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## Why TaxMe Makes Taxpayers Happy?

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**Abstract:** TaxMe-Online is the online tax declaration system of the Canton of Bern in Switzerland, where each of the 26 Cantons has its own fiscal regime and taxation system. In 2008 it was used by almost 26 percent of the Canton of Bern taxpayers (42% used the TaxMe-CD or other software, and the last third chose the paper forms). The TaxMe portal furthermore gives taxpayer access to their fiscal data (taxation status, amounts paid, etc.) and allows them to send electronic vouchers. TaxMe-Online does not require any preliminary registration as the taxpayers receive their user ID at the same time as the tax declaration forms, and when they log in with their identification data, their identity data (name, address, etc.) are already available. Users do however have to sign a paper-based validation declaration: until they have done so, their online tax declaration is not considered as finalized. The tax administration does not have the right to access taxpayers' data until the receipt of this validation declaration. TaxMe-Online is built on open source components and solutions; data are coded before being sent electronically (Secure Socket Layer). 33% of the TaxMe-Online users say they are "very happy" with this way of filling in their tax declaration, but amongst citizens using a similar solution on CD-ROM or the paper-based declaration, only 18% say they are very happy. This paper tries to find out why the online solution scores much higher than other tax declaration systems. It comprises three main parts (i) the development of an assessment model; (ii) a description of the system and its functionalities; and (iii) an analysis of user acceptance. We investigated the point of view of the TaxMe-Online users on an empirical basis, most notably by analysing secondary sources such as surveys realized by the fiscal administration of the Canton of Bern and newspaper articles, and by conducting interviews with various stakeholders.

**Keywords:** Taxation, case study, usability, portal, data exchange, open source, user acceptance

### 1. Introduction

Online taxation systems are becoming more and more common at the international levels: there are too many eTaxation projects to list them all, but let us mention a few such as eDavki in Slovenia, Revenue Online Service in Ireland, Taxis in Greece, FinanzOnline in Austria, e-Filing in Singapore, e-Revenue in Thailand, etc. In Switzerland we seem to be a bit behind with only one Canton offering a fully online tax declaration system. As each of the 26 Cantons has its own fiscal regime, there are very heterogeneous solutions. However most Cantons do offer a solution (downloadable or on CD-ROM) to support taxpayers in the process of filling their tax declaration. The Canton of St-Gall had the concept for such a product in 1998 already and nowadays this solution called eTaxes is used in 5 other Cantons (Zug, Schwytz, Tessin, Luzern and Basel-Stadt). eTaxes users fill their declaration on their computer and have the possibility of sending their data over the internet, as opposed to other Cantons such as Vaud, Valais or Geneva where users still have to print their tax declaration and send it back to their fiscal administration via postal mail. A barcode is printed on the declaration, allowing the administration to scan all data quickly and accurately. For the time being the only fully online solution is TaxMe-Online in the Canton of Bern: this system will be described more in details in section 3.

### 2. Assessment Model

In previous work, we described the reorganization of a fiscal administration through the introduction of computer-aided taxation (citation removed), and a private-public partnership where employers provide electronic fiscal data on their employees directly to the tax administration and pay taxes on their behalf (citation removed). In order to compare these two case studies and the TaxMe system described in this paper we wanted to develop a suitable analysis framework. Here we will only apply this framework to the TaxMe case as the first step of the implementation of this model and in future work we will do a full comparative analysis. First of all we needed to analyse level of services (a taxpayer seeking information on his situation or a taxpayer just willing to pay taxes online do not have the same needs), as well as

communication channels and modes. In order to do so we used the work of (Quirchmayr et al. 2006) who define four levels of services in e-Taxation:

- *Information and intention building phase*: governments publish information on the Web and taxpayers can download forms.
- *Contracting phase*: taxpayers can file their tax declaration (or returns) online.
- *Service delivery phase*: taxpayers can pay their taxes online.
- *Aftercare phase*: complains and appeals are managed online.

Regarding the channel types, (Ebbers et al. 2007) write that three of them stand out as being used the most by citizens: Web, phone and front desk. In order to study these channels they defined several modes based on who is the initiator of the interaction and on the level of interactivity:

- *Allocution*: an organization sends information to the citizens.
- *Registration*: a citizen sends information to the organisation.
- *Consultation*: a citizen uses an information source provided by the organisation in order to find the data he/she needs.
- *Conversation*: a user requests information and the organization provides the information, tailored to the user's needs.

(Ebbers et al. 2007) furthermore integrate the concept of (financial) transactions, where money (and not information) is exchanged between citizens and governmental organisations.

Table 1 combines these two approaches and can be used either to describe the current situation of eTaxation systems (as-is situation) or to identify user needs and requirements for a future system (to-be situation). In this example we have listed the existing communication modes corresponding to front desk/phone/online communication channels for each level of services. We consider the paper-based workflow for taxation to be integrated within the traditional front desk channel.

**Table 1:** Level of service and communication channels

	<b>Front desk</b>	<b>Phone</b>	<b>Online</b>
Information and intention building	<i>Allocution</i>	<i>Conversation</i>	<i>Consultation</i>
Contracting	<i>Registration</i>		<i>Registration</i>
Service Delivery	<i>Transaction</i>		<i>Transaction</i>
Aftercare	<i>Conversation</i>	<i>Conversation</i>	

Furthermore we needed dimensions and criteria in order to assess eTaxation systems. We combined two models that are not so different from one another and that cover similar grounds. The first one was developed by (Quirchmayr et al. 2006) who propose a number of evaluation criteria for each of the following dimensions of e-Taxation services:

- *Information quality*: relevant, accurate, timely and context-pertinent information is provided.
- *Usability*: system is easy to use and provides support (search, download, help, FAQ, etc.)
- *Multi-channel*: information is provided on multiple channels and taxpayers can return their data likewise.
- *Security and privacy*: information is sent at the right person at the right place over secure communication channels.
- *Service quality*: service should not only be faster but also better
- *Empowerment*: instructions are available to help users master the different channels and services.

The second one is from (Economides and Terzis 2008) who developed the Tax Site Evaluation Framework (TSEF) that is based on the following five categories:

- *Content*: quantity, quality and personalization.
- *Presentation*: appearance, format and multimedia.
- *Usability*: user interface, navigability, orientation, search, structure.
- *Technical*: security and privacy, performance, compatibility, reliability and maintenance.
- *E-Services & Interactivity*: quantity, quality, online payment, online learning, technical services, informational services.

However these two models only look at the supply-side (content and services provided by the tax administration) and do not allow us to analyse the demand-side or the user uptake of such systems. We used the work of (Gareis and Forte 2007) who based their assessment of online tax declaration use in nine European countries on the ACM model (Access to the internet, Competence in using the internet and Motivation for using the internet to communicate with tax authorities). We extended the motivation dimension by using the model of (Yung et al 2006) who applied the theory of planned behaviour to measure user acceptance of the e-Taxation system in Taiwan. They introduce concepts such as attitude towards perceived risk (Stone and Gronhaug 1993), perceived usefulness (Davis 1989) or trust (Gefen 2002), as well as subjective norms and intentions (Taylor and Todd 1995).

Table 2 shows the two sides of our assessment model and lists the dimensions that we will analyse. We will not discuss in detail why we chose one indicator over the other from the literature mentioned above. We will however point out that there is a correspondence between supply-side indicators and demand-side indicators: content is linked to access, usability is related to competence, perceived risk is a function of the communication channel, trust is based on security and privacy guarantees, and so on.

**Table 2:** Evaluation of eTaxation services supply and user uptake

Supply-side	User Uptake
<i>Content</i>	<i>Access</i>
<i>Usability</i>	<i>Competence</i>
<i>Multi-channel</i>	<i>Perceived Risk</i>
<i>Security and Privacy</i>	<i>Perceived Usefulness</i>
<i>Technical</i>	<i>Trust</i>

### 3. Description of the TaxMe System

The tax administration of the Canton of Bern is responsible to levy Federal, Cantonal and municipal taxes for all natural and legal persons that are residents in the Canton of Bern. The tax administration is decentralized over five regions and has a central office in the City of Bern. It has the strategic objective of being one of the three best tax administrations in Switzerland and of being effective, efficient, and citizen-oriented. In order to achieve this goal the tax administration relies (amongst others) on technology since 1999 when the first experiences with a CD-based solution was conducted. In 2001 the concept of TaxMe-Online was introduced and it has since become a success story distinguished by a "Eugen e-Government Award" in 2008 and listed in 2009 as one of the 200 best Websites in Switzerland by the "anthrazit" magazine. In 2007 there were close to 100'000 users of TaxMe-Online, 125'000 in 2008 and an estimated 150'000 in 2009 (out of around 580'000 natural persons that pay taxes in the Canton of Bern). This is approximately a 20% annual growth rate.

The information system portfolio of the tax administration of the Canton of Bern comprises about 60 applications but we only describe several subsystems that are of interest for our case study:

- NESKO (Neues Steuerkonzept) is a tailor-made business application for tax assessors; it taxes automatically around 20% of tax declarations and it also routes tax declarations to specialist groups or to regions.
- TaxInfo is an information portal where tax specialists explain the tax administration practices. TaxInfo content is written in everyday language and complements the legal texts and regulations that are also available.
- TaxMe-Online is the online tax declaration system (figure 1) where taxpayers enter data on their income, wealth, real estate properties, debts, deductions, etc. All taxpayers can access the system with identification data they received along with their tax declaration forms. They can furthermore choose not to receive any paper forms anymore, apart from a letter with this identification data.
- TaxMe-Portal gives access to tax declarations and decisions of previous years, to tax provision, slips and deposits, to tax payment balance, etc (figure 2). It also allows users to upload digital versions of vouchers or additional documents such as medical bills. In order to use the TaxMe-Portal, taxpayers must first register and they then receive a one-time code card along with a personal identification number. Around 40'000 users are registered as of January 2010.

**2.21 Activité lucrative dépendante**

Déclarez les revenus de vos activités lucratives dépendantes principale et accessoire.

**Homme: activité lucrative dépendante** [Explications](#)

Statut	Employeur	Nature des revenus	Montant
Il n'y pas d'enregistrement!			

[Saisir un nouvel enregistrement](#)

**Femme: activité lucrative dépendante** [Explications](#)

Statut	Employeur	Nature des revenus	Montant
Il n'y pas d'enregistrement!			

[Saisir un nouvel enregistrement](#)

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**Figure 1:** TaxMe-Online user interface and tax declaration forms

**Mes bordereaux**

C'est un récapitulatif des sommes restant dues par année fiscale. Voir le détail sous "Extrait de compte".

Année	Impôts cantonal et communal	Montant
2010	Impôts cantonal et communal	CHF 2405.50
2009	Impôts cantonal et communal	CHF 2405.50
2008	Impôts cantonal et communal	CHF 2405.50

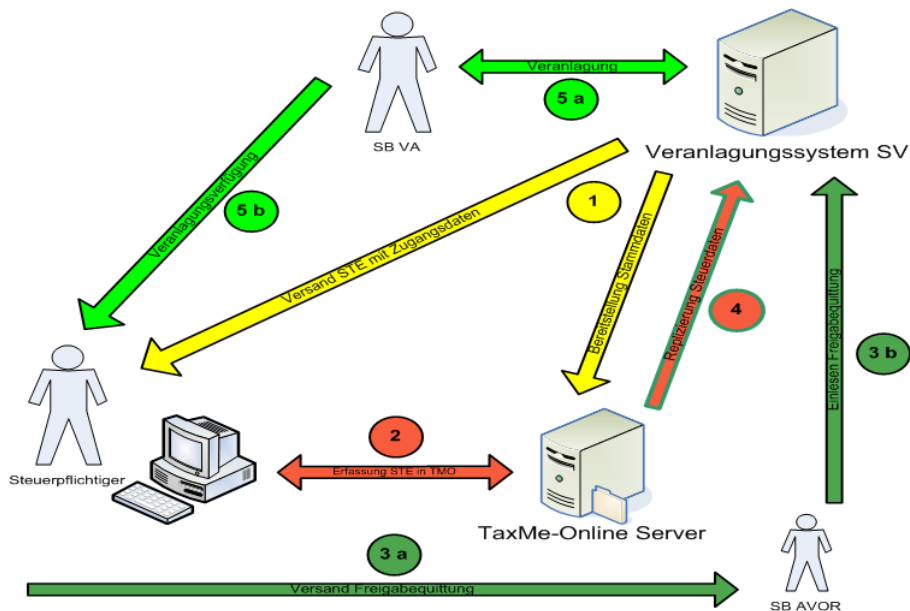
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**Figure 2:** TaxMe-Online portal

The illustration of the TaxMe-Online work process (figure 3) is taken from a working document of the tax administration of the Canton of Bern; although it is in German, the various steps are described below:

1. Data is transmitted from the taxation system to the TaxMe-Online server; tax declaration is sent to the taxpayer, as well as the identification data to access the system.
2. Taxpayer fills in the tax declaration with TaxMe-Online; base data is already available from previous year's declaration and from other data sources within the administration of the Canton of Bern (such as residence or marital status).
3. Taxpayer sends a signed validation declaration (paper-based) to the fiscal administration; an employee enters the validation in the back-office taxation system. This business event launches the taxation process, as before it occurs the fiscal administration does not have the right to access data entered by taxpayers.
4. Data is transmitted from the TaxMe-Online server to the back-office taxation system.
5. Tax assessor handles the tax declaration and makes a taxation decision; the tax decision is available to the tax payer.



**Figure 3:** Taxation process using the TaxMe-Online system

Without describing the technical architecture of TaxMe, let us state that the system was developed using open source components and technologies:

- Several Apache projects, such as Axis (implementation of the SOAP protocol for Webservices), FOP (Formatting Objects Processor, a print formatter driven by XSL formatting objects), Struts for Web applications development), etc.
- JBoss application server.
- jTDS database connector.
- Java Barbecue barcode generator.

All data exchange (both ways) are coded with a 128 bits key Secure Socket Layer (SSL); passwords and one time codes are stored in a database after a one-way coding (hash key 160 bits).

In order to complete the picture, we should also say that there are two software solutions developed by private companies that are also compliant with the tax administration standards: Dr. Tax and PEBE. Table 3 shows the breakdown of 2008 tax declarations turned in by December 31<sup>st</sup>, 2009.

**Table 3:** 2008 tax declarations and channels used

	Number	%
Paper	183'471	32
TaxMe CD	160'779	28
Dr. Tax	45'554	8
PEBE	35'648	6
TaxMe Online	149'761	26
Other	1'011	<1
<b>Total</b>	<b>576'224</b>	<b>100</b>

#### 4. Assessment of the TaxMe System

As mentioned in section 2, we built our assessment model in order to compare TaxMe and two other case studies we developed previously. The model is thus applied ex-post to our analysis subject and this constitutes a limitation of our work. Indeed we did not formalize our research design ex-ante in order to study a given research question. We do however think that our exploratory approach can create some useful knowledge such as “good practices” or “lessons learned”. In order to validate and refine our model we begin by applying it to the TaxMe-Online system only. Regarding the methodology, our survey is mostly based on secondary sources (documents and numbers provided by the fiscal administration of the Canton of Bern) and complemented by interviewing stakeholders of the Cantonal fiscal administration. We notably used the results of a survey conducted in November 2008 by the fiscal administration of the Canton of Bern: 4002 taxpayers were contacted and 1404 answered the survey, which is a return rate of 35.1%. They received a letter and a paper-based survey, as well as a link and a password to answer online. The main goal of this survey was to analyse the taxpayers’ satisfaction regarding the services provided by the fiscal administration and to compare the three possible channels for tax declarations (paper, CD and software, online). The survey covered four dimensions: communication, contact, competencies, and cooperation. The notation was based on a Likert-scale from 1 to 6 (1- do not agree at all, 6- fully agree).

Table 3 shows the levels of services and the communication channels supported by the fiscal administration of the Canton of Bern. The traditional paper-based taxation process (tax declaration sent to taxpayers along with a paper guide on how to fill it, signed tax declaration sent back to the administration, tax decision made by tax assessors and notified to taxpayers, bills and payment via bank or post, letters of complaints and appeals) is compared to the online process enabled by TaxMe tools, whereas the phone support is only there for inquiries and questions.

**Table 4:** TaxMe levels of service and communication channels

	<b>Front desk</b>	<b>Phone</b>	<b>Online</b>
Information and intention building	<i>Allocation: paper guide to taxpayers</i>	<i>Conversation: call centre, regional tax centres</i>	<i>Consultation: TaxInfo portal</i>
Contracting	<i>Registration: full tax declaration / validation declaration sent by postal mail</i>	<i>n/a</i>	<i>Registration: tax declaration sent over the internet</i>
Service Delivery	<i>Transaction: traditional payments</i>	<i>n/a</i>	<i>Transaction: online payments</i>
Aftercare	<i>Conversation: paper-based workflow for complaint management, appeals, etc.</i>	<i>Conversation: information on tax decisions, negotiation of payment arrangements</i>	<i>Consultation: TaxInfo and TaxMe portals Conversation: possibility to ask for a payment delay</i>

The possibility to pay online is quite new as was introduced in November 2009. The tax administration does not provide these tools directly; they have made conventions with eBilling providers such as banks or the Swiss Post. Without any communication or marketing around that service, there were already 8'000 registered users in January 2010.

Our next step is the assessment of the supply-side services offered by the TaxMe system:

- **Content:** TaxInfo is very complete and combines the applicable legislation with a description of taxation practices in everyday language; TaxMe-Online is equivalent to the paper-based tax declarations with additional capabilities (such as automated calculations, suggestions on deductions that one might forget when using the paper forms, controls and estimation of the amounts of tax to be paid); TaxMe Portal also bring added value compared to the paper-based process, as it gives access to tax declarations and decisions of previous years, to tax provision, slips and deposits, to tax payment balance.
- **Usability:** the system is quite intuitive with 92% of TaxMe-Online users rather or completely satisfied with tax declaration process (76% for the paper-based process), 91% rather of completely satisfied with the forms themselves (84% for the paper forms) and 95% rather of

completely satisfied with the documentation (87% for the paper documentation). Considering that the system is rather new, these numbers show that those using TaxMe-Online have no problems regarding usability.

- Multi-channel: users can choose between the paper-base tax declaration, the TaxMe CD-ROM, two compatible commercial applications, and TaxMe-Online. A proportion of taxpayers also use the services of professional tax accountants.
- Security and Privacy: the TaxMe-Online solution has a page presenting very clearly the issues regarding privacy and security; however it has to be noted that some users prepare their declaration on the CD-ROM (feeling they have more privacy) and then enter data again using TaxMe-Online.
- Technical: although we had no hard data on performance and reliability issues, let us mention that the system is managed on the basis of ITIL practices; furthermore it is completely standard and open-source based (see end of section 3). Both these elements do not prove per se that the system is technically up-to-date; they do however show that the system is developed and maintained according to state-of-the-art practices.

We will now comment user-uptake and user-acceptance, according to the dimensions defined in section 2:

- Access: the main reasons stated by respondents for not using TaxMe-Online are no internet connection, confidentiality issues, users being accustomed and satisfied with the paper-based process, and the fact of staying online which is perceived as a risk (see above, some people use the CD-ROM to prepare their tax declaration, thus being off-line, and then enter their data again using TaxMe-Online). We do not have a detailed break-down of these numbers and we cannot comment on how many taxpayers do not have internet access in the Canton of Bern. However we can suppose that it is similar to the internet access rate in Switzerland: according to the Swiss Statistical Office, 74% of Swiss households had access to internet in 2007.
- Competence: it is really difficult to assess that dimension as there are two types of competencies to master here, the use of internet and the ability to fill in a tax declaration. It has to be noted that 69% of the taxpayers do their tax declaration by themselves, with another 31% getting help or using professional services. Tax professional do have access to the system on behalf of their customers, as long as the latter sign the validation declaration. However it seems that those using the internet do not have any problem with the system, with 96% percent of users rather or completely satisfied with the system.
- Perceived Risk: we have already mentioned above that a proportion of the users do not use TaxMe-Online because of confidentiality issues and do not appreciate the fact of having to stay online during the whole time it takes to fill in the tax declaration.
- Perceived Usefulness: with almost twice the proportion of very satisfied taxpayers amongst TaxMe-Online (33.1%) than amongst the paper forms users (17.7%), one can say that at least a proportion of users do perceive the usefulness of the online system.
- Trust: all in all, taxpayers do trust their fiscal administration, with 80% of respondents stating that they are rather or very satisfied with how tax assessors handle their cases and with their "loyalty". It is interesting to note that 85% of TaxMe-Online users say so (84% for the paper-based tax declaration), as opposed to 73% of the CD-Rom solution's users.

## 5. Conclusion and Future Work

We yet have to answer our initial question: why is it that almost twice as many TaxMe-Online users are very satisfied with the system, compared to the paper-based forms and the CD-ROM solution? Table 4 shows a summary of the results of the users satisfaction surveys (NB: numbers of rather satisfied users include very satisfied users).

**Table 5:** TaxMe levels of service and communication channels

	TaxMe-Online	TaxMe CD-ROM	Paper
Rather satisfied with the system	96%	95%	86%
Very satisfied with the system	33%	18%	17%



While there is no definite single answer, we believe that content and usability of the online system are key elements of satisfaction. On the other hand access and competence could possibly explain the differences between paper and digital solutions, but as figures are similar for the CD-ROM and paper channels, it probably does not have such an influence. Indeed, the numbers of people that have a computer in Switzerland is almost equivalent to the number of people with internet access, meaning that it is very likely that most users of the CD-ROM have access to the internet. Furthermore, if one is able to use the CD-ROM application, there is no reason that he or she could not use TaxMe-Online as they are very similar to operate. So if we rule out access and competence, that leaves us with perceived risk as an explanation. Although 80% of taxpayers globally trust their fiscal administration, it seems that a portion of users still want to be able to fill in their tax declaration (and to make simulations on how to optimize their fiscal situations) while being off-line and that they do not want to take any chances of the administration looking into their data and simulations (even if the system is built in order to make that impossible). This is corroborated by the fact that a number of CD-ROM users have indicated in the survey that they wished for an off-line version of the TaxMe-Online. This would indicate that the eTaxes project mentioned in the introduction has taken a smart option by allowing users to fill in their tax declaration off-line before sending it electronically to the fiscal administration. Last, there is a small monetary incentive in using TaxMe-Online: in order to postpone the return of the tax declaration (which is normally set March 15<sup>th</sup>) until November 15<sup>th</sup>, there is a fee of CHF 20 if it is done by postal letter or email; when using the online system, it is free until September 15<sup>th</sup>, and it costs CHF 10 until November 15<sup>th</sup>.

As we indicated in the opening of this paper, we are currently only testing and refining this assessment model by analysing the TaxMe tools (TaxMe-Online, TaxMe Portal and TaxInfo). Our next step will be a comparative study of three case studies by applying this analysis framework.

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