

TAKING PEER-TO-PEER SHARING AND COLLABORATIVE CONSUMPTION ONTO THE NEXT LEVEL – NEW OPPORTUNITIES AND CHALLENGES FOR E-GOVERNMENT

Complete Research

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Abstract

Rapid advances in IT combined with increasing awareness for environmental side-effects of modern economies are causing a shift in the consumer behavior towards new forms of consumption. Private individuals increasingly become both providers and consumers of services. Web 2.0 enables peer-to-peer transactions between consumers creating a new consumption space with hundreds of mediator platforms. While the new legally questionable market is typically seen as a challenge by governments, the opportunities for governments to participate in peer-to-peer (P2P) sharing and collaborative consumption services (SCCS) for their citizens are hardly explored in academia. In contrast, first pioneer governments such as the cities of Seoul and San Francisco have already developed strategies to support the development of P2P SCCS for their citizens. In this work, we advocate for extending the function scope of e-government by including P2P SCCS into its portfolio. To support our reasoning and in order to systematically address the problem area emerging from the combination of e-government and P2P SCCS, we review and synthesize e-government models and relate them to the P2P SCCS phenomenon. Our results reveal what constitutes a research agenda for utilizing potentials of P2P SCCS in the context of e-government research and practice.

Keywords: E-Government, Peer-to-Peer Sharing, Sharing Services, Collaborative Consumption.

1 An Ignored Potential

Following the initial, mostly positive, hype around the emergence of IT-enabled peer-to-peer (P2P) sharing and collaborative consumption services (SCCS) (Geron, 2013; The Economist, 2013) in the markets such as food (LeftoverSwap), accommodation (Airbnb), transport (Uber) and clothes (Share Closet), a countermovement is emerging, in which not only the competitors from the traditional businesses (Owyang et al., 2013), but also governments raise concerns regarding the legitimacy of peer-to-peer practices (Chernova, 2013; Tuttle, 2013; Wogan, 2013). Main criticism is concentrated around missing regulations for new consumption space, where services are offered by private individuals and often lack regulations that are typical for traditional businesses. A private taxi is for example missing regulations forced upon the enterprise taxi (Cellan-Jones, 2014), a private host does not comply with regulations circulating the hotel industry (Vasagar, 2014) and a kindergarten offered by a group of private individuals is far from achieving the formal standards required from the public ones (Wogan, 2013).

Nevertheless, the motivations behind P2P SCCS are aligned with the aims of each government. If the purpose of a government is “to meet the needs of its constituency, to maintain their welfare [...] serving people’s basic needs, both physical and economic” (Firestone and Catlett, 2009, p. 296), then allowing its citizens to solve economic, social and environmental challenges of today by means of P2P SCCS is an aim worth striving for. Both in academic (Botsman and Rogers, 2011; Heinrichs and Grunenberg, 2013) and public (Geron, 2013; The Economist, 2013) discourse, P2P SCCS are discussed as a promising instrument to address these challenges. In fact, some governments already actively support the development of sharing and collaborative consumption. However, a mere support is arguably not enough to unfold the potential of P2P SCCS for solving challenges such as overpopulation and resource overcapacity (Princen et al., 2002).

There is a hidden potential for electronic government (e-government) to assume functions in peer-to-peer sharing and collaborative consumption services. The benefits of an active participation by governments in P2P SCCS are manifold. First, since trust is a major impediment for establishing P2P SCCS networks (Botsman and Rogers, 2011; Petri et al., 2011), a mediation by a trusted stakeholder such as a local government can spur the citizens’ involvement in the P2P practicing. Second, the provision of a platform for P2P SCCS can utilize already existing e-government infrastructure therefore minimizing investments required to establish the services. Third, by taking the mediator role, governments can exercise greater control over the P2P practicing therefore addressing critical issues that are on the current agenda of governments when it comes to problems in regard to missing regulations in the P2P SCCS market. Finally, a number of sharing and collaborative consumption services cannot exist in the realm of commercial business models. Sharing and exchange of cheap yet resource-consuming assets often cannot be combined with attractive revenue models for an entrepreneur interested in providing a platform for P2P SCCS (Belk, 2007, 2010). The corresponding market can be however created by a governmental body through publically funded e-government services.

We conclude from the above that there are sound reasons and a not yet realized potential for e-government to actively support the establishment of IT-based services, which would enable citizens to address their needs through peer-to-peer sharing and collaborative consumption of resources. Specifically, we address the following research goal: *Integrating P2P SCCS into classical e-government models and providing a meaningful research agenda for integrating the provision of IT-enabled peer-to-peer sharing and collaborative consumption services into the scope of e-government.*

To derive a meaningful research agenda, we structure our work as follows. First, we provide theoretical background in regard to both e-government and P2P SCC services. We then describe our approach for deriving e-government models that enable the integration of P2P SCCS. Afterwards, we present these e-government models which have been used to derive the research agenda. In our result section, we integrate P2P SCCS into the e-government models and discuss the corresponding research agenda for utilizing potentials of P2P SCCS in the context of e-government.

2 Research Background

2.1 Sharing and Collaborative Consumption Services

IT-enabled P2P SCCS belong to consumer practices, in which the owner of the resource is a private individual (Andersson et al., 2013; Petri et al., 2010). In P2P SCCS, access to a resource is preferred over the ownership and a function of the consumption object over the product that enables this function (Bardhi and Eckhardt, 2012; Chen, 2009; Tencati and Zsolnai, 2012). This type of alternative consumer practices goes by names such as *collaborative consumption* (Botsman and Rogers, 2011), *access-based consumption* (Bardhi and Eckhardt, 2012), *the mesh* (Gansky, 2010) or *product-service systems* (Mont, 2002) and are often subsumed under the term of *sharing economy* (Heinrichs and Grunenberg, 2013; Kassin and Orsi, 2012; Malhotra and Van Alstyne, 2014).

Different and often incompatible definitions of sharing and collaborative consumption exist in the public and academic discourse (Belk, 2014a; Benkler, 2004; John, 2013; Wittel, 2011). However,

sharing and collaborative consumption can be seen as subsets of the access-based consumption (Bardhi and Eckhardt, 2012). Both phenomena are similar in that they represent a shift in consumer behavior towards alternative forms of consumption. The motivations for this shift range from the prospects of economic benefits (Bardhi and Eckhardt, 2012) to ethical concerns regarding overconsumption (Belk, 2014a; Leismann et al., 2013), prospects of environmentally-driven resource utilization (Elliot, 2011; Malhotra et al., 2013) and addressing degradation of the natural environment (Anderegg et al., 2010; Oreskes, 2004). Despite the similarities, sharing and collaborative consumption are, however, different in regard to whether the provision of access to a privately owned resource is followed by some form of compensation or not. Sharing forms a qualitative relationship between involved individuals and does not involve money (Belk, 2007, 2010). Hence, it is different from pseudo-sharing (Belk, 2014b) such as traditional car sharing, which typically involves a monetary compensation for the provided mobility service. On the other hand, collaborative consumption forms a quantitative relationship between participants through monetary or any other quantitative compensations (Bardhi and Eckhardt, 2012; Belk, 2014a).

The Information Systems research has not yet systematically addressed the phenomenon of P2P SCCS in combination with tangible goods. While there is a significant body of research on the sharing of digital goods (Bergquist and Ljungberg, 2001; Hughes et al., 2005; Nunes and Correia, 2013; Xia et al., 2012), the research is silent in regard to the specifics of sharing and collaborative consumption of tangible assets. This is especially true for its peer-to-peer-based subset (Andersson et al., 2013).

2.2 E-Government and its Relation to P2P SCCS

E-government is “the simplified handling of information, communication and transaction processes for providing an administrative service through the use of information and communication technologies within and between authorities, and between authorities and private individuals or companies” (Becker et al., 2012 p. 21). Classical e-government services comprise among others the publication of information on governmental websites, answering questions via e-mail and the processing of applications and requests. However, there are concepts which aim at an active involvement of citizens in governmental processes. In the course of *co-production*, citizens not only consume but also assist in producing government services (Meijer, 2011; Needham, 2008; Whitaker, 1980). *E-participation* aims at integrating citizens in administrative and political decision making, i.e. enables citizens to design governments (Macintosh, 2004; Sæbø et al., 2008; Sanford and Rose, 2007).

Although these topics to involve citizens in processes of public administrations have been targeted by researchers comprehensively, P2P SCCS has yet not been connected to e-government. At the same time, first public administrations around the globe begin to actively support the development of P2P SCCS for their citizens. The city of Chicago enables to share winter resources among the citizens (City of Chicago, 2014). In Seoul, the government started a city-funded multifaceted project to support the introduction of P2P SCCS (Johnson, 2013). And the city of San Francisco actively supports the growing P2P SCCS market (Stoll, 2012). LINDERS (2012) defines the term *Do it Yourself Government* to describe scenarios where public administrations do not take an active role and enable citizen-to-citizen coproduction by offering a supporting platform or framework. BOTERO ET AL. (2012) provide a collection of articles presenting experiences from Finland regarding peer-to-peer sharing in public services. To the best of our knowledge, sharing services as new kind of participatory e-government services have not been targeted from a scientific perspective in detail. This paper extends the scope of e-government research to P2P SCCS.

3 Research Design

The aim of this work is to provide a meaningful research agenda for integrating the provision of IT-enabled peer-to-peer sharing and collaborative consumption services into the scope of e-government. In the course of traditional e-government services, the government takes the role of the provider and the citizen the role of a consumer. In the P2P SCCS setting the role of the government in e-

government services is shifting towards representing an intermediary for citizens being both users and providers of resources. To integrate P2P SCCS into the range of e-government services, we therefore require extended conceptualizations of e-government. For this purpose, we synthesize various models describing the functions and scope of e-government from different perspectives, before incorporating P2P SCCS aspects into them. The derived models represent the state-of-the-art in regard to e-government concepts. They therefore help to identify aspects of e-government that require changes in order to include P2P SCCS as an e-government service. Our methodological process is illustrated in Fig. 1. Based on WEBSTER AND WATSON (2002) and VOM BROCKE ET AL. (2009), the first step is to search for a representative set of models that conceptualize the scope and the functions of e-government (Step 1 in Fig. 1). Combinations of keywords such as *e-government*, *reference*, *frame*, *framework*, *model* and *synthesis* as well as the search engines Scopus, Web of Science and Google Scholar have been used to search for relevant articles. Additionally, backward and forward searches have been performed. Subsequently, identified models are grouped according to the type of aspect these e-government models cover. By discussing similarities and differences among the models in each of the categories, the aim is to derive what constitutes a corresponding synthesized model for each of the categories (2). The number of synthesized models is not determined in advance. Instead, the grouping of similar models that were identified during the literature review determines the final amount of synthesized models. The synthesized models are then extended to integrate P2P SCCS and their specific characteristics in the third step (3). Finally, we use the extended synthesized models of e-government to derive and to formulate a research agenda for utilizing potentials of P2P SCCS in the context of e-government.

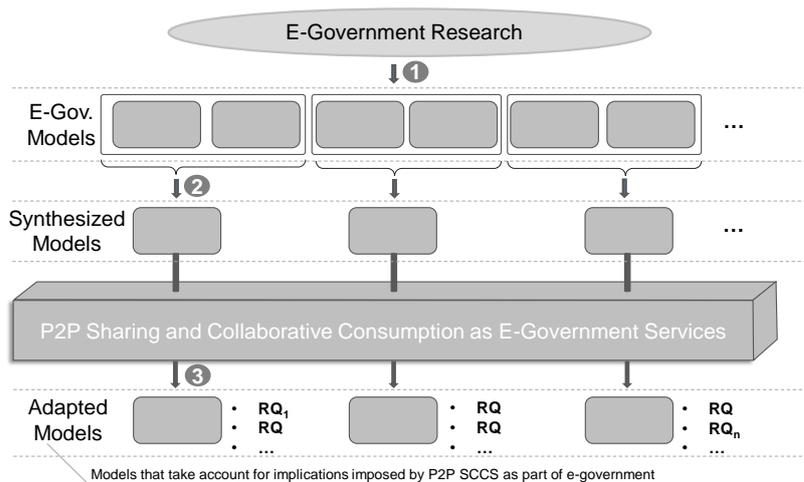


Figure 1. Methodological Steps

4 Synthesized E-Government Models

After searching for models according to step one of the chosen methodology, the total of 30 relevant models were identified and grouped into three relevant categories of e-government models. The first group of models describes *stakeholders* of e-government services, the second visualizes *acceptance factors* and the third considers *stages*.

4.1 Synthesized Stakeholder Model

The first group of models considers different stakeholders (Freeman, 1984) of e-government services. Since e-government services are used by governments to interact with different entities, stakeholder models are suitable means in order to illustrate the involved parties and are widely conceptualized and applied in literature (Affisco and Soliman, 2006; Becker et al., 2012; Belanger and Hiller, 2006;

Beynon-Davies, 2007; Brown and Brudney, 2001; Coursey and Norris, 2008; Fang, 2002; McClure, 2001; Scholl and Klischewski, 2007; Siau and Long, 2005; Yildiz, 2007). Abstracting from different terminologies, five stakeholders have been identified.

The first stakeholder is the government which communicates with other entities and delivers services to them. One receiver of governmental services is the citizen, also named customer. Both terms are used interchangeable. Consequently, the relationship between the government and its citizens or customers is named *Government-to-Customer* or *Government-to-Citizen (G2C)*¹. Accordingly, governments can deliver services to businesses which are named *Government-to-Business (G2B)* services². These two kinds of relations may be further subdivided into *GwIS (Government with individuals – delivering services)*, *GwIP (Government with individuals – political process)*, *GwBC (Government with business as a citizen)* and *GwBMKT (Government with business in the marketplace)* (Belanger and Hiller, 2006). In order to provide citizens and companies with services, the cooperation between governments might be necessary. The relationship between governments themselves is called *Government-to-Government (G2G)*³. Finally, governments interact with their employees which is named *Government-to-Employee (G2E)*⁴. Alternatively, this communication may be subsumed by G2G (Affisco and Soliman, 2006). The synthesized stakeholder model is visualized in Fig. 2. *Citizen-to-Citizen (C2C)* communication may also be seen as part of a stakeholder model if it enables and promotes the usage of IT in governments (Beynon-Davies, 2007) or deals with governmental services (Yildiz, 2007). However, C2C is not integrated into our model since in the above mentioned C2C scenarios the government is not directly involved in the communication. Instead, it is topic of a conversation (C2C communication deals with governmental services) or an entity that may be influenced by C2C interaction (C2C promotes the usage of IT in governments). Other relations such as *Government-to-Nonprofit (G2N)* (Fang, 2002) and *Government-to-Civil Society Organizations (G2SC)* (Yildiz, 2007) are not incorporated into the model due to their rare occurrences and low relevance for the integration of P2P SCCS.

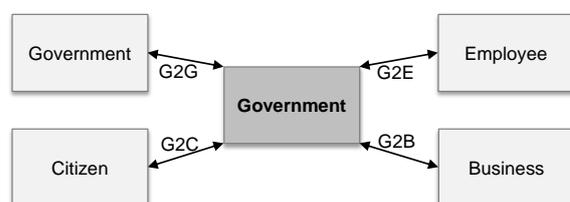


Figure 2. Synthesized Stakeholder Model

4.2 Synthesized Acceptance Factors

Besides numerous stakeholder models for e-government, a large number of models exist explaining acceptance factors for the usage of e-government services (Bhattacharjee and Sanford, 2006; Carter and Bélanger, 2005; Hofmann et al., 2012; Huang, 2007; Korteland and Bekkers, 2008; Lin et al., 2011; Ozkan and Kanat, 2011; Shareef et al., 2011; Yao and Murphy, 2007). Different theories are

¹ For reading convenience, the references are annotated as footnotes: (Affisco and Soliman, 2006; Becker et al., 2012; Beynon-Davies, 2007; Brown and Brudney, 2001; Coursey and Norris, 2008; Fang, 2002; McClure, 2001; Scholl and Klischewski, 2007; Siau and Long, 2005; Yildiz, 2007)

² (Affisco and Soliman, 2006; Becker et al., 2012; Beynon-Davies, 2007; Brown and Brudney, 2001; Coursey and Norris, 2008; Fang, 2002; McClure, 2001; Scholl and Klischewski, 2007; Siau and Long, 2005; Yildiz, 2007)

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⁴ (Belanger and Hiller, 2006; Fang, 2002; McClure, 2001; Scholl and Klischewski, 2007; Siau and Long, 2005)

used to arrange a multitude of acceptance factors in the models. Studies in this context are predominantly quantitative studies in which psychometric questionnaires are used to capture respondents' attitude and intention to use e-government services. The majority of the models makes use of the *Technology Acceptance Model (TAM)* (Davis et al., 1989) and its extensions for e-government⁵. Further models and theories considered to arrange e-government acceptance factors include for instance the *Theory of Planned Behavior (TPB)* (Ajzen, 1991) found in a number of studies⁶ and the *Diffusion of Innovation (DOI)* (Rogers, 1995) theory⁷. Against the backdrop of multiple theories used as a theoretical lens to explain and predict user acceptance of e-government services, a synthesis of these heterogeneous models is not meaningful. However, different acceptance factors can be grouped into categories providing an overview of acceptance factors identified in research. Since this paper focuses on P2P SCCS with governments as intermediaries, acceptance factors of citizens as users and governments are relevant. Acceptance factors of businesses are out of scope.

Among the identified works concerning the identification of e-government acceptance factors, one work by HOFMANN ET AL. builds a taxonomy of relevant factors (Hofmann et al., 2012). Fig. 3 visualizes the categories of impact factors proposed by HOFMANN ET AL. The acceptance of e-government is influenced by government characteristics such as its organizational size (Korteland and Bekkers, 2008). Besides, regional and population characteristics like the diversity of ethnic structures and the population growth are influential (Huang, 2007). Other significant categories are managerial characteristics, government capacities and environmental characteristics. On the citizen side, technology characteristics such as perceived ease of use (Carter and Bélanger, 2005; Lin et al., 2011; Ozkan and Kanat, 2011; Yao and Murphy, 2007) or perceived ability to use (Shareef et al., 2011) are important. Additionally, trust (Carter and Bélanger, 2005; Ozkan and Kanat, 2011; Shareef et al., 2011) and factors of the other categories environmental characteristics, service characteristics and user characteristics influence citizens' acceptance of e-government services.

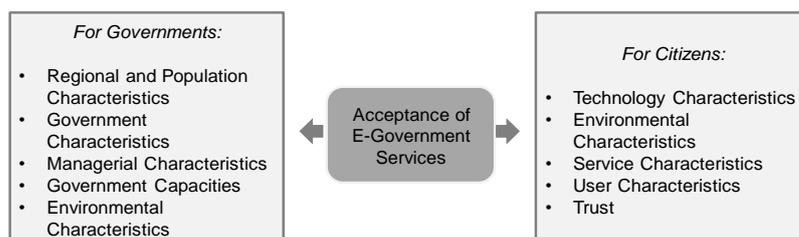


Figure 3. Synthesized Acceptance Factors for E-Government

4.3 Synthesized Stage Model

Besides stakeholders and acceptance factors, stages have been identified as third main category. Stages indicate the maturity and comprehensiveness of e-government services. Models and classifications regarding maturity stages of e-government services are widely used in literature (Affisco and Soliman, 2006; Andersen and Henriksen, 2006; Becker et al., 2012; Brown and Brudney, 2001; Fang, 2002; Hiller and Bélanger, 2001; Klievink and Janssen, 2009; Layne and Lee, 2001; Lee, 2010; Siau and Long, 2005). These models have a varying quantity of stages and the individual stages may have different semantics. The names of the phases have slightly been aggregated in comparison to the sources, for instance “Transaction” and “transacting” both refer to “Transaction”. The first phase called *Catalogue* (Layne and Lee, 2001), *Web Presence* (Siau and Long, 2005), *Publishing* (Affisco and Soliman,

⁵ (Bhattacharjee and Sanford, 2006; Carter and Bélanger, 2005; Lin et al., 2011; Shareef et al., 2011; Yao and Murphy, 2007)

⁶ (Bhattacharjee and Sanford, 2006; Ozkan and Kanat, 2011; Shareef et al., 2011)

⁷ (Bhattacharjee and Sanford, 2006; Huang, 2007; Shareef et al., 2011)

2006) or *Information*⁸ describes the publication of information. Secondly, *Interaction*⁹ or *Communication*¹⁰ represents the offering of communication channels by governments. The third stage comprises the offering to perform self-services online. Hence, it is named *Transaction*¹¹. The next stage represents the provision of seamless and integrated e-government services, i.e. changes the way governments offer services which leads to the names *Integration*¹² and *Transformation*¹³. Finally, the fifth stage enables the participation and involvement of citizens in the decision making process. The stage is named *E-Democracy* (Siau and Long, 2005), *Democratic Transactions* (Brown and Brudney, 2001) or *Participation* (Hiller and Bélanger, 2001). Additionally, there are models whose stages cannot be combined with the stages of the other models since they conceptualize stages from different perspectives¹⁴.

Stages can be characterized by dimensions: *Integration* and *Technological and Organizational Complexity* (Layne and Lee, 2001), *Customer centric* and *Activity centric applications* (Andersen and Henriksen, 2006), *Level of flexibility* and *Level of customer orientation* (Klievink and Janssen, 2009) as well as *Time/Complexity/Integration* and *Benefits/Costs* (Siau and Long, 2005). During the model synthesis phase, we have identified the model by LEE (2010) which covers the majority of aspects identified in the aforementioned stage models. Therefore, the synthesized model in Fig. 4 borrows terminology from LEE'S stage model.

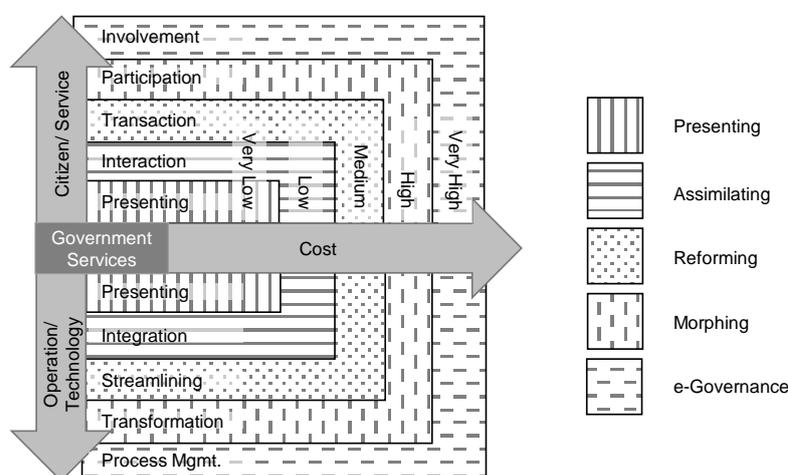


Figure 4. Synthesized Stage Model based on (Lee, 2010)

The model by LEE suggests five stages of e-government characterized by two perspectives *operation/technology* and *citizen/service* (Lee, 2010). The first stage is named *Presenting*. Secondly, the *Assimilating* stage covers the composition of different information technologies in order to enable a two-way-communication. An interaction with citizens requires the technological integration of infor-

⁸ (Becker et al., 2012; Brown and Brudney, 2001; Fang, 2002; Hiller and Bélanger, 2001)

⁹ (Affisco and Soliman, 2006; Siau and Long, 2005)

¹⁰ (Becker et al., 2012; Brown and Brudney, 2001; Fang, 2002; Hiller and Bélanger, 2001)

¹¹ (Affisco and Soliman, 2006; Becker et al., 2012; Brown and Brudney, 2001; Fang, 2002; Hiller and Bélanger, 2001; Layne and Lee, 2001; Siau and Long, 2005)

¹² (Hiller and Bélanger, 2001; Layne and Lee, 2001)

¹³ (Affisco and Soliman, 2006; Siau and Long, 2005)

¹⁴ (Andersen and Henriksen, 2006; Klievink and Janssen, 2009)

mation system elements. The third stage is named *Reforming* which means the improvement of governmental real-world processes using requirements and benefits of information technology leading to higher efficiency. Regarding the operational perspective this requires the streamlining and enhancement of real-world processes. On the citizen side this leads to enabling transactional electronic services. The *Morphing* stage describes the shaping of governmental appearances and processes within the real world and the information space by extending the governmental scope. After the reformation and automation of classical governmental services such as application processing in the course of the prior stage, this phase leads to a transformation of the governmental profile since new services may evolve previously unknown to governments. Regarding the citizen perspective this results in participation. Finally, the *e-Governance* stage describes a visionary scenario where the virtual space and the real world are administrated synchronously in almost real time. Citizens are involved in governmental and political decision processes.

In addition to the dimensions proposed by LEE, we add the *Cost* dimension to the model since it is important for e-government services as well as the integration of P2P SCCS and is not covered by the model yet. In this case, costs are meant as monetary amount to establish and maintain an e-government service. This comprises among others costs for employees to set up the technical infrastructure and support the citizens in using the service. The more mature a stage is, the higher the costs for governments to provide according services are. For example, presenting information on a website requires less resources and costs than offering elections via the internet in order to achieve a higher citizen involvement.

5 P2P Sharing as an E-Government Service – The Research Agenda

We divide the research agenda in accordance with three basic e-government models that were synthesized in the previous section. For each model, we indicate extensions that are required to represent the extended scope of e-government, which would include P2P SCCS into the range of services supported by e-government. In the following, we focus on each of the synthesized models to derive research questions resulting from the models' extensions that are required to include P2P SCCS. Finally, we put the single research questions into perspective and outline the research agenda.

5.1 Research Questions Associated with the Stakeholder Model

In order to include the provision of P2P SCCS into the scope of e-government services, the stakeholder model is adapted as illustrated in Fig. 5. Since a government can provide a platform for allowing peer-to-peer sharing and collaborative consumption of resources for its citizens, an additional 'citizen' stakeholder is included to represent a possible citizen-to-government-to-citizen (C2G2C) relationship with the government as intermediary.

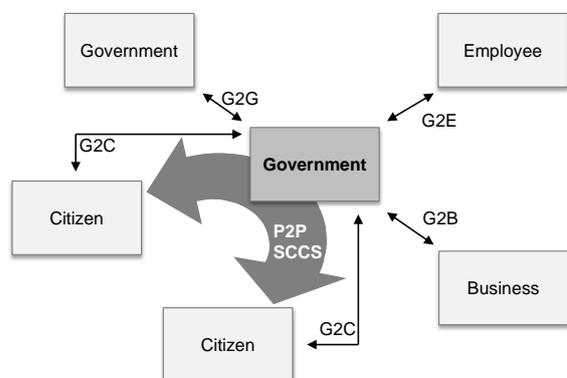


Figure 5. Synthesized and Adapted Stakeholder Model

The following table summarizes research questions resulting from the integration of P2P SCCS into the stakeholder model of e-government (Tab. 1).

<p><i>RQ1: How can a government participate in establishing a P2P SCCS platform as an e-government service for its citizens?</i></p>
<p>Alternatives can range from sponsoring and advertising to developing and operating the platform by itself. The research question results from the evaluation of the synthesized and adapted stakeholder model. Governments can take different roles in relationships with the other stakeholders (citizens, businesses, employees and other governments). These alternatives need to be evaluated in a dedicated research as they are manifold. For instance, governments could assume a novel role of the intermediary between citizens by providing a digital platform where citizens can share and collaboratively consume their resource. On the other hand, governments can limit their participation in P2P SCCS through offering public resources on existing P2P SCCS platforms or even limiting it to a mere sponsoring. Between these two extremes there is a space of alternatives that need to be explored by answering the proposed research question.</p>
<p><i>RQ2: Which form of participation in establishing a P2P SCCS platform as an e-government service is suitable for which government?</i></p>
<p>While for some governments any form of participation can be difficult, others should satisfy prerequisites associated with a certain form of participation. Similarly to RQ1, this research question results from the examination of the stakeholder model. It is not only important to answer the question of <i>which</i> roles can be taken by the government. The identified participation alternatives should be mapped and evaluated in regard to concrete <i>contexts</i>. The choice of a suitable role depends on a multiplicity of factors that need to be first identified and then set in relation to the participation alternatives. Ideally, a set of evaluation techniques is developed that would help a government to, first decide whether a participation in P2P SCCS is meaningful in the concrete case and second to choose a suitable role for the participation in P2P SCCS.</p>
<p><i>RQ3: What are external obstacles and barriers for the introduction of P2P SCCS as an e-government service and how can they be addressed?</i></p>
<p>External factors such as the legal environment can prevent or impede certain forms of governments' participation in establishing P2P SCCS. This research question results from the analysis of the relationships in the stakeholder model. Each relationship, represented by an arrow between the government and the corresponding stakeholder (cf. Fig. 5), is subject to an analysis for potential barriers such as legal challenges that can hinder the relationship. It is therefore required to address the proposed research question and to systematically address each relationship of the synthesized stakeholder model in regard to potential external obstacles and barriers for the introduction of P2P SCCS as an e-government service.</p>
<p><i>RQ4: How does the participation of a government in establishing P2P SCCS affect its relationships to other e-government stakeholders?</i></p>
<p>The decision of a government to participate in P2P SCCS affects the relationships not only to those stakeholders that become involved in the establishment of corresponding P2P SCCS, but also to those stakeholders that observe a change in the government's role. For example, a decision to establish a relationship with a business (G2B) by allowing businesses to provide resources on the government's P2P SCCS platform can have dramatic effects on the relationship of the government at hand to its citizens (G2C) and to other governments (G2G). Hence, it is important to investigate in which way the interdependent relationships illustrated in the synthesized and adopted stakeholder model are influenced by the government's decision to participate in P2P SCCS. Studies of governments that have pioneered the P2P SCCS domain such as the cities of Seoul and San Francisco can help to answer the research question.</p>

Table 1. Research Questions based on the Stakeholder Model

5.2 Research Questions Associated with Acceptance Factors

The introduction of P2P SCCS as an e-government service has several implications from the perspective of acceptance factors that are relevant for e-government (Fig. 6). First, in addition to acceptance factors for providing an e-government service, another set of acceptance factors is relevant in case

when governments decide to whether offer resources over the platform in addition to providing or supporting the platform. Second, since each citizen can provide a resource, corresponding acceptance factors need to be distinguished from those relevant for the decision to either use the resources offered through the platform or not. In order to include the provision of P2P SCCS into the scope of e-government services, the figure on acceptance factors needs to be adapted.

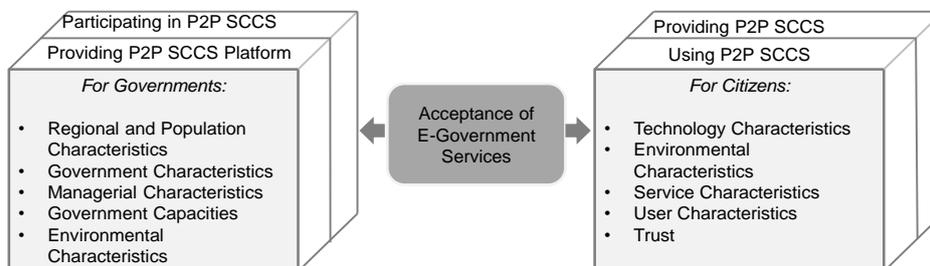


Figure 6. Synthesized and Adapted Acceptance Factors

The following table summarizes research questions resulting from the integration of P2P SCCS into the scope of e-government with regard to acceptance factors (Tab. 2).

<p><i>RQ5: What is the antecedent structure for the governments' acceptance in regard to establishing P2P SCCS as an e-government service?</i></p>
<p>The adapted figure on acceptance factors for e-government services comprises four parts, each of which needs to be addressed (cf. Fig. 6). Similarly to the question of how the introduction of traditional e-government services can be hindered or facilitated depending on the varying degree of acceptance by the government itself, the acceptance of P2P SCCS within governments needs to be investigated. Consequently, we need to understand the acceptance factors of the decision makers in the governments that are critical for the introduction of P2P SCCS as e-government service. Researchers that aim at understanding the antecedents of acceptance in the context of P2P SCCS as e-government service can build upon the mature body of knowledge in regard to the acceptance of traditional e-government services. To answer the question is crucial for the integration of P2P SCCS into the scope of e-government because the integration cannot be undertaken if decision makers in the governments do not accept the services.</p>
<p><i>RQ6: How can an incentive structure support the governments' attitude towards P2P SCCS as an e-government service?</i></p>
<p>Insights from answering RQ5 can be utilized to study the possible incentive structures that can positively influence the governments' attitude towards P2P SCCS. The identification of effective incentives can be utilized to foster a successful introduction of P2P SCCS as an e-government service. Although the research question does not result directly from the adapted figure on acceptance factors, it builds directly upon the research question RQ5. To answer the question, similar problem areas can be studied such as, for example, the studies of other non-profit organizations in regard to possible incentives that can be used to influence the attitude of decision makers towards new technologies and services.</p>
<p><i>RQ7: To what extent can citizens' trust in IT-enabled P2P SCCS be improved through governments assuming the role of the platform provider?</i></p>
<p>Trust is known to be a crucial aspect for the participation in P2P SCCS (Botsman and Rogers, 2011). It is however yet unclear whether citizens' trust can be increased with the government assuming the role of the intermediary. It is reasonable to assume that governments are perceived as more trustworthy by the citizens than profit-oriented companies. On the other hand, recent data protection affairs have had negative impact on citizens' trust in governments. The answer to the research question is therefore required before any attempts by governments to introduce P2P SCCS are initiated.</p>

<p><i>RQ8: How do the antecedents of acceptance in regard to providing and using P2P SCCS as an e-government service differ from the citizen perspective?</i></p> <p>A successful operation of a P2P SCCS platform is only possible when services are both used and provided. As illustrated in the synthesized and adopted figure on acceptance factors, in the context of P2P SCCS, the question of the citizens' acceptance of the services is twofold. Since citizens can not only use services in the context of P2P SCCS but also assume the role of a provider, it is important to analyze both common and specific determinants of citizens' participation behavior in P2P SCCS. Researchers that aim at understanding the antecedents of citizens' acceptance in the context of P2P SCCS as e-government service can build upon the mature body of knowledge in regard to the acceptance of traditional e-government services as well as draw upon the specialized literature on sharing and collaborative consumption. Besides, it is not only important to investigate acceptance factors for the initial participation but also for the continuous use. These factors may be different to the initial acceptance factors. Additionally, it may be analyzed which factors are more important for a successful integration of P2P SCCS in e-government: Those which are for governments or those which are for citizens.</p>
<p><i>RQ9: To what extent can the acceptance of classical e-government services be increased by the introduction of government-based P2P SCCS?</i></p> <p>Since P2P SCCS as an e-government service has a potential to address daily needs of citizens, the general attitude of citizens to e-government can be improved. Maybe governments which are providers of P2P SCCS platforms may receive a higher reputation. This research question results from the adapted figure on acceptance factors since increasing citizens' adoption of e-government services is an important issue and this may be achieved by integrating P2P SCCS into the governmental context.</p>

Table 2. Research Questions based on the Acceptance Factors

5.3 Research Questions Associated with the Stage Model

Peer-to-peer sharing and collaborative consumption services can be situated in the synthesized stage model (Fig. 7). Like services from the *Morphing* stage, P2P SCCS will change the appearance of governments and lead to a scope extension. Hence, the operations are transformed. Additionally, P2P SCCS result in a high participation of citizens since governments rely on the resources and willingness of citizens to fulfill the services. Once the platform is conceptualized, P2P SCCS require fewer costs in opposite to other *Morphing* services since governments serve as intermediaries and the citizens are the main service providers.

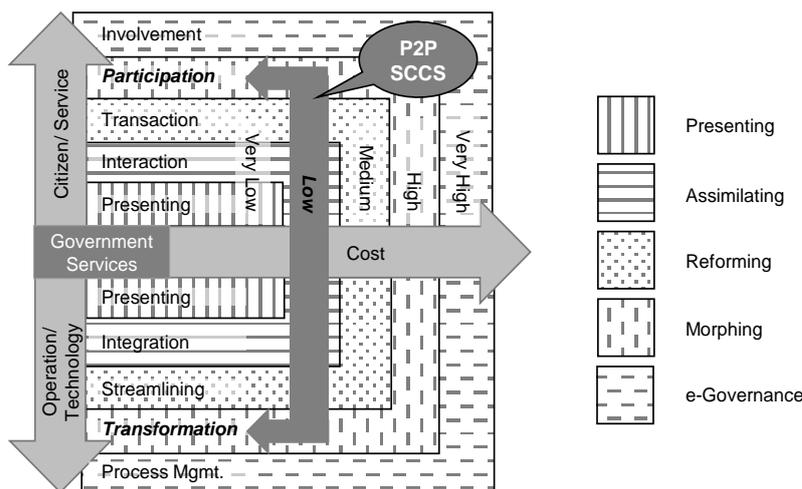


Figure 7. Synthesized and Adapted Stage Model

The following table summarizes research questions resulting from the integration of P2P SCCS into the stage model of e-government (Tab. 3).

RQ10: How can existing e-government infrastructures of services from related stages be adopted to provide IT-enabled P2P SCCS?

Existing infrastructure for providing e-government services can be utilized to ease the development of P2P SCCS. The research question results from the stage model since the different stages are characterized by different levels of technical maturity and complexity. In order to reduce the effort to establish complex technical infrastructures, it should be investigated whether existing infrastructures can be used by governments to introduce P2P SCCS for their citizens.

RQ11: What are the different resource types that can be best shared and collaboratively consumed over the P2P SCCS as an e-government service?

Due to the difficulty to build businesses around low cost resources, these resources may be better shared or collaboratively consumed over P2P SCCS as an e-government service. Since the synthesized and adopted stage model in Fig. 7 differs in the kind of information, resources and services that are provided within each stage, the research question results directly from the model. The answer to the research question can open new markets for P2P SCCS that are yet underdeveloped due to missing interest of for-profit organizations to particular niches that can still represent value for citizens.

RQ12: How should a P2P SCCS platform be designed to combine low costs of the service with high value and quality for the citizens?

The cost perspective is important as it has a potential to address citizens' needs through relatively small investments. This research question results from the stage model since the cost dimension is of high relevance for governments since it has impact on all decisions made in governmental institutions, i.e. it affects the way services are provided. Since there is normally a tradeoff between quality and costs, it should be investigated how a government-operated P2P SCCS can be designed to, on the one hand, keep the costs for governments low and, on the other hand, create reasonable benefits for users.

Table 3. Research Questions based on the Stage Model

5.4 Putting Research Questions into Perspective

Addressing the twelve formulated research questions constitutes the agenda for future research. However, in order to effectively address the proposed questions, they need to be put into perspective. First, as already made clear in the previous sections, there are three major directions for research: 1) understanding the complex relationships between stakeholders arising when P2P SCCS is introduced as e-government service, 2) understanding the nature and antecedents of the acceptance of P2P SCCS and their implications for the acceptance of e-government as such and 3) outlining the ways for P2P SCCS to be effectively integrated into existing e-government infrastructures. Second, the questions are not to be thought to represent a sequence of research activities following a strict order. Instead, proposed research questions can be addressed in parallel. This is especially true for the questions derived from different synthesized models. Nevertheless, a connection between the research questions exist within the research question blocks (RQ1-4, RQ5-9, RQ10-12). The exact chronological order for answering the proposed research questions depends on the methodological approach that will be chosen by the researchers. Third, the research questions constitute an interdisciplinary research agenda. Beside the Information Systems discipline, from which perspective the work has been written, the research questions can be additionally addressed by Computer Science (RQ10, 12), Business Administration (RQ12), Law (RQ3) and Sociology (RQ4). Fourth, the choice of appropriate methods needed to answer the questions is open for the researchers. Nevertheless, while RQ1, 2, 4 and 7 can be answered well by applying qualitative techniques, quantitative or mixed techniques will likely be a better choice to address research questions RQ3, 5, 6, 8, 11 and 12. Finally, as mentioned in section 2, the phenomenon of e-government starting to support sharing and collaborative consumption practices is currently limited to few geographical areas including South Korea and USA. It is therefore a promising path to situate the research in these areas when it comes to generating data required to answer the questions.

However, questions such as the barriers for e-government to adopt P2P SCCS (cf. RQ3) can be addressed in any country with an established e-government practice.

6 Closing Thoughts

The consumption landscape is changing. Increasing awareness for environmental and economic problems of today is a force behind the growing number of consumers who prefer market transactions among each other through sharing and collaborative consumption. Advances in internet technology enable this consumer shift. Despite the growing interest of citizens, governments across the world, with exception of few pioneers in P2P SCCS, assume the opposition role criticizing missing regulations in the market and the resulting lack of protection for citizens involved in P2P SCCS.

In this work, we argue for an alternative route that governments can take in the relationship with P2P SCCS. By means of extending the traditional scope of e-government to include P2P SCCS, public administrations cannot only gain a better control over the developments on the P2P SCCS market but also unfold the hidden potentials of peer-to-peer sharing and collaborative consumption services.

We presented an agenda for e-government research on the integration of P2P SCCS. The agenda is based on three synthesized e-government models which represent the scope and the function range of current e-government solutions. By extending the models in accordance with the specifics of P2P SCCS, we were able to derive a set of research question that need to be answered by further research. We contribute to research by opening a new perspective on P2P SCCS adoption and outlining potentials and benefits that result from governments providing platforms for peer-to-peer sharing and collaborative consumption services.

Our study is of course a subject to several limitations. We base our research agenda on synthesized models of e-government, which are derived from a limited set of models. The method in searching for literature described in section 3 may be limited to find a reasonable portion of relevant literature. Books, working papers, dissertations, and especially important persons' opinions that could give an impression of innovative products and services together with the experience when testing the first prototypes may be undiscovered. Although it is reasonable to believe that we sufficiently captured the basic aspects regarding the scope and function range of e-government, an inclusion of further e-government models can be valuable to identify further research questions. Creating a synthesized model based on a comprehensive literature analysis may even lead to an own paper for each category (Hofmann et al., 2012; Lee, 2010). Besides, there may be additional research questions which have not been discovered since they are not related to one of the synthesized models. Moreover, the potentials we outlined for the integration of P2P SCCS in e-government are only true for those countries in which both P2P SCCS and e-government already took roots. A missing interest to the alternative modes of consumption such as sharing or missing e-government services on the basic level would not meet the requirements for a successful implementation of government-mediated P2P SCCS. Finally, our work misses empirical evidence on the potentials of P2P SCCS as an e-government service. Although this lies in the nature of the limited instances that can be studied, further work should identify and conduct studies to provide the required empirical evidence.

Taking everything into account, we hope to have laid down a foundation for an impactful research on the possible integration of peer-to-peer sharing and collaborative consumption services into the range of services supported by e-government. We believe that the diffusion of P2P SCCS into governmental services would help to bring alternative consumption modes into consumer foreground. The presented research operationalizes the vision of integrating P2P SCCS into the frame of e-government. One of the possible outcomes could be a digital platform that would be run by a government and would allow its citizens to share different resources starting with tool and house equipment to more expensive goods such as vehicles or spaces. From our point of view, this will increase the acceptance of and the participation in e-government services and will have a positive impact on addressing global challenges of modern economies that are in need of responsible, more regionally-oriented and more autonomous consumers.

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