Toward employee-driven digital innovation in public organizations through the use of action design research

Leif Erik Opland[1], Letizia Jaccheri[1], Jostein Engesmo[1] and Ilias O. Pappas[1,2]

[1]Norwegian University of Science and Technology (NTNU), Trondheim, Norway
[2]University of Agder, Kristiansand, Norway
leif.e.opland@ntnu.no

Abstract. Innovation is important for development in the private sector, but inevitably public sector also needs innovation to enhance services and processes, with research on employee-driven digital innovation in public organizations being limited. We propose a study in a public organization based on action design research (ADR) methodology to enhance theoretical knowledge and develop practice in relation to employee-driven digital innovation. This research-in-progress study follows the divided stages of ADR, where the stage of problem formulation is to be conducted through semi-structured interviews. Findings from stage 1 will provide knowledge about the phenomenon with a public organization as a context and make up the problem definition within ADR. The stage of building, interventions and evaluation is to be conducted with interventions in focus groups where we will investigate how to increase adoption of employee-driven digital innovation and how introducing digital tools can support employee-driven digital innovation as an innovation practice. The study aims to contribute by creating general solution concepts about employee-driven digital innovation.

Keywords: Employee-driven innovation • Digital innovation • Employee-driven digital innovation • Public organization • Action Design Research.

1 Introduction

To enhance innovation organizations have increasingly started to recognize the innovation potential their employees represent [1]. Employee-driven innovation is founded upon the argument that organizations cannot ignore the innovative resources and potential of ordinary employees [2]. This new approach to innovation, although the underlying elements are not new, has been attracting more interest in recent years [3]. Looking into the subject shows that most of the research in the quest to understand employee-driven digital innovation has been done towards private organizations. But there exist knowledge gaps to the understanding of the phenomenon with regard to public organizations, not at least in relation to digital innovation. This brings us to our research questions for our study:

R.Q.1: How do employee-driven digital innovation work in a public organization?
R.Q.2: How to increase employee-driven digital innovation in a public organization?
R.Q.3: How to introduce digital tools to support employee-driven digital innovation?

To address these research questions, we intend to use the ADR methodology [4]. One of the strengths of this research method is that it contributes both to building theoretical knowledge in the field being investigated as well as solving practical problems. In chapter 2 we present a background on employee-driven digital innovation, in chapter 3 we present details about the methodological approach, before presenting the expected contribution and potential further research in chapter 4.

2 Background

Organizations, private as public, are increasingly facing global competition, ever-changing environments, new technology and more informed and demanding customers and users. Some researchers claim that organizations that are not interested in innovation to face the dynamic environments will apparently disappear [5]. Organizations seek to exploit the opportunities to innovate in pursuit of competitive advantages. Innovation is more than just a creation of an idea, it is also about idea-creation and idea-development (exploring), and how these can be utilized (exploited) through new product and service offerings [6]. Innovation in the public sector however is an area that has not been extensively studied before, and there is no common understanding of what innovation in public organizations is or developed a framework for understanding innovation within [7]. One reason for this might be the fundamental differences between public and private organizations that might affect their interest and ability to innovate, such as purpose and innovation focus. In recent years, several new approaches to innovation have emerged, including user-driven innovation and open innovation [8]. Lately we have also seen the emergence of employee-driven innovation [9]. The understanding of innovation, and how innovation develops in the organizations, is no longer limited to R&D units or experts. Innovation processes initiated by employees, and often in collaboration with the external ecosystem, are recognized. Because of these new approaches improved explanatory models are required to innovation.

Employee-driven innovation research concentrates on how organizations can create innovative practices among ordinary employees [10]. In employee-driven innovation, the focus is on utilizing the innovation potential that the organization has overall and, not least, the knowledge, skills and experience that the ordinary employees possess. Organizations increasingly recognize that innovation does not just happen exclusively through top-down decisions, internally by investing in R&D units or externally by pursuing open innovation or creating innovation hubs [11]. The core idea of employee-driven innovation is that by inciting cooperation between employees and managers, companies' innovation performance will improve greatly [1]. A bottom-up approach, like employee-driven innovation, might produce value to the organization by utilizing employee's knowledge, experience and ideas to provide continuous innovation. Changing environment and conditions in work life also underpin employee-driven innovation, as a growing number of innovations will be intangible and service oriented [12]. These changes, together with increasing focus on digital innovation, has created what we have chosen to call employee-driven digital innovation. Digital innovation can be understood as using digital technology during the process of innovation or that the outcome of the

innovation is fully or partly digital [13]. When ordinary employees, through involvement in the innovation process, creating ideas and contributing to the realization of these, with elements of digital innovation, one can talk about employee-driven digital innovation. Despite the emerging interest in digital innovation, it emerges as a research area to the extent that it is not fully developed [14]. Digital innovation initiatives still need further theorization [14].

The need for more theorizing and understanding of employee-driven digital innovation also applies to the context of public organizations. Increasing focus on digital transformation has seen the rise of a new type of innovation which influences not only private but also public organizations [15]. Many have the misperception that the public sector does not engage in innovation practices, and at least not through the involvement of ordinary employees. However, the fact that public organizations do not have traditional R&D units, can emphasize the advantages employee-driven digital innovation can create [16]. Therefore, there seems to be a greater need to include these activities into the daily activities of these organizations. Knowledge is needed both in relation to the phenomenon in public organizations, and not at least how to make use of this way of practicing innovation throughout organizations.

3 Research Methodology

Within Information Systems research there is a consensus for the need to both make theoretical contributions and solve the current and anticipated problems addressed by practitioners [17-18]. The field of Information Systems earlier relied on design research [19] and action research [20] to address these challenges. The emergence of ADR [4], as a variant of design science research [19], privileges organizational influences on the design and evolution of the design artifact, emphasizing concurrent building, intervention and evaluation [21]. In our study the aim is to both contribute to theory and practice, and to elucidate our research questions, we have chosen to use the methodology of ADR. ADR is a research method for generating prescriptive design knowledge through building and evaluating ensemble IT artifacts in an organizational setting [4]. This methodological approach deals with two seemingly disparate challenges: (1) addressing a problem situation encountered in a specific organizational setting by intervening and evaluating; and (2) constructing and evaluating an IT artifact that addresses the class of problems typified by the encountered situation [4]. Employee-driven digital innovation has knowledge gaps when it comes to application in public organizations. Our aim is to study employee-driven digital innovation through the use the ADR method in the context of a public organization (theoretical contribution) and increase the use of employee-driven digital innovation and implement digital tools to support the innovation practice (practical contribution).

We are studying employee-driven digital innovation in a large public organization with about 13000 employees. In this organization, there are several digital innovation projects that are already employee-driven, and they have an ambition to increase the impact of digital innovation through new and better services for their inhabitants. The management has expressed a desire to increase adoption of employee-driven digital

innovation, as an innovation practice, to the whole organization. We therefore think that using ADR is an appropriate approach to the problem. Our research approach can be attributed to the four stages in the ADR methodology (fig. 1). Through this approach we will be both gaining an understanding of the problem as well as generating interventions in the innovation practice and adoption and support of employee-driven digital innovation. According to [4] the ADR research method can be broken down into four different stages:

Problem formulation (problem perceived in practice or anticipated by researchers).

Building, Intervention, and Evaluation (building of artifact shaped by organizational use).

Reflection and Learning (continuous stage that parallels all stages).

Formalization of Learning (development of general solution concepts).

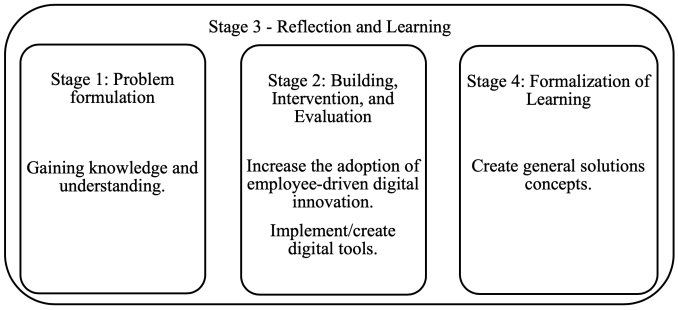

Fig. 1. Intended contribution of our research in relation to the stages in the ADR method.

Design science addresses research through the building and evaluation of artifacts designed to meet the identified business needs [20]. In our research design this is precisely what we are trying to do in stage one, before we in stage two try to solve the problem by increasing the prevalence of employee-driven digital innovation and the introduction of one or more digital artifacts to support innovation in the public organization. There are still uncertainties about how the ADR method is being used in practice [21]. This relates to two conflicts: (a) how to balance the competing interests of the organizational stakeholders and the research team, and (b) how to balance the situated implementation of the design artifact against the need to produce generalized knowledge outcomes.

3.1 Problem formulation

At stage one in ADR our aim is to build knowledge about employee-driven digital innovation in the context of a public organization (fig. 1). This is a diagnostic phase and contribute to the problem definition of employee-driven digital innovation. The problem formulation stage in ADR identifies and conceptualizes a research opportunity based on existing theories and technologies [4, 20]. Here we do that through the use of existing theory of employee-driven digital innovation. The data collection is done through the use of semi-structured interviews with respondents, including project leaders and project members, from three different ongoing employee-driven digital innova-

tion projects. There will also be conducted semi-structured interviews with people holding other positions across the organization close to the different projects (support positions). These respondents both include the strategic level in the organization, as well as at the IT-department (programmers) who interact across the various digital innovation projects. This also gives us opportunities to compare between the different projects and increases the validity of the potential findings. This acquisition of knowledge will also be important when we face the stage of intervention later in the research design. These innovation projects are at different stages in the innovation process, which gives us different perspectives on the innovation process.

3.2 Building, intervention and evaluation

After building knowledge and framing the problem in relation to employee-driven digital innovation in this specific context, we will move on to stage two in the ADR methodology (fig. 1). This stage consists of building, intervening and evaluating [4] around the construct of employee-driven digital innovation, and will be a therapeutic phase. This stage heavily rests upon the framing and theoretical premises adopted at stage one [4]. Through this stage we will build further knowledge about the phenomenon of employee-driven digital innovation and do interventions through the use of focus groups to increase adoption in parts of the organization that have not yet adopted and implemented the innovation practice. This stage will create knowledge about best practices of employee-driven digital innovation in public organizations that also can be used in stage four to create general solution concepts. The design of the model/construct/approach for how to increase the adoption of employee-driven digital innovation in the organization must be done in close collaboration with the employees and management of the organization. This also applies for introduction of digital tools to support this innovation practice. The outcome of stage two of the ADR is the realized design of the artifact [4]. This type of research is aimed at changing the organization´s practice, and not just studying the phenomenon from an outside perspective [19]. There is also conceivable to apply iterations to the ADR method at stage one and two. This will give the possibilities of further developing knowledge and practices about adoption of employee-driven digital innovation in the organization and how introduction of digital tools to support it can be done [22]. This building of knowledge and practices will also contribute to the reflection and learning in stage three in the ADR method.

The ambition is to use the acquired knowledge through stage one and two to implement digital tools that can support the innovation process associated with employee-driven digital innovation in the public organization (fig. 1), eg. to gather innovative ideas, collaborating with development of ideas, seeing ideas through towards realization and so on. This may include utilizing existing artifacts in the organization, implementing new artifacts or developing customized artifacts for the organization. This also contributes to the building, intervention and evaluation in stage two in the ADR methodology [4]. This will be based on knowledge in relation to how employee-driven digital innovation takes place in this organization (stage one and two) and general theory of how organizations can be supported through the use of digital tools.

3.3 Formalization of learning

At stage four the ambition is through knowledge and practical experience from all stages to formalize learning through the development of general solutions concepts [4] for employee-driven digital innovation that can be used across public organizations. This is based on the initial problem definition in stage one, the interventions in stage two and the continuous reflection and learning in stage three of ADR. Reflection and learning recognize that the research process involves more than just solving a problem [4]. Conscious reflection on the problem framing, the theories chosen, and the emerging ensemble is critical to ensure that contributions to knowledge are identified [4].

4 Expected Results, conclusion and further research

This research-in-progress paper describes the intended research design for our study of employee-driven digital innovation in a public organization. Our main goal of the study is to increase the knowledge and understanding of employee-driven digital innovation in a public organization. There is reason to believe that employee-driven digital innovation in private and public organizations might have differences in terms of factors (e.g. innovation focus and tasks) affecting employees' willingness to participate in the innovation process. One of the reasons for this may be that innovation in public organizations is based on providing the best and most effective services to the citizens, while in private organizations it is based on innovating with a view to products and services that will maximize profits. These differences in basic assumptions in the organizations can influence how innovation processes are adopted, implemented and practiced, and not least the outcomes. It may also be that factors known as basis for creating employee-driven innovation in private organizations; as autonomy, organizations innovation focus, willingness to collaborate, etc., may appear different in the context of public organizations. We believe that using ADR, with the possibilities of numerous iterations at stage two, will give a better understanding of employee-driven digital innovation in a public organization, and provide the ability to create general solution concepts of how to increase adoption and digital supporting tools that are more applicable then the use of any other research methods.

References

1. Hansen, K., Amundsen, O., Aasen, T. M. B. & Gressgård, L. J.: Management Practices for Promoting Employee-Driven Innovation. In: Oeij P. R. A. et al., Workplace Innovation, Aligning Perspectives on Health, Safety and Well-Being. Springer International Publishing AG (2017).
2. Haapasaari, A., Engeström, Y., & Kerosuo, H.: From initiatives to employee-driven innovations. European Journal of Innovation Management 21(2), 206-226 (2018).
3. Høyrup, S.: Employee-driven innovation: A new phenomenon, concept and mode of innovation. In S. Høyrup, M. Bonnafous-Boucher, C. Hasse, M. Lotz, & K. Moller (Eds.), Employee-driven innovation. A new approach (3-13). New York: Palgrave Macmillan (2012).

4. Sein, M. K., Henfridsson, O., Purao, S., Rossi, M. & Lindgren, R.: Action Design Research. MIS Quarterly 35(1), 37-56 (2011).
5. Chesbrough, H. W.: Open innovation: The new imperative for creating and profiting from technology. Harvard Business Press (2003).
6. Whittington, D.: Digital innovation and entrepreneurship, Cambridge University Press (2018).
7. Moussa, M., McMurray, A & Muenjohn, N.: A Conceptual Framework of the Factors Influencing Innovation in Public Sector Organizations. The Journal of Developing Areas 52(3), (2018).
8. Gambardella, A., Raasch, C. & von Hippel, E.: The User Innovation Paradigm: Impacts on Markets and Welfare, Management Science 63(5) (2017).
9. Kesting, P., & Ulhøi, J. P.: Employee-driven innovation: Extending the license to foster innovation. Management Decision 48(1), 65-84 (2010).
10. Høyrup, S.: Employee-driven innovation and workplace learning: basic concepts, approaches and themes. Transfer 16(2), 143-154 (2010).
11. Birkinshaw, J. & Duke, L.: Employee-Led Innovation, Business strategy Review 24(2), 46-51 (2013).
12. Alasoini, T.: A New Model for Workplace Development in Finland. Rethinking Employee Participation and the Quality of Working Life in the Context of Broad-based Innovation Policy. International Journal of Action Research 8(3), 245-265 (2012).
13. Nambisan, S., Lyytinen, K., Majchrzak, A. & Song, M.: Digital innovation management: Reinventing innovation management research in a digital world. MIS Quarterly 41(1), 223-228 (2017).
14. Holmstrøm, J.: Recombination in digital innovation: Challenges, opportunities, and the importance of a theoretical framework. Information and Organization 28, 107-110 (2018).
15. Janowski, T.: Digital government evolution: From transformation to contextualization. Government Information Quarterly 32(3), 221-236 (2015).
16. Bäckström, I. & Bengtsson, L.: A mapping study of employee innovation: proposing a research agenda. European Journal of Innovation Management 22(3), 468-492 (2019).
17. Rosemann, M. & Vessey, I.: Toward Improving the Relevance of Information Systems Research to Practice: The Role of Applicability Checks. MIS Quarterly 32(1), 1-22 (2008).
18. Cole. R., Purao, S., Rossi, M. & Sein, M.: Being Proactive: Where Action Research Meets Design Research. Proceedings International Conference on Information Systems (ICIS) (2005).
19. Baskerville, R. & Myers, M. D.: Making IS Research Relevant to Practice-Foreword. MIS Quarterly 28(3), 329-335 (2004).
20. Hevner, A. R., March, S. T., Park, J. & Ram, S.: Design Science in Information Systems Research. MIS Quarterly 28(1), 75-105 (2004).
21. Haj-Bolouri, A., Purao, S., Rossi, M. & Bernhardsson, L.: Action Design Research in Practice: Lessons and Concerns. Proceedings European Conference on Information Systems (ECIS) (2018).
22. Mullarkey, M. T. & Hevner, A. R.: An elaborated action design research process model. European Journal of Information Systems 28(1), 6-20 (2018).