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Service Design in Digitization of Governmental Services

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Abstract

Digitization of governmental systems and services do still not seize the opportunities that e-governance offer. The transformation is often fragmented and the digital services seldom integrate the government horizontally and vertically. This paper discusses how governments can benefit from a holistic approach to digitization of services. The paper explores the possibility of exploiting service design and user-centric approaches, when innovating government-to-citizen and government-to-business services. With a case from a Norwegian governmental agency, the paper shows when and why service design can be implemented in digitization of government. Findings shed light on problems that are unique for the digital transformation of governmental services.

Keywords: Electronic governance, Electronic services, Digitization, Service design, Norwegian government

1 Introduction

In the last decades, industrialized economies have transformed from producing physical goods to creating immaterial services. At the same time, high-income populations have created a high demand of immaterial services (The World Bank, 2008). Faster internet connections and smartphones have strengthened the demand of online services, reinforcing and enabling further development of the service economies (Brynjolfsson & Saunders, 2010; West, 2014). The private sector has fully embraced electronic and online services. Competition has forced companies in making services available online, as it gives them a competitive advantage. Technological advancements and the fast pace of digitization in the private sector have also paved the way for sharing economy businesses, such as AirBnB and eBay (Grzunov & Zekanović-Korona, 2014).

The situation above reads differently for digitization in the public sector. Governments in the developed countries have embraced electronic services in an effort to govern more efficiently. However, the digitization of governmental services is difficult due to the sheer amount of information, services and stakeholders involved. Most of the effort toward creating electronic governments, e-governments, has not touched upon this complexity – but rather focused on making digital versions of an equivalent analogue governmental service.

This paper analyzes literature on e-government efforts and discusses a case study conducted in collaboration with the Norwegian governmental agency NAV (2013), from September 1st, 2015 to December 21st, 2015. Interviews with stakeholders within NAV and with several companies in Trondheim are analyzed. An expert committee report (NAV, 2015) criticizing NAV's efforts in digitalization, as well as statistical surveys (Difi, 2015c; Njøs et al., 2013, pp. 1-53; Rambøll, 2014; SSB, 2014; United Nations, 2014, pp.75-93) contribute to investigate the situation on e-governance.
The paper introduces service design in section 2. Section 3 discusses electronic services and models of electronic government, supplemented with insights from the case study. The paper also touches upon reasons why the pace of digital transformation of governments still is slower than that of the digitization in the private sector and discuss introduction of e-services and findings. In section 4 and 5 de facto application of service design in Norwegian e-governance and findings are discussed. In section 6 the paper looks at the possibilities that lies within electronic government combined with a user-centric approach, and suggests a centralized approach to digitization in governments.

2 Service design

As the service sector has expanded, there has been an increasing effort in the field of design to create and formalize practices, processes and tools towards designing services (Mishra Lundstrom & Anand, 2010). In the last decade the field of service design has emerged. Service design has become a popular term for describing the practice of designing services with a user-centered approach (Abras, Maloney-Krichmar & Preece, 2004, pp. 445-456; Brown, 2008). The service design process is a nonlinear process, as shown in figure 1.

Figure 1. "The Squiggle of Design" by Damian Newman. An illustration of the nonlinear process in design, also applicable for the service design process.

2.1 Principles of service design

Academics have a wide variety of definitions of service design, but there is a common theme. Marc Stickdorn, a service design expert and academic, has compressed the common threads in service design into five principles: User-centricity, co-creation, sequencing, evidencing and holism (Stickdorn, 2012). In service design, user-centricity is a way to design for an end user and meet their needs. A service can be defined as "a system that provides something that the public needs, organized by the government or a private company" (Service, 2016). By gaining insight into the user needs, it is possible to create services that fulfill these needs – creating more efficient and better services. User-centricity requires the designer to gain an empathic perspective, understanding a service through the eyes of the user, in order to create better user experiences and services.
In order to design something within the scope of feasibility, the service designer needs to involve as many stakeholders (Donetto, Pierri, Tsianakas & Robert, 2014; Polaine, Løvlie &

Reason, 2013, pp. 10-16, 42-43) as possible. By involving the ones that are going implement the service design, the designer gains insight to what is feasible to implement. The involvement of stakeholders encourages implementation of the final designs, by making the stakeholders personally invested. This is some of the ideas behind the second principle, co-creation (Sanders & Stappers, 2008, pp. 5-18). Since services are immaterial, visualization is needed to communicate ideas and concepts efficiently. Visualization creates a common ground and understanding of the services that are being designed. A service is a system of actions in a period of time, that can be visualized into a sequence in a timeline. Sequencing makes it easier to communicate and discuss the service, as the different stakeholders and interactions with the end user can be mapped out on the visualizations (Stickdorn, 2012). In order to visualize these interactions, physical and tangible artefacts of the service can be used. This is often called evidencing (Stickdorn, 2012). Connecting the intangible actions with a physical object or a stakeholder makes it easier to understand the sequence of actions in the service. The last principle is holism, creating something with a holistic approach. A service is not only a sequence of actions, but a system of actions in an environment. When services are approached holistically, challenges in interactions with users and internal stakeholders become apparent.

3 E-services and e-governance

There is a broad range of terms used for digital services. This paper introduces some of those terms, how different types of services can be categorized and models of service systems in electronic government.

3.1 Self-service definitions

Self-service technology is technology that eliminates the need for interpersonal interaction in services (Andreassen, Olsen, Calabretta, 2010). Self-services enable the consumer to produce the service themselves. Self-services can thereby enhance the user experience and cut costs at the same time. E-services are defined as self-services that is available online (Hassan, Shehab & Peppard, 2011; Meuter et al., 2000).
E-governance is similarly ambiguous as the term e-service. In its widest definition, e-governance includes all information that is provided by the government and is available online (Hassan et al.). The Norwegian Agency for Public Management and e-Government, Difi, does not include websites and online document in the term e-governance (Njøs et al., 2013).

3.2 Government-to-user interactions

E-governments are large systems of information, services and stakeholders. In order to make e-governance more manageable, e-governance can be dissembled into four major groups of interactions (Hassan et al.):

Government-to-citizen (G2C):
Interactions between governmental bodies and external actors, citizens. Static information on government websites is a one-way G2C interaction.

Government-to-business (G2B):
Interactions between governmental bodies and external organizations or businesses. The users of G2B services include both commercial businesses and non-profit organizations.

Government-to-government (G2G):
Internal interactions between government bodies. Including interactions between different agencies horizontally – on the same level of government, but within different domains. G2G interactions can also be vertical – agencies from different levels of government, on federal, state, county and municipal levels.

Government-to-employee (G2E):
Services provided by government used by its own employees. G2E interactions include communication between employees in the same government agency.

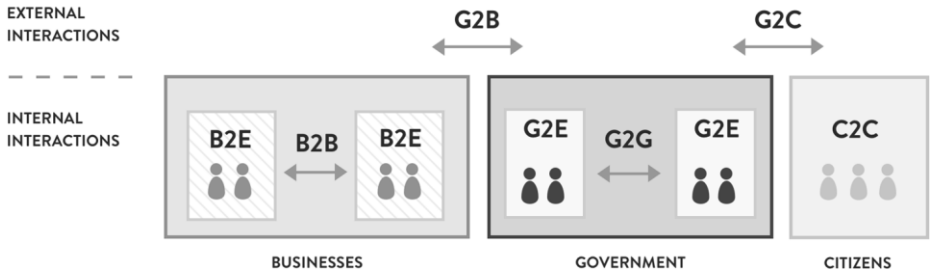

Figure 2. An illustrations of interactions within, with and without government.

As shown in figure 2, interactions with electronic services can both be with internal and external parties. The more sophisticated e-governance systems include several external stakeholders and internal stakeholders within a government. The types of interactions and integration of external and internal stakeholders is evident in models of e-governments.

3.3 Models of e-governance

In order to valuate the quality of e-governments and its services, several models have been proposed in academic literature. One of the most quoted models was proposed by Lee and Layne (2001), where the goal of e-governance was to create a "One Stop E-government". The model suggests a positive correlation between the value of a service and its complexity (Hassan et al.). The model proposes that services in e-government can be categorized in four stages. The stages in the suggested model are shown in figure 3, each stage adds more complexity and integration between governmental bodies:

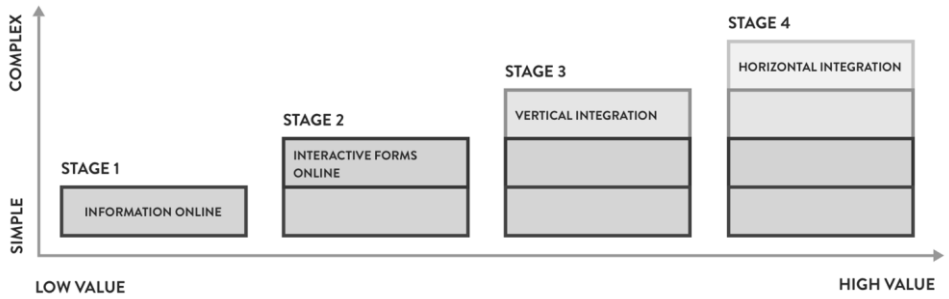

Figure 3. Illustration adopted from the suggested model of stages in e-government development, by Layne and Lee (2001).

Stage 1 - Information online
The governmental agency or service has an online presence, with general information and downloadable forms that citizens, organizations and businesses can download. This stage offers no interactivity with the government, and should thereby be labeled a preliminary phase of e-government.

Stage 2 - Interactive forms online
In this stage, the government offers interactive forms that are available online. In this stage the service is not integrated with any other system in the e-government, which means that the end user is the only source of external information. The service is not automated, has no integration and requires the user to give information that the user might have given previously.

Stage 3 - Vertical integration
The third stage include vertical integration between different levels of government within the same domain of government function. This stage can include all types of government interactions previously discussed: G2G, G2E, G2B and G2C. Transaction of information between government bodies can be automated.

Stage 4 - Horizontal integration
The fourth stage of e-governance includes interactivity, as well as vertical and horizontal integration of government. This enables total automation of the e-government. The user never needs to fill out the same information twice, and services can provide instantaneous feedback and responses. This is a "One Stop E-Government".

The model suggested by Layne and Lee has been criticized for overvaluing integration of different systems within government. Difi, a Norwegian digitization agency, has made an alternative model for evaluating e-governance (Njøs et al., 2013). Difi categorizes e-governmental services in five groups, instead of four stages. In this model, Difi still suggests that more integration means more sophisticated services. At the same time, this model suggests that integration of services do not always add value. The groups in Difi's model, as shown in figure 4, adds more complexity to the services for each step to the right, but not necessarily more value to the e-government:

Group 1 - Online forms
Including government websites, and forms that can be downloaded. Difi do not recognize this as a digitized service.

Group 2 - General services
Interactive services such as maps, calculators, information filters and search. One-way communication and self-service that does not require employees in government to process any information.

Group 3 - Specialized and tailored services
The service is user-tailored and often requires the user to log in to a government system. The role of the user is specified as citizen, business or organization. The service is integrated vertically.

Group 4 - Advanced and tailored services

The user needs to log in, giving the service access to information across several governmental agencies. The services are integrated horizontally and vertically as needed, and the G2G interaction is automated. Interactive forms fill is filled with user information that the government already holds. Responses can be instantaneous.

Group 5 - Proactive services
The service is automated, and does not require the user to do anything. An example of a proactive service in e-governance is giving parents child benefits automatically when a child is born, without requiring any user requests for the compensation.

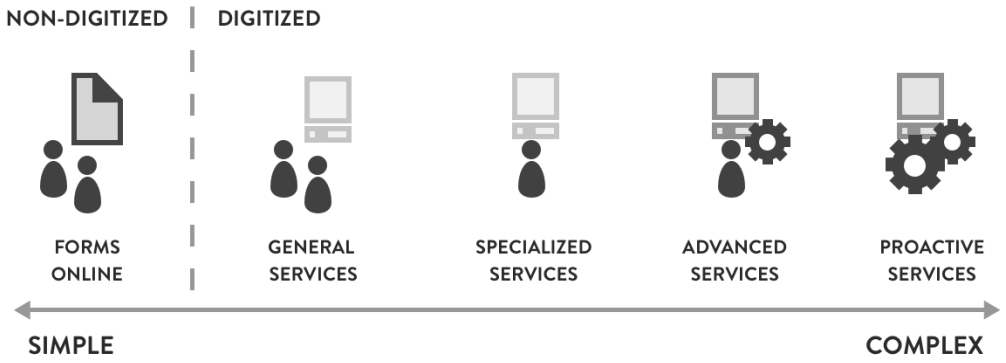

Figure 4. Illustration of a suggested e-governance model by Difi.

4 Service design in Norwegian e-governance

In Norway, KS has been a great driver in utilizing service design in digital transformation and service innovation. All the Norwegian municipalities are members of KS, an organization that strives to create efficient and service oriented local government in Norway (KS, 2015a). KS has collaborated with major design firms in order to create service design tools available and usable for employees in municipalities without a design background. The initiative is called "Samveis", and a website with the same name containing the tools and information about service design was published in late 2015 (KS, 2015b).
In Norway, the government agency Difi advices the authorities and public service providers on digitization and e-government. Difi states that user-focus in the Norwegian e-government is weak (Difi, 2015a) and that services provided by e-government needs improvements (Difi, 2015b). Difi also notes that people in most cases would rather interact with the government offline rather than online, and suspects this is due to lack of user-focus when the services has been created (Njøs et al., 2013). In 2013, 76.4% of all services provided by the Norwegian e-government was in group 1 in Difi's model of e-governance categorization. Difi has therefore emphasized that there is significant potential for digitization in the public sector. At the same time 7 out of 10 ICT leaders within governmental agencies say that all their services are fully digitized. 60% of these leaders have also stated in surveys that they see no value in further digital transformation. (Difi, 2015c; Njøs et al., 2013; Rambøll, 2014; SSB, 2014). The Institute of Product Design, at Norwegian University of Technology and Science (NTNU). NTNU and collaborated in a pilot on service design with Difi. This papers comprises of analyses of literature, surveys and case studies but the data collection is rather limited and more studies are needed to stabilize reliability of the following findings.

5 Findings

Academic research (Hassan et al.; Kotamraju & van der Geest, 2012, pp. 261-273; Layne & Lee, 2001), e-government surveys (Njøs et al., 2013; Rambøll, 2014; SSB, 2014; United Nations, 2014) and case studies (Andresen, 2014, pp. 7-9; KS, 2015b; NAV, 2015; Solli, 2013) all indicate that there are several factors that halts the pace of digital transformation in government. These factors are specific for e-governance, and are not prominent in the private sector.

Service monopoly:
Governments are often the sole provider of specific services. This often due to the fact the the services they provide are not able to create profits, or due to the fact that the law prohibits private companies to provide the specific service. When government is the sole service provider, there are fewer incentives for innovation (Potts & Kastelle, 2010, pp. 122-137).

Analogue counterparts of the services in governments already exist:
Digital services provided by the government have to compete with their own services provided offline. Some citizens might lack computer skills or prefer interpersonal interaction. If governments only offer basic digital forms, services that fits in the stage 1 in the "One Stop E-Governance" model, there are few incentives for citizens to use the digital service.

Lack of continuous, instantaneous and specific feedback:
Governmental agencies often conduct surveys in order to get feedback from its users, but often lack feedback mechanisms in their online services. In the private sector, the feedback from users are often more instantaneous – as users can swap from one service to another if they are unsatisfied. Since satisfaction of users expressed numerically in surveys often is unrelated to the quality of the services, e-governments often lack actionable feedback (Bertot, Jaeger & McClure, 2008; Kotamraju & van der Geest, 2012).

Services need to fit all users:
Governments are required by law to make services available for all citizens in greater extent than private companies. Private companies often target a specific niche of the population with their services. Governments on the other hand, need to create "one-size-fits-all" services. Thereby governments often focus on accessibility rather than the usability of their services. A user-centric approach is also difficult when the target group is too broad. (Kotamraju & van der Geest, 2012)

Lack of centralized authority to make decisions regarding digitization:
Governments tend to spread the responsibly of digital transformation of services to the particular governmental agencies that provide them. Without overarching strategies for how the different services should be digitized, integrating systems across levels of government and functional domains can prove challenging.

Lack of ICT competency:
Without technological competency in governmental agencies, understanding the value of a digital transformation and how to create collaborative e-governments can prove difficult. In Norway the governmental bodies lack competency regarding ICT. As much as 77% of all governmental organizations in Norway say their leaders lack ICT competency to further digitize services efficiently. (Rambøll, 2014)

6 Discussion

When looking at digitization of governments, there are clear obstacles that make the digital transformation difficult. The lack of consensus regarding terms and models of evaluating e-governments also make the transition to electronic services challenging. At the same time, governmental bodies with great ICT competency see the clear benefits of digitization, while the governmental agencies that are supposed to conduct the digital transformation lack incentives for doing so. The four stage model presented in this paper, should not be used in order to evaluate e-governance. While its true that highly sophisticated systems with high levels of integration can create superior user experiences and highly efficient government, some services do not get any added value when integrated with large e-government systems. The model created by Difi, can often be a better solution.

6.1 The digitization paradox

When governments transform their analogue services into digital forms, they should be aware that they also remove the face-to-face interaction between government employees and the end user. When the user looses this interpersonal interactivity, they are transformed from solely a consumer of the service to a service producer. The transition from consumer to producer changes the user experience drastically. The change from consumer to producer, requires more of the end user. Firstly, e-governance require the user to have computer equipment, internet access and knowledge on how to use ICT systems. Difi has stated 20% of the Norwegian population lacks knowledge of how to use ICT systems. Secondly the user is liable for giving the correct information when using the services provided by e-government, but without the face-to-face interaction there can be a higher risk of involuntary misinformation. Governments need to be aware of the paradox that occurs when digitizing services. While the goal of digital transformation can be both more efficient systems and better user experiences, services can be rendered unusable for users without ICT knowledge or access to internet. If the user experience worsens when a services is digitized, the government should not make the transition. Governments should look at the digital platforms as one of many options of providing a service.

6.2 Top-down and bottom-up digitization

The decentralized way of digitizing, a bottom-up model, might be a major reason for the slow pace of transforming governments to e-governments in developed economies. In the case of Norway, Difi lacks authority when it comes to making decisions regarding digital transformation throughout the government. At the same time, the governmental agencies apart from Difi, lack both competency and incentives to digitize their services. Instead of spreading the responsibility of digital transformation across all governmental bodies, governments could create a specific agency that would be the driver of digitizing in government. The local government and specific governmental agencies should still be digitizing services they provide. The specific digitization agency should be a central hub for all services that would be integrated across levels and sectors of government.

If governments had a central digitization hub, a holistic approach to digitization would become more feasible. It could also require less ICT competency within the different governmental bodies, as they would not be responsible for the most complex e-government systems. In a top-down approach to digitization of the public services, governmental agencies could share their domain knowledge to the central digitation agency, and thereby create a collaborative and efficient e-government. (Difi, 2015c; Rambøll, 2014; SSB, 2014).

6.3 When to implement service design in a digitization process

When looking at the effect of service digitization, governments should look at which agencies that could benefit from integration with the service, as well as how frequent the service is used both externally and internally. Digitization of a service will often have most effect if the service is frequently used and includes many governmental agencies. This way the G2G interaction could be automated and the service could be co-produced by citizens and businesses – creating an efficient e-government. The more complex the service is - the more useful implementation of service design can be. Since a service design process often is lengthy and full of ambiguity, implementation of service design will not have a major effect on silo services, services that are simple, lack integration and are used infrequently. (Polaine et al., pp. 18-24)

7 CONCLUSION

This paper has explored how service design can be utilized when governments are making a digital transformation of their services. It is apparent that there are some restrictions and unique problems within government, that makes digitization more difficult for governments compared to the private sector.

Due to the natural complexity of governments, service design can often be useful in relation to governance innovation. Service design can be a great way to clarify the value of horizontal and vertical integration within an e-government. At the same time, governments need to be aware of the problems related to separation of governmental bodies that operates as silos and the lack of mandate to create a collaborative e-government. Utilizing service design is most effective if the there is a mandate to make changes across government.

The scope of this paper has been broad, due to the nature of complexity shown in digital transformation of governments. Since governments are structured differently in different countries, creating a specific model of e-governance and how its services should be evaluated may be unmanageable. Further research on the topic of service design in e-government could instead look deeper into case studies in specific governments, and creating a model for the given government. In order to create awareness of service design and its benefits in a digitization process, further research could also look at statistical data in cases where service design has had a significant impact.

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