Exploring the Role of Participation in Government Employees' Adoption of IT:
A Qualitative Study of Employees' Participation in the Introduction of the E-File in Germany

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ABSTRACT

Employee participation in IT projects is considered to be a critical IT adoption factor in the public sector. However, research into the impact of participation on government employee adoption of IT is very limited. Therefore, this study investigates the role of participation in government employee adoption of IT. A qualitative research study was carried out and project managers were interviewed. Additionally, employees who participated in the introduction of the e-file in Germany were also interviewed. The findings reveal that information and communication, training and support, and active participation in project groups, the formal participation of the staff council and the exchange of experiences between governmental agencies all have a potential positive impact on government employee adoption of IT. However, managers have key positions in this context. Furthermore, barriers to participation, such as the lack of resources as well as a lack of willingness and qualifications, are also discussed.

KEYWORDS

Adoption, Employee, Government, IT, Manager, Participation

INTRODUCTION

The public sector worldwide is increasingly confronted with digitalisation projects. The success of information technology (IT) projects in the public sector depends strongly on the adoption of this technology, not only on the customers' site, but also within the public sector (Capgemini et al, 2010). The low usage by end-users is still one of the major expansion barriers to e-government projects. In particular, maladapted staff threaten the chances of IT projects becoming successful (Weerakkody, 2012). The introduction of the electronic file, or "e-file" (also known as the electronic document management system EDMS), is one of the most critical intergovernmental IT projects worldwide and can be interpreted as "electronic- the use of modern information technologie; document- a set of information pertaining to a topic, structured for human comprehensation, represented by a variety of symbols, stored an handeled as a unit; and management, retrieval, manipulation, update, and eventual dispotion of documents to fulfill an organizational purpose" (Abdulkadhim, Bahari, Bakri, & Ismail, 2015, p. 422). It deals with the the creation, capturing, modification, storage, archiving and the transfer of electronic documents and should help governments increasing the effeciency of

their internal processes on the one hand and supporting the external communication processes with citizens on the other hand (Kunis, Rünger, & Schwind, 2007). German government agencies are legally required to implement the e-file and to achieve a paperless state at all three administrative levels. The implementation of such inter-jurisdictional e-government projects presents a big challenge for many countries (Abdulkadhim, Bahari, Bakri, & Ismail, 2015). The scope of such projects make them uniquely challenging not only in terms of the technical, fiscal, and political dimensions, but especially mangerial and human challenges hinder the implementation of such systems ((Al-Hashimi, Shakir, Hammood, & Eldow, 2017; Distel, 2016). Staff and leadership resistance to change is one of the main factors affecting the implementation of the e-file in the public sector worldwide (Abdulkadhim et al., 2015). According to (Distel, 2016) the success of the implementation of e-file in Germany depends to a large extent on the usage behavior of the administrative staff. Studies on the e-file adoption in the public sector were focusing upon technological factors such as the perceived usefulness and ease of use of the system (e.g. (Hung, Tang, Chang, & Ke, 2009)) and the efficiency of the used tool from an implementation perspective (e.g. (Ejlertsson, Gustafsson, Hagman, Hellgren, & Ullman, 2011)). Several studies have advocated for employees' participation in the IT introduction process in the public sector and view it as a critical adoption factor in this sector (e.g. (Nurdin, Rosemary, & Scheepers, 2010; O'Brien, 2002)). However, most of these studies have focused on the broader, strategic view of participation as a new public management approach to achieve change in organizations (O'Brien, 2002) and to meet strategic e-services goals (Karlsson, Holgersson, Söderström, & Hedström, 2012). Employees who participate in the change process in an organization are more likely to support this change and continue to use the system that has been introduced (James Roughton, 2015). This is a familiar pattern in Human-Computer Interaction (HCI) research, especially in participatory design. Participation as an acceptance strategy can replace the conventional top-down approach used for the IT implementation process in the public sector (O'Brien, 2002). In practice, however, employees' participation in IT projects in the public sector is a poorly used tool (Ben Rehouma, 2018). The authors of (Holgersson, Melin, Lindgren, & Axelsson, 2018) encourage researchers and practitioners to consider research questions such as: How should users participate in IT projects in the public sector? What should be achieved with user participation? To fill this gap, we address the following research question: "How does government employees' participation impact their adoption of IT?" We aim with this study to advance the research field in this area by investigating the role of government employees' participation in IT projects in their use of this technology. In order to achieve this goal, we conducted a qualitative study using semi-structured interviews of 11 government employees who were involved in the introduction of the e-file to German government agencies.

Section 2 provides an overview of employees' participation and IT adoption research concerning the public sector. The research methodology of this study is described in Section 3. Section 4 presents the findings, which are followed by a discussion in Section 5. Finally, we conclude the study in Section 6 and outline limitations and future research.

RELATED WORK ON EMPLOYEE PARTICIPATION AND IT ADOPTION IN THE PUBLIC SECTOR

Employee participation is a broad concept which has been a core topic in a range of research fields. Therefore, this terminology is defined considerably differently depending on the area of research. In the literature, the term "participation" is often intertwined with the term "involvement". Barki & Hartwick (1989) separated the two constructs and defined user participation as "a set of behaviors or activities performed by users in the system development process" and user involvement as "a subjective psychological state reflecting the importance and personal relevance of a system to the user." Heller, Pusic, Strauss, and Wilpert (1998, p. 6) describe participation with the interaction of people with each other in an organizational context, embracing a range of behavior and choices. This definition embraces the access to information and to the process of decision-making. A further

definition of participation refers to "the range of mechanisms used to involve the wokforce in decisions at all level in organization, whether undertaken directly with employees or indirectly through their representatives" (Wilkinson, Gollan, Marchington, & Lewin, 2010, p. 9). User participation takes many forms and can occur at many levels. Users may participate formally via formal groups and teams and holding discussions in official meetings or participate informally through relationships, discussions and tasks (Cavaye, 1995). The different levels of participation refer to the amount of responsibility assigned to an individual during their participation and can vary between serving in an advisory capacity, having sign-off responsibility, being part of a team and having full responsibility (Cavaye, 1995). Marchington & Wilkinson (2005) deconstructed participation into an escalator, in which employees can participate in an informative, communicative, consultative manner or even with codetermination and control. According to (Marchington & Wilkinson, 2005), employee participation can be categorized into five areas: downward communication, upward problem solving, vertical task-based participation, teamwork and self-management. Downward communication ranges from formalized written documents sent to all employees to face-to-face interactions between line managers and their staff. Receiving information directly from management and open communication about new developments within an organization are important basics in this category. Upward problem solving comprises resolving problems and new ideas suggested by individuals or groups. Vertical task-based participation revolves around training, managerial and supervisory responsibilities. The last category incorporates responsibility for a completed task, working without direct supervision and encouraging team members to organize and utilize multiple skills.

The concept of participation within participatory design approach (PD) has been core topic of research since the 1960s (Markus & Mao, 2004). Research on participation in PD contains evidence of the importance of user participation in the decision-making process, when they are affected by this decision or change (Ben Rehouma, 2019). Indeed, a good design implies the participation of the intended users in technology design (Kensing & Blomberg, 1998). This requires an exchange of knowledge between designers and workers, access to relevant information, the possibility of taking an independent position of the problems, participation in decision making, the availability of appropriate participatory development methods, and room for alternative technical and/or organizational arrangements (Kensing & Blomberg, 1998). PD emphasizes democratic participation, where users participate, in particular by analyzing the organizational requirements and by planning appropriate structures to support both individual and organizational needs (Kujala, 2003). Typical methods used for participation in this context are workshops and prototyping.

Studies on participation in information system research highlight the importance of the affected stakeholder (Markus & Mao, 2004). While stakeholders are all those who are affected by a solution, participants are described as a "subset of stakeholders who are actually given the chance to participate in solution development and/or implementation activities" (Markus & Mao, 2004). Participants can have different employee status, such as being operational or managerial personnel or of different managerial ranks, have different IT skills, and be members of different stakeholder groups (Markus & Mao, 2004).

The process of introducing IT in the public sector is complex due to the different stakeholders involved in this process (Patanakul, 2014; Rosacker & Rosacker, 2010; Wirick, 2009). Axelsson, Melin, & Lindgren, (2013) argued that it is necessary to address the notion of stakeholder participation in any e-government project. They have examined how the involvement of stakeholders in e-government projects influences the stakeholders' attitudes towards this project and have recommended the investigation into more cases with additional stakeholders. The authors in (Karlsson et al., 2012) showed how user participation approaches can meet strategic e-services goals, and found that it is important to consider the user target segment, the nature of participation and the presence of adequate skills when choosing among participation approaches. Employees' participation in the public sector should increase employees' technological skills and hence their readiness to use IT (Hu, Clark, & Ma, 2003; Hung et al., 2009). Usually, the use of IT in the public sector is a mandatory requirement.

Nevertheless, IT adoption research deals primarily with users' behavioural intentions regarding a given system and their attitudes towards IT, which influence their actual use of this system. These determinants of IT adoption are used in the Technology Acceptance Modell (TAM) (Davis, 1986) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003), which have their origins in the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) and the Theory of Planned Behaviour (TPB) (Ajzen, 1991). Attitudes towards an object refers to the degree to which a person has a favorable or unfavorable reaction towards this object. Davis (1986) introduced two constructs, perceived usefulness and perceived ease of use as primary antecedents of users IT acceptance. Perceived usefulness refers to "a persons subjective probability that using a specific application system will increase his or her job performance within an organizational context", and perceived ease of use to "the degree to which the user expects the target system to be free of efforts" (Davis, Bagozzi, & Warshaw, 1989, p. 985). According to TAM, a person's attitude toward using a given system is determined by his or her perceived usefulness and ease of use of this this system. Although most research on IT adoption has focused on the technological factors influencing users' adoption of IT, such as perceived usefulness and perceived ease of use, the authors of (Ben Rehouma & Hofmann, 2018) recommend a deeper investigation into individual, managerial and organizational factors that influence government employees' adoption of IT. Those factors include, for instance, participation, information, communication flow, training and education.

METHOD

Research Design

The purpose of this research study is to explore the role of government employees' participation in IT projects in their adoption of this technology. A qualitative approach to this study is suitable, especially in view of the fact that this research area has hitherto been under-investigated. Qualitative research is done in natural environments and interprets phenomena based on the meaning and value people give to the questions asked (Alvesson & Sköldberg, 2018). A semi-structured interview is the most common qualitative research method, and it is often argued that it is the most effective and convenient means of gathering information (Qu & Dumay, 2011). This method requires the preparation of interview guidelines on the basis of identified themes. The interview guidelines should help to direct the interview towards the topics of interest (Qu & Dumay, 2011). Based on the related work discussed above, interview guidelines were developed for each stakeholder group which included primary questions about their experiences in participating in the introduction of the e-file, the implications of participation, the impact of participation on their adoption of the e-file and further adoption factors.

Data Collection

The German governmental system is divided into three levels: the federal level, the state (Länder) level and the local level. The local level in Germany is a concern of the state level. In total, there are 16 different local government settings, with three of them having the status of a state and local government at the same time. To obtain access to project managers and employees in government agencies who were involved in the introduction of e-files, we contacted the central government department responsible for digitalisation within a city-state of Germany. In doing so, we received contact information for the project manager responsible for the introduction of e-files to all government departments at the state level, who then gave us access to the interviewees. The government departments in this state have, in total, approximately 25,000 employees. Of the 25,000, 5,000 are, or should be, direct users of e-files. The interviewees' departments included the Senator of Finance, the Senator of Justice, the State Chancellery and the Social Welfare Office. The interviews took place in April 2018. In total, 11 interviewees participated in this study. Three of the participants were project managers, four were employees participating in the introduction

of e-files to their agencies and all participants were intended users. The sample included a total of nine female and two male interviewees. The interviews were recorded and transcribed anonymously via the f4-Tool. Each interview had an average duration of 30 minutes.

Data Analysis

Since this study is exploratory in nature, we used qualitative content analysis. Qualitative content analysis is generally used in studies to develop theories or to build a model or concept and aims to provide knowledge, new insights, a representation of the facts and a practical guide to action (Elo & Kyngäs, 2008). According to (Mayring, 2000) it is "an approach of empirical, methodologically controlled analysis of texts within their context of communication, following content analytical rules and step by step models, without rash quantification." This method follows a number of procedures to fulfil reliability and validity criteria. The analysis process may follow a deductive or inductive approach. We followed the deductive approach in this study for the development of the interview guidelines, as described in Section 3.1. We developed a coding scheme via generating categories from the theoretical backgrounds of the broad topics in our research question. These categories included mainly participation activities, the impacts of participation in the adoption of e-files and further adoption factors. In the next step, we coded the text (transcripts) according to these categories and occasionally (when an appropriate category was not found for a text segment) followed the inductive approach and developed new categories based on this data (e.g. barriers to participation). To ensure the reliability of our coding, it was done separately by two experienced researchers. The coding took place in June 2018. Finally, we evaluated the findings according to related works and explored the possible relationships between government employees' participation in IT projects and their IT adoption. In addition, we identified further important factors influencing government employees' adoption of IT as well as barriers to participation. To support our content analysis, we used the software MAXQDA version 12.

FINDINGS

Participation Activities and Their Role in Government Employees' Adoption of IT

The results showed clearly the importance of employees' participation in IT projects for their adoption of this technology. Employees' adoption issues were not taken into account when IT projects were introduced in the public sector. As a result, IT projects failed from lack of use. A project manager stated: "We just had an implementation project that failed because of lack of use." E-file adoption proceeded satisfactorily since employees' participation was taken into account. The same project manager noted: "Acceptance is a topic which I believe we have neglected very much and which I personally also underestimated. We have set up a subsequent implementation project, […]. Of course, we have also dealt with the issue of acceptance in a different way." In addition to the assumed technological factors, employees' participation in IT projects is one important way to achieve the intended use of the IT which has been introduced in the public sector. One interviewee, for example, stated how critical participation is for his or her adoption of the introduced system: "The more I'm involved in the run-up, the more I'll accept the system." The interviewees also reported on their experiences with participation in the introduction of e-files. These activities included information and communication, training and support, active participation in project groups, the participation of the staff council and the exchange of experiences.

Information and Communication

One the most simple and important ways to involve employees in IT projects in the public sector is to inform and communicate with them about the technology to be introduced and the technological and organizational challenges related to it. All interviewed project managers

agreed on that point. This point was not always as self-evident as it is today. Hardly any public relations work related to informing employees about the introduction of IT in their departments was done in the past. Public relations is concerned with information, and communication is now one of the main measures used to achieve government employees' adoption of IT. For example, one interviewed project manager stated: "One simple and effective way to achieve acceptance by our employees is to inform them about the new system and to communicate with them about it. They should be aware of the benefits of the use of this system as well as how to overcome challenges related to it." Project managers arrange information events, workshops and send newsletters to disseminate information about new technology and are now much more focused on having a presence on the intranet. Such "simple" measures are underestimated, but they still show great impact on employees' awareness about what is going on in their agencies, as one interviewee stated: "We get a lot of positive feedback and inquiries." Although informational events are intended to reach most employees, in many cases, employees are informed about the introduction of IT by their colleagues and line managers. Responses supporting these results include: "Until now, we have received information by our line manager." and "We were informed both by employees as well as byour superiors." In addition, communication with the line managers about the upcoming changes seem to be favoured. One of the interviewed employees, for instance, expressed their preference for the communication to come from their line manager: "I would like to get some information from my team leader about what the e-file is." While project managers try hard to keep communications open, they do not always succeed, as noted by some of the interviewed participants: "There is no instruction or something like how to handle the e-file, there is partly uncontrolled growth." Line managers should not only inform their employees about the introduction of IT, but also actively communicate with them about challenges related to it.

Training and Support

Other important participation activities in the public sector are providing customized training and individual support for the system which has been introduced. The results indicate that standard training which take place long before the regular operation of the system is not enough. In addition, support in one's own office and at one's own desk is essential for reducing fears and reluctance. Generally, every employee participates in a standard training for about two days. Most employees encounter e-files for the first time during the training course. For example, one interviewed employee stated: "On the first day of training is where we get the first information about this topic." Interviewed project managers and employees agree that a standard two-day training session is not enough. There is a need for more instruction, such as more days of training, advanced and needs-oriented courses and workshops for special issues. For example: "For my qualification, I would have preferred more days of training", and "We would like to get advanced courses." In addition, much of the training which does take place occurs long before the introduction of the IT and is consequently useless. For example, one interviewee stated: "Unfortunately, the fact that this often does not follow directly, it was all a waste of time." Government employees see training as critical for overcoming both the technical and organizational challenges presented by IT in the work context: "The training is not only about technical issues but also about organizational changes for daily work."

Furthermore, support in one's own office and at one's own desk is one of the most important measures for reaching employees who have problems using IT. Managers actively communicate this issue in their departments to identify support needs. Employees who are more resistant to IT and have more difficulties with the use of IT need particular support. Such support includes identifying and discussing problems as well as support at one's own desk. For example, one interviewed project manager stated: "Go into the offices, into the teams, and then ask something like: "Where are the problems?" Conduct more conversations, discuss problems, identify difficulties, proceed step-by-step and practice the processes together on their PC."

Active Participation in Project Groups

The complexity of the organizations in the public sector claims the participation of steering committees and "on-site" project groups in the introduction of IT projects. On-site project groups react to individual needs in their departments, transmit information between steering committees and sub-stakeholders and involve employees in decision-making processes. Providing project managers on-site within the concerned departments is considered an effective measure for proceeding with the project. One response, for example, supporting these results is: "The central department cannot exert influence on the departments and that is why they have found a sub-project manager in the department who undertakes this on-site." The overall project group serves as a steering committee and includes project managers as the representatives of the department involved. The project managers have an overview of the projects in their departments and inform the employees about participation activities in each department such as training opportunities and support for the system being introduced. For example, one project manager stated: "We distribute the protocols of our meetings; we inform employees in each office that they should go to training, and we do workshops." Departments where participating employees work closely with project managers in project groups are more advanced in their implementation of IT and report higher adoption by their employees: "The participation in our department is good. […], because we work very closely together." Project managers and participating employees are available for any questions about the introduction of IT in their departments; they advise employees and try to solve their problems: "We actually take up every question." Employees participate in project groups in different ways. They transmit employees' individual needs, provide feedback concerning the system being introduced, test new system releases and try to influence the decision-making process. For example, one interviewee stated: "Employees express their needs, this goes around the project group, and then to the steering committee, where they decide about it."

The Role of Staff Council

The formal participation of the staff council in IT projects in the public sector is considered to be a critical factor in getting employees to adopt IT. To reach all employees, it is important to involve the staff council since it is the employees' representative in the IT introduction process. The staff council takes part in important decisions and relays employees' concerns in this context. Some statements supporting this are: "Formal participation of the staff council and other committees, then the acceptance is in any case higher. I'm quite sure of that", "It is recommended that the staff council join the meetings of the project groups to represent all of the employees.", and "I consider an individual participation to be critical, but a contribution via the staff representation committees to be very important."

Exchange of Experiences

A further participation activity applied in the public sector is the exchange of experiences between departments and agencies. Such exchanges help to provide an overview of the positive and negative aspects affecting the adoption and success of IT projects. All managers and participating employees supported the importance of exchanging experiences and strongly recommended it for future projects. Some interviewees stated: "I strongly recommend the exchange of experience between government departments. It should help to obtain feedback about the IT introduction process in other departments and to learn about applied success and adoption factors", "Through the participation of committee meetings of project managers from different departments, an exchange of experiences takes place, an exchange with others, giving feedback about the system" and "An agency has also provided a newsletter. We have practically copied that from them and then applied it in our project."

Barriers to Participation

In addition to the activities involved in participating in IT projects in the public sector and their impact on employees' adoption of IT, we have identified barriers to participation, including the lack of personnel and of willingness and qualifications.

Lack of Personnel

One of the greatest challenges when planning participation in the public sector is the lack of personnel. The lack of personnel negatively influences the progress in IT projects and leads project managers to feel overstrained. Most government agencies have no personnel to devote to managing their IT projects and give project management responsibilities to employees in addition to their daily work. Such projects often involve a massive change in job structure and require a lot of time and special qualifications. One interviewee, for example, stated: "One challenge was that very few agencies hired separate personnel for the introduction of e-files, but they gave it to many people in addition to their present workload, which was really a massive change that didn't work." On the contrary, agencies where personnel were available to manage the introduction of IT reported successful progress in their projects: "The agencies that have allocated a person who can solely take care of it have made good progress."

Lack of Willingness and Qualifications

In addition to the lack of personnel, the lack of willingness and qualifications to participate is a further challenge facing participation in IT projects in the public sector. It is a big challenge to acquire suitable personnel with the appropriate skills and who are willing to participate. It is not enough to find an individual to manage or participate in IT projects if she or he does not wish to participate or lacks the appropriate qualifications to do so. One interviewee described this challenge as follows: "It is not easy to find people who are willing to do this and who are able to do it too."

The Role of Manager as an Important Factor Influencing Government Employees' Adoption of IT

Clear Announcements From Managers

The responses received from the interviewed project managers about further adoption factors beyond participation were unexpected. Participation was indeed identified as an important and critical adoption factor influencing government employees' adoption of IT. Nevertheless, all interviewed project managers argued that a top-down approach with a clear announcement from the manager is a more important factor in this context. A statement describing this relation is: "First clear announcements from the manager, then participation." Based on the majority of responses from the project managers, the use of IT in the public sector can be achieved only by first utilizing a top-down approach and then utilizing participation. For instance, a project manager stated the following: "I believe that top down must be there in any case. From the moment in which this announcement is given, we can also immediately begin with participation." The use of new technologies is a change that is expected in the public sector. Managers bear the responsibility of communicating openly and clearly about this expectation. One response, for example, supporting these findings is: "This is what we expect now, and we want to proceed like this."

The Exemplary Function of Managers

The role of a manager is not limited to clear announcements about the expected use of the system being introduced. Line managers in the public sector have an exemplary function and should be role models in using IT. They should go to training courses and use the system themselves. They should incorporate management measures such as ensuring the use of IT in their departments as well as setting standards and rules and making sure they are followed. For example, some interviewees

stated: "The supervisors have to say: so now we work like this with the e-file and you don't have to send me anything by email anymore, but only via e-file, and have to make sure that this is done" and "Managers are such a tiresome subject. For them, we offer separate training courses and say again how important it is that they set standards, that they set rules, that they demand rules are adhered to." In practice, managers do not fulfil an exemplary function: "The first one who doesn't use it is the supervisor. This has less to do with qualifications than with rules for cooperation." Managers' attitudes towards IT is a further aspect to consider when specifying the exemplary function of managers in the public sector. The positive attitude of line managers towards a new IT system is a critical adoption and success factor in the public sector. For instance, one interviewed project manager stated: "The more positive the team leader's attitude toward the e-file, the more positive is the development of the e-files and all around it. That is just how it is."

DISCUSSION

Our investigation into the role of government employees' participation in IT projects in their adoption of IT is in line with previous studies arguing that participation is a critical adoption factor in this sector. Our findings present the overall positive impact of government employees' participation in IT projects on their IT adoption and reveal that the role of managers is more important than participation in this context. To answer our research question as to how government employees' participation impacts their adoption of IT, our analysis identifies different activities of participation, such as information and communication, training and support, active participation in project groups, the formal participation of the staff council and the exchange of experiences, and shows how critical these activities are for the use of IT in the public sector. Information and communication measures are not restricted to formal measures such as the arrangement of information events or the sending of newsletters but especially imply the active communication between line managers and their employees, and in particular the face-to-face interactions. Receiving information directly from management and open communication about new developments in the organization are important basics in direct participation (Cats-Baril, william Thompson, 2016). Users' individual perceptions of being informed as well as the IT-relevant details and the communication channel used for spreading the information are important factors influencing the use of IT and warrant more attention in IT-adoption research in the public sector (Muneera & Didar, 2015). Informing potential users and communicating with them about the benefits of the system being introduced is one major strategy for overcoming their negative attitudes towards this system (Aladwani, 2001). In addition, our findings reveal that training and support are also important participation activities which influence government employees' adoption of IT. We argue that training should be customized to meet employees' individual needs and should take place shortly before the introduction of IT. Prior research has demonstrated the positive effect of intensive training programs on users' intentions to accept a program (Hu et al., 2003), and that training in the form of users' support is a significant determinant of government users' attitudes towards a system (Hung et al., 2009). Especially support in one's own office and at one's own desk should help reluctant employees to handle the new system. Training and support are necessary basics needed to ensure continued acceptance (Hu et al., 2003) and belong to the set of main management interventions which influence the acceptance of technology since they influence the shared beliefs regarding the benefits of this technology (Amoako-Gyampah, 2007). The benefits accrued through user participation on system satisfaction and user system acceptance depend on the degree or the level of the participation (Muneera & Didar, 2015). Whereas, the informative participation of users is limited to providing or receiving information, users can participate in a consultative or representative manner, allowing them to influence the decision-making and system design processes (Muneera & Didar, 2015). Active participation in "on-site" project groups, helps reacting to individual needs in their departments, transmitting information between steering committees and sub-stakeholders and involving employees in decision-making processes. User participation in decision making, steering

committees, work groups, and system design activities are common participation methods used in participatory design (Kensing & Blomberg, 1998). Since the participation of all employees in IT projects is not possible, it is essential to involve representatives from the full range of users (Rasmussen, Christensen, Fjeldsted, & Hertzum, 2011). This study asserts that the participation of the staff council plays a key role in reducing resistance to IT-related changes among civil servants. The staff council is an institutionalized organizational member who can influence the decision-making process. Previous research reported on lack of participation of the staff council in IT-projects in the public sector and appeal to make much greater use of such opportunities for participation (Ben Rehouma, 2018). A further participation activity identified in our findings is the exchange of experiences. The exchange of experiences between different projects groups, departments, or agencies helps learning from each other through the exachange on successful or even failed projects. The capacity to exchange, transfer and share knowledge is a key factor in social and economic success (Bolisani, 2008). This is also in line with the observability component of the Diffusion of Innovation Theory (DOI), which describes the characteristics that determine an innovation's rate of adoption (Rogers, 1995). In (Rogers, 1995) Rogers describes observability as the degree to which the results of an innovation are visible to others.

In addition, our findings include barriers to participation and highlight the challenges associated with the lack of personnel as well as the willingness and qualifications to participate. Previous studies reported on several barriers hindering user participation such as legal constraints, available resources, and competencies (Holgersson et al., 2018). The negative effect of low personnel on the decision to use IT is one important aspect in this context (Hofmann, 2014). Furthermore, as highlighted by (Cats-Baril, william Thompson, 2016), it is critical to have a project leader with specific responsibilities for managing IT projects in the public sector. This research argued that it is impossible to succeed without project leaders with the necessary skills for managing IT projects in the public sector. Further aspects discussed in the literature as main factors enabling or hindering participation in IT projects include users' abilities and willingness to participate as well as top management awareness and support (Thakurta, 2017). Our analysis is consistent with these findings and reveals that the role of the manager is an important factor influencing government employees' adoption of IT. In fact, it is considered to be more important than employees' participation. Managers should make clear and direct announcements about their expectations. Furthermore, they should be role models in using IT, exhibit exemplary function with their positive attitudes towards using IT in their agencies, and apply management measures to ensure the use of IT in their departments. Leadership via traditional, top-down and hierarchical approaches is obsolete today. The style of leadership used in organizational change has shifted to a more open, participatory management style (Graetz, 2000). However, leaders exhibiting strong leadership and high responsibility facilitate the success of e-government projects (Rao Baliwada & Jayaram, 2014). The role of a strong leadership, which control the project in all level of implementation is significant for a successful implementation of e-file (Abdulkadhim et al., 2015). Training, the formation of user groups, formal announcements, testimonials and managerial support are examples of mechanisms which support forming relationships between users' initial attitudes towards a system and their perceptions of the usefulness of this system (Brown, Massey, Montoya-weiss, & Burkman, 2002). Existing literature on leadership in the public sector has argued that managers' pro-innovation characteristics and attitudes influence the adoption of an innovation (e.g. (Damanpour & Schneider, 2008; Koo, Wati, & Jung, 2011)). Using their personal adoption of IT, leaders can not only improve their effectiveness in using IT but also be role models as direct users (Van Wart, Roman, Wang, & Liu, 2017).

CONCLUSION, LIMITATIONS AND OUTLOOK

The use of IT in the public sector depends strongly on employees' adoption of IT. Employees' participation in IT projects in the public sector is argued to be a critical factor in achieving the expected use of the system being implemented. However, very few studies exist that deal with

the relationship between participation and adoption of IT in the public sector. Using a qualitative approach with semi-structured interviews, we explored such relationships and assessed the impact of government employees' participation on their adoption of IT during the implementation of e-file in German government agencies. A set of activities included in participation was analysed in this study. We concluded that information and communication, training and support, active participation in project groups, the formal participation of the staff council and the exchange of experiences between governmental agencies all could have a positive effect on government employees' adoption of IT. We have identified barriers to participation such as the lack of personnel as well as willingness and qualifications. Furthermore, we identified that the role of managers is an additional critical factor influencing government employees' adoption of IT in the public sector. Our findings can serve as basic for further empirical research, especially in terms of investigating the influence of participation activities on IT adoption. Practitioners can use our findings to advocate for participation in IT projects in the public sector and show the possible benefits of the activities used.

This research study has several limitations. First, our findings are not generalizable across the whole public sector because the study was conducted in only one state in Germany. Future research could be conducted in additional states (and additional countries) with a wider range of stakeholders. In addition, we recommend researchers to deeper investigate further individual, managerial and organizational factors influencing the adoption and success of such inter-jurisdictional e-government projects. A further important discussion point for future research is the impact of public sector managers on their employees' adoption of IT.

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