# Evaluation of Success Factors for Public One-Stop Portals and Integrated Portals: A Literature Review

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**Abstract.** When digitalizing governmental services, many countries invest in new e-government portals. Estonia, for example, uses a one-stop portal, which allows centralized access to all provided governmental services. Germany, on the other hand, realizes integrated portals that link several separate portals on federal, state and municipal level. The governmental service provision is decentralized, but forwarding between different portals is established. These two portal types have different characteristics that result from their specific design. When administrations decide to plan and implement such portals, it is useful to adhere to success factors to ensure an effective development. This paper reviews academic literature on success factors for e-government initiatives. As different aspects might become more relevant for the different portal types, the importance of the success factors for each portal type is examined. This research helps administrations to focus on critical aspects of development according to the specific portal type.

**Keywords:** e-government, public administration, digital government, one-stop shop, portal development

## 1 Introduction

The German government established a law in August 2017 committing to the integrated online delivery for administrative services on country and state level until the end of the year 2022 [1]. Countries like France, Great Britain, Norway, Estonia or Austria are already providing their services via portals [2]. Germany and Austria with respect to their federal organization choose *integrated portals* that are decentralized and link portals from federal, state and municipal levels. Estonia has centralized its service provision in a *one-stop portal*. In contrast to the Estonian one-stop portal, the German and Austrian version of integrated portals leaves large parts of the responsibility and execution not only to federal but to state and municipal agencies.

The introduction of portals for e-government has a high strategic and monetary value and should therefore be closely monitored. To successfully develop solutions, managers should think about the relevance of critical success factors when planning such portals. Existing academic literature on the one hand covers success factors for e-government initiatives and on the other hand includes definitions of portal requirements. However,

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there is no comparison and differentiation in the importance of these success factors for the two portal types based on their specific characteristics. Therefore, this paper works on the following research question: *What success factors are important for developing public one-stop portals and integrated portals?* A literature review on success factors in e-government is conducted. Success factors are identified and their importance is discussed against the traits of public one-stop portals and integrated portals.

The remainder of this paper is structured as follows: a differentiation between public one-stop portal and integrated portals is established in the second section, while the third section presents the literature review approach employed, continuing with an explanation of the resulting success factors in section four. Based on these factors, section five discusses their relevance for the different portal types, before concluding the paper in section six.

## 2 Research Background

Governmental services can be provided digitally using public portals. These portals are obliged to legislations and constitutions, efficiency and public welfare [3–5]. In this paper two different portal types are examined, the public one-stop portal and the integrated portals. The characteristics of public one-stop portals will be specified first based on Wimmer et al. [6]. According to them, the key idea of a public one-stop portal is the integrated provision of governmental services in one central platform, the so called front-end system. It is the single-point of contact for citizens. All services, independent from the administration offering it, are accessible in this front-end. Usability is an important aspect, e.g. employing a language understandable to the citizens or an intuitive navigation. This front-end connects to the back-ends, where the actual process execution of the different administrations takes place. The interface between front- and back-end needs to enable the interoperability between the different administrations participating in the portal.

In contrast to public one-stop portals, integrated portals are a rather new option. The main difference is the decentralization [7]. Integrated portals consist of several independent portals on federal, state and municipal levels. The respective administration is responsible for its own portal and its own service delivery. Therefore, a complete reengineering is not necessary, as interoperability between portals, apart from forwarding citizens, is not needed. Each portal has an individual access point, but a single-sign-on can be employed. In order to keep a certain degree of usability, there are general guidelines for design and navigation and language use, but the implementation lies with the respective administrations. Technical interfaces are also standardized but leave space for individual realization [7].

Summing up the characterization of the portal types, it becomes obvious that the main difference between the two types is caused by their different focus: the one-stop portal follows the idea of an inclusive service provision with a unique point of access, whereas the integrated portals tolerate decentral responsibilities. Therefore, different aspects might become important, when thinking about success factors for portal development. Here, success factors are understood according to the definition of critical

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success factors (CSF) by Bullen and Rockart in 1981: "CSFs are the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department or organization. CSFs are the few key areas where 'things must go right' for the business to flourish and for the manager's goals to be attained" [8, p. 7]. The next section introduces the method applied to identify the success factors for e-government initiatives.

## 3 Research Method

This paper is based on the approach for a literature review proposed by Webster and Watson [9], since the approach was developed for literature reviews in the field of Information Systems. In this case, not only journals but also conference papers were included, when performing the initial step of the literature review. Besides Information Systems the disciplines Management, Business, Political Science and Public Administration were included, as they are linked to the management of software development in the public sector. The search started from year 2000, as before there were only a few publications in that field [10], and employed the following search string: *(e-Government XOR eGov) AND (best practice XOR lessons learnt XOR success factor XOR Erfolgsfaktor [eng. success factor] XOR Handlungsempfehlung [eng. recommendations])*. The databases were not case sensitive.

The literature review was performed in December 2018 on Springerlink, Science Direct, Web of Knowledge and Google Scholar. The initial search with the search string resulted in 2.266 articles. In a first iteration, these results were refined by reading the title and if necessary the abstract. 39 articles and conference papers were chosen that are related to success factors in e-government initiatives. After conducting the forward and backward search on these findings, a total of 85 papers was collected. Articles other than English or German were excluded, as well as some articles only accessible after purchase. To identify the papers that were to be considered for this literature review, a closer look on the introduction and the conclusion was taken. A total of 31 papers deals with success factors or challenges for e-government initiatives.

The next iteration was to read over the lasting 31 papers to get a better idea on the research performed. Eleven publications out of this 31 were excluded according to the following reasons: Three had no own contribution but summarized existing literature or only stated hypotheses for future research. Two case studies and one survey dealt with case specific recommendations. Four other publications had a slightly different focus, e.g. shortcomings of e-government in general. One paper performed a correlation analysis on success factors, finding that there are not many positive correlations between different variables [11].

One contribution by Siegfried [12] resulted from the literature review, but refers for details on the mentioned success factors to a related study performed by a consortium of researchers led by Grabow, including Siegfried [12, 13]. That study goes more into detail about the success factors and their description. For this reason, the version of Grabow et al. [13] will be considered in this paper in place of Siegfried [12], even though it was not derived directly from the used methodology.

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After sorting the literature through these iterations, a total of 20 publications lasted to serve as a basis to identify success factors for e-government initiatives. They are published between 2001 and 2016. Different regions from Europe, Northern America, Africa, Asia and Australia are covered, which ensures the development of globally applicable success factors. Most publications are from the UK (3) and Germany (3). Research methods used are case studies (6), literature reviews (6), mixed approaches of literature review combined with a case study (4), survey/interview (3) and one recommendation. The texts did not only regard success factors for e-government projects but also challenges, barriers or factors for failure. Overall, 253 different characteristics influencing the development process of e-government initiatives were found. In a first step, these factors were grouped into three categories according to their appearance in the project lifecycle: precondition, project execution and project outcome. Factors that have an influence on the project but are rather in governmental responsibility and constitute the basis were summed up in the first group. Factors related to the actual project planning and implementation form the second group. The third group consists of factors regarding the resulting application and its effect. Reoccurring themes in these categories where summarized as success factor.

The characteristics of the identified success factors will be presented and explained in the next section, using a concept matrix to highlight the contribution of the different papers to the success factors.

## 4 Results

The following **Table 1** reflects the contribution of the different authors to the developed concepts. Ten different success factors were identified: legal framework, project funding, long-term support, leadership, project staff, technology, process reengineering and change management, integration, usability and privacy and security.

**Precondition.** *Legal framework* refers to the existence of legislations and regulations that enable e-government development [5, 14–18]. It might be necessary for governments which want to engage in efforts in e-government to review, adjust or add their existing laws [13, 17, 19]. The legal framework is in the responsibility of the government and not of the initiatives themselves. Without a proper legislation, no project in e-government would take place in the public sector and it is therefore a fundamental necessity.

Along with the legislation, the government is also in charge of the *project funding*. E-government initiatives usually require high investments for implementation and hardware. On the one hand the literature points out technical infrastructure as an expensive and crucial part of e-government projects and therefore the criticality for an adequate funding [14, 17, 20–26]. On the other hand, the problem of the guaranteed project financing is addressed. The public budget is usually planned on a one-year basis, which might collide with the project timespan [27]. To secure a budget for the whole

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**Table 1.** Identified success factors for e-government initiatives

| *Author* | *Precondition* | | | *Project Execution* | | | | *Project Outcome* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *SF 1* | *SF2* | *SF3* | *SF4* | *SF5* | *SF6* | *SF7* | *SF8* | *SF9* | *SF10* |
| Abu-Shanab et al. [14] | X | X | X | X | X | X | X | X | X | X |
| Ali et al. [28] | | | | X | X | X | | | | |
| Alsheri et al. [20] | | X | X | X | X | X | X | X | X | X |
| Baguma e. al. [29] | | | | X | X | X | X | | | |
| Becker et al. [21] | | X | | | | X | | | | |
| El-Haddadeh et al. [15] | X | X | X | X | | X | | X | X | X |
| Evangedilis et al. [16] | X | X | X | X | | X | | X | X | X |
| Franke et al. [30] | | | | X | X | | | X | X | |
| Gichoya [22] | | X | X | X | X | X | X | | X | |
| Gil-Garcia et al [27] | | X | | X | X | X | X | X | X | X |
| Grabow et al. [13]° | X | | X | X | X | X | X | X | X | X |
| Heeks [23] | | X | | X | X | X | X | | | |
| Ke et al. [24] | | X | | X | | X | | X | X | |
| Krishna et al. [31] | | | X | X | | X | | X | | |
| Kühn et al. [19] | X | X | X | X | X | X | X | X | X | X |
| OECD [17] | X | X | X | X | X | X | X | X | | |
| Reffat [18] | X | | | | | | X | X | X | X |
| Rose et al. [25] | | X | X | X | X | X | | X | X | X |
| Sarantis et al. [5] | X | | X | X | X | | | | | |
| Ziemba et al. [26] | | X | | X | X | | | X | | X |

° not resulting from literature review, but referred to by resulting publication of Siegfried [12]
SF1: legal framework, SF2: project funding, SF3: long-term support; SF4: leadership, SF5: project staff, SF6: process reengineering and change management, SF7: technology, SF8: integration; SF9: usability; S10: privacy and security

project lifespan Kühn et al. [19] recommend doing only projects that directly emerge from laws and therefore have an explicit guarantee for funding.

El-Haddadeh et al. [15] see a need for a functionality-oriented budgeting as many times politics set a budget for project implementation without considering actual cost calculations but rather based on political budgetary plans, usually allocated according to ministries and agencies. Evangelidis et al. [16] see a problem here, as especially e-government projects often affect different agencies, they opt for a cross-agency project funding. An e-government initiative does not end with the complete implementation of the actual project or program but needs to be continually ran and maintained. These costs in terms of personnel and technology need to be considered when committing to e-government projects [13–15, 20, 25, 31]. Summing these advices up, there is a need for a guaranteed project-oriented funding that also considers the cost arising from running and maintaining the resulting services in the public sector.

A last aspect in this category is *long-term support*. To unfold their whole impact, e-government initiatives usually need a long-term political will and support [5, 13, 22]. El-Haddadeh et al. [15] see this commitment from the government as a strengthening factor for the position of the project manager, especially when thinking about the necessary process changes that are implied by e-government initiatives. Krishna et al. [31] add another critical dimension: Especially in developing countries projects face corrupted structures and need a strong political will to change these. But also in

developed countries, a clear vision concerning e-government facilitates the project implementation [13–15, 17, 19, 22, 25, 27, 30, 31]. To save resources and benefit from possible synergies it might be helpful to centrally coordinate all initiatives [17, 22, 25]. Evangedilis et. al. [16] and Gichoya [22] emphasize the importance of a manageable timespan to conduct the projects, as often politicians need to show a fast success. This leads to a rush in project planning and execution and might affect the performance of the result and therewith the maintainability of the solution. E-government projects flourish on the long-term and are situated in a fast-changing environment. Therefore, the political awareness for a long-term commitment and support is required. This facilitates the work of the project manager, builds a foundation for change management and justifies the investment in e-government initiatives.

**Project Execution.** The *leader* of the e-government initiative seems to be a central factor, as it is mentioned by almost all publications and in most cases the importance of this key person is highlighted. This leader also needs the support of the top management [13–17, 19, 20, 22–30]. He needs to be skilled in project management, business, IT as well as to be able to work in the administrative setting because many processes (especially decision-making) work differently in the governmental context [5, 14, 23, 30, 31]. According to Evangelidis et al. [16] it is possible to build a management team to cover all the different demands on a project manager. The project leader is seen as the engine of the project and responsible for the planning, coordinating and monitoring of the project implementation [14, 17, 19, 20, 30]. As critical aspects of the project management skills the allocation of resources [19, 20, 23], complete requirements analysis while considering laws and regulations [5, 13, 19, 24, 25, 27, 29], setting clear goals [5, 16, 19, 25, 27], eventually cutting down the project size [16, 19, 27], employing risk management [5, 16, 17, 19, 25, 28], considering the complexity of the e-government context [5, 16, 19, 30] and calculating the costs [13, 23, 25] are mentioned. Clear prioritization [13, 15, 30] and explicitly clarified responsibilities [19, 29] need to be established by the project leader. Apart from that s/he is also responsible for the successful involvement of all stakeholders [5, 15, 17, 19, 25, 27–30] and for influencing the collaborations with other project partners [24]. To facilitate the work for the manager, it is useful to have an e-government strategy or vision in place and project goals need to be aligned to this strategy [13–15, 17, 19, 22, 25, 27, 28, 30, 31]. Compiling the aspects related to leadership mentioned in the literature it becomes obvious that the leader needs to be supported by high officials, skilled in project management as well as other disciplines related to the project, responsible for the successful integration of all project partners and stakeholders. To support the manager in his or her work, the agencies can formulate strategies and visions and establish clear responsibilities.

For conducting projects not only the manager is a critical factor but also the *project staff*. Several authors see a lack of qualified personnel in the ministries and agencies and recommend to train the staff accordingly [13, 14, 17, 19, 20, 22, 23, 25–30]. The staff does not only need to know the used methods and techniques, but also needs to have the right attitude and motivation [13, 22, 29]. According to Sarantis et al. [5] there are not enough experts working in the public sector. Franke et al. [30] suggest using interdisciplinary teams to benefit from different specialties. Another approach proposed

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is the cooperation with the private sector to overcome the lack of skilled staff [13, 16, 17, 19, 20, 31].

When introducing new e-government solutions this goes hand-in-hand with *process reengineering and change management* in the affected organization [13–15, 17, 19–25, 27, 29, 31]. To be able to offer services online, a reengineering of existing processes in the agencies and ministries especially when considering interoperability between different agencies is necessary [13, 21]. The earlier the new processes are implemented the easier the adoption by government clerks will be [29]. The process change usually creates fear and is therefore often refused by government employees [13–16, 20, 27, 31]. Strategies to overcome this resistance include clear vision, understanding the benefits and training of the servants [13–16, 19, 20, 24, 25, 27–29]. This step is essentially important to guarantee the internal collaboration of the members of different departments [13, 16, 25]. Rose et al. [25] mention the importance of making the public servants understand and control that they are still accountable for the service execution quality even though they are not communicating directly facing the citizens any more.

*Technology* also plays an important role in project execution. Technology is seen as an important influence on the quality of the intended solution [14, 20]. Usually there exists an old infrastructure that must be considered and sometimes even partially integrated with the new solution [13, 19, 22, 23, 27]. In contrast, Baguma et al. [29] highlight the possibility of using synergies from the existing infrastructure. Furthermore, new technologies constantly arise and need to be integrated in the services offered in e-government to keep a certain quality of the provided services [14, 17, 18, 22, 27].

**Project Outcome.** To generate a great benefit for citizens, different agencies need to collaborate and *integrate* their services [13–19, 24–27, 30]. Many authors recommend using a central platform for offering governmental online services [15, 16, 26]. But the technology in place is various, governmental definition of standardards for technology is a preliminary [13, 15, 17, 18, 26, 27]. Also, the collaboration between different affected agencies is pointed out as a major problem. There does not seem to be enough motivation to work together and use synergies or even exchange data [13, 16, 18, 26, 27, 30].

The integration of services also affects the *usability*. As the development of an e-government solution is not a self-purpose for the government but aims at benefiting the citizen as well, usability of the service should be ensured [13–16, 19, 20, 22, 24, 25, 27]. Therefore the needs of the citizen should be analyzed and the presentation of the information designed in a citizen-centric way, which means according to their language, culture and especially offering the services which create value for the citizen [13–16, 19, 22, 25, 27, 30]. To be able to use the services, they need to be broadly accessible, which is important especially in countries with a high digital divide and low e-literacy [13, 14, 17–20, 24, 25]. To encounter the problem with e-literacy, El-Haddadeh et al. [15] propose a training of the citizens to enable them to use the offered services.

Another factor critical for the adoption by the citizen is the aspect *of privacy and security*. Privacy ensures an adequate handling of citizen-related data [13–15, 17–20, 25, 27]. To create trust with the citizen when using the applications, privacy standards

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should be met. Security is a significant aspect that needs to be addressed, meaning the protection of information and systems from illegitimate access and manipulation [13–20, 25–27].

## 5 Discussion

After identifying the different success factors mentioned in the academic literature, the importance of these factors will be discussed against the portal types mentioned before. Which portal type will be implemented by a country depends mostly on its specific characteristics. As mentioned in the introduction, Germany has a federal and decentralized administration and therefore integrated portals might address bureaucratic processes better. However, Estonia, as a centralized and small country, can implement a one-stop portal more easily. The different importances of success factors for the portal types are summarized in **Table 2**.

**Table 2.** Importance of success factors for different portal types

| *Portal type* | *SF1* | *SF2* | *SF3* | *SF4* | *SF5* | *SF6* | *SF7* | *SF8* | *SF9* | *SF10* |
|---|---|---|---|---|---|---|---|---|---|---|
| Public one-stop portal | X | | X | | | X | X | X | | X |
| Integrated portals | X | X | X | X | X | | | | X | |

SF1: legal framework, SF2: project funding, SF3: long-term support; SF4: leadership, SF5: project staff, SF6: process reengineering and change management, SF7: technology, SF8: integration; SF9: usability; SF10 privacy and security

For both portal types equally, the factors legal framework and long-term support are important. Without legislations, regulations and policies in place that consider the requirements of digital governmental service provision, the work on its implementation is obsolete. In order to not generate sunken costs, a clear political long-term commitment to the investment in e-government initiatives is necessary. Countries that want to act in e-government development should therefore make sure that their legislation is up to date. Taking the example of Germany, there is a law clearly defining to offer governmental services online until the end of 2022 [1].

Public one-stop portals are more affected by the factors *process reengineering and change management*, *technology*, *integration* and *privacy and security* than integrated portals. The primary cause here is the highly integrated service provision. As some processes might be completely restructured to focus on the reuse of citizen data according to Wimmer et al. [6], it might lead to a whole restructuring of government units and will give need to a government-wide *change management*. Managers in high positions might see their jobs endangered and become a risk for the project requirements analysis and implementation. Integrated portals will also need some process reengineering, but in a more moderate way as they are based on existing portals. The focus lies on digitalization. For the public one-stop portal not only reengineering needs to be performed, but clerks need to be trained to work with new electronic solutions and their fear of unemployment due to automation needs to be encountered. Here, change management becomes critical for the success of the project, especially considering the requirements analysis, as the support and contribution of the clerks is

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necessary. In addition, all new solutions need to take the current technologies and systems in place into consideration. When creating a public one-stop portal, the used *technologies* need to be highly compatible to enable the close integration of governmental services. A high investment in updating the existing systems and migrating old applications needs to be done. Like in the case of Estonia, a complete centralization of the technology is accomplished [2]. In contrast, integrated portals can be based on the infrastructure in place. It is possible for different participants of the portals to rely on different systems. Another critical factor for public one-stop portals is the high *integration* of processes, as all services are offered through one front-end [6]. The integrated portals need standards for the interfaces because the different portals are connected via links but apart from that each portal provider can design his or her own front-end. The close collaboration between different government units is not a prerequisite. Apart from the internal restructuring, it is important to consider that citizens today have a high awareness for *privacy and security* issues. According to Wimmer et al. [6] security plays an important role for one-stop portals, as many agencies exchange data. Thus, to invite citizens to use online services in public one-stop portals, it is necessary to guarantee secure online communication.

Integrated portals on the other side need to focus more on *funding*, *leadership*, *project staff* and *usability*. Governments should be aware of the cost implications. The proper *funding* is critical for public one-stop portals as well as integrated portals. For integrated portals, these costs will be located with the responsible agencies and therefore it is very important to think about measures to help agencies with smaller budgets to guarantee an overall success of integrated portals. Project *leadership* is already characterized as a central success factor in the forgoing literature review. Integrated portals might need more managers, as the initiatives are more spread. These managers need to be skilled in order to assess the project status. To overcome this bottleneck, Evangelidis et al. [16] propose to build a management team for e-government initiatives. While a one-stop portal has high attention and prestige, a lack of competencies might be bridged by an extra funding whereas for integrated portals many project managers on different levels will be needed. The same problem arises for *project staff*. A central one-stop portal could benefit from the expertise from employees of different agencies, brought together to work on this project, whereas integrated portals will be implemented in many different agencies, which results in a higher need for employees. In addition, *usability* is critical for the user satisfaction regarding the offered service. Public one-stop portals should have a strong focus on this, as the process reengineering is initiated from the citizen-centric front-end. Wimmer et al. [6] see the main intention of public one-stop portals to provide a high usability and satisfy the user with easy and unsophisticated access to governmental services. Integrated portals might be seen a bit more critical here, as the portals will guide the user from one portal to another, and these portals are not following a common style [32].

When deciding to implement a public one-stop portal, it becomes more critical in the development to focus on the aspects related to the digital centralization of governmental services while profiting from a high level of attention and the possibility to have the experts from different agencies united in one team. Whereas when committing to integrated portals, the government avoids a big change in administrative

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ways and therefore creates less resistance in the ministries and agencies at the price of lower usability compared to a one-stop portal. There needs to be a strong focus on enabling all participating agencies to have the funds and personnel to master the challenges of digitalization.

## 6 Conclusion and Outlook

This paper regards success factors and their importance for different e-government portal types. A literature review following Webster and Watson [9] is used to identify existing success factors for e-government initiatives. The success factors are legal framework, project funding, long-term support, leadership, project staff, technology, process reengineering and change management, integration, usability and privacy and security. Caused by their different design different success factors become important for public one-stop portals and integrated portals. Public one-stop portals should focus on *process reengineering and change management*, *technology*, *integration* and *privacy and security*, whereas integrated portals should pay special attention to *funding*, *leadership*, *project staff* and *usability*.

These results imply for practice that when deciding to implement e-government portals different aspects depending on the portal type become important. Also, when choosing to follow integrated portals, it becomes critical to analyze all service providing organizations and their special weaknesses to secure a high-quality implementation of the portal solutions. For research, this work extends the knowledge base on success factors for e-government initiatives and can serve as a basis for further evaluation of the different success factors and their influence on the portal types. Up to now, the results are conceptual, and can be confirmed by case studies to provide empirical evidence. The interrelation between the different success factors might be studied in the future. The here taken view from an information systems perspective needs to be extended by a closer investigation of, for instance, legal aspects. Also, the success factors in digital health care are not considered.

Public one-stop portals and integrated portals are two different options for providing services in e-government. Caused by their different design, it becomes necessary to emphasize different aspects when planning and conducting the implementation. This research seeks to support governments in the implementation of such portals.

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