

# Diffusion of Innovative Digital Work Practices

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**Abstract.** The aim of this paper is to highlight use of different digital solutions and systems in two public welfare offices in Norway, and the impact this has on recently graduated students work practices in the public welfare services. This requires new knowledge, theories, methods and ethics related to professional work. In this paper, innovation theory is used to promote the understanding of work practices using technology in public welfare services. When using a qualitative method, the advantages and disadvantages of using current digital practices among newly graduated workers in public sector are analyzed. The results are linked to activities that can contribute to realizing potentials for further innovation in public welfare services through the use of technology. There is a need for educational institutions to facilitate educations for more knowledge and competence in public welfare services regarding digital competence, technology, and innovation to be able to help develop the service in the future.

**Keywords:** Innovation Diffusion Theory, Public Benefit Organization Decision Making, Digital Work Practices, Use of Technology

## 1 Introduction

### 1.1 A Subsection Sample

This paper is based on perspectives from new work practices by educated social workers in public welfare services and use of technology [1, 2, 27], and analyzes of these work practices related to Everett Rogers' theory of diffusion of innovation [18-20]. This research is based on a study by Zhu and Andersen [27] at two public welfare service offices in Norway. The following issue is examined: *How do newly graduated workers experience that technology affects their work practices, and how can new work practices promote innovation in the welfare service?*

Developing new knowledge, new skills and general competence that is incorporated in all education, is the basis for a goal of lifelong learning for a society in constant change. This requires new perspectives that promote innovation in new forms of interdisciplinary education. In this regard is innovation a very important factor, that should contribute to value creation and/or societal benefit. In the new Norwegian national guidelines for health and social sciences educations [28], innovation is included as part of the learning outcome descriptions. The student organization [29], claim that innovation in the education should involve continuous professional development and new

thinking about solutions. Furthermore, they claim that the educations must promote the students' own development of innovation competence, which is characterized by the ability to apply theory, skills and competence, to develop and improve conditions around them.

## **2 Theory**

### **2.1 Diffusion Of Innovation**

The term innovation covers all activity that creates something new, "new combinations of knowledge and resources that lead to a desired effect" [2,p. 66], or new idea, new goods, new services, new work practices, new processes and new forms of organization [4, 20, 22,25]. Dissemination of innovations is called diffusion [9, 13, 16], and is defined by Rogers [19] as «*Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a special type of communication, in that the messages are concerned with new ideas*»(p. 259). Rogers [19] describes four specific elements that affect the spread of innovation in the public sector:

- a) innovation and its characteristics,
- b) communication,
- c) time,
- d) the social system.

### **2.2 Characteristic of Innovation**

According to Rogers [20], an innovation has specific characteristics:

1. Relative advantage indicates how favorable the new idea or innovation is to key actors assessed on the basis of their interests and objectives [18]. If someone claims that new solutions and technologies do not fit their goals, this may be a sign of inertia and resistance to change.
2. Observability indicates the extent to which the result of an innovation is visible to oneself and to others[18]. Visible innovations will spread faster than innovations that are difficult to observe.
3. Compatibility is about how a new measure fits into the existing structure and culture [18]. An innovation is likely to spread faster than if the innovation is difficult to reconcile with previous experiences and existing attitudes. It also becomes more uncertain whether users will end up using the innovation at all. In public organizations, there is often a hierarchical organization, and it can be difficult to make room for new solutions.

4. Complexity addresses how difficult it is to understand and apply innovation [18]. Innovations that are perceived as difficult to understand and difficult to use will spread more slowly than innovations that are simple and user-friendly.
5. Testability is about the extent to which an innovation can be tested on a small scale or to a limited extent [18]. Testing an innovation gives people a better understanding of an innovation and the opportunity to find out how it works under their conditions. The possibility of a large degree of testability will lead to the innovation being implemented more quickly and reduce the risk of adoption.

### **3 Methodology**

The study follows the hermeneutic and qualitative tradition in pedagogical and social work research [15, 26]. Qualitative method is well suited when one is interested in each individual's experience and interpretation of a phenomenon. Qualitative method uses various forms of systematic collection, processing and analysis of material from participatory observations, focus group interviews and semi-structured interviews [8, 23, 24].

This survey covers two public welfare offices in Norway in the period 2017–2019. 35 newly graduated workers at these offices participated in the survey, 20 women and 15 men between the ages of 27 and 65. All informants were bachelor educated professional social workers. They had all digital competence so they could relate to and use digital tools and media in a safe, critical and creative way. Digital competence is about knowledge, skills and attitudes. It is about being able to perform practical tasks, communicate, obtain or process information [30]. However, they all had to learn to use new systems and solutions at their workplace, and learn about communicate in new ways.

The interview questions dealt with the informants' perception, understanding and practical experiences of the various digital solutions. The individual interviews ranged from 20 to 60 minutes, with questions about the newly graduated worker's work practices and use of technology. All interviews were recorded and transcribed. All informants are newly graduated worker's and also described as employees in the rest of the article. In the treatment of the empirical data, different work practices and different technologies were considered and identified what all the informants said about precisely these topics. This approach made it possible to compare what all the informants said on the same topic, and made it possible to analyze how similarities and differences between the feedback could be understood. Qualitative method is well suited when one is interested in each individual's experience and interpretation of a phenomenon. It was important that the informants contributed to the survey to the best of their ability and in that way could provide relevant empirical data.

## 4 Analysis

The findings are analyzed in relation to Rogers'[18] five characteristics for innovation: relative advantages, observability, compatibility, complexity and testability. All informants say that user participation is a fundamental goal in public services. Furthermore, all the informants state that extensive use of laptops and smartphones with access to various systems means that the employees can be more accessible and flexible. The introduction of new technology solutions has made it possible for more frequent communication between employees and users of welfare services. An informant said: «... I can write a short message to the user, and we can discuss it at the next personal meeting. In this way, he can become more involved in his own process. »

The empiri shows that the challenge is to organize this so that both users and employees experience this as good solutions. This is similar to Rogers' [18] description of relative advantage, in that the new way of working is perceived as something new and innovative for employees, since the new work practices also ensure their interests and objectives. Observability is when employees describe various new ways of communicating, and to what extent the result of such innovation is visible to the employee him/herself and to the users. An informant said:

*«You need to communicate with young people and understand how they use various social media, snaps and text messages with a mix of symbols, characters and GIFs. I have used Snapchat and Instagram to communicate with a group of young people who are job seekers. I often post new vacancies along with photos or snaps of the workplaces to give them a more visual and visible understanding of what it looks like if they work there. »*

According to Rogers [19], compatibility means fitting in with something. Here it means to what extent the innovation is perceived to be in accordance with existing values, previous experiences and the needs of potential users. Furthermore, an innovation is likely to spread more quickly if the innovation can easily be reconciled with previous experiences and existing attitudes. An informant said: «I think some people miss seeing a face when communicating. When using a screen, I can not predict the user's reaction. He can read the message long after it was sent, and I can not help in relation to his feeling or reaction.» The analysis shows that standardization allows for quality assurance of information. An informant said:

*«I am against standardization. Because it may seem that we who work here are concerned with satisfying a system all the time. I enter a lot of data instead of going out to meet the users. We have the requirements for how much we should do in a week or month. In this way, we work continuously to satisfy the system.»*

Public welfare organizations are often hierarchical. The introduction of new technologies and system solutions in large welfare organizations must be adapted to the organizations at all levels. The use of technologies that may be difficult to use

effectively may end up not being used as intended. Rogers [18] describes this as compatibility, as it is about how a new tool fits into the existing structure and culture.

Innovations that are perceived as difficult to understand and difficult to use will spread more slowly than innovations that are simple and user-friendly. One informant said: «I need to log in to the IT system consistently within a day to check if I have overlooked something important coming from my clients. » The quote can be understood so that the informant describes regular logins in IT systems every day. The analysis shows that several task requests in different information systems in public welfare services overlap due to errors in the integration and synchronization of systems.

The introduction of innovation as a new process, new work practices, new systems and solutions that are difficult to understand and apply, is perceived as complex and not very user-friendly [18]. This can lead to innovation being perceived as inappropriate. Testability and observability means the extent to which an innovation can be tested on a small scale or to a limited extent. The possibility of a large degree of testability will lead to the innovation being implemented more quickly and reduce the risk of adoption. All the informants in this survey describe the technology that has been used (adopted) as a top-down process, since the decision has been made by the public welfare organization centrally.

## 5 Discussion

The informants in the survey describe that they experience the new technological solutions as good tools in their work practices. Use of technology requires digital competence [12, 14, 17]. There is a need for knowledge related to the advantages and disadvantages of digital welfare services as well as identifying necessary knowledge and resources in the work of supporting digital inclusion [11, 17].

Challenges with complex technologies and system solutions can prevent the acceptance and spread of innovations [20]. Interaction can not be described independently of an offline dimension [4, 6]. The study shows that the technology solutions in public welfare services have led to a standardization of work practices in that case processing takes place by following predefined systematic steps in the information systems [3, 14, 21]. Several informants state that they experience that digital case processing contributes to quality control. Many informants are concerned about all the welfare services that are being standardized. Some of the informants state that they want to give the individual job-seeker individual follow-up and guidance, but that this is sometimes difficult because the system solutions are standardized and do not allow for what is different. Complexity problems are a reason for spending a lot of time on demanding system tasks that take away the attention you want to have on users. The majority of informants stated that they spend more than half of their working time on digital documentation, registration of new information, filling in forms and reporting of meetings.

Almost all the informants want a combination of the various computer systems in public welfare services into a common user-friendly system for data information search and registration. This will simplify employees' digital work practices related to documentation and help to avoid endless duplication of information. A study of similar work

practices shows that the result can also provide high-quality information and better service [7, 10]. Findings suggest the need for more training in the use of technology and discussion of new ethical assessments of digital work practices. The majority of the informants stated that they thought previous technology training during education was not interactive and useful enough to help them understand the functionalities and possibilities of the various solutions. Studies in welfare work, point out that new education must focus both on ways of tackling specific system tasks, data registration, and also address challenges and opportunities when using technology [5, 12]. Increased awareness when using digital solutions leads to a need for increased awareness related to the collection, sharing and administration of users' personal information, must take place in an ethically sound manner [7, 11]. More use of digital solutions in the welfare services leads to a need for increased awareness related to the collection, sharing and administration of users' personal information. Other studies indicate that this must be done in an ethically sound manner [10, 12]. The findings show that employees can help users understand how their data can be used, and what is included in privacy statements, terms and conditions. The informants expect that the various digital solutions will be improved and updated so that they can be used with different user groups, among other things so that this is offered as more personal conversations through text-based messages.

## **6 Concluding Remarks**

The survey shows that employees in public welfare services experience those new technological solutions help to simplify the way they now work, the new work practices and that this provides a better overview of the procedure. Further, the survey shows that there is a need for more knowledge and competence in public welfare services regarding digital competence, technology, and innovation. and innovation but also need for further evaluation of change processes related to the introduction of digital solutions.

There is a need for more knowledge and competence to promote the understanding of new work practices through the use of technology. The technology solutions provide the opportunity for active participation for users of the welfare services who have relevant resources and expertise in the use of technology, but that there are also challenges related to communication with the users that must be improved. The survey represents only a small number of employees, and there is therefore a need for further studies with a larger number of respondents to get a more accurate overall picture. In addition to assessing the characteristics of innovation, it will be interesting to study other influencing factors such as communication channels, organizational context and user-centered processes. Educational institutions must facilitate the education of social workers for today's society by implementing and develop new pedagogy and new learning tools so that innovation is better integrated in professional study courses in order to be able to help develop the service in the future.

## References

1. Andersen, S. T. (2018). Bruk av sosiale medier åpner for handlingsrom ved barnevernfaglig arbeid. I W. Schönfelder, S. T. Andersen & A. A. Kane (Red.), *Handlingsrom i Barnevernet: Muligheter og begrensninger for profesjonsutøverne* (65–83). Bergen: Fagbokforlaget
2. Andersen, S.T., og Jansen, A.J.(2011). Innovation in ICT-Based Health Care Provision. *International Journal of Healthcare Information Systems and Informatics* 2011; Volum 6 (2). s 14–27. <http://dx.doi.org/10.4018/jhisi.2011040102>
3. Andreassen, T. A. (2018). Measures of accountability and delegated discretion in activation work: lessons from the Norwegian Labour and Welfare Service. *European Journal of Social Work*, 1–12. <https://doi.org/10.1080/13691457.2018.1423548>
4. Antonio, E. M., José, M. J.-P., & Chaime, M. S. (2018, a). e-Social work in practice: a case study. *European Journal of Social Work*, 21(6), 930–941. <https://doi.org/10.1080/13691457.2018.1423552>
5. Antonio, L. P., Raquel, P. G. & Victoria, A.-T. M. M. (2018, b). e-Social work: building a new field of specialization in social work? *European Journal of Social Work*, 21(6), 804–823. <https://doi.org/10.1080/13691457.2017.1399256>
6. Baker, S., Warburton, J., Hodgkin, S. & Pascal, J. (2014). Reimagining the Relationship between Social Work and Information Communication Technology in the Network Society. *Australian Social Work*, 67(4), 467–478.
7. Berzin, S. C., & Coulton, C. J. (2017). Harness technology for social good. In R. Fong, E. J. Lubben & R. P. Barth (Eds.), *Grand challenges for social work and society*. New York: Oxford University Press.
8. Creswell, J. W. (2014). *Research design : qualitative, quantitative, and mixed methods approaches* (4th edn). Los Angeles, CA: SAGE.
9. Dingfelder, H. E., & Mandell, D. S. (2011). Bridging the research-to-practice gap in autism intervention: An application of diffusion of innovation theory. *Journal of autism and developmental disorders*, 41(5), 597–609.
10. Fitch, D. (2019). Using data to improve client services. In L. Goldkind, L. Wolf & P. P. Freddolino (Eds.), *Digital social work: Tools for practice with individuals, organizations, and communities*. USA: Oxford University Press.
11. Goldkind, L., Wolf, L., & Freddolino, P. P. (2018). *Digital social work: Tools for practice with individuals, organizations, and communities*. UK: Oxford University Press.
12. Goldkind, L., Wolf, L., & Jones, J. (2016). Late adapters? How social workers acquire knowledge and skills about technology tools. *Journal of Technology in Human Services*, 34(4), 338–358. <https://doi.org/10.1080/15228835.2016.1250027>
13. Greenhalgh, T., G. Robert , F. Macfarlane , P. Bate og O. Kyriakidou . 2004. Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations *Milbank Quarterly* 82(4): 581–629. <https://doi.org/10.1111/j.0887-378X.2004.00325.x>
14. Hansen, H. T., Lundberg, K., & Syltevik, L. J. (2018). Digitalization, Street-Level Bureaucracy and Welfare Users' Experiences. *Social Policy & Administration*, 52(1), 67–90. <https://doi.org/10.1111/spol.12283>
15. Johannessen A., Tufte P.A, & Kristoffersen L. (2004). *Introduksjon til samfunnsvitenskapelig 1 metode*. Oslo: Abstrakt forlag
16. Knudsen, H.K & Roman, P.M. (2015) . Innovation Attributes and Adoption Decisions: Perspectives from Leaders of a National Sample of Addiction Treatment Organizations. *Journal of Substance Abuse Treatment*, 49: 1–7. <https://doi.org/10.1016/j.jsat.2014.08.003>

17. Olsson, T., Samuelsson, U., & Viscovi, D. (2019). At risk of exclusion? Degrees of ICT access and literacy among senior citizens. *Information, Communication & Society*, 22(1), 55–72.
18. Rogers, E. M. (1995). *Diffusion of innovation* (4th ed). New York: Simon & Schuster Inc.
19. Rogers, E.M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press.
20. Rogers, E. M. (2010). *Diffusion of innovations*. New York: Free Press.
21. Røhnbæk, M. (2013). Standardized flexibility: The choreography of ICT in standardization of service work. *Culture Unbound*, 4(4), 679–698. <https://doi.org/10.3384/cu.2000.1525.124679>
22. Schumpeter, J.A. (1934). Teorien om økonomisk utvikling: En undersøkelse av overskudd, kapital, kreditt, renter og konjunktursyklusen. Vol. 55. London: Transaksjonsutgivere
23. Stewart, D. W., & Shamdasani, P. N. (2014). *Focus groups: Theory and practice* (Vol. 20). London: Sage publications.
24. Thagaard, T. (2013). *Systematikk og innlevelse: En innføring i kvalitativ metode*, 4 utg. Bergen: Fagbokforlaget.
25. Traube, D. E., Begun, S., Okpych, N., & Choy-Brown, M. (2016). Catalyzing Innovation in Social Work Practice. *Research on Social Work Practice*, 27(2), 134–138. <https://doi.org/10.1177%2F1049731516659140>
26. Walsham, G. (2006). Doing Interpretive Research. *European Journal of Information Systems* 15(3) 320-330.
27. Zhu, H., & Andersen, S. T. (2018). User-driven innovation and technology-use in public health and social care: A systematic review of existing evidence. *Journal of Innovation Management*, 6(2).s 138–169. [http://dx.doi.org/10.24840/2183-0606\\_006.002\\_0008](http://dx.doi.org/10.24840/2183-0606_006.002_0008)
28. National guidelines for health and social work education (RETHOS), regjeringen.no
29. Hjem (student.no)
30. [www.regjeringen.no/no/dokumenter/nou-2019-2/id2627309/?ch=4](http://www.regjeringen.no/no/dokumenter/nou-2019-2/id2627309/?ch=4)