

# Digital Culture and Learning Culture: An Empirical Analysis of Cultural Change in the German Armed Forces

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## ***ABSTRACT***

*Digital culture is a concept introduced a few years ago to the German Armed Forces supporting the process of digitization in the Bundeswehr. Although the digital culture in the armed forces is based on the traditional organizational culture, digitization requires accelerated learning processes of soldiers as well as civilian employees and the cultural change towards a new learning culture has to be mastered. In 2020, data on this topic was collected for the first time as part of an online survey within the Bundeswehr (n=1.997), a second survey has just been completed. The study shows that digitization is predominantly seen as a driver for the transformation of organizational culture towards a learning culture.*

## **1.0 INTRODUCTION**

Digital culture describes how members of the German military (Bundeswehr) deal with the requirements, opportunities and risks of digitization on the basis of a common understanding. Part of this is the digital self-image, which describes the awareness of the changes associated with the digital transformation. The "Implementation Strategy Digital Bundeswehr" introduced by the MOD (BMVg) is the basis for the development of the target image of the digital culture and reference point for the actual measurement in the survey study.

The theoretical focus taken in this study is the "learning organization". Although the digital culture of the Bundeswehr builds on the traditional organizational culture of civic education and leadership (Innere Führung), it still creates a need for discussion among many soldiers (Elbe 2020). As is generally the case in society, numerous institutions in the Bundeswehr are being reassessed with increasing digitization. Leadership behavior in virtual space as well as on the battlefield is experiencing new requirements as a result of digitization, as is the cooperation of uniformed and civilian organization members in everyday service. For example, working from home, whether as telecommuting or in another form, has been changing from an exceptional phenomenon to one of the usual working models in the course of the corona pandemic - this also requires adjustments in management behavior (Landes/Wittmann 2020). Digitization requires accelerated learning processes for both soldiers and civilian employees, as well as a cultural change towards a new learning culture. This is increasingly based on a work design that promotes learning in general and learning in the process of work as part of the digitization of the Bundeswehr and it helps to avoid making the same mistakes over and over again (Senge 2011). In the course of 2020, members of the Bundeswehr experienced directly how much the institutionalized learning processes were hampered by the restrictions imposed by the corona pandemic. Accordingly, it is important for those affected to participate in the digitization of the learning locations themselves and to be able to cope with the learning requirements in the work process largely unaccompanied (Elbe/Erhardt 2020).

In the context of digitization, numerous learning opportunities are designed to master specific learning

content on learning platforms or to optimize certain products of digitization - e.g. programs or application devices. In order to cope with the current learning requirements in the context of digitization, collective learning processes for the acquisition of digital skills and (especially under Corona conditions) their transfer from the private to the professional area are required, e.g. use of communication programs, video telephony and online conferences with several participants. Learning tools in this context only have a posterior meaning, learning is rather done in the process of work. Part of the new learning culture is that competences are required, the training of which is left to the soldiers or civilian employees themselves. Learning becomes the core principle and basic problem of digitization. The learning culture becomes part of the digital culture. With the increasing power and spread of digital technology, its own interaction and learning potential is also increasing. Whenever humans are involved in such interactions, when mere technical systems become human-machine systems, then there is an increasing need to grant and demand at least the same learning potential from humans as from technical system components. (Elbe/Erhardt 2020: 204 f.)

## **2.0 THE EMPIRICAL ASSESSMENT OF DIGITIZATION IN THE BUNDESWEHR**

In late summer 2020, data was collected as part of an online survey on digitization and digital culture within the armed forces (Richter/Elbe 2021). The sample size was 10.000 Bundeswehr members, drawn from a population of 178.049 soldiers and civilian employees based on their official e-mail address (67 percent of all Bundeswehr members). The response rate was  $n=1.997$  (20 percent). The questionnaire had a scope of 27 questions, some of which included several individual items as well as questions with open answer options. A second survey wave took place in autumn 2022.

The 2020 study showed that the everyday lives of soldiers are largely shaped by digitization (Richter/Elbe 2021). 91 percent of respondents use a work computer every day as well as the work e-mail program. 49 percent use official mobile communication devices such as smartphones or tablets at least several times a week. With regard to information about the topics of digitization in the Bundeswehr, 24 percent of respondents are well or very well informed, a majority of 52 percent are ambivalent and 24 percent feel badly or very badly informed. Overall, there is a widespread desire to learn more about topics of digitization and in particular about technical innovations and mobile working in the Bundeswehr.

The open answers on the topic were evaluated with the help of qualitative content analysis (Mayring 2015). Overall, it should be noted that the open comments are primarily specifications of the topics covered in the question in a standardized manner, with one exception, namely training. This topic had not previously been covered with regard to the information needs of the respondents. Specifically, digitization in the area of training, streaming distance learning, webinars and other aspects of e-learning were in demand.

## **3.0 LEARNING CULTURE AND DIGITIZATION**

With regard to the learning culture in the Bundeswehr, the 2020 data was collected in such a way that a target/actual comparison was possible. From the point of view of members of the Bundeswehr, it is particularly important (= target) to be able to carry out a challenging and interesting activity in the service (92 percent). The answers to the complex of questions of learning in the Bundeswehr point to a high level of learning orientation and a high willingness to deal proactively with new and changing working conditions and requirements. From the point of view of digital culture, it is particularly relevant to what extent supervisors create a climate conducive to learning and promote the use of IT-supported working methods and means of communication and apply them themselves.

88 percent see the responsibility here with their superiors. In which aspects do the requirements for the learning organization deviate from the perceptions? For all aspects, the IS always lags behind the target. The three highest deviations between actual and target can be seen with regard to "being able to work with state-

of-the-art IT ", "constantly getting to know new technologies" and "being able to continue one's education and training on a regular basis". For the process of digitization in focus here, the high deviation between target and actual in the modern IT equipment is also striking (table 1).

**Table 1: Learning culture - target/actual comparison**

To what extent are the following points in your daily work fulfilled from your point of view?	M(actual)	M(target)	M(actual)-M(target)
(3) to be able to work with state-of-the-art IT	-0,19	0,70	-0,90
(8) constantly learning about new technologies	-0,22	0,34	-0,56
(4) to be able to regularly participate in further education and training	0,10	0,64	-0,54
(7) to be allowed to try out things or make mistakes	0,10	0,62	-0,52
(11) to have superiors who promote IT-supported working methods and means of communication, and apply them themselves	0,06	0,58	-0,52
(10) to have supervisors who actively promote learning processes	0,16	0,66	-0,51
(5) to be able to plan and decide independently	0,22	0,68	-0,46
(9) to be able to contribute innovative ideas and suggestions	0,06	0,49	-0,43
(1) engage in a challenging and interesting job	0,34	0,72	-0,38
(6) to be able to learn continuously in the work process	0,21	0,58	-0,37
(2) to be able to frequently take on new tasks	0,16	0,36	-0,20

Notes: Range M: [-1, 1]. Subtraction was done with values that were not yet rounded. Database: ZMSBw Bundeswehr survey on digital culture 2020 (Richter/Elbe 2021).

Overall, only 26 percent of Bundeswehr members rate the state of digitization in the Bundeswehr positively, while 34 percent rate it rather negatively. A differentiated opinion on this puts the findings into perspective and it becomes clear that an overwhelming majority considers digitization to be suitable for making the Bundeswehr more efficient, and assumes that the Federal Armed Forces will perform their tasks better in this way. In addition, the respondents assume that digitization is suitable for improving work processes and that it contributes to actively sharing and maintaining knowledge (figure 1).

	Please assess digitization in the Bundeswehr. Use the boxes in between to grade your answer. Digitalization ...					
	1	2	3	4	5	
is suitable for making the Bundeswehr more efficient.	48	32	13	5	1	is unsuitable for making the Bundeswehr more efficient.
helps the Bundeswehr to better fulfil its tasks.	40	38	17	4	1	does not help the Bundeswehr to better fulfil its tasks.
motivates me in service or at work.	29	33	30	6	2	demotivates me in service or at work.
leads to less bureaucracy in the Bundeswehr.	22	17	28	20	13	leads to more bureaucracy in the Bundeswehr.
helps to actively share and maintain knowledge.	41	36	18	5	1	does not help to actively share and maintain knowledge.

Notes: Percentages, red line shows Means. Individual percentages sometimes do not add up to 100 percent because they have been rounded. Database: ZMSBw Bundeswehr survey on digital culture 2020.

**Figure 1: Impact of digitization on learning culture**

#### 4.0 ADVANTAGES AND DISADVANTAGES OF DIGITIZATION

With regard to the perceived advantages and disadvantages of digitization, the interviewees were given the opportunity to set their own priorities and to record their individual experiences and views. In the qualitative part of the online questionnaire, the respondents were able to answer two open questions in corresponding text fields. When asked about the advantages of digitization, 57 percent (n=1.149) of responded about the advantages and 55 percent (n=1.097)<sup>1</sup> answered about the disadvantages. The advantages and disadvantages of digitization cited by the respondents can be divided into three categories, each of which represents its own efficiency criterion:

1. Organizational efficiency: This refers to aspects for the work process or the organization of the Bundeswehr as a whole.
2. Social efficiency: it concerns individual and group Enhancements.
3. Change efficiency: It refers to the potential for change of digitization.

In accordance to Elbe and Erhardt (2020), these categories were formed as umbrella terms for the generalized statements of the respondents, after they had been grouped according to their meaningful

<sup>1</sup> Due to the qualitative method of summary content analysis, the original annotations were first subjected to reduction, and secondly to generalization. Example: The answer to question 10 in case 77 is "faster processing and completion of tasks. Much fewer stacks of paper". This was abstracted into two keywords: "more efficient work" and "less paper". Such a generalization was carried out for both questions for so many cases until a constant saturation effect was achieved, i.e. that no further new keywords could be generated by deleting statements of the same meaning (selection). In the second step, the categorization, the keywords obtained in this way were summarized in a meaningful way. Thus, category systems were created for both the advantages and disadvantages of digitization, which are presented and explained below.

similarity.<sup>2</sup> Many of the respondents answered with enumerations, some with longer considerations or experience reports, whereby a differentiated picture emerged with regard to the positive assessment of the digitization process so far. With regard to future developments, positive or open expectations were expressed with regard to an uncertain future. Here are some of the key results:

Opportunities are recognized quite concretely for one's own work area and further improvements are suggested. Particular emphasis is placed on the fact that digitization enables more flexible, efficient work and that information is more readily available. In principle, positive effects are described, but these are accompanied by capacity problems in the introduction phase. In general, digitization in the Bundeswehr leads to less administration, less paper and less travel. The following statement summarizes this once again:

"A big advantage is the possibility of working from home and the resulting flexibility to achieve a better work-life balance." (No. 644)

The generalized statements, which can be attributed in particular to social efficiency, were: working at home, mobile working, better cooperation, the opportunity for further training, the creation of new posts and increased employer attractiveness. Thus, social efficiency works in two ways: On the one hand, it helps to improve the work-life balance and on the other hand, it has a positive influence on the social aspects of daily working relationships, which generally affects employer attractiveness.

"Keyword attractiveness! From my point of view, digitization can help to make the Bundeswehr more attractive as an employer. The greater flexibility and independence of fixed workplaces or locations can contribute greatly to this. The acceptance and will of superiors and structural planners to use these opportunities is crucial. The increased deployment of offices and command authorities 'across the board' is a core element in exploiting the full potential of digitization." (No. 74)

In many cases reference to the dynamics of the change process that goes hand in hand with digitization is to be found. In addition to organizational and social efficiency, the dynamics of change (change efficiency) are the third main category of digitization. This topic is characterized by the positive contribution to pandemic management and by the uncertainty of the future, which, however, appears to be shapeable and offers opportunities.

"Finally to get rid of analog THINKING. To have the opportunity to work no matter what time or place. It would be nice if every soldier had his own IT device." (No. 92)

It is important to overcome analogue thinking and allow more innovation, new technology and, in particular, teleworking – there is also a need for further development, which is expressed pointedly in the following remark:

"Which digitization?" (No. 207)

The following table provides an overview of the category system for the advantages of digitization (table 2).

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<sup>2</sup> The specific questions were "Please indicate in a free choice of words what advantages digitization in your direct working environment has had or is likely to have for you." and "Please indicate in free choice of words what disadvantages digitization in your direct working environment had or is likely to have for you."

**Table 2: Category system for the advantages of digitization**

Advantages of Digitization		
Organizational Efficiency	Social Efficiency	Change Efficiency
More flexible working	Increased employer attractiveness	Pandemic management
Work more efficiently	Working at home	Uncertainty
Information more readily available	Work-life balance	Odds
Less administration	Better collaboration	No more analogue thinking
Time saving	Mobile working	Innovation
Less paper	Opportunity for further training	New technology
Less travel	New post	
Error reduction		
Quality		
Continuous improvement		

Notes: Category system for the question "Please indicate in free choice of words what advantages digitization in your direct working environment had or is likely to have for you" due to globalization and categorization. Database: ZMSBw Bundeswehr survey on digital culture 2020.

As has been shown, the positive effects of digitization are generally recognized, but there are many concerns about actual implementation and organizational efficiency. For example, it is complained that digitization sometimes leads to more work, to the duplication of work and to more bureaucracy overall. The increase in communication channels and information as well as a loss of information due to the loss of direct personal communication are criticized. The topic of standardization is similarly double-edged – isolated solutions are criticized here.

As has been shown, the organizational disadvantages are also accompanied by negative effects of social efficiency. It is striking here that the lack of leadership performance is repeatedly criticized when e-mail messages from superiors are simply forwarded without a concrete direction or assistance for order processing being associated with it. The criticism here extends to the loss of jobs due to digitization measures. In many cases, deficiencies in training, a lack of military training and an increasing training effort are criticized and sometimes just as personalized:

- "– Older people are often not holistically trained in the systems
- Processes are not processed holistically/incompletely" (No. 21)

The mixing of business and private life also has a double meaning. On the one hand, it is assumed, among other things, that working in the home office is abused as an excuse, on the other hand, a lack of working time regulations, a loss of social contacts, a loss of autonomy, an intensification of work and a dehumanization of the work process are lamented. This can be seen, among other things, in the following list:

- “– Dependence on digital technology
- Pressure for faster work
- Expectation from superiors that everything must/should go faster
- the danger of 'digital dementia'" (No. 54)

The development perspective (change efficiency) is often characterized by the fact that a rethinking with regard to the design of procedures and the abandonment of resistance is required.

"So far, the only disadvantage is that not all users are convinced of digitization and thus of almost paperless processing and retain 'old' process patterns." (No. 121)

Different implementation statuses and partly old hardware also appear to be disadvantages. In general, introduction turbulence is criticized and also the loss of meaningful analog procedures. A category system can also be mapped for the disadvantages of digitization (table 3).

**Table 3: Category system for the disadvantages of digitization**

Disadvantages of Digitization		
Organizational Efficiency	Social Efficiency	Change Efficiency
More bureaucracy	Lack of leadership	No disadvantages
More work	Lack of training	Rethinking
Duplication of work	Lack of military training	Resistors
Variety of	Lack of working time regulation	Old Hardware
Communication channels	Training costs	Different
Too much information	Job losses	Introduction stands
Isolated solutions	Loss of social contacts	Introduction turbulence
Scope for interpretation	Loss of autonomy	Loss of analogous processes
Standardization of processes	Intensification of work	
Lack of transparency	Dehumanization	
Loss	Home office as an excuse	
Lack of functionality	Mixing of official matters and private life	
Technology dependency		

Notes: Category system for the question "Please indicate in free choice of words what disadvantages digitization in your direct working environment had or is likely to have for you" due to globalization and categorization. Database: ZMSBw Bundeswehr survey on digital culture 2020.

The poles of the debate on the effects of digitization can be outlined as follows: On the one hand, digitization offers the opportunity to make the world of work more humane, for example through automation processes, a reduction in manual routine activities and a relief from physical exertion. On the other hand, however, there is the danger that it can be associated with a higher workload and work intensity up to loss of control over one's own work result.

## 5.0 DIGITIZATION AND LEADERSHIP

"Digitization is the mega topic of the Bundeswehr in the next decade and is above all a leadership task." – said former Defense Minister Ursula von der Leyen.<sup>3</sup> Based on this finding, the effects of digitization on leadership in the Bundeswehr are now being asked. A majority of Bundeswehr members of 58 percent assume that the meaning of leadership will not fundamentally change. 27 percent assume an increase in the importance of leadership as a result of digitization and 15 percent attest to a loss of importance for

<sup>3</sup> [www.bmvg.de/de/themen/ruestung/digitalisierung/umsetzungsstrategie-digitale-bundeswehr](http://www.bmvg.de/de/themen/ruestung/digitalisierung/umsetzungsstrategie-digitale-bundeswehr), Download: 12.11.2020.

leadership. Digitization is therefore only a means of leadership support. The proportion of those who expect leadership to gain in importance is significantly higher among civilian personnel than among soldiers. The BMVg (2019: 17) assumes that leadership plays a key role in building a digital culture and the "Implementation Strategy Digital Bundeswehr" consequently formulates some requirements for the leaders of all departments and staffs in the BMVg and the organizational areas.

## 6.0 DIGITAL CULTURE

The underlying "basic understanding of digital culture" is fundamental for the introduction of the concept in the Bundeswehr. A total of ten guiding principles of this basic understanding were condensed with regard to their central significance and presented at the end of the content part of the questionnaire in 2020, i.e. before the queries of the socio-demographic characteristics. The following table shows the replies across all respondent groups (table 4).

**Table 4: Self-Conception of Digital Culture**

Keeping the overall situation in your working environment in mind: To what extent do the following statements on digitization apply today?	This statement is largely true for my working environment.	The statement is more true for my working environment.	The statement applies partly to my working environment.	The statement does not so much apply to my working environment.	This statement does not apply to my working environment.	I don't know /missing
1. My comrades and colleagues are, by and large, open to new technologies.	23	40	29	6	2	29
2. My comrades and colleagues by and large, recognize the opportunities that arise with digitization.	19	33	35	9	3	32
3. The Bundeswehr provides the prerequisites and the necessary technologies and tools for work that is continuously adapted to new framework conditions.	5	17	39	25	13	30
4. The existing procedures and structures support my comrades and colleagues in using their room for manoeuvre and making decisions on their own responsibility.	9	26	39	18	8	34
5. My comrades and Colleagues try to exploit the potential of digital technologies in their own working environment in the sense of a "culture of doing"..	14	30	32	16	7	36
6. Existing workflows are continuously questioned and based on opportunities for improvement have been examined	8	18	33	25	14	28
7. Digitisation promotes networking and cooperative cooperation within the Bundeswehr.	26	35	26	9	4	29
8. Superiors in my work environment recognize the potential of digital technologies, promote their use and lead by example..	12	25	33	19	11	30
9. The protection of IT and the guarantee of information security have priority in my working environment.	35	38	18	7	2	28
10. The human being is at the centre of our on democratic values based digital change process in the Bundeswehr.	14	24	34	18	10	40

Notes: Percentages. Individual percentages sometimes do not add up to 100 percent because they have been rounded (value columns 1 to 5). Database: ZMSBw Bundeswehr survey on digital culture 2020.



In the following, the aim will be to further operationalize the ten aspects of digital culture, both with regard to the mindset of individuals and the digital environment, and to examine their organizational cultural anchoring. To this end, we launched a new study within the Bundeswehr in autumn 2022, the results of which we are currently still analyzing. It is assumed that organizational cultures are subject to constant change in the exchange between individual and collective construction of effectiveness, which also changes the knowledge of the organization. The following types of cultural knowledge are involved (Sackmann 1991, Elbe 2002):

1. Directory knowledge: causal-analytical attributions and expectations about relationships and courses of action;
2. Recipe knowledge: normative attributions as the hypothetical basis of action knowledge;
3. Dictionary knowledge: descriptive categories for objects and facts;
4. Axiomatic knowledge: underlying assumptions that create value.

These types of knowledge are organized hierarchically in principle, with directory knowledge as the instantaneous guide to action and axiomatic knowledge as a deep-seated layer of basic ideas and assumptions about the nature of the world and social relationships. Of particular importance and, so to speak, as a mediator between an abstract organizational culture and the experience of the organizational member, these types of knowledge determine to what extent there is agreement between the organizational culture and the individual and – intended as an aggregate – to what extent this actually represents a jointly held knowledge.

Due to the construction of the concept of digital culture in the Bundeswehr it is measured with two scales: one for the individual mindset and the other one for the organization as digital environment. Digital culture can now be interpreted in detail with regard to the digital mindset and the digital environment as characteristics of the digital culture of the Bundeswehr,<sup>4</sup> as well as with regard to the basic knowledge model of organizational culture.<sup>5</sup> Thus, on the one hand, the agreement of individuals with regard to this model can be determined, as well as the perception of the effect of digital culture with regard to organizational culture in general. Further results in this regard are to be expected in the current year (2023).

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<sup>4</sup> Items in the digital culture scales: AI = affirmative to innovation, AT = affinity for technology, A = agility, PR = personal responsibility, RJ = risk joy, AC = awareness of change, CN = collaboration/networking, DL = digital leadership, SA = security awareness, E = ethics. All items have specifications in the digital mindset as well as the digital environment.

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