

Developing Augmentation Strategies for Human Resource Development (HRD)

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Abstract: The digital transformation has major implications for workplaces. Human Resource Development (HRD) might also be affected by this digital transformation [U113]. Davenport and Kirby [DK16] developed a framework that comprises five augmentation strategies, i.e., approaches how knowledge workers could deal with smart machines: step up, aside, in, narrow, and forward. These generic strategies may be useful for all kinds of knowledge workers. My cumulative dissertation aims to provide a better understanding of the augmentation strategies of Davenport and Kirby in the context of HRD. The research comprises three phases: 1) multiple-case study, 2) empirical validation 3) focus group.

Keywords: Human Resource Development, Augmentation Strategies, Smart Machine

1 Introduction and aim of the project

The digital transformation has significant implications for workplaces. One major challenge of the digital transformation we are currently undergoing is the inclusion of artificial intelligence (AI) and AI-enabled smart machines. Smart machines are defined as physical and non-physical systems that rely on artificial intelligence, e.g., chatbots. Smart machines are increasingly used in areas previously reserved for well-trained knowledge workers [BM14] [NQ18].

Human Resource Development (HRD) might also be affected by this digital transformation and thus facing a highly dynamic environment. Activities in existing professions and disciplines may undergo rapid change, new fields of occupation may evolve and existing professions might become obsolete [SGM19]. In the field of HRD, the pressure to act is particularly high due to the multi-faceted demands: on one side HRD has to prepare the employees for new requirements. On the other side, the further development of HRD's profession in the course of the advanced digital transformation should be encouraged [SGM19]. In the face of increasing numbers of smart machines in the workplace, Davenport and Kirby [DK16] propose the concept of five augmentation strategies to drive professional development regarding working with smart machines.

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For HRD, a great challenge might be to better understand the implications of smart machines in the workplace and the resulting competence requirements. My cumulative dissertation aims at exploring the competencies required to collaborating with smart machines in the context of HRD and how these can be developed by using the augmentation strategies and thus driving the HRD function and their professional development. The leading research question is, therefore: *How can competencies to manage digital transformation in companies be developed by using augmentation strategies in HRD?*

2 Theoretical anchoring

Research on intelligent machines in the workplace has focused to a large extent on the aspect of automation: Which tasks and activities are or will be performed by intelligent machines and what are the implications for knowledge workers [FO13] [NQ18]. The concept of augmentation addresses - in contrast to substitution - the productive interaction between humans and smart machines [Ja18] [Me19]. The idea of augmentation appears as early as 1962. Intelligence Augmentation (IA) emerges along with the evaluation of Artificial Intelligence (AI) and was coined by Engelbart [En62]. IA aims at development tools that improve the efficiency of human intelligence. With the current state of technology well-structured tasks can be automated, while more complex and ambiguous tasks cannot be automated and rather need to be addressed by augmentation [DW18] [DK16].

Furthermore, Daugherty and Wilson [DW18] argue that with this emphasis on automation an important area of activities is neglected. Specifically, hybrid activities in which humans and machines work in close cooperation. The authors distinguish between two types of activities where humans are complementing smart machines; and those in which intelligent machines enhance human capacities. For hybrid activities to be successful, it takes specific skills, so-called fusion skills. Meier et al. [Me20] argue that fusion skills cannot be presupposed, rather they need to be diagnosed and developed. However, the question is how to develop the workforce to realize the potential of smart machines. A relevant framework for developing these and other skills related to smart machines are “augmentation strategies” by Davenport and Kirby [DK16]. The framework comprises five augmentation strategies, i.e., development strategies related to smart machines in the workplace: step in (working with smart machines), step up (evaluate and manage smart machines), step aside (apply specifically human capabilities), step forward (develop smart machines), and step narrow (specialize and evade smart machines). These generic strategies may be useful for all kinds of knowledge workers [DK16]. The strategies would be particularly useful for HRD, as they seek to develop the knowledge, skills, and attitudes (competencies) of employees.

To clarify, what this implies for HRD, my dissertation will build on the conceptual 'Framework for Competences of HRD in Digital Transformation' [SGM19]. This framework points out the facets of professional competencies in HRD to drive the digital transformation in organizations. Hence, it closes the gap between models addressing digital competences of individuals and generic competence models for shaping digital change in organizations. Furthermore, adding a new dimension of augmentation by incorporating the augmentation strategies by Davenport and Kirby [DK16].

- Level 1: competences related to digital transformation and smart machines at the level of individual contributors in HRD;
- Level 2: capabilities related to digital transformation and smart machines at the level of the HRD function;
- Level 3: digital transformation and learning at the organizational level.

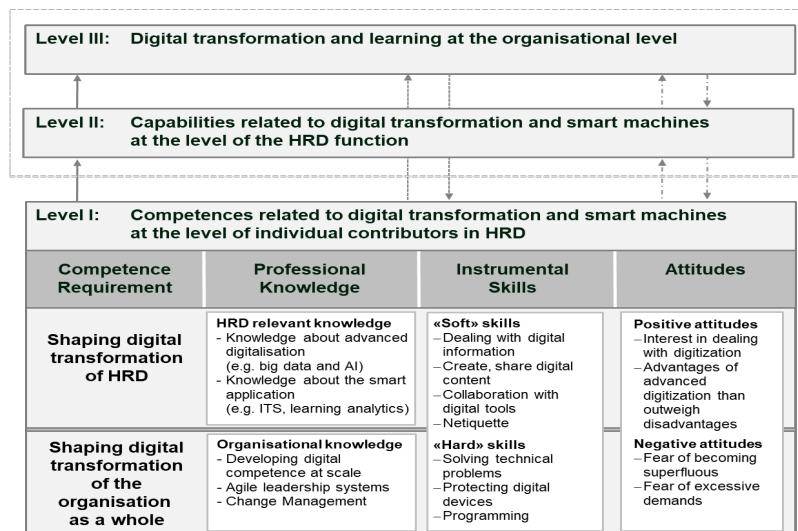


Figure 1: Framework for Competences of HRD in Digital Transformation [SGM19]

Current research [Se19] shows that on the individual level it is not yet clear which "digital" competencies will generally be required in the future. Regarding the second level, augmentation strategies are relatively new approaches in the context of HRD and do not yet seem to be widespread. They represent interesting alternatives or additions that should help to move away from focusing only on automation and more on a productive interaction between humans and smart machines [DK16]. Concerning the organizational level, there is empirical evidence that digital maturity in many companies is still rather low [Se19].

3 Research question

Against this background, the following three central problem areas are identified.

- Individual level: digital competences of HRD
- Professional level: digital usage in the HRD profession
- Organizational level: driving digital transformation

Within the cumulative dissertation, three topics are dealt with in-depth. The dissertation is guided by the following overarching research question:

How can competencies to manage digital transformation in companies be developed by using augmentation strategies in HRD?

The overarching research question is broken down into the following subordinate research questions.

RQ1: How can augmentations strategies of Davenport and Kirby [DK16] be conceptualized in the context of HRD?

RQ2: What knowledge, skills, and attitudes (competencies) drive the extent to which the five strategies are pursued?

RQ3: What context factors drive the extent to which the five augmentation strategies are pursued?

RQ4: How can each of the five augmentation strategies be developed?

4 Research design

The research comprises three phases: 1) multiple-case study, 2) empirical validation 3) focus group.

To address RQ1 and RQ2 a qualitative approach is adopted, namely, a multiple-case design study. The aim is to generate a deeper understanding of augmentation strategies in HRD. To be able to make cross-case statements, the author considers the inclusion of at least three case studies to be useful. The data collection includes semi-structured interviews with HRD professionals as a primary source of evidence. All interviews will be recorded and transcribed. Guest, Bunce, and Johnson [GBJ06] state that ‘theme saturation’ in qualitative interviewing typically occurs within the first 12 interviews and meta themes appear as early as within the first six interviews. Therefore, it is intended to conduct six to 12 interviews for each case. According to the principle of data triangulation [Yi09] secondary sources of evidence in the form of internal and external documents will be collected. As the first step of this multiple-case, a pilot case study is carried out to

evaluate the suitability of the chosen method to examine the concept of augmentation. Moreover, a pilot case study helps to refine the data collection plans and gain some conceptual clarification for the research designs [Yi09]. The pilot case study includes an explorative interview with an HRD professional. The findings indicate that a multiple-case study is suitable for gaining a better understanding of the augmentation strategies by Davenport and Kirby [DK16] in the context of HRD.

In a subsequent quantitative phase, RQ3 will be addressed. The aim is to gain a better understanding of the contextual factors, which influence the choice of the augmentation strategy. Data from members of the German Association for HRD (DGFP) were collected in 2019 (N = 160) and 2020 (N= 170). Drawing on the work of Davenport and Kirby [DK16], it is hypothesized as drivers for the extent of the augmentation strategies: orientation towards pedagogical goals (supporting employees in their development), short vs. long term economic orientation (pursuing short or long term economic goals), position (manager vs. clerk), attitude towards digital transformation, and self-reported knowledge as well as skills in the context of digital transformation. All items for capturing these constructs are measured on a seven-point scale of rating. As control variables, gender, age, and company size will be considered. A Linear regression for each of the five strategies will be conducted. The dependent variable is the extent of the augmentation strategies measured with our two self-report questions on a seven-point scale of rating

Building on the preceding two steps, RQ4 will be answered. The last phase of the study includes focus groups with HRD professionals to examine how each of the five augmentation strategies can be developed. This qualitative approach was selected due to the novelty of the augmentation strategies [SGM19]. A more structured approach might not have covered the most relevant issues of HRD professionals. Moreover, an important dimension is added from the collected information, as perceptions are partly developed through interaction with others [KC09]. Concerning sampling, saturation emerges after four to six groups [Mo96]. To direct the flow of the conversation during the group discussion a discussion guide will be used which will be informed by the result of the preceding two phases.

5 Expected results and limitations

This dissertation aims to gain the following insights: Firstly, precise and definable characteristics of each augmentation strategy with anchor examples and sample items (RQ1). Secondly, finding out which competencies drive the extent to which the five strategies are pursued (RQ2). Thirdly, gained insights into the contextual factors the extent to which the five strategies are pursued (RQ3). Finally, finding a coherent approach to develop each of the five augmentation strategies and recommendations for action for HRD professionals (RQ4). However, this research proposal has also some limitations. It cannot be entirely ruled out that approaches beyond the augmentation strategies may be of relevance for the development of competencies for managing the digital transformation.

It is planned to publish at least three papers according to my research goals as well as to present the findings at least at two double-blind reviewed conferences (e.g., EURAM, AERA, EARLI)

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