus groups substantially validated our benefit framework, but introduced some specific issues enriching and modifying some of the variables. Quite obviously, cost savings and time savings were confirmed as important benefits able to increase attitude towards an e-government service. Nonetheless, a specification on both the

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[1] Transcriptions and detailed summaries of the focus groups are available upon request.

savings emerged with specific reference to multichannel service provision: minimizing the distance to access the service (e.g., in the case of service provision through different physical channels) assumes a relevant importance, as testified by the following quote:

> "if I had to pay a fine, maybe I could save time if I used the Internet instead of going to the Public Office, but if I passed by a tobacconist going back home, then I'd have not to move, to make efforts or to learn a new system. So, I'd go to the tobacconist […] if I had to a little extra-commission […] Indeed, that's what I do when I can" (G.C., focus group 1).

Similar arguments and following agreement were reached almost unanimously in the focus groups. So, a first modification to the framework emerged: not only time or cost savings, but also minimal transfers or efforts to access the service.

Participants also generally confirmed, unconstrained access, providing a richer interpretation of the concept, essentially shared in all the focus groups, as testified by the following quote:

> "Public Offices often are crowded or have opening hours too limited; Other shops stay open until late evening or night, sometimes […] I never felt the need to pay the school fees for my children at 3 a.m.; if I could get it, say, at 10 p.m., it would be fair enough to me" (N.B., group 3).

So, multichannel provision introduces a concept of unconstrained access as both possibility to avoid lines or crowded service delivery points, and to extend the opening hours, not necessarily moving towards a 24/7 provision.

Security issues, with respect to multichannel service provision, assumed a punctual, though partly more limited, connotation: on the one hand, especially the fourth focus group (but with some general underlying agreement also by the other three) has unanimously associated security to the immediate feedback on the operation, as testified by the following quote:

> "If I went in a supermarket to pay a fine, surely it would be potentially convenient. Yet, I'd really go to a supermarket for that only if I were sure that the payment was correctly executed and the supermarket could give a receipt granting me that" (R.R., focus group 4).

On the other hand, especially in focus group 1, more than in the others, security emerged as dealing with the punctual feedback about possible mistakes. The following quote, in this respect, is emblematic:

> "The reason why, especially with certificates, I go to the Public Offices and I'd hardly change this habit, is that [in PA offices] clerks can tell you immediately if you made something wrong in filling the forms, or if you filled all the forms necessary for that certificate […] What I hate the most is to do twice these things; at least, Public Offices in general ensure that you can do it once and for all" (D.T., focus group 1).

The security issues, however, were very often entwined in the focus groups and fell in the same idea of being sure that the service provided in the different channels had quality and reliability.

The adoption of different channels of interaction was generally considered as beneficial as three conditions were increasingly respected: (i) having the possibility to obtain the service through different channels (i.e., having potentially the same services in all the possible touchpoints) — an aspect of the "democracy dimension" in the starting framework particularly emphasized, unanimously, in focus group 2 and 3, (ii) having a common archive of all the services obtained in the different channels in order to keep track independently from the specific channel, underlined in focus group 1, 2 and 4 and less in focus group 3, and (iii) having, in the case of complex services, the possibility to begin the service (e.g., filling the forms) through a channel and finish

it through another channel (highlighted especially in focus group 2). This interoperability recursively emerged during focus groups, as testified by the following statement:

> "I do not trust Internet payments; but I would like if my Municipality gave me the opportunity to fill the forms at home, send them via Internet and maybe do my payment at the tobacconist, or in the post office; this would be a great service to me" (P.R., focus group 2).

The issues of transparency and democracy (as access to formerly undisclosed information), never emerged in the discussions. We believe that the main reason for that does not lie in their limited importance in e-Government, but rather in the limited importance that citizens perceived when thinking about payment services. Nonetheless, information support still emerged as salient in the adoption of channels for Public service provision. In particular, two elements emerged: (i) the possibility to interact with a person who is authoritative and may provide clear information, and (ii) the presence of clear information points in the channel; this second point, in particular, is considered particularly important in complex services (i.e., services consisting of several steps or required once in a lifetime or almost) and in online channels such as websites or mobile sites.

3.2.1.2. Revised benefit framework. In the glance of the focus groups, a revised framework of benefits emerged, consisting of:

- Cost savings
- Time savings
- Movement savings
- Unconstrained access
- Archiving
- Immediate feedback on the outcome
- Immediate feedback on errors
- Quality warranties
- Multiple channels of interaction
- Clear information
- Human interaction
- Multichannel interoperability
- Multichannel feedbacks (i.e., possibility to have notifications about the outcome of a service on a channel that is different from the one adopted for service provision

3.2.2. Interaction channels for e-Government

3.2.2.1. Results. The focus groups showed an important point with reference to multi-channel e-government: potentially whatever channel of interaction may be valuable to customers, nonetheless an important issue of reputation and past experience affects the attitude towards different channels. For instance, post offices and tobacconists, which are historical interaction points with PAs,[2] were immediately recognized as important channels for Public Service provision. Among other physical channels through which accessing Public Services, the interviewees highlighted how potential attractiveness is both channel-specific (according to arguments of perceived reliability, for instance) and context-specific: for instance, pharmacies were recognized

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[2] Tobacconists have been fundamental public utility centers for almost two centuries in Italy and in the former areas constituting independent countries before the unification (1861). For instance, they were retailers of salt when this good was considered a luxury good and was subject to taxes. Similarly, in late 1800s, they were official, public distributors of quinine, in order to prevent epidemic malaria. Italian posts, monopolistic for most of the post services until 2006, were controlled by a specific Ministry, and were one of the most important points of reference for savings, giving the opportunity for citizen to buy either Treasury bonds or specific bonds by the Posts themselves. For this reason, they represented also a kind of "public bank" for large strata of the population up until few years ago.

as interesting channels for payments related to healthcare issues, while banks (and especially home banking) emerged as strongly entwined to tax payment and other payments. A special mention is for supermarkets, which emerged as potentially interesting channels.

As for digital channels of interaction with the PA, it is interesting to notice how most of the citations dealt with the websites of the physical channels emerged in the discussion (i.e., besides obviously the PA sites, post website, banks websites and websites of the company in charge of payment services at tobacconists'), but also other virtual channels such as e-commerce websites or app stores, or even social networks were nominated.

3.2.2.2. E-Government channel framework. In the glance of the outcomes of the focus group, a framework of possible channels for e-government service provision was developed. It consists of:

- Post or Lottomatica (the company in charge of payment services at tobacconists') websites
- Post offices
- Bank offices
- Tobacconists and Pharmacies
- Social networks
- Home banking
- E-commerce websites or app stores
- PA websites

3.3. Research questions

Thanks to the refinement of the framework after the focus groups, it was possible, through an extensive survey to provide an answer to the following research questions:

RQ1. How is it possible to segment Italian citizens according to the benefits sought when approaching payment services?
RQ2. Which are the channels towards which those segments have a better attitude?

4. Framework testing: method and results

4.1. Method

Data to test the model were drawn from a cross-sectional field study of Italian citizen in July 2012. A nation-wide questionnaire-based survey was conducted. Questionnaires were conducted adopting a computer-aided telephone interview (CATI).

In order to provide statistical representation of the whole population a standard sampling plan including 1000 respondents in the age above 15 years old was adopted. Details about the sample profile are provided in Table 2. Thanks to its characteristic, descriptive statistics of the questionnaire are representative of the actual incidence in Italy of the phenomena investigated with a tolerance below 3.1% (with a 95% confidence).

4.2. Questionnaire structure and measures

The questionnaire was articulated into four sections:

- Demographics, in which details such as age, education, job, family size, etc. were asked
- Importance attributed to the benefits provided by a payment service provided by a channel different from the Public Sector office; each of the 13 benefits obtained after the focus groups were measured through 3 items (as suggested by James, Mulaik, & Brett, 1982) with 5-point likert scales (from "not important at all" to "extremely important")
- Propensity towards interaction channels in payment services. A question of the form "if it were offered, would you use X for a payment service?" where X was either of 8 channels emerged after the focus group. A 5-point Likert scale was adopted also in this case (from "Extremely unlikely to use" to "Extremely likely to use"). A similar question for PA offices was asked as a comparison.

A pretest was conducted to ensure that the instrument possessed acceptable reliability and validity. The subjects in the pretest sample were postgraduate students. 87 subjects completed the survey. All of the scales of benefits had reliabilities of 0.8 or more. This provided a preliminary reliability testing.

After the collection of the 1000 responses, scales for assessing the benefits were further tested to ensure reliability and validity. We followed the two-step procedure recommended by Anderson and Gerbing (1988). Convergent and discriminant validity of the benefits scales were tested with confirmatory factory analysis (CFA) using Stata 12. Each item was modeled as a reflective indicator of its hypothesized latent construct. The thirteen constructs were allowed to covary in the CFA model. The measurement models were evaluated using maximum likelihood estimation. Appendix A presents the results of the CFA analysis. All of the constructs had average variance explained (AVE) and composite reliabilities above the threshold value of 0.8, and the fit indexes (Table 3) were satisfactory, suggesting that the factorial design is appropriate for representing the data. Given the factor loadings of the items, all above 0.8, simple average of the scores of the items were used for representing the latent variables (see Table 4 for descriptive statistics and Appendix B for correlations between benefits).

Table 2
Sample profile.

Gender	
Female	52.20%
Age	
15–24	8.00%
25–34	18.10%
35–44	14.70%
45–54	21.80%
55–64	20.60%
65 +	16.80%
Area of the country	
North-East	19.50%
North-West	27.20%
Center	19.50%
South	23.20%
Islands	10.20%
Population of the hometown	
Up to 2,000	6.00%
2,001–5,000	14.60%
5,001–10,000	13.40%
10,001–20,000	14.70%
20,001–30,000	9.50%
30,001–50,000	7.50%
50,001–100,000	10.90%
100,001–250,000	8.90%
250,000 or above	14.50%
Education	
No title/primary school	30.9%
High School	53.5%
Higer education	15.6%
Job position	
Unemployed	5.6%
Student	6.7%
Housewife	9.9%
Farmer	0.9%
Labor	12.0%
White collar or manager	25.6%
Top manager	1.8%
Entrepreneur or freelance professional	7.5%
Teacher/researcher	3.5%
Retired	26.2%
Did not answer	0.3%

Table 3
Fit statistics of the confirmatory factor analysis.

	$\chi 2$	d.f.	p-Value	Normed Fit Index (NFI)	Non-normed Fit Index (NNFI)	Comparative Fit Index (CFI)	Random Mean Square Error Average (RMSEA)
Model 1	4187	767	<0.01	0.91	0.97	0.92	0.046

Note: Model 1 associates each item to the underlying, hypothesized factor (e.g., CS1, CS2 and CS3 loding the Cost Saving construct, and so on). In this way, a 13-factor model, each of which had 3 items loading on it, was estimated. The Null model lets the 39 items free to covariate.

4.3. Clustering citizens

In order to perform clustering and to increase the interpretability of the outcomes, the identification of macro-benefits able to represent the structure of preferences in a more parsimonious way was pursued. To do this, exploratory factor analysis (EFA) was performed. Through a principal components method, 3 factors were extracted (Table 5) according to the Kaiser's (1960) threshold value of eigenvalues ≥ 1. All factor loadings exceed the threshold .5 value. Nonetheless archiving showed excessive cross-loadings on factor 1 and 2 and was hence dropped in successive analysis.

Factor 1 in both the service types collects benefits related to the availability of information or the accessibility of information able to grant an appropriate control to the citizen. For this reason, it was named "Control". Factor 2 collects the benefits related to savings in terms of time, costs, movements and the availability of the service, showing a common idea of "Convenience" sought. Finally factor 3 collects the benefits related to multichannel environment: availability of different channels, interoperability and multichannel feedbacks; as a consequence it was easy to associate this factor to "Multichannel access". Cronbach alpha values exceeded .7 for each factor extracted, suggesting that they are reliable.

Using the three identified factors we ran a cluster analysis to look for groups of citizens with similar benefits sought. We ran clustering just on the three factors and not on (also) the channel type or the socio-demographic variables in order to obtain clusters that differ only according to the expectations, hence the psychometric variables in play, using behavioral variables (i.e., channels) and socio-demographic variables at a later stage to identify whether the psychographic parameters were actually discriminant in anticipating channel preference. This approach to behavioral and demographic variables has been largely used in previous research (e.g., Frösén, Tikkanen, Jaakkola, & Vassinen, 2013; Sismeiro, Mizik, & Bucklin, 2012; Rufín Moreno, Molina, Figueroa, & Moreno, 2013) to understand the discriminant power of psychographic clustering

When approaching clustering, three core issues are in play: (i) determining the optimal number of clusters, (ii) assigning observations to clusters, and (iii) assessing the stability of cluster assignments (Homburg, Jensen, & Krohmer, 2008). In the following the methodological approaches to address the issues are presented.

4.3.1. Determining the number of clusters

Clustering techniques fall into two categories: hierarchical and non-hierarchical. In hierarchical procedures, different numbers of clusters may be formed depending both on the similarity of the observations and how the groups are linked (e.g., Vicente Cuervo & López Menéndez, 2006). We used this approach as we did not know the number of clusters that should have been formed in advance (which would have allowed the use of a non-hierarchical method). To determine the appropriate number of clusters, we applied several hierarchical methods such as single linkage, average linkage, complete linkage, centroid linkage and Ward linkage in order to understand whether solutions converged (e.g., Hair, Black, Babin, Anderson, & Tatham, 2005). The Pseudo-F index, that provides an evaluation of the ratio between inter-cluster and intra-cluster variance for solutions from 3 to 9 clusters is reported in Table 6. Our selection of the number of

Table 4
Descriptive statistics for the key variables in the study.

Benefit	Mean						Std. Dev.
TS	4.11						1.328
MS	4.06						1.293
CS	4.41						1.182
UA	4.30						1.177
AR	3.98						1.421
IFO	4.50						1.037
IFE	4.58						0.990
W	4.66						0.859
MCI	4.44						1.035
MI	3.26						1.536
CI	4.46						1.082
HI	4.34						1.107
MF	4.18						1.308

Attitude towards channels	Mean	Std. Dev.	1 = Extremely unlikely to adopt	2	3	4	5 = Extremely likely to adopt
Post office	3.83[a]	1.44	13.6%	5.9%	14.1%	16.4%	50.0%
Banks	3.763[a]	1.45	13.8%	6.8%	16.6%	14.9%	47.9%
PAoffice	3.760[a]	1.43	13.7%	6.2%	17.4%	15.8%	46.9%
Authorized retailers	3.45[b]	1.52	19.1%	8.3%	18.7%	16.6%	37.3%
PA websites	2.86[c]	1.62	35.3%	7.9%	17.4%	14.3%	25.1%
Websites of authorized retailers	2.71[d]	1.57	37.3%	9.8%	17.8%	14.6%	20.5%
Homebanking	2.53[e]	1.65	46.5%	8.0%	13.6%	9.5%	22.4%
Social networks	1.895[f]	1.39	58.7%	13.0%	15.2%	7.2%	5.9%
eCommerce/AppStore	1.893[f]	1.24	65.6%	7.6%	9.9%	6.5%	10.4%

Note: for channels, means that have the same superscript are not significantly different (p < .10) on the basis of a t-test. Highest means are assigned the superscript "a," the next lower means are assigned the superscript "b," and so forth.

Table 5
Exploratory factor analysis (EFA) for payment services.

	Factor 1 = Control	Factor 2 = Convenience	Factor 3 = Multichannel access
TS		.5910	
MS		.5912	
CS		.5473	
UA		.5177	
IFO	.6030		
IFE	.6492		
W	.5432		
MCI			.6464
MI			.7756
CI	.5214		
HI	.5222		
MF			.6623
Eigenvalue	4.63006	2.03202	1.43715
alpha	.8647	.7625	.7505

total variance explained: .6230.

clusters follows the Pseudo-F criterion (Caliński & Harabasz, 1974), suggesting that the best solutions are associated to higher values of the Pseudo-F. As it may be noticed in Table 6, 3 methods out of 5 suggest a 6-cluster solution; the two remaining suggest a 4 cluster one. For this reason, the determination of the number of clusters led not to a univocal answer, and the assignment to clusters was used also to select the optimal solution.

4.3.2. Assigning observations to cluster

In order to assign observations to cluster, a non-hierarchical, partitioning method such as k-means was adopted (Milligan & Cooper, 1987). In order to obtain an optimal starting solution, we followed the procedure by Homburg et al. (2008): we split the sample in halves, ran the k-means clustering method on each of them, and then assigned each object in the second half to the nearest cluster centroid obtained from the first half (based on the squared Euclidean distance). As a result, two cluster assignments for each object in the second half were obtained, and then compared using Rand's (1971) index. Both k = 4 and k = 6 solutions displayed acceptable stability (0.79 and 0.82, respectively) and, given their closeness, they did not lead us to a univocal choice of the clustering model. For this reason, we observed also, following the procedure by Vicente Cuervo and López Menéndez (2006), the presence of a balanced distribution of cases in the cluster solutions. The 4-cluster solution had not a balanced distribution of cases, including almost the 90% of the cases in just two clusters, a suboptimal situation for clustering. The 6-clusters solution, instead, was more balanced (the largest cluster accounts for 37.1% of the observation, the second largest for 24.1% and the smallest for the 4%), and for this reason it was preferred. The centroids for this solution are presented in Table 7, while the channel attitudes and demographics are presented in Appendices C and D.

Table 6
Pseudo-F index for the hierarchical clustering solutions.

# clusters	Pseudo-F by linkage method				
	Single	Average	Complete	Centroid	Ward
3	3.57	302.67	500.89	178.94	548.16
4	4.92	241.45	**505.66**	**191.07**	616.09
5	5.35	195.18	439.02	162.17	588.7
6	**5.97**	**380.31**	483.98	178.94	**641.16**
7	5.07	332.4	422.23	149.19	580.72
8	4.8	317.96	371.55	128.33	543.88
9	5.24	286.43	332.14	118.52	487.31

Table 7
Cluster centroids of the groupings of citizens.

Cluster	F1: control	F2: convenience	F3: Multichannel	Incidence
C1: Unyielding citizens	−3.54	−2.63	−2.53	4.0%
C2: Conservatives	−0.86	−0.39	−1.38	11.6%
C3: Average citizens	0.26	0.48	−0.39	24.1%
C4: Countryside citizens	−0.45	−2.00	−0.46	6.3%
C5: On-line multichannel-ers	0.14	−0.52	0.48	16.9%
C6: Offline multichannel-ers	0.49	0.67	0.82	37.1%

4.4. Clusters' profile and channel attitudes

The characteristics shared by citizens within but distinguishing between the clusters help to provide a qualitative explanation for the findings. We interpret the clusters as follows:

Group 1: Unyielding citizens (40 observations; representing 4% of respondents)
These citizens show a very low propensity to change their habits with respect to payment service provision, attributing the lowest importance to all the possible drivers of channel switch in the population. It is a residual part of the population, characterized by the highest average age (56.43 years) and a low degree of education (more than half of the sample has not achieved a high school diploma). Over-represented in Southern Italy, these citizens show very low attitudes towards all the alternative channels and the highest propensity to PA offices.

Group 2: Conservatives (116 observations; representing 11.6% of respondents)
These citizens, characterized by an average age of 50.83 years, a slight over-representation of men, retired and graduated people and an average-like distribution in terms of population of the home town, show an importance attributed to convenience, control and multichannel provision in determining a possible channel switch below the average of the population. Nonetheless, while importance attributed to multichannel provision and control is extremely low (only higher than unyielding citizens), convenience importance is relatively close to the average, suggesting that probably, for those kind of payments that are not perceived as extremely "dangerous" or "risky" (e.g., fines rather than tax payment of school fees) some possibility of channel switch can exist. In fact, analyzing channel propension, it is possible to observe how attitudes are generally slightly below the average, but generally the 3rd–4th highest in the population (2nd highest only in the case of PA offices, testifying a conservative attitude). Intriguingly, these attitudes are quite homogeneously "spread" among the channels, including both offline and online channels (even if the attitude towards PA websites is comparatively lower than in the other clusters).

Group 3: Average citizens (241 observations; representing 24.1% of respondents)
This cluster is characterized by a strong reliance on convenience and control; it is particularly interesting because it shows a socio-demographic profile that is extremely close to the average of the whole population, except for a slight over-representation of Northern Italy population, as well as an overall channel propensity very close to the average for all the channels but two: social networks and eCommerce websites, i.e., the two channels that emerged as particularly innovative during focus groups. This kind of attitude sets the cluster at a relatively high level of attitude towards banks

and homebanking (2nd highest attitude in the sample), suggesting both that banks seem perceived as reliable (in fact, control is a very important factor in the channel decisions) payment service providers, but also that online payment attitude may be a mainstream channel of provision.

Group 4: Countryside citizens (63 observations; representing 6.3% of respondents)

This relatively small cluster is characterized by a significant over-representation of men (almost two thirds of the cluster) and a polarization towards the lowest and the highest age classes. But the pre-eminent element is the fact that the cluster has an extremely low representation of people living in large cities above 250,000 inhabitants and, on the converse, a high presence of people living in small towns and cities below 50,000 inhabitants, hence the naming. Living in a small town or a small city probably makes some convenience issues (e.g., lines at the PA offices) less relevant, and this is probably the reason why, compared with other clusters, PA offices are more attractive than other channels. It is remarkable to note how the attitude towards post offices is, in this cluster, the second lowest. Once again a possible reason lies in the size of the hometown: the smaller the hometown, the lower the number of post offices, hence probably the smaller the perceived advantage in terms of service availability and service capability compared to PA offices. Nonetheless, it is extremely interesting to note how social networks and e-commerce sites gather a relatively significant consensus, reasonably driven by the high incidence of young respondents.

Group 5: On-line multichannel-ers (169 observations; representing 16.9% of respondents)

This cluster is characterized by a strong importance attributed to control and multichannel provision, while lower emphasis is put on convenience arguments in channel decisions. The cluster shows the highest propensity towards online channels, except for homebanking, and a very positive attitude towards post offices and other retailers. Analyzing the profile of the cluster, it is possible to observe how younger citizens are over-represented, suggesting that some kind of correlation between age and attitude towards online channels exists.[3] In particular it is remarkable how the attitude towards particularly innovative online channels such as Social Networks and eCommerce websites is the highest in the population, testifying a significantly higher attitude to experience new channels of interaction.

Group 6: Offline multichannel-ers (371 observations; representing 37.1% of respondents)

This cluster is characterized by the highest scores in all the importance factors (i.e., convenience, control and multichannel provision) and, remarkably, it is also the biggest cluster in the population. Under a socio-demographic perspective, this cluster has a distribution by area of the country and by population of the hometown extremely consistent to the general data of the Italian population,

while in terms of age classes, there is a slight under-representation of the youngest and the oldest class.

Analyzing channel attitudes, the cluster, together with on-line multichannel-ers, shows the highest propensity towards alternative channels; nonetheless the attitude towards offline channels (namely, banks, PA offices and authorized retailers) is the highest, while the attitude towards online channels (except for homebanking) is lower than on-line multichannel-ers.

5. Discussion and implications for academia and policy makers

5.1. Is the concept of multichannel service provision adopted by the Italian government consistent to citizens' expectations?

The results reported in the present study suggest that in the specific context of Italy, the diffusion of e-government services can benefit of an appropriate multichannel strategy mixing pure online payment service provision with the proliferation of offline access points providing ICT-enabled and ICT-based payment services. In fact, except for a minority of the population (represented mostly among unyielding citizens), channel preferences and attitudes generally are not concentrated in a specific channel. This means that the possibility to access the service from several alternative access points is a request by citizens, and as such a multichannel service provision represents a potential improvement in PA effectiveness, as contended by OECD (2012).

This idea is further enhanced by observing that PA websites are just the fifth preferred service provision point by Italian citizens, and the top four channels are offline. This means that, despite the huge investments by Italian Government in favoring the diffusion of e-government, citizens' mindset is still not fully ready to accept the switch to online channels. If one could suggest that, at least for some payment services, post offices and banks (besides PA offices) are already possible channels in several PAs, hence the preference expressed could be biased by habits, two facts cannot be neglected: (i) online payment services are already largely provided in Italy, hence the difference in the attitude expressed for established offline and online services by Italian citizens is very significant; (ii) the majority of the population shows low attitude towards PA websites, testifying a cultural distance limiting the potential for online channel diffusion. This element raises a crucial point for both academia and policy makers: as shown by Carter and Bélanger (2005), a twofold trustworthiness issue lies at the core of online PA service adoption: trust in technology (and namely in the Internet) and trust in government. Both are positively related to attitude to adopt e-government. The results of this study hence testify that in Italy, a clear problem of citizens' trust in the Governmental bodies, more than in technology, exists and has reflection on their attitude towards online public services. This leads to two important implications for Italian PAs (but more in general for all the PAs displaying low levels of online service penetration): recent studies on trust building in online contexts and eCommerce (e.g., Chang, Cheung, & Tang, 2013), have demonstrated that reputation, rather than warranties or other service-level advantages, drive trust and adoption; indeed, Chang et al. (2013) show that warranties and other "insurances" are even counterproductive in terms of perceived trustworthiness of the provider whereas its reputation is not good. On the other hand, as contended by Park, Gunn, and Han (2012), reputation, besides being built on competence, may be empowered by communicating benevolence (i.e., the willingness to act on the citizen's behalf) and integrity (i.e., honesty and commitment). As a result, two main conclusions may be drawn: first, PAs should empower their communication and reputation management (and the potential savings generated by a broad online service adoption may generate positive return on such an investment), in case by showing responsiveness, openness to dialogue and service orientation through

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[3] Correlation between age and channels attitudes were tested running multivariate regression using channel attitudes as dependent variable and age, education and age*education as independent variables. The results showed significant relationships between age and attitude towards eCommerce websites ($\beta = -0.074$, $p < .05$), PA websites ($\beta = -0.097$, $p < .01$) and authorized retailers' websites ($\beta = -0.098$, $p < .05$), significant positive relationship between education and attitude towards Homebanking ($\beta = 0.209$, $p < .01$), PA websites ($\beta = 0.172$, $p < .001$) and authorized retailers' websites ($\beta = 0.093$, $p < .05$). Combined effect was not significant (minimum $p = .163$ for PA websites). Nonetheless the adjusted R^2 for the multiple regression was relatively low (ranging from .10 for Social Networks to .26 for Homebanking), so we just took this data as a support for interpretation rather than a primary finding.

those channels, such as social networks, that establish deeper relationships with and among citizens and that, observing the results, are much less far away from their habits than one could expect. Second, multichannel service provision, being motivated by the objective of providing service in the right moments and contexts in which citizens need them, could represent an opportunity to increase perceived benevolence, enabling a virtuous circle: multichannel provision drives perceived benevolence, which in turns increases trust, hence penetration of e-Government.

5.2. What are the drivers to increase the effectiveness and the efficiency of multichannel service provision?

If the availability of different channels of interaction represents a potential driver of effectiveness and even of improvement of PA reputation, it is necessary to understand, given the objective of return maximization, how multichannel payment services are to be deployed in order to pursue efficiency and effectiveness. The study provides some interesting insights also into this issue. First of all, offline service provision seem able to easily attract citizens; in particular post offices and banks are perceived as natural PA payment service providers by citizens, hence whatever initiative aimed at conveying flows of citizens away from PA offices in order to, for instance, convert public servants to back office activities increasing effectiveness and efficiency, or just diminishing the need for front office personnel and structures, diminishing costs, must try to maximize the interchangeability of banks and post offices with PA offices. Remarkably, the overall attitude towards these channels is higher than the one towards PA offices, testifying a sort of established reputation as reliable or efficient channels of interaction. As for online channels, instead, the situation is more complex: the general attitude towards these channels is significantly worse than for offline channels.

This situation suggests that, probably, the best way to deploy multichannel government is to start from offline channels (currently closer to citizens' attitudes, with a larger potential marketing and with a better reputation than PAs) and then, in time, extend to online channels. This idea finds further, intriguing support in recent studies testifying how offline service quality are actually boosters of online service adoption (e.g., Lee, Kim, & Ahn, 2011). In this perspective, enlarging the service provision to suited offline channels may represent, rather than a "cannibalization" of online channels, a good way to favor the penetration of online channels.

This does not mean that online channels are to be neglected: if the majority of the population displays low attitudes to offline channels, a significant segment, and remarkably the youngest, made of more digital natives, display not only high levels of propensity towards online channels, but also an intriguing attitude towards app stores and social networks. Even more remarkably, these citizens are not necessarily concentrated in large cities (as in the case of the cluster "Countryside citizens"). This population may represent an important "market" to target in order to develop a habit of e-Government usage, for instance through innovative platforms and systems (e.g., mobile apps).

So, in conclusion, a balanced multichannel PA service provision, where online and offline channels are opened is required to meet the diverse expectations and needs by the different profiles. This conclusion is consistent to OECD's (2012), and actually our work provides even a quantitative estimate, in a specific country, of the market targeted by the different channels.

5.3. Users' segmentation: what marketing implications for the Public Bodies?

The cluster analysis reveals the existence of 6 clusters of Italian citizens different in terms of importance attributed to three dimensions of benefits sought in e-government services. The profiles of these clusters provide interesting insights into the mindset and the attitudes of Italian citizens when approaching payment services. A first important contribution of this analysis lies in the understanding that attitudinal segmentation leads to segments whose socio-demographic profile is relatively homogeneous, supporting previous research highlighting how demographics are decreasing their driscriminant power in predicting online sevice adoption (e.g., Mostafa & El-Masry, 2013). Surely, the lower average age of online multichannel-ers and the higher incidence of educated people in the cluster with the highest attitude towards PA websites confirm the outcomes of previous studies that younger and more educated people are generally more prone to adopt e-government (e.g., van Deursen & van Dijk, 2009). Nonetheless, such a correlation is not so evident, and testifies how psychographics represent better supports for PA marketing than socio-demographics. In fact, the clusters identified starting form the benefits sought show behavioral patterns that may represent valuable levers for developing suited marketing plans: for instance, as multichannel-ers (both online and offline) show a higher than average attitude towards online channels, but also towards post offices and bank offices, these offline channels may be an appropriate place for promoting online service (e.g., promoting homebanking or post websites as channels of provision).

6. Conclusions

This study analyzes the benefits sought by Italian citizens when approaching multichannel payment service provision by the PA and their attitude towards different channel of provision in order to understand whether and how multichannel service provision may represent a strategy for encouraging the adoption of e-government service. The results contribute to the understanding of this issue in several ways:

- thanks to a sampling method that makes the sample representative of the Italian population, the study provides a sound picture of the benefits sought by Italian citizens when approaching PA payment services and their attitudes towards the different channels of interaction that Italian PAs are considering to introduce as payment channels;
- through its exploratory (focus groups) and explanatory (survey research) approach on the benefits sought, the study provides both a framework of benefits sought and an interpretive scheme for aggregating these benefits in second order constructs, providing two possible ways to approach benefits sought importance measurement in future studies;
- the study provides a segmentation of the Italian population in terms of the benefits sought in PA payment services that is able to discriminate in terms of channel attitude, hence provides PAs with a tool able to identify the key characteristics, besides the mere size, of the targeted population when investing in opening new channels of service provision;
- the study highlights possible trajectories for turning multichannel service provision into a booster of diffusion and, in time, of online channel adoption.
- the study suggests that even if some socio-demographic variables are still significant discriminating factors in describing the approach to PA payment services, their relevance is not absolute, and hence more comprehensive "listening" and intelligence skills must be developed by Public bodies to increase the effectiveness and the efficiency of multichannel payment service provision.

Obviously this study is subject to limitations, which suggest immediate streams for further research. First of all, the study is limited to an Italian sample, and it would be extremely interesting to understand whether the segmentation proposed stands also in other contexts or if cultural patterns, habits and traditions impact on the psychographics. Second, the work is limited to payment services, a relevant but not comprehensive part of PA services. As a consequence, we encourage replicating this study with respect to other PA services, such as, for instance, certificates or other registry office services. Finally, this study

has mostly focused on perceptions and channel attitudes/intensions providing a detailed view on these two issues, but we cannot neglect that these aspects are not exhaustive in forecasting future behaviors whereas multichannel payment service provision will be actually fully provided by Public Bodies and third parties. To accomplish this objective, the contribution and theoretical advancement of this study will have to be included into broader theoretical backgrounds, such as Theory of Planned Behavior (TPB), where attitudes and intentions are complemented by further elements (e.g., subjective norms, perceived control and, obviously, actual decisions) able to explain the drivers of channel decisions. Further, it seems reasonable to extend the interpretive scheme provided in this work by analyzing, besides pure attitude, which are the contexts and the specific situations in which different channels are actually particularly attractive.

In conclusion, we believe that this work, by providing a framework of possible benefits sought, as well as by providing through a clustering some preliminary interpretation in the drivers for channel attitude, may represent a valuable starting point for developing a punctual, though parsimonious, research and practice on multichannel PA service provision.

Acknowledgements

Appendix A. Confirmatory factor analysis (CFA) and scale properties

Construct	Item	Thinking about a public payment service provided by a channel different from the PA office, how important would be for you…	Payment Mean	Loading	AVE	Composite reliability
Time savings (TS)					0.82	0.88
	TS1	…to save time	4.06	0.87		
	TS2	…to avoid time losses	4.10	0.89		
	TS3	…to be sure that the way you are approaching is the shortest one	4.16	0.91		
Movement savings (MS)					0.77	0.87
	MS1	…to have to move as few as possible to reach the delivery point	3.99	0.84		
	MS2	…to avoid excessive movements to get the service	4.12	0.85		
	MS3	…to minimize the number or travels to the delivery places	4.06	0.86		
Cost savings (CS)					0.83	0.89
	CS1	…to have not extra-costs	4.51	0.87		
	CS2	…to minimize the extra-fees related to special service provisions	4.37	0.88		
	CS3	…to find the cheapest way to obtain the service	4.36	0.93		
Unconstrained Access (UA)					0.94	0.85
	UA1	…not to have to think about the opening time for having the service delivered	4.19	0.83		
	UA2	…to have the possibility to access the service whenever I want	4.33	0.86		
	UA3	…to have access at any day, any time	4.38	0.86		
Archiving (AR)					0.92	0.84
	AR1	…to have enabled a digital archive managed by the PA with the records of the past services provided	3.87	0.83		
	AR2	…to have the possibility to keep track of my services on an archive I can easily access	4.01	0.90		
	AR3	…to have the possibility to have a place (physical or virtual) where I may find all the history of my interactions with the PA	4.05	0.86		
Immediate feedback in the outcome (IFO)					0.93	0.82
	IFO1	…to be immediately sure that everything went good	4.61	0.87		
	IFO2	…to get feedbacks about the outcome as soon as possible	4.43	0.82		
	IFO3	…to have receipts testifying that everything went smooth	4.46	0.89		
Immediate Feedback on Errors (IFE)					0.75	0.87
	IFE1	…to get alerted immediately if something went wrong	4.59	0.86		
	IFE2	…to be sure that there will not be unexpected problems if everything goes smooth	4.70	0.86		
	IFE3	…to get prompt feedbacks on possible problems occurring	4.45	0.88		
Warranties (W)					0.81	0.83
	W1	…to have insurances that there cannot be problems with the PA if I do things right at the channel	4.62	0.85		
	W2	…to have clear statements granting that the channel I choose is fully substitute of the PA office	4.69	0.92		
	W3	…to have clear evidence of the effectiveness of the channel	4.66	0.89		
Multiple Channels of Interaction (MCI)					0.8	0.84
	MCI1	…that the channel leaves me the possibility to interact with the PA through other means	4.27	0.86		
	MCI2	…that the channel can be accessed in different ways (Internet, physically, etc.)	4.54	0.88		
	MCI3	…that the channel provides supports and information accessible even without visiting it	4.51	0.90		
Multichannel Interoperability (MI)					0.74	0.81
	MI1	…that I can start filling the forms in a channel and conclude the payment in another one	3.03	0.88		
	MI2	…that if something goes wrong in the channel I can still continue on another channel without wasting time	3.65	0.90		

Construct	Item	Thinking about a public payment service provided by a channel different from the PA office, how important would be for you...	Payment			
			Mean	Loading	AVE	Composite reliability
Multichannel Interoperability (MI)	MI3	...that the channel I use can be seen as integrated with the PA office so that I can start the payment at the PA office and conclude on a different channel or viceversa	3.09	0.84		
Clear Information (CI)					0.82	0.91
	CI1	...that the channel presents complete references to norms and regulations for the payment service	4.13	0.84		
	CI2	...that the channel provides complete and clear information about the service	4.69	0.83		
	CI3	...that the channel supports the payment providing all the necessary information at every step	4.56	0.89		
Human Interaction (HI)					0.81	0.88
	HI1	...that there can be a person and not a "machine" providing the service	4.13	0.85		
	HI2	...that there is the possibility to talk to a human being if I have problems with the service	4.45	0.82		
	HI3	...that somebody assists or alerts me during or after the service provision	4.43	0.91		
Multichannel Feedbacks (MF)					0.79	0.89
	MF1	...that the outcome of my service can be notified on my mobile, email or other	4.29	0.84		
	MF2	...that if a problem occurs, the system can alert me by reaching me where I am	4.21	0.92		
	MF3	...that I can get a feedback on the outcome of the service without going back to the channel	4.03	0.84		

Appendix B. Correlations among benefits

Payment services

	TS	MS	CS	UA	AR	IFO	IFE	W	MCI	MI	CI	HI	MF
TS	–												
MS	0.5510	–											
CS	0.3239	0.5033	–										
UA	0.3723	0.4307	0.4974	–									
AR	0.2691	0.3427	0.3756	0.4045	–								
IFO	0.3720	0.4192	0.4299	0.4786	0.4717	–							
IFE	0.3571	0.4272	0.4721	0.4638	0.4346	0.7028	–						
W	0.3405	0.3914	0.4673	0.4680	0.3747	0.6377	0.7268	–					
MCI	0.2850	0.3510	0.3755	0.4667	0.3056	0.5233	0.5125	0.5613	–				
MI	0.1816	0.2459	0.2363	0.2613	0.2467	0.2406	0.2167	0.2229	0.3754	–			
CI	0.2723	0.3426	0.3656	0.3706	0.3725	0.4767	0.5311	0.5347	0.4699	0.3617	–		
HI	0.2622	0.3199	0.3873	0.3579	0.3416	0.4744	0.5183	0.4799	0.4656	0.3224	0.6232	–	
MF	0.2825	0.3095	0.3526	0.3711	0.3294	0.4395	0.4820	0.4515	0.4439	0.3836	0.5343	0.5047	–

All correlations are significant at $p < .05$ level.

Appendix C. Sample profile and representation in the clusters

	In the whole sample	C1	C2	C3	C4	C5	C6
Female	52.20%	57.50%	46.55%	52.28%	36.51%*	54.44%	54.99%
Age							
15–24	8.00%	7.50%	12.07%	4.56%	12.70%	15.38%	4.85%
25–34	18.10%	5.00%	11.21%	18.67%	12.70%	21.89%	20.49%
35–44	14.70%	5.00%	12.07%	17.43%	19.05%	10.06%	16.17%
45–54	21.80%	22.50%	16.38%	21.58%	17.46%	19.53%	25.34%
55–64	20.60%	27.50%	24.14%	19.92%	15.87%	17.16%	21.56%
65+	16.80%	32.50%	24.14%	17.84%	22.22%	15.98%	11.59%
Average age (years)	48.22	56.43*	50.83	49.12	47.73	44.66**	47.64
Area of the country							
North-East	19.50%	17.50%	18.97%	22.82%	19.05%	21.89%	17.79%
North-West	27.20%	17.50%	25.00%	32.78%	22.22%	27.81%	25.88%
Center	19.50%	22.50%	24.14%	19.50%	30.16%	13.61%	18.60%
South	23.20%	32.50%	18.97%	17.43%	17.46%	27.22%	26.42%
Islands	10.20%	10.00%	12.93%	7.47%	11.11%	9.47%	11.32%
Population of the hometown							
Up to 10,000	20.60%	25.00%	18.10%	22.41%	25.40%	17.75%	20.22%
10,001–50,000	37.60%	35.00%	37.07%	31.12%	42.86%	47.34%	36.93%
50,001–250,000	27.30%	20.00%	27.59%	29.05%	28.57%	25.44%	27.49%
250,000 or above	14.50%	20.00%	17.24%	17.43%	3.17%	9.47%	15.36%

	In the whole sample	C1	C2	C3	C4	C5	C6
Education							
No title	0.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.27%
Primary school	30.80%	52.50%	31.03%	29.46%	41.27%	31.95%	26.95%
High school	53.50%	40.00%	46.55%	53.53%	53.97%	55.03%	56.33%
Higher education	15.60%	7.50%	22.41%	17.01%	4.76%	13.02%	16.44%
Job position							
Unemployed	3.90%	0.00%	3.45%	4.15%	1.59%	4.73%	4.31%
Student	0.50%	0.00%	0.86%	0.00%	0.00%	1.18%	0.54%
Housewife	2.30%	5.00%	0.86%	2.07%	1.59%	1.78%	2.96%
Farmer	1.10%	0.00%	2.59%	1.66%	0.00%	1.18%	0.54%
Labor	15.60%	12.50%	15.52%	12.86%	22.22%	18.93%	15.09%
White collar or manager	27.40%	20.00%	23.28%	27.80%	19.05%	24.85%	31.81%
Top manager	1.80%	0.00%	2.59%	2.07%	0.00%	1.18%	2.16%
Entrepreneur or freelance professional	10.90%	10.00%	8.62%	13.28%	15.87%	9.47%	9.97%
Teacher/researcher	2.10%	0.00%	0.00%	2.49%	3.17%	2.37%	2.43%
Retired	34.00%	52.50%	42.24%	32.78%	34.92%	33.73%	30.19%
Did not answer	0.40%	0.00%	0.00%	0.83%	1.59%	0.59%	0.00%

*Significant different from the sample average at p. <.05.
**Significant different from the sample average at p. <.01.

Appendix D. Description of cluster profiles in terms of channel attitude

Cluster	Social networks	Homebanking	eCommerce/Apps	Sites of PAs	Authorized retailers	Authorized retailers sites	Bank offices	Post offices	PA offices
C1: Unyielding citizens	− 0.49[e]	− 0.76[d]	− 0.49[d]	− 0.94[e]	− 0.85[d]	− 1.30[d]	− 1.40[d]	− 1.31[e]	1.36[a]
C2: Conservatives	− 0.15[c]	− 0.21[c]	− 0.19[c]	− 0.41[d]	− 0.28[c]	− 0.25[c]	− 0.22[c]	− 0.12[c]	− 0.15[d]
C3: Average citizens	− 0.23[d]	− 0.02[b]	− 0.13[c]	0.04[b]	0.01[b]	0.03[b]	0.07[b]	0.01[b]	0.06[c]
C4: Countryside citizens	0.00[c]	− 0.23[c]	− 0.02[b]	− 0.25[c]	− 0.21[c]	− 0.18[c]	− 0.30[c]	− 0.27[d]	-0.06[d]
C5: On-line multichannel-ers	0.23[a]	0.04[b]	0.30[a]	0.17[a]	0.12[a]	0.19[a]	0.08[b]	0.19[a]	0.10[c]
C6: Offline multichannel-ers	0.14[b]	0.18[a]	0.06[b]	0.17[a]	0.18[a]	0.11[a]	0.19[a]	0.15[a]	0.16[b]

The response options ranged from 1 ("extremely unlikely to use") to 5 ("extremely likely to use").
Notes: Reported values are mean standardized values. In each column, cluster means that have the same superscript are not significantly different (p < .10) on the basis of ANOVA test. Highest means are assigned the superscript "a," the next lower means are assigned the superscript "b," and so forth.

References

Agostino, D., Arena, M., Azzone, G., Dal Molin, M., & Masella, C. (2012). Developing a performance measurement system for public research centres. *International Journal of Business Science and Applied Management*, 7(1), 43–60.

Aladwani, A.M. (2013). A contingency model of citizens' attitudes toward e-government use. *Electronic Government, an International Journal*, 10(1), 68–85.

Andersen, K. V., & Henriksen, H. Z. (2006). E-government maturity models: Extension of the Layne and Lee model. *Government Information Quarterly*, 23(2), 236–248.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: a review and recommended two-step approach. *Psychological Bulletin*, 49, 411–423.

Assinform (2012). 43 anni di innovazione tecnologica in Italia. Online report retrievable at: http://www.rapportoassinform.it/interna.asp?ln=3&sez=324&info=1113

Barone, T. (2012). Agenda digitale, pronti 3 miliardi di Euro. Retrieved from. http://www.pubblicaamministrazione.net/e-government/news/3399/agenda-digitale-pronti-3-miliardi-di-euro.html

Benedetti, M., Ghezzi, C. M., Lamberti, L., & Russo, C. (2009). Towards a user-centric e-government service design: evidences from Italy. In A.R. Shark, & S. Toporkoff (Eds.), *Beyond e-Government Measuring Performance: A Global Perspective*. BookSurge Publishing.

Caliński, T., & Harabasz, J. (1974). A dendrite method for cluster analysis. *Communications Statistics-Theory and Methods*, 3(1), 1–27.

Carter, L., & Belanger, F. (2004). The influence of perceived characteristics of innovating on e-government adoption. *Electronic Journal of e-Government*, 2(1), 11–20.

Carter, L., & Bélanger, F. (2005). The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information Systems Journal*, 15, 5–25.

Chang, M. K., Cheung, W., & Tang, M. (2013). Building trust online: Interactions among trust building mechanisms. *Information & Management*, 50(7), 439–445.

Chiesa, V., Frattini, F., Lamberti, L., & Noci, G. (2009). Exploring the approach to management control in radical innovation projects. *European Journal of Innovation Management*, 12(4), 416–443.

Colesca, S. E. (2009). Understanding trust in e-government. *Inzinerine Ekonomika-Engineering Economics*, 3(3), 7–15.

Colesca, S. E., & Dobrica, L. (2009). Adoption and use of e-government services: The case of Romania. *Journal of Applied Research and Technology*, 6(3), 204–217.

European Commission (2013). Public Services Online — Digital by Default or by Detour? Online report retrievable at: https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/eGov%202012%20insight%20report%20published%20version%200.1%20_0.pdf

Frösén, J., Tikkanen, H., Jaakkola, M., & Vassinen, A. (2013). Marketing performance assessment systems and the business context. *European Journal of Marketing*, 47(5/6), 715–737.

Gao, Y. (2013). The Influences Of Cognitive Factors And Trust On E-Government Acceptance: Evidence From A Two-Stage Model. *Review of Business Information Systems (RBIS)*, 17(4), 153–158.

Gilbert, D., Balestrini, P., & Littleboy, D. (2004). Barriers and benefits in the adoption of e-government. *International Journal of Public Sector Management*, 17(4), 286–301.

Goulding, C. (2005). Grounded theory, ethnography and phenomenology: A comparative analysis of three qualitative strategies for marketing research. *European Journal of Marketing*, 39(3/4), 294–308.

Hair, J. F., Black, B., Babin, B., Anderson, R. E., & Tatham, R. L. (2005). *Multivariate Data Analysis*. New Jersey: Prentice-Hall.

Homburg, C., Jensen, O., & Krohmer, H. (2008). Configurations of marketing and sales: a taxonomy. *Journal of Marketing*, 72(2), 133–154.

Horst, M., Kuttschreuter, M., & Gutteling, J. M. (2007). Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in The Netherlands. *Computers in Human Behavior*, 23(4), 1838–1852.

Hung, S. Y., Chang, C. M., & Yu, T. J. (2006). Determinants of user acceptance of the e-Government services: The case of online tax filing and payment system. *Government Information Quarterly*, 23(1), 97–122.

Italian Ministry for PA and Innovation (2012). Multicanalità: Come comunicare e offrire servizi attraverso molteplici canali. Online report retrieved at: http://www.urp.it/Sezione.jsp?idSezione=812

James, L. R., Mulaik, S. S., & Brett, J. M. (1982). *Causal analysis: Assumptions, models, and data.* Beverly Hills: SAGE.

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, *20*, 141–151.

Lamberti, L., Noci, G., Guo, J., & Zhu, S. (2011). Mega-events as drivers of community participation in developing countries: The case of Shanghai World Expo. *Tourism Management*, *32*(6), 1474–1483.

Lambrinoudakis, C., Gritzalis, S., Dridi, F., & Pernul, G. (2003). Security requirements for e-government services: a methodological approach for developing a common PKI-based security policy. *Computer Communications*, *26*(16), 1873–1883.

Layne, K., & Lee, J. (2001). Developing fully functional E-government: A four stage model. *Government Information Quarterly*, *18*(2), 122–136.

Lean, O. K., Zailani, S., Ramayah, T., & Fernando, Y. (2009). Factors influencing intention to use e-government services among citizens in Malaysia. *International Journal of Information Management*, *29*(6), 458–475.

Lee, J., Kim, H. J., & Ahn, M. J. (2011). The willingness of e-Government service adoption by business users: The role of offline service quality and trust in technology. *Government Information Quarterly*, *28*(2), 222–230.

Leonidou, C. N., & Leonidou, L. C. (2011). Research into environmental marketing/management: a bibliographic analysis. *European Journal of Marketing*, *45*(1/2), 68–103.

Liamputtong, P. (2011). *Focus group methodology: Principles and practice.* New York: SAGE.

Milligan, G. W., & Cooper, M. C. (1987). Methodology review: Clustering methods. *Applied Psychological Measurement*, *11*(4), 329–354.

Morgan, D. L. (1996). Focus Groups. *Annual Review of Sociology*, *22*, 129–152.

Mostafa, M. M., & El-Masry, A. A. (2013). Citizens as consumers: Profiling e-government services' users in Egypt via data mining techniques. *International Journal of Information Management*, *33*(4), 627–641.

Nasi, G., Frosini, F., & Cristofolini, D. (2011). Online service provision: Are municipalities really innovative? The case of larger municipalities in Italy. *Public Administration: an International Quarterly*, *89*(3), 821–839.

OECD (2012). Working smarter in revenue administration — Using demand management strategies to meet service delivery goal. *Forum on Tax Administration* (Information note retrievable at: http://www.oecd.org/site/ctpfta/49428187.pdf).

Park, J., Gunn, F., & Han, S. L. (2012). Multidimensional trust building in e-retailing: Cross-cultural differences in trust formation and implications for perceived risk. *Journal of Retailing and Consumer Services*, *19*(3), 304–312.

Politecnico di Milano (2011). E-government negli enti locali: a certe condizioni. Online report retrievable at: www.osservatori.net//rapporti/rapporto/journal_content/56_INSTANCE_0HsI/10402/767653

Rand, W. M. (1971). Objective criteria for the evaluation of clustering methods. *Journal of the American Statistical Association*, *66*(336), 846–850.

Rufín Moreno, R., Molina, C. M., Figueroa, J. C. S., & Moreno, M. R. (2013). Gender and E-Government Adoption in Spain. *International Journal of Electronic Government Research*, *9*(3), 23–42.

Sismeiro, C., Mizik, N., & Bucklin, R. E. (2012). Modeling coexisting business scenarios with time-series panel data: A dynamics-based segmentation approach. *International Journal of Research in Marketing*, *29*(2), 134–147.

Smith, S., & Jamieson, R. (2006). Determining key factors in e-Government information system security. *Information Systems Management*, *23*(2), 23–32.

Stokes, D., & Bergin, R. (2006). Methodology or "methodolatry"? An evaluation of focus groups and depth interviews. *Qualitative Market Research: an International Journal*, *9*, 26–37.

Susanto, T. D., & Goodwin, R. (2010). Factors influencing citizen adoption of SMS-based e-Government services. *Electronic Journal of e-Government*, *8*(1), 55–71.

Susanto, T. D., & Goodwin, R. (2013). User acceptance of SMS-based e-government services: Differences between adopters and non-adopters. *Government Information Quarterly*, *30*(4), 486–497.

Tat-Kei Ho, A. (2002). Reinventing local governments and the e-government initiative. *PA Review*, *62*, 434–444.

Teicher, J., Hughes, O., & Dow, N. (2002). E-government: a new route to public sector quality. *Managing Service Quality*, *12*(6), 384–393.

Thomas, J. C., & Streib, G. (2003). The new face of government: citizen-initiated contacts in the era of e-government. *Journal of PA Research and Theory*, *13*(1), 83–102.

van Deursen, A. J. A.M., & van Dijk, J. A. G. M. (2009). Improving digital skills for the use of online public information and services. *Government Information Quarterly*, *26*(2), 333–340.

Vassilakis, C., Lepouras, G., & Halatsis, C. (2007). A knowledge-based approach for developing multi-channel e-government services. *Electronic Commerce Research and Applications*, *6*(1), 113–124.

Venkatesh, V., Chan, F. K. Y., & Thong, J. I. L. (2012). Designing e-government services: Key service attributes and citizens' preference structures. *Journal of Operations Management*, *30*(1–2), 116–133.

Vicente Cuervo, M. R., & López Menéndez, A. J. (2006). A multivariate framework for the analysis of the digital divide: Evidence for the European Union-15. *Information & Management*, *43*(6), 756–766.

Warkentin, M., Gefen, D., Pavlou, P. A., & Rose, G. M. (2002). Encouraging citizen adoption of e-government by building trust. *Electronic Markets*, *12*(3), 157–162.

Welch, E. W., Hinnant, C. C., & Moon, M. J. (2005). Linking citizen satisfaction with e-government and trust in government. *Journal of Public Administration Research and Theory*, *15*(3), 371–391.

West, D.M. (2004). E-government and the transformation of service delivery and citizen attitudes. *PA Review*, *64*, 15–27.