

# **INFLUENCE OF INFORMATIZATION ON WORKING ACTIVITIES IN THE INFORMATION TECHNOLOGY BUSINESS – AN APPROACH FOR AN ANALYSIS FRAMEWORK OF LABOR CAPACITY**

**Knut Linke**

University of Applied Sciences Weserbergland  
Institute for Knowledge Management  
Am Stockhof 2  
Hameln, Germany  
linke@hsw-hameln.de

**Prof. Dr. André von Zobeltitz**

University of Applied Sciences Weserbergland  
Department of Business Economics  
Am Stockhof 2  
Hameln, Germany  
vonzobeltitz@hsw-hameln.de

## **ABSTRACT**

The effects of the digitization of the work provide companies and educational institutions uncertainty. Therefore new future working skills of employees will be necessary. This applies in particular to those employees in the field of information technology who are particularly affected by digitization and who mostly perform on the technologically cutting edge of information technology. The practical part of this article aims to present an analysis model which explores the work activities of IT specialists through quantitative and qualitative analysis methods and shows which informal skills are placed in the work activities of the employees. A methodological triangulation should enable a multi-layered view of work activity. The developed framework will be discussed during the conference contribution in order to enable reflection and improvement of the approach with the aim of enabling a good practice for other researchers.

## **KEYWORDS**

Informatization; Digitalization of work; Labor Capacity; Working Assets; Agile Work;

# 1 INTRODUCTION

Information has become a pillar for value creation in this time of digital capitalism (Schiller 1999) within the structural change of the society from industrialism to informatization (Castells 2001; 2003) in which value is created digitally and globally. For the future education of employees, it is mandatory to understand which (informal) personal skills need to be developed to work in companies, which fulfil agile or hybrid working strategies.

The research project OPEN IT (Städler et al. 2018) analyses those skills within the working world of IT workers. The focus of the research project is to construct, test and evaluate IT study programs. Those take IT workers' competencies from the field of IHK education (DIHK 2010; Rogalla and Witt-Schleuer 2004) into account to reduce academic workload.

# 2 INFORMATIZATION AND LABOR CAPACITY

Informatization describes the process of generating and using information (Schmiede 1996: 27) for value creation. In capitalist production, a shift from material to immaterial products has taken place. The informatization of the working world (e.g. Schmiede 1996; 2006; Boes and Pfeiffer 2006) means that services and production processes are decentralized continuously, virtualized as well as offered and provided internationally (Boes and Kämpf 2006). In the context of this change, information technology allows the globally organized production capital a smooth, distributed production and exercise of services (Boes and Kämpf 2011) as well as the realization of global and virtual project work (Will-Zocholl 2016). The progress of the computerization of work is favored by the information space created by computerization (Boes and Kämpf 2011: 56-63), especially on the Internet (Boes et al. 2014). The central assumption of informatization is that services and produc-

tion processes are increasingly digitized and distributed in a global context within decentralized and virtualized work. For the future development of capitalism, it is essential to expect how capital can generate further value. It is essential to reflect the Marxism terms of real and formal subsumption (Marx 1979: 431-440). Real subsumption is the classification of living labor into the production process through standardization and formalization (Schmiede 1981). In formal subsumption, capital, its benefit solely through the formal subordination of a production process into a capitalist system. The production itself, in the information space and of application and IT products, is already following standardized *patterns* to organize development processes (Böhle et al. 2008: 93).

The necessary qualification for the development of products is beyond conventional formalization and categorization, and soft skills such as communication skills, the ability to work in a team, or creativity and the ability to improvise are gaining importance. In addition to the classical qualifications that workers must bring, various skills are difficult to formalize. They concern cognition as well as informal *soft skills* that play a role in agile organizations. The concept of work capabilities tries to make this informal knowledge and skills empirically tangible (Pfeiffer 2004).

*Labor capacity* can be a key aspect of the computerized economy: „The qualitative and social essence of work is displayed in laboring capacity;... The comprehensive forming and application of the senses, living working knowledge with its objectified (but not yet objectified) and non-objectified shares of experiential knowledge and, finally, capabilities of the situational concretizing application of theoretically-grounded knowledge or theoretically-grounded procedures and methods.“ (Pfeiffer 2014: 610-611). The subjectivation of labor action as a phenomenon of living labor ability understands experience not as a static accumulation of routines, but as a particular way of dealing with things, people, and situations (Pfeiffer and Suphan

2015). For some time, employers themselves have been expecting virtues and qualities from employees in addition to technical skills (Opaschowski 2006). Those requirements go in line with analysis, which examines job descriptions (Kanning 2007: 13-19). Since the end of the 1990s, those descriptions have shown an increase in the requirements for social competences in job advertisements.

Suphan and Pfeiffer (2015) propose an analysis of labor capabilities (AV index) and the associated capacity to work. Their analysis focuses on the questions of a German labor analysis conducted by the Professional Institute for Education and the Federal Institute for Occupational Safety and Health in 2012 (Rohrbach-Schmidt and Hall, 2013). They differ the selection of 18 questions into three separate divisions: Situational handling of complexity, Situational imponderables and Increase in structural complexity. The results of the three sections are multiplied by the relevance of experiential learning for the job.

### **3 RESEARCH AND DATA ANALYSIS**

In order to meet the demands of work in a computerized world, the following question arises: *Which working competences and working abilities must employees have - especially in the area of IT workers, who are particularly affected by digitalization?*

Based on the theory of informatization and the approaches of working asset analysis a triangulated research design is performed to understand the working worlds of IT workers. A contrast between traditional and agile working assets in the IT departments will be the result of the analysis.

In the first research step, the questions of the AV index (Pfeiffer and Suphan 2015), extended by quantitative questions on work activity, and are used to gain an impression of the group structures and hierarchical levels in companies.

Based on the results of the first research step, interviews with different roles within IT and IT projects will be conducted in the second step. This second step is planned as a set of intensive interviews based on narrative depth controlled by impulse questions. The qualitative data collected will be used to support the quantitative statements on roles and for the formation of inductive categories (Berger-Grabner 2016) for work activities. The interviews will be accompanied by a description of the respective workplace and working environment.

The information collected in the second step is used for the third and final analysis for inductive category formation. In the observation in the third step, employed persons in companies will be observed in group discussions (Kauffeld 2005: 290) and structured within interactions (Lamnek 2010: 509-510; Kauffeld 2005: 275).

The focus in this last step is on the differentiation of the interaction in project sprints and process steps, customer interaction and administrative management.

### **4 CONCLUSION**

The results will provide information about those kinds of skills, which are necessary for self-determined work and display how different approaches result in several types of outcomes.

The results should display the inequality in the analyzed workforce regarding work behavior, working assets, labor capacity and the dedicated requirements to fulfil within an agile and traditional working place. The results will be used to define a framework for scientific education offers as well as for the participation of employees and the necessary participation of companies.

### **5 ACKNOWLEDGEMENTS**

The project underlying this document was funded by the Federal Ministry of Education and Research Germany under funding code 16OH22005. The author is responsible for the content of this publication.

## 6 REFERENCES

1. Berger-Grabner, D. (2016). *Wissenschaftliches Arbeiten in den Wirtschafts- und Sozialwissenschaften*. Wiesbaden: VS.
2. Boes, A., Kämpf, T. (2006). Internationalisierung und Informatisierung: Zur neuen Produktivitätskraftstruktur globaler Wertschöpfungsprozesse. In Baurowitz, A., Berker, T., Boes, A., Pfeiffer, S., Schmiede, R., Will, M. (Eds.): *Informatisierung der Arbeit - Gesellschaft im Umbruch* (p. 320-334). Berlin: Edition Sigma.
3. Boes, A., Kämpf, T. (2011). *Global verteilte Kopfarbeit – Offshoring und der Wandel der Arbeitsbeziehungen*. Berlin: Edition Sigma.
4. Boes, A., Kämpf, T., Langes, B., Lühr T. (2014). Informatisierung und neue Entwicklungstendenzen von Arbeit. *Arbeits- und Industriosozilogische Studien*, 7(1), p. 5-23.
5. Boes, A., Pfeiffer, S. (2006). *Thesen zur Informatisierung der Arbeit: Neue Qualität der Entwicklung, neue Perspektiven für die Arbeitsforschung*. In Dunkel, W., Sauer, D. (Eds.): *Von der Allgegenwart der verschwindenden Arbeit: Neue Herausforderungen für die Arbeitsforschung* (p. 31-44). Berlin: Edition Sigma.
6. Böhle, F., Bolte, A., Pfeiffer, S. & Porschen, S. (2008). *Kooperation und Kommunikation in dezentralen Organisationen – Wandel von formalen und informellen Handeln*. In Funken, C., Schulz-Schaeffer, I. (Eds.): *Digitalisierung der Arbeitswelt, zur Neuordnung formeller Prozesse in Unternehmen* (p. 93-115). Wiesbaden: VS.
7. Castells, M. (2001): *Das Informationszeitalter I – Die Netzwerkgesellschaft*, Opladen: Leske + Budrich.
8. Castells, M. (2003): *Das Informationszeitalter III – Jahrtausendwende*, Opladen: Leske + Budrich.
9. DIHK (2010): *IT-Weiterbildung: Rahmenlehrplan mit Lernzielen*, Berlin: DIHK.
10. Kanning, U. P. (2007). *Soziale Kompetenzen in der Personalentwicklung*. In U. P. Kanning (Ed.), *Förderung sozialer Kompetenzen in der Personalentwicklung* (p. 13-36). Göttingen: Hogrefe.
11. Kauffeld, S. (2005). *Strukturierte Beobachtung*. In Kühl, S., Strotholz, P., Taffertshofer, A. (Eds.): *Quantitative Methoden der Organisationsforschung* (p. 273-308). Wiesbaden: VS.
12. Lamnek, S. (2010). *Qualitative Sozialforschung*. Weinheim: Beltz.
13. Marx, K. (1979). *Das Kapital: Kritik der politischen Ökonomie*. In Marx-Engels-Werke, No. 23, Berlin: Dietz.
14. Opaschowski, H. W. (2006). *Deutschland 2020 – Wie wir morgen leben – Prognosen der Wissenschaft*. Wiesbaden: VS.
15. Pfeiffer, S. (2004). *Arbeitsvermögen: Ein Schlüssel zur Analyse (reflexiver) Informatisierung*. Wiesbaden: VS.
16. Pfeiffer, S. (2014). *Digital Labour and the Use-value of Human Work, On the Importance of Labouring Capacity for Understanding Digital Capitalism*. *Triple C*, 12(2), p. 599-619.
17. Pfeiffer, S., Suphan, A. (2015). *Der AV-Index. Lebendiges Arbeitsvermögen und Erfahrung als Ressourcen auf dem Weg zu Industrie 4.0*. Working Paper 2015 #1, University Hohenheim.
18. Rogalla, I./Witt-Schleuer, D. (2004): *IT-Weiterbildung mit System*, Hannover: Heise.
19. Rohrbach-Schmidt, D., Hall, A. (2013). *BIBB/BAuA-Erwerbstätigenbefragung 2012, Version 4.1, BIBB-FDZ Daten- und Methodenberichte Nr. 1/2013*. Retrieved from [https://www.bibb.de/dokumente/pdf/FDZ\\_DuMB\\_ETB12\\_4\\_0\\_DE.pdf](https://www.bibb.de/dokumente/pdf/FDZ_DuMB_ETB12_4_0_DE.pdf)
20. Schiller, D. (1999). *Digital capitalism: Networking the global market system*. Cambridge, Mass: MIT Press.
21. Schmiede, R. (1981): *Rationalisierung und reelle Subsumtion: Überlegungen zu den Arbeiten des Frankfurter Instituts für Sozialforschung 1970 bis 1980*. In: Schulte, Werner (Ed.): *Soziologie in der Gesellschaft: Referate aus den Veranstaltungen der Sektionen der Deutschen Gesellschaft für Soziologie, der Ad-hoc-Gruppen und des Berufsverbandes Deutscher Soziologen beim 20. Deutschen Soziologentag Bremen, 16. bis 19. September*. Bremen.
22. Schmiede, R. (1996). *Informatisierung, Formalisierung und kapitalistische Produktionsweise*. In Schmiede, R. (Ed.): *Virtuelle Arbeitswelten* (p. 107-128). Berlin: Edition Sigma.
23. Schmiede, R. (2006). *Informationeller Kapitalismus und Subjekt*. In Kronauer, M., Ranc, J., Klärner A. (Eds.): *Grenzgänge: Reflexionen zu einem barbarischen Jahrhundert* (p. 244-254). Frankfurt am Main: Humanities Online.
24. Städler, M., von Zobeltitz, A., Linke, K. (2018). *Das Forschungsprojekt „Open IT“ und die Bedeutung für IT-PraktikerInnen mit abgeschlossener IT-Erst- und Zweitausbildung*. In Städler, M., von Zobeltitz, A. (Eds.): *Akademische Weiterbildung für IT-*

Fachkräfte (p. 3-12). Hamburg: HSW Schriftenreihe (1).

25. Will-Zocholl, M. (2016). Die Verlockung des Virtuellen. Reorganisation von Arbeit unter Bedingungen der Informatisierung, Digitalisierung und Virtualisierung. AIS-Studien, 9(1), p. 25-42.