



Co-Creating Service Value from Data in a Public Administration Context

PRACTICE

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ABSTRACT

Data are of increasing importance in the digital transformation of the public sector, but their potential has not yet been fully exploited.

Service-dominant logic (S-D logic) is a principle according to which data creates value only when it is utilized, leading, for example, to better-informed decisions and planning results. Public administration practitioners can make use of this by consistently tailoring data-based services to the needs of users. As a result, services are developed jointly with potential users in a co-creation process. Providers and users test and improve the services together in a collaborative, iterative process. Such an approach offers considerable potential in the public administration sector.

In this article, the S-D logic perspective and its operationalization by service design methods are applied to the public sector. It is examined how, in the context of public administration, S-D logic can be used to design data-based value propositions. An application case is presented in which a value proposition for the statistical office of a Swiss canton is designed. The results show that service design methods can be helpful in the context of public administration and that they also lend themselves to shaping innovation.

ZUSAMMENFASSUNG

In der digitalen Transformation der öffentlichen Verwaltung spielen Daten eine immer wichtigere Rolle. Das Potential dieser Daten wird heute allerdings oft noch zu wenig ausgeschöpft.

Gemäss der Service-dominant logic (S-D logic) wird mit Daten erst dann Wert geschaffen, wenn sie genutzt werden, wenn sie also beispielsweise zu einer fundierteren Entscheidung oder einer besseren Planung führen. Für die öffentliche Verwaltung bietet dies die Chance, datenbasierte Services konsequent auf die Bedürfnisse der Nutzerschaft auszurichten. Service wird in einem kollaborativen, iterativen Prozess mit den potenziellen Nutzniessenden entwickelt, getestet und verbessert. In der öffentlichen Verwaltung bieten diese Ansätze ein grosses Potential.

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Im vorliegenden Artikel werden die Sichtweise der S-D logic und die Methoden des Service Design – mit denen diese Sichtweise operationalisiert wird – auf die öffentliche Verwaltung übertragen. Ein Anwendungsbeispiel illustriert, wie mit Methoden des Service Design ein Wertangebot für das Statistische Amt eines Schweizer Kantons entworfen wurde. Die Arbeit zeigt, dass Methoden des Service Design auch im Kontext der öffentlichen Verwaltung gut handhabbar sind und damit Innovation gestaltet werden kann.

RÉSUMÉ

Les données jouent un rôle de plus en plus important dans la transformation digitale de l'administration publique. Cependant, le potentiel de ces données est souvent sous-utilisé aujourd'hui.

Selon la Service-dominant logic (S-D logic), la valeur n'est créée avec les données que lorsqu'elles sont utilisées, par exemple lorsqu'elles conduisent à une décision plus éclairée ou à une meilleure planification. Pour l'administration publique, cela offre la possibilité d'aligner de manière cohérente les services basés sur les données avec les besoins des utilisateurs. Les fournisseurs et les utilisateurs développent, testent et améliorent les services ensemble dans un processus collaboratif et itératif. Dans l'administration publique, ces approches offrent un grand potentiel.

Dans cet article, la perspective de la S-D logic et les méthodes de Service Design – avec lesquelles cette perspective est opérationnalisée – sont transférées à l'administration publique. Un exemple d'application illustre comment les méthodes de Service Design ont permis de concevoir une proposition de valeur pour l'office statistique d'un canton suisse. Ce travail montre que les méthodes de Service Design sont bien applicables dans le contexte de l'administration publique et peuvent servir à façonner l'innovation.

1 INTRODUCTION

1.1 BACKGROUND

Data are increasingly important in the digital transformation of public administration. Strategically, digital services play a key role in public administration (Bertot et al. 2016); however, the potential of the large and diverse data volumes available in public administration is often not yet being fully exploited.

According to service-dominant logic (S-D logic), value is only created from data when they are applied by users, for example when data lead to a more informed decision or better planning results (Lusch & Vargo 2014: 53–80).

For public administration, this offers the opportunity to consistently tailor data-based services to the needs of users – regardless of whether the services are directed at users within their own administrative organizations, in other public organizations, in private sector enterprises, or at citizens. Only when users apply the data and information in their own context do concrete benefits arise from them (Lusch & Vargo 2014: 78).

In recent years, service science and service design have become increasingly important (Prestes et al. 2019). According to these principles, service is not developed unilaterally by the provider, but in a collaborative process with potential users. This puts their needs at center stage when designing a value proposition. Suppliers and users test and improve the services in a collaborative, iterative process (Stickdorn et al. 2018).

In public administration, approaches from the service management literature such as S-D logic and service design are not yet being widely used but offer great potential (Hodgkinson et al. 2017). There is some literature exploring innovation and barriers to innovation in public sector organizations (e.g., Boukamel & Emery 2019, Mazzucato 2018). Based on the assumption that the application of service design methods might favor innovation in public administration, the

aim of this paper is to provide an application example of service design methods in a public administration context. A value proposition for a statistical office of a Swiss canton was, therefore, designed according to the principles of S-D logic to illustrate the applicability of these principles in public administration.

1.2 STRUCTURE

After a brief overview of the methodology (Chapter 1.3), chapter 2 provides theoretical foundations on S-D logic and service design and shows the change to digital, data-driven value creation. Additionally, a literature review examines the extent to which S-D logic has gained acceptance in the public sector. Chapter 2 concludes with an overview of the state of digital transformation in Switzerland.

Chapter 3 presents the application case in public administration. Service design methods were applied to design a value proposition for the statistical office of a Swiss canton. In the application case, the value proposition for the statistical office was systematically derived from the needs of specific actors representing user types and then compared with the existing value proposition.

The paper concludes with a discussion of the results.

1.3 METHODOLOGY

Supported by a literature review on the application of service-oriented principles in public administration, the focus of this paper is to provide an application case of service design methods in a public administration context. For this purpose, a value proposition for the statistical office of a Swiss canton was derived from customer needs using service design methods. Customer needs were explored with semi-structured interviews. The interviews were supplemented by an analysis of the web statistics and user requests received by the office in the previous year.

The data-information-knowledge-wisdom (DIKW) hierarchy, also known as the DIKW pyramid (Rowley 2007: 163–164), was used to describe the core task of a statistical office: the transformation of data to a higher level of the DIKW pyramid, that is, to information or even to knowledge. Users process these resources further and apply them in their own context, thus bringing them to an even higher level on the DIKW pyramid. In the application case, the DIKW pyramid was used to identify different user types from the persons interviewed.

Value propositions for specific user types were derived by applying service design methods and then compared to the existing value proposition.

2 THEORETICAL FOUNDATIONS AND LITERATURE REVIEW

2.1 SERVICE-DOMINANT LOGIC AND SERVICE DESIGN

As described in the introduction section, the approach discussed in this paper is based on the concept of S-D logic, which was introduced in 2004 by the seminal article by Vargo and Lusch (2004). S-D logic is based on (initially) 10 foundational premises, which were enhanced in 2016 by an additional premise to incorporate the perspective of cooperation in ecosystems (Vargo & Lusch 2016). With a transition from products to services, an economy moves from the concept of goods-dominant logic (G-D logic) to S-D logic. In S-D logic, service is considered the fundamental purpose of economic exchange (foundational premise 1 (FP 1)). The focus of value creation is shifted from the provider as the creator of the value to the co-creation of mutual value through interaction with the beneficiary (Vargo et al. 2008) (FP 6). Here the benefit of the service is determined by the customer's perception, rather than by the engineering on the side of the provider. Value is deployed over a period of time that exceeds the discrete moment of sales and distribution and is created in socio-technical ecosystems through actor-generated institutions and institutional arrangements (FP 11). S-D logic also states that operant resources (knowledge and skills) are the fundamental source of competitive advantage for the actors in the ecosystem (FP 4). Service providers apply their knowledge and skills for their own benefit or the benefit of another entity (Vargo et al. 2008). In the context of public services, the ability to process and analyze data as described in the introduction represents an operant resource.

The concepts of S-D logic are translated into practical procedures in various ways, including the service design approaches mentioned. According to [Vargo et al. \(2018\)](#), service design (as defined by [Stickdorn et al. 2018](#)) can be considered an operationalization of S-D logic. Service design describes a methodology and a mindset for developing new services in a human-centered way. Co-creation with the user or customer and proceeding in iterations by designing and testing hypotheses (also known as prototypes) with them are key elements of service design ([Stickdorn et al. 2018](#)). When designing a new service, it is essential to first define and understand the target customers and to explore their needs for service in the specific context. The benefit for the customer depends strongly on the customer itself and on its individual situation and context. The value proposition design methodology ([Osterwalder et al. 2015](#)) provides a practical toolset for assessing and addressing the customer needs in terms of jobs, pains, and gains.

2.2 THE SHIFT TO DATA-DRIVEN VALUE CREATION IN BUSINESS AND SOCIETY

The service sector is continuously growing and represents a substantial share of employment and gross domestic product ([Kindström & Kowalkowski 2014](#)). Upon transitioning from products to services, companies start to move from the concept of G-D logic to S-D logic, and this shift gave rise to the concept of companies and organizations as service providers ([Lay 2014](#)). The shift to services is driven by saturated markets and high intensity of competition ([Gebauer et al. 2012](#)), as well as by customer demand for the values and benefits provided by services ([Kowalkowski & Ulaga 2017](#)). In particular, an evolution for customers to demand and pay for some agreed performance output instead of the resource inputs the provider offers can be identified. Therefore, the transition from goods to services and the addition of advanced services to existing products (which may include, for example, a basic service) is considered essential ([Lightfoot et al. 2013](#)). For the development of this service economy, the omnipresence of information and communications technology is a major driving force ([Chen et al. 2010](#)).

2.3 APPLYING A SERVICE-DOMINANT LOGIC PERSPECTIVE TO PUBLIC ADMINISTRATION

Initially, the service management literature largely neglected the public service context, which is “surprising given its importance and impact on the everyday lives of citizens” ([Hodgkinson et al. 2017: 998](#)). Public services often have multiple potential users whose needs can be contradictory and sometimes diffuse, leading to a greater complexity of the public management context as compared to a business sector context ([Osborne et al. 2013: 150-151](#)). [Hodgkinson et al. \(2017: 1002\)](#) write that “This complexity may explain why in practice GDL [goods-dominant logic] has persisted.”

One of the first contributions to applying S-D logic to the public sector was by [Osborne et al. \(2013\)](#), who observed serious shortcomings in existing public management theory as a result of its firm basis on G-D logic. “This has generated a ‘fatal flaw’ in public management theory that has viewed public services as manufacturing rather than as service processes – and that are created by professional design and input and then delivered to the user” ([Osborne et al. 2013: 136](#)). The authors argue that the S-D logic approach, or its application in the public sector, will lead to more sustainable delivery of services. They refer to this approach as public-service-dominant logic ([Osborne et al. 2013: 138](#)).

In a later publication, Osborne points out that public-service-dominant logic is still too entrenched in the G-D logic paradigm ([Osborne 2018](#)). He argues that a distinction must be made between coproduction and cocreation. In co-creation, the public service organization is no longer in the leading role in creating value. Rather, value is created by citizens and/or service users, “by integrating the service offering of the PSO [public service organization] with their needs, personal abilities and experiences, and their social context. The task for PSOs is to establish the service offering and to facilitate this value creation process.” ([Osborne 2018: 229](#)). [Osborne \(2018\)](#) calls this approach public service logic. In contrast to public-service-dominant logic, the focus is on the service user rather than the public service organization, and the guiding question is how a public service offering should be designed so that it facilitates the co-creation

of value by the user (Osborne 2018: 229, Strokosch & Osborne 2021). Other researchers have explored the concept of co-creation, its risks, benefits, drivers, and barriers in the public sector and in public leadership (e.g., Torfing et al. 2019, Sørensen et al. 2021).

Petrescu (2019) applies a service ecosystems perspective to public service logic. She suggests that public service ecosystems “provide a comprehensive framework for analyzing the co-creation of value at micro, meso, and macro level, and expose individual and collective aspects of value” (Petrescu 2019: 1748). Because the same individual may have different roles in the public sector context, service ecosystems tend to be more complex than in the private context (Petrescu 2019: 1742).

Trischler and Charles (2019) state that although S-D logic and its implications for practice have been widely researched within the private sector literature, the topic has not found its way into public sector research to an equal extent. S-D logic and the related concepts may still not be fully understood, leading to misconceptions and potentially inappropriate applications to practice (Trischler & Charles 2019). Westrup (2018) studied the potential of S-D logic as a tool for developing more effective public sector services in practice. Based on the case of a contact center in a Swedish municipality, she concludes that there is potential for value creation by considering S-D logic as a tool. Vestues et al. (2021) provide a case study that explores how digital platforms are used to transform value co-creation into a process of continuous improvement in public sector organizations.

2.4 DIGITAL TRANSFORMATION IN SWITZERLAND'S PUBLIC ADMINISTRATION

In recent years, the digital transformation in Switzerland has been characterized in particular by government-funded pilot projects, various strategy developments, the setting of standards, and strategic partnerships between the federal government, the cantons, and local authorities (eGovernment Schweiz 2021). Switzerland's first national eGovernment Strategy was passed by the Federal Council in 2007. It was developed under the leadership of the federal IT steering body, in partnership with the cantons and local authorities. Its strategies and follow-up strategies formed the basis for the federal government, the cantons, and local authorities to drive the digital transformation forward in accordance with uniform principles and objectives, and to enable it to propagate into the day-to-day work of the public administrations and in projects. The current strategy, for 2020–2023, comprises seven principles, representing the basis for the implementation of increasingly digital public administration (eGovernment Schweiz 2020). These principles are:

- Services and information tailored to target groups' needs
- Automated, consistent processes
- Common data management
- Openness and transparency
- Dialogue and partnership
- Standardization and interoperability
- Promotion of innovation and technology monitoring

Against the background of this strategy, as part of the digitalization of government services, public administration bodies should always keep users' needs in focus and should follow usability and accessibility standards. This is where the challenge in the combination of service design methods and the classic administrative model becomes apparent. Even after the introduction of New Public Management (Schedler & Proeller 2011), this still contains elements of the bureaucratic administrative model (Weber 1976). This new way of thinking, along with the digitalization of administrative services on the basis of service design methods, represents a paradigm shift for public administration bodies. New methods are being introduced into project management, and public administration bodies must continue to adjust to users playing an increased role in shaping them. Among other things, the technical networking of databases belonging to various administrative bodies and the implementation of the requirement for transparency when working with user data are driving an expansion of New Public Management in Switzerland to a new level.

The European Union's most recent eGovernment benchmarking showed that, at the international level, Switzerland is not yet playing a leading role in the digitalization of

administrative services. Relevant for this comparison are the implementation of user-centricity, transparency (in terms of “Are public administrations providing clear, openly communicated information about how their services are delivered?”), key enablers (“What technological enablers are in place for the delivery of eGovernment services?”), and cross-border mobility (“How easily are citizens from abroad able to access and use the online services?”). In the 2020 comparison of countries, Switzerland was ranked only 29 out of the 36 countries examined (European Commission 2020). Switzerland achieved below-average results in several areas, including the online delivery of services, transparency in relation to service delivery, and the use of personal data.

The application of customer-focused service design methods can help incorporate the stated principles in digitalization projects. Although the application of S-D logic in public administration has increasingly been examined in the literature in recent years (see Section 2.3), there seems to be a lack of specific examples. Our contribution, therefore, is to provide an application case illustrating how S-D logic might be interpreted in a public administration context.

3 RESULT: INTERPRETING SERVICE DESIGN METHODS IN A PUBLIC ADMINISTRATION CONTEXT

In this chapter, we provide an application case of S-D logic in a public administration context. To this end a value proposition for the statistical office of a Swiss canton was systematically derived from user needs applying service design methods. The aim was to illustrate how S-D logic might be interpreted in a public administration context.

Statistical offices and official statistics

Statistical offices are the producers of official statistics. They collect data or process existing data in order to generate condensed information that is made available to the general public. They are intended to contribute to better decision-making of all kinds and for all types of users. Statistical offices are generally public administration bodies, e.g., at state or regional level (Radermacher 2020: 2–14).

The DIKW hierarchy

The DIKW hierarchy is a model to relate data, information, knowledge, and wisdom. According to the model, there is a hierarchical relationship between these elements, with data as the foundation. Information is based on data, knowledge on information, and wisdom on knowledge (Rowley 2007: 163–164). In the case study, we use the DIKW hierarchy to identify different types of users of the statistical office (see Chapter 3.1, “Step 2”).

3.1 VALUE PROPOSITION DESIGN FOR A STATISTICAL OFFICE: HOW WE PROCEEDED

In this chapter, we show the approach we used to consistently derive a value proposition for the statistical office from user needs under the application of service design methods.

Step 1: Customer insight research

The first step was to gain a deeper understanding of the customers (users) of the statistical office: What exactly do users need? What are their main tasks and what would facilitate fulfilling these tasks? What makes life difficult for users today?

These questions were answered by a combination of qualitative and quantitative methods:

- a) *Interviews*
19 interviews with customers were conducted in a semi-structured manner. Each interview lasted between 30 and 75 minutes.
- b) *Web statistics*
User statistics of the statistical office’s websites were analyzed: Which websites are used frequently, which only rarely? This can be interpreted as an indication of users’ thematic needs.
- c) *Statistical requests received by the statistical office*
We analyzed the statistical enquiries received by the statistical office and explored what could be learned from them about users’ needs.

Step 2: User types

For each person interviewed, a customer profile was created applying the template proposed by Osterwalder et al. (2015) (see right side of Figure 3).

We then investigated whether and how specific user types could be identified from the customer profiles. This was mainly based on the following criteria:

- To fulfill their tasks, users demand resources at different levels of value on the DIKW hierarchy. Do users primarily demand data, information, knowledge, or wisdom?
- Users integrate resources from the statistical office with their own skills and further information. On which level of the DIKW hierarchy (data, information, knowledge, or wisdom) is the “output” created by the user?

In addition, further criteria such as data literacy were included.

Applying these criteria, we identified four user types among the persons interviewed (see Figure 1, where user types are arranged on a hierarchy starting with data professionals at the bottom):

1. Data professionals

These actors have a high level of data literacy. They typically demand individual data or small-scale aggregated data and process them further up to the level of information or even knowledge. Typical end products of their work are studies, concepts, plans, analyses, evaluations, and models.

2. Professionals with a strategic focus and in-depth information needs

This user type includes persons responsible for strategic or planning tasks who require detailed information. They typically have only moderate data skills, and their time available for data analysis is restricted. They prefer getting aggregated tables in a spreadsheet format (which corresponds to data or information in the DIKW hierarchy) and work with them intensively. Their output includes strategies and plans (“knowledge”, level (K) in the DIKW hierarchy). Persons of this user type usually have a great deal of expertise on content in their field, but they need support and advice in handling, processing, and interpreting data and information.

3. Middle management, generalists

Persons of this user type require edited information (level I in the DIKW hierarchy) or knowledge (level K) in a typically rather broad range of topics. They like to grasp the required information quickly, preferably visually. They need statistical information for arguing in their own presentations or articles, for projects or for decision-making. People of this user type work far less intensively with statistical information than the actors described above. Often the statistical information provided by media such as newspapers is sufficient for them. Media as intermediaries are therefore particularly important for this type of user.

4. Top management, decision-makers

These actors require information as a basis for developing high-level strategies or for decision-making. This information should be condensed, but nevertheless deep enough to enable them to form a well-founded opinion. This group of users requires information embedded in its context and illuminating the topic from different angles. In addition, options for action and their consequences should be shown.

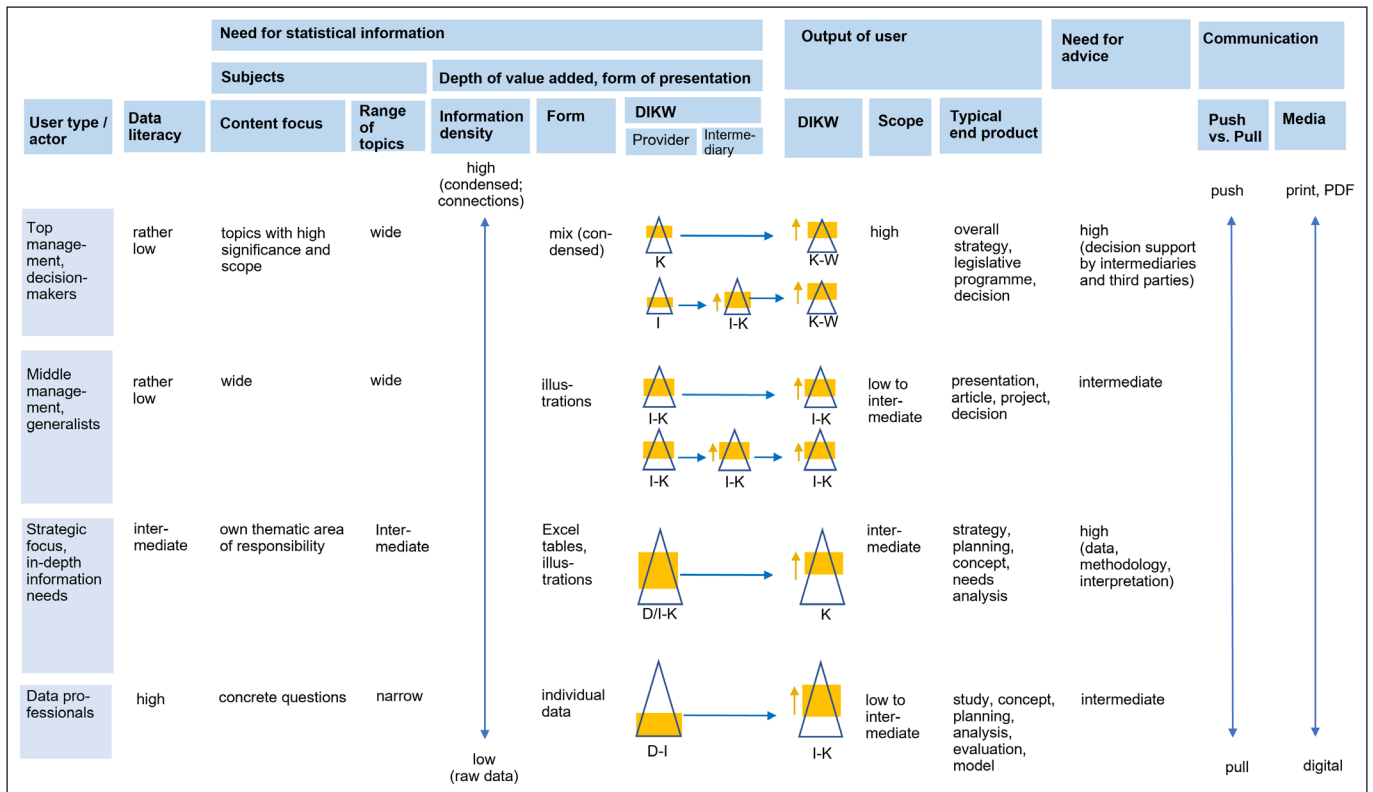
Persons of this user type often obtain information from employees reporting to them or from consultants, who thus take the role of intermediaries in the flow of information from statistical offices and other information sources.

Each interview subject was then assigned to one of the four user types.

Step 3: Personas and customer profiles

Next, we created personas for each user type. A persona is a fictitious person who represents a certain group of user needs. His or her profile is an archetype based on the interviews conducted.

For each persona, a customer profile according to Osterwalder et al. (2015) was designed. The customer profile is a tool to describe a specific customer segment in a structured way. It consists of three parts:



1. *Customer jobs* describe what customers are trying to accomplish in their work or in their everyday lives.
2. *Gains* describe the results customers want to achieve or the specific benefits they seek.
3. *Pains* describe poor outcomes, risks, and obstacles associated with customer tasks.

The customer profile is a component of Osterwalder's value proposition canvas. Figure 3 is a diagram of the value proposition canvas, consisting of the customer profile (right) and the value map (left) (Osterwalder et al., 2015).

We will now illustrate the customer profiles designed in the case study using the example of user type 2, "Professionals with a strategic focus and in-depth information needs". This user type is represented by the fictitious person "Monica Miller". She heads the Office for Society and Social Affairs of a mid-sized community.

The customer profile shows her jobs, gains, and pains.

Some of her main **jobs** are:

- Recognize/anticipate developments and derive/implement appropriate measures
- Give presentations; answer requests, including from parliament
- Planning; prepare the basis for decision-making
- Initiate and manage projects; implement concepts
- Get her budget approved; justify funding requests for projects; convince surrounding communities to participate in joint projects
- Evaluate the effectiveness of measures; justify measures

Gains describe the results and benefits she wants, expects, or hopes for. These are some of Monica Miller's most important **gains**:

- Initiate the right measures and projects in time; "good feeling" when initiating measures and making decisions because of her confidence that she has a complete and correct information basis
- Convince superiors and other decision-makers of the necessity of measures
- Get the budget approved; obtain funding for projects
- Gain the respect and trust of her superior
- Generate insights from data
- Get data that are specifically tailored to her information needs

Figure 1 Formation of user types (source: own representation).

DIKW: Data-Information-Knowledge-Wisdom hierarchy (D: data; I: information; K: knowledge; W: wisdom).

- Understand reasons for developments; understand the impact of factors influencing future developments
- Find information quickly; have information at hand when she needs it

What makes life difficult for Monica Miller? What worries her, what is tedious or hinders her in fulfilling her jobs? These are some of her main **pains**:

- Wrong decisions; missed developments
- Decisions made without sufficient facts
- Uncertainty on which recommendation or action should be derived from information given
- Data that are difficult to interpret; drawing the wrong conclusions from data
- Difficulty of finding the right information; information scattered in different places
- Too little time; tools that are too complex; data in formats she cannot handle

Step 4: Value proposition design

In the next step, a value proposition was derived for each persona applying the value proposition canvas developed by Osterwalder et al. (2015). Osterwalder's value proposition canvas consists of the customer profile and the value map (Osterwalder et al. 2015). The value map (see the left side of Figure 3) contains the products and services of the value proposition and describes how these products and services solve problems and generate gains for the customer. There must be a fit between the value map and the customer profile. In other words, each product or service has to correspond to a specific customer job, each gain creator to a specific gain, and each pain reliever to a specific pain.

For the persona Monica Miller we derived a value proposition consisting of a basic and an individualized offer (see Figure 2). One of the components was a data selfservice option, which is used for the explanations below.

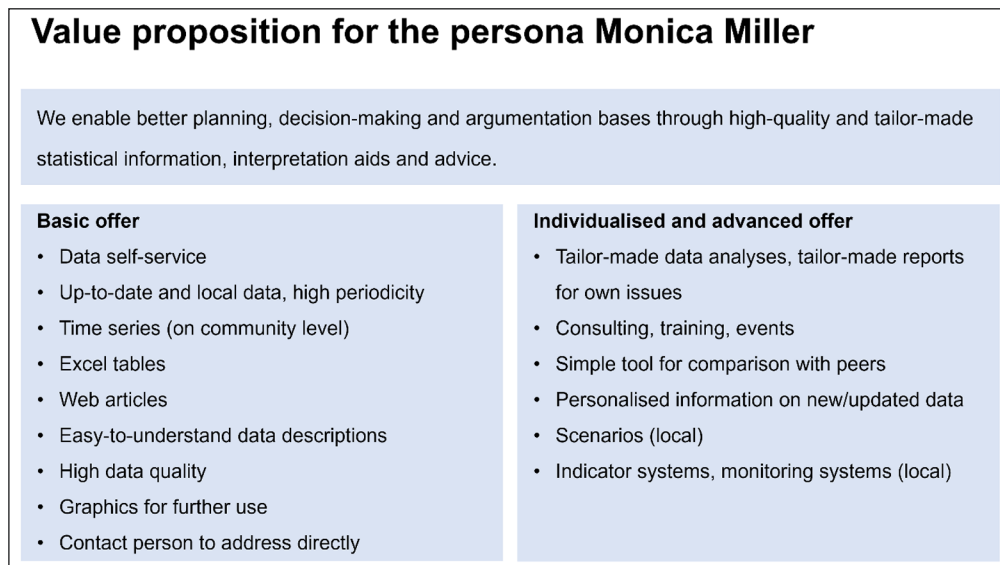


Figure 2 Value proposition for the persona Monica Miller (source: own representation based on Osterwalder et al., 2015).

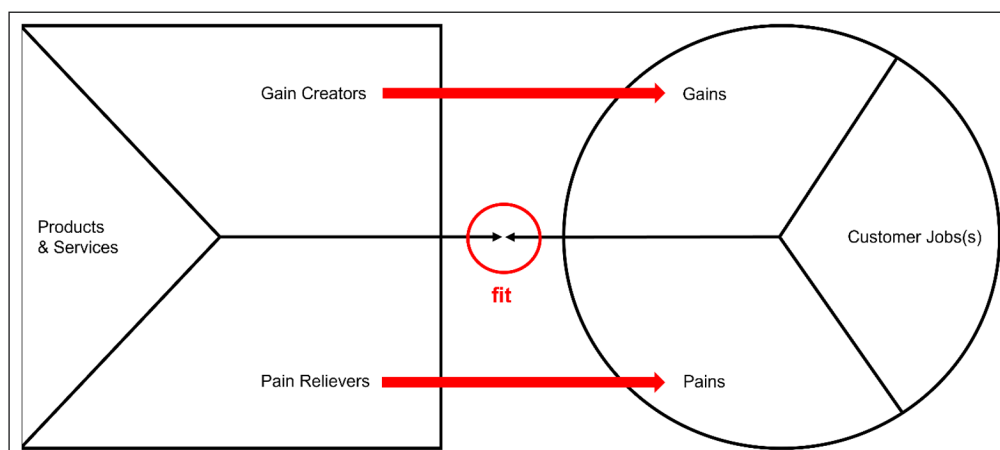


Figure 3 Fit between value map and customer profile according to Osterwalder (source: own representation based on Osterwalder et al., 2015).

For each component of the service bundle proposed in the value proposition, we created a customer journey. The customer journey visualizes the experience of the user over time (Stickdorn et al. 2018: 44).

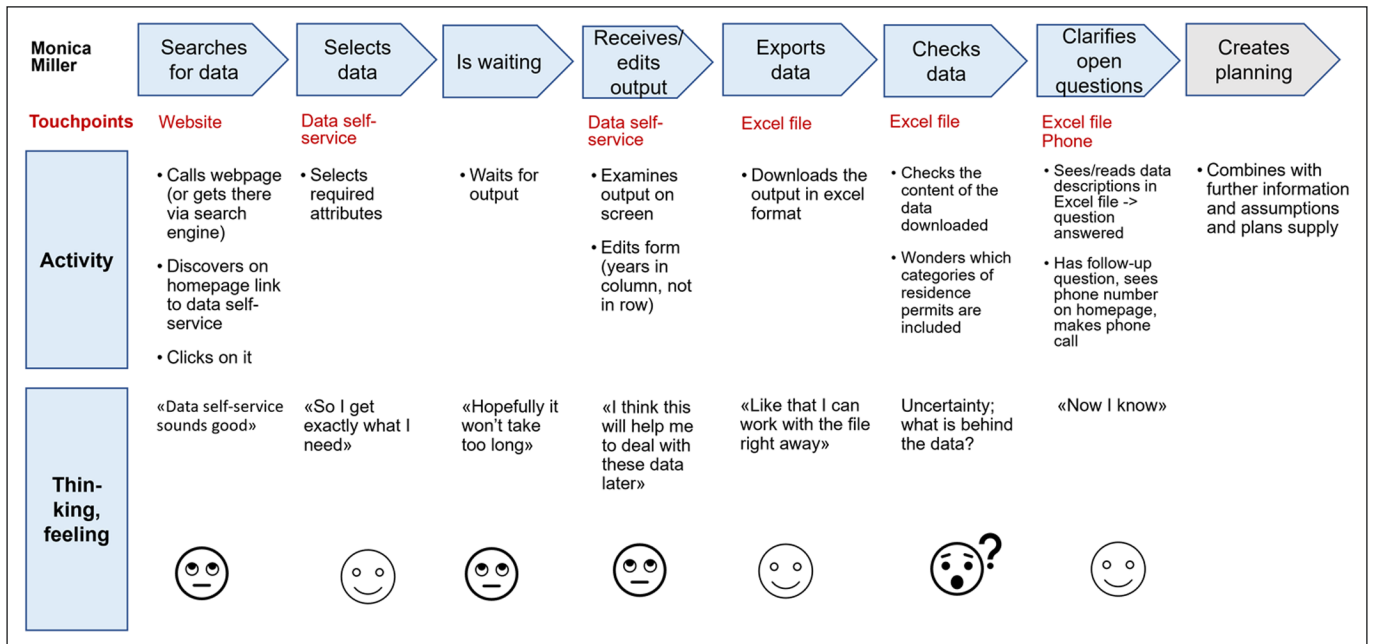
To illustrate, below we show a customer journey for one specific component of the value proposition: the data self-service.

We assume the following use case:

Monica Miller wants to know the number of young children (per age group) for selected nationalities. In order to see a trend, she needs this information for several years.

Figure 4 shows the customer journey for this use case.

Figure 4 Target customer journey of persona Monica Miller for the service component “Data self-service” (source: own representation).



Steps in the customer journey that are decisive for the user experience are called “moments of truth”. Moments of truth for the use case shown in Figure 3 might include:

- the user discovers the data self-service option
- the user is selecting the data she needs (is the tool simple enough?)
- the user gets and opens the export received from the tool (is it what the user has been looking for?)

Step 6: Service blueprints

Next, we created service blueprints. A service blueprint builds on the customer journey and adds additional layers of depth, showing the frontstage and backstage tasks and processes necessary for the creation of the service. Service blueprints also contain the systems and partners involved in the service creation (Stickdorn et al. 2018: 54).

Figure 5 shows the service blueprint for the use case mentioned above.

Step 7: Service ecosystems

Service ecosystem maps visualize the whole system around a particular user experience or service. A service ecosystem map contains all the actors involved and their relationships to each other. Actors can be individual persons (who can be grouped into departments or other organizations) as well as devices or systems (technical actors). The exchange of value between the actors is visualized with arrows (Stickdorn et al. 2018: 62–63).

In service design, a service ecology map is primarily created to gain an overview of the actors involved, to understand the relationships between the actors, and to facilitate generating new service concepts by reorganizing the cooperation between actors (Polaine et al. 2013).

An example of a service ecosystem map (for the use case “Data self-service”) has been included in the appendix.

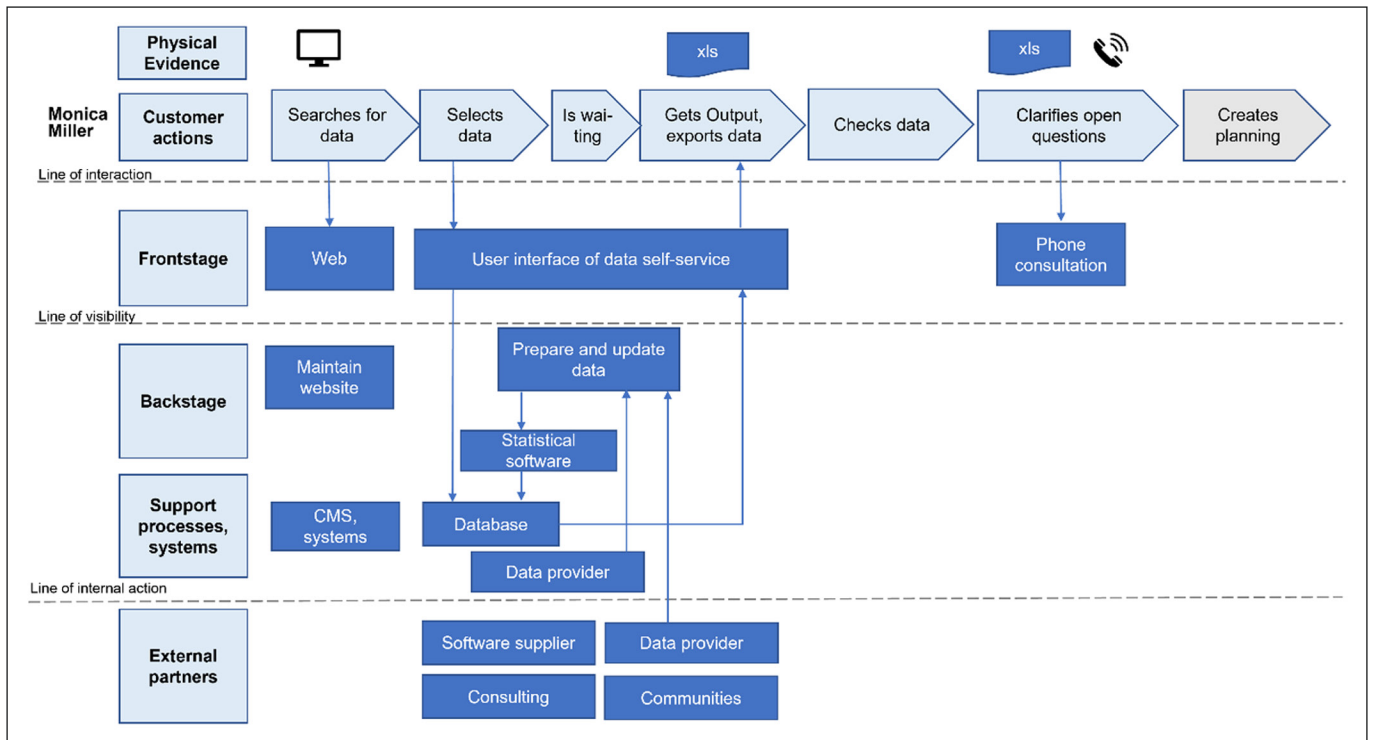


Figure 5 Service blueprint for use case “Data self-service”. (source: own representation).

Step 8: Prototyping and testing

Finally, prototypes were created for the various components of the value proposition. These are then to be tested with the users.

We designed first tests applying the test cards proposed by [Osterwalder et al. \(2015\)](#).

An example of testing the service component “data self-service” is shown below:

WE BELIEVE THAT

the data self-service is easy to use and self-explanatory and would be used by persons with in-depth information needs.

TO VERIFY THIS

we go through rapid prototyping sketches with five people using a concrete use case. The test subjects describe what they would click on. We also ask them whether they would use the data self-service option.

AND MEASURE

how many test subjects were able to complete the use case query without any problems. We also count how many people would use the data self-service option.

WE ARE RIGHT IF

four of the five test subjects completed the use case without any problems and indicated that they would use the data self-service.

Based on the outcomes of the tests, the service components are improved, tested again, improved, and so on in an iterative process.

3.2 HOW THE TARGET VALUE PROPOSITION DIFFERS FROM THE CURRENT OFFERING

The value proposition systematically derived from user needs (“target value proposition”) differs from the existing offer.

The main differences include:

- The target value proposition contains more statistical information products that are specifically tailored to the needs of specific user groups or even individual users. For instance, professionals with a strategic focus and in-depth information needs might

receive individualized reports tailored to their specific needs. Generalists might appreciate ready-to-use charts that can be downloaded and embedded in their own presentations (addressing the gain of preparing compelling presentations in the least time).

- The target value proposition contains components that make the search for information and their use easier and more convenient, addressing users' pain points such as "too little time", "difficult to find what is needed", and "tools too complex".
- The target value proposition offers more consulting and more support in understanding and using data correctly. This service component addresses pain points such as "difficulties in interpreting data" or "uncertainty of using data correctly".
- The target value proposition includes new services of analyzing data for other offices of the cantonal administration or supporting them in data analysis issues ("competence center for data analysis").

3.3 LESSONS LEARNED FROM THE APPLICATION CASE

The application case showed that service design methods are applicable to and helpful in the development of a value proposition in a public administration context. Some of the key lessons learned include:

a) *Manageable method, new insights*

Understanding the users and their interrelation in depth and taking their point of view led to helpful insights for the management of the statistical office. It became clear that today's service offerings do not cover the needs of specific user groups adequately. Overall, the application case showed that service design methods may work well in a public administration context and generate valuable insights for public administration managers.

b) *More analyses, more consulting*

The value proposition developed with service design methods differs from the existing one. In particular, it contains more analyses and more consulting, while being more differentiated to meet the needs of the various actors. Depending on the balance of resources and competencies among the ecosystem partners, different levels of the value proposition are appropriate for creating value.

c) *Ecosystems are more complex in a public administration context*

In the public sector, ecosystems tend to be more complex than in the private sector (Petrescu 2019: 1742). In the public sector, the same person can have different roles (Osborne 2018; Grönroos 2019). He or she might be both a user who creates value from what the statistical office has to offer as well as a taxpayer wishing to keep public expenditure low. That same person might even be a parliamentarian having to approve the state budget. The interests he or she has in these different roles are often contradictory. This means that even if the target value proposition created more value than the previous one, its implementation might be complicated or even prevented by a lack of funding.

d) *Supporting users to create value*

According to the premises of S-D logic (FP 7), the statistical office only offers a value proposition, it does not create value alone. It is the customers who create value when using the offer for their own purposes: Customers process data or information into knowledge or even wisdom. Customers often need support or advice when using the statistical office's offerings. Support, training, and counseling by the statistical office might, therefore, facilitate the value creation process.

In summary, the value proposition developed in the application case from an in-depth understanding of customer needs differs from the existing one. In particular, it contains more components tailored to individual user groups. A collaborative approach is important not only in the design of data-based value propositions but also in the application of these offerings by users: Concrete benefits are only created if users understand and interpret data and information correctly and apply them in their specific context.

So far, Switzerland is still not playing a leading role in the digitalization of administrative services. Services and information tailored to target groups as well as dialogue and co-creation are principles claimed in Switzerland's eGovernment Strategy 2020–2023. The application of customer-focused service design methods can help incorporate these principles in digitalization projects. We argue that it is essential to first define and understand the target customers when designing a new service, explore their needs for service as well as their competencies in the specific context, and understand their position in their ecosystem.

The use of approaches from new service development helps to take the customer perspective into account. Traditional top-down management is the wrong way to develop and test new services. Overall, digitalization has strong organizational and social components in addition to the technical ones. These components must be taken into account in a holistic change management process. In this paper, we have suggested an approach based on the concept of S-D logic.

In a S-D logic perspective, value is co-created by multiple actors, always including the beneficiary (Vargo et al. 2008, foundational premise 6 (FP 6)). Actors cannot deliver value but can participate in the creation and offering of value propositions (FP 7). Knowledge and skills of both providers and users are required to co-create value. In Figure 1, we have illustrated how this might be interpreted in a public administration context. In the example shown, statistical office employees combine operant resources (e.g., their data analysis skills and their domain knowledge) and operand resources (e.g., software, hardware) to offer data, information and knowledge according to the needs of the specific user type – which statistical office operatives have to understand in depth. Service design methods described in the application case above help to understand customers' jobs, gains, and pains.

However, products and services offered by the statistical office are only a value proposition and do not yet create value. Value is only created when users apply the data or information offered and integrate them into their own resources and thus, for example, make better decisions. A professional with planning tasks (user type "Strategic focus, in-depth information needs", see Figure 1), for example, might require information on the number of elderly people in a municipality and how that demographic is developing to help him or her in planning nursing home places. Value is created when that person uses the data or information provided by the statistical office towards what he or she already knows to improve his or her planning accuracy.

In order to transform "data", which are at the bottom of the DIKW hierarchy (e.g., number of elderly people) to a higher level on the DIKW hierarchy (e.g., "knowledge": correct number of nursing home places available in the future), the competencies of the statistical office (provider) and of the user and other actors in the ecosystem are required. The value co-created by the actors in the ecosystem might be functional or financial benefits (e.g., improved planning results, less time required for the planning task), but there might also be social or emotional value dimensions, such as more confidence and safety (Sweeney & Soutar 2001). In a public sector context, value for society as a whole, such as societal cohesion, will also be created (for "public value", see Hodgkinson et al. 2017, Petrescu 2019, Sørensen et al. 2021). As Figure 1 shows, the products and services required to initiate this value cocreation process depend on the user type. Data professionals might ask the statistical office for raw data whereas top management might require highly condensed information products. A comprehensive understanding of customer needs and developing the "right" products and services are, therefore, prerequisites for creating value.

S-D logic can be used to combine the requirements of public administration and the development of digital services. This concept takes into account stakeholders, information, resources, and processes when redesigning services. As a result, new services can be designed and developed based on customer benefits. The value for the administrative bodies lies in the efficient and effective design of new services. These changes in service development require new skills on the part of the actors involved. Some examples of these are fundamental IT skills, process orientation, and agile project management within the team. These new skills can be integrated into public administration bodies via new staff or by training existing staff. In the future, openness to change and new methods will be an essential requirement for anyone working in public administration. However, these changes must have the support of policymakers as well as public administrators. S-D logic provides a standard for agile project management.

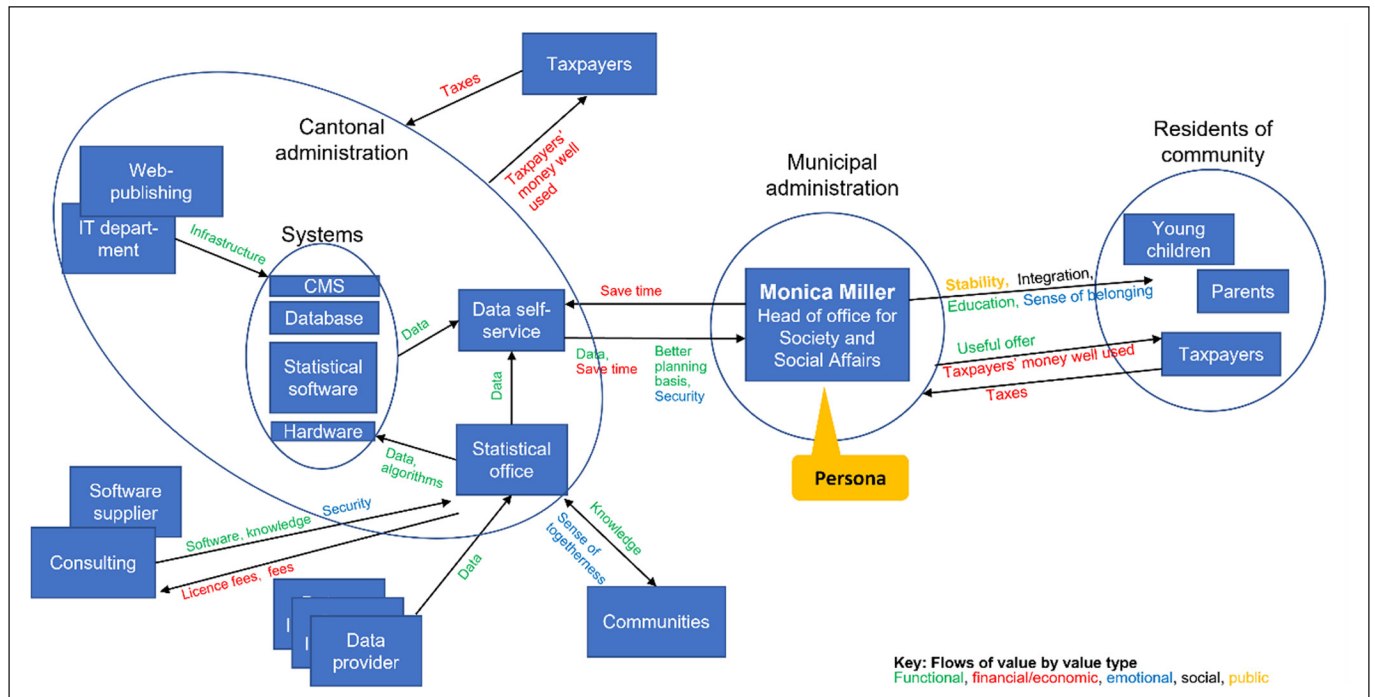
S-D logic and related concepts still need to be better understood in a public sector context to avoid misconceptions and potentially inappropriate applications to practice (Trischler & Charles 2019). The application case we have presented here illustrates how S-D logic can be interpreted in a public administration context. Our findings suggest that service design methods are highly suitable for application in the specific context of a statistical office and that they can be used to shape innovation. However, more research and further application cases are required to gain more insight into whether these findings are transferable to other areas of public administration.

APPENDIX

SERVICE ECOSYSTEM MAP

Figure 6 shows an example of a service ecosystem map (for the use case “data self-service”). Service ecosystem maps are described in Chapter 3.1, Step 7.

Figure 6 Service ecosystem map for use case “Data self-service” (source: own representation).



COMPETING INTERESTS

The authors have no competing interests to declare.

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