Impact of Digitalization on Service Work in Knowledge-Intensive Business Services: An Empirical Study in Tax Consultancies

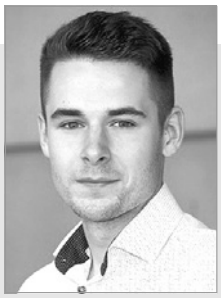
By Philipp K. Görs*, Henning Hummert, Anne Traum, and Friedemann W. Nerdinger

Digitalization is a megatrend, but there is relatively little knowledge about its consequences for service work in general and specifically in knowledge-intensive business services (KIBS). We studied the impact of digitalization on psychological consequences for employees in tax consultancies as a special case of KIBS. We compare two tax consulting jobs with very different job demands, those of tax consultants (TCs) and assistant tax consultants (ATCs). The results show that the extent of digitalization at the workplace level for ATCs correlates significantly positively with their job satisfaction. For TCs, the same variable correlates positively with their work engagement. These positive effects of digitalization are mediated in the case of ATCs by the impact on important job characteristics. In the case of TCs, which already have very good working conditions, the impact is mediated by the positive effect on self-efficacy. Theoretical and practical consequences of these results are discussed.

1. Introduction

Digitalization plays a special role in international business development, where technology changes the way people work (Lee et al. 2019; Montealegre and Cascio 2017). In addition to increasing technological complexity, knowledge intensity is growing in many industries (Aarikka-Stenroos and Jaakkola 2012). As the importance of technology for services has already been sufficiently emphasized (Parasuraman 2000; Singh et al. 2017), and many companies are recognizing the potential productivity gains from digital technology adoption (Muro et al. 2017), the question that arises is what concrete effects digital change will have on employees in the service sector. Due to the growing knowledge intensity, which is, inter alia, caused by digital change, knowledge-intensive business services (KIBS) appear to be particularly relevant for investigation of the effects that this technology has on employees. The importance of KIBS for the European Economic Area has already been highlighted, as they were the main source for job creation at the turn of the century (European Commission 2009).

Tax consulting is a typical example of KIBS (Muller and Doloreux 2009), and the international tax system is also facing a variety of challenges as a result of digitalization (Olbert and Spengel 2017). Hence, the empirical approach to the aforementioned problem in the current paper is provided by investigating the German tax consulting industry, which is regarded as particularly knowledge-intensive due to its high statutory regulation and high education



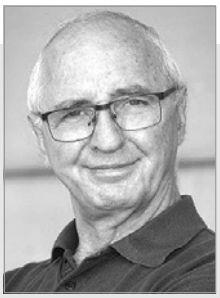
Philipp K. Görs is Research Assistant at Senior Professorship for Business and Organizational Psychology, University of Rostock, Ulmenstr. 69, 18057 Rostock, Germany, E-Mail: philipp.goers@uni-rostock.de
* Corresponding Author.



Henning Hummert is Research Assistant at Chair of Organizational and Personnel Psychology, University of Rostock, Ulmenstr. 69, 18057 Rostock, Germany, E-Mail: henning.hummert@uni-rostock.de



Anne Traum is Research Assistant at Senior Professorship for Business and Organizational Psychology and at Chair of Organizational and Personnel Psychology, University of Rostock, Ulmenstr. 69, 18057 Rostock, Germany, E-Mail: anne.traum@uni-rostock.de



Friedemann W. Nerdinger is Senior Professor for Business and Organizational Psychology, Senior Professorship for Business and Organizational Psychology, University of Rostock, Ulmenstr. 69, 18057 Rostock, Germany, E-Mail: friedemann.nerdinger@uni-rostock.de

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level among employees on average (Blaufus et al. 2017). Using an approach to examine the effects of digitalization by focusing on the psychological consequences for working individuals, this article investigates possible positive and negative consequences for perceptions of the work of those affected. Thus, we analyse the effects of digitalization on two different occupational groups who differ in terms of formal education and areas of responsibility: chartered tax consultants (TCs) and assistant tax consultants (ATCs).

Our study makes multiple contributions: First, it is the first empirical study to examine the effects of digitalization on employees in KIBS. Therefore, the research is not based on technology itself but rather deals with the question of how employees cope with increasing demands resulting from digitalization. This is important, since the way employees use and manage technology is crucial for empowerment and constraints in their work (Montealegre and Cascio 2017). In addition, our study allows us to derive recommendations for managerial practice by investigating the extent to which increasing digitalization is related to the individual perceptions of work. In addition, the relationship between digitalization and subjectively perceived work outcomes, such as job satisfaction and work engagement, is examined for the first time within the framework of tax consulting services, based on the job demands-resources (JD-R) model of burnout by Demerouti et al. (2001). To address the research gaps mentioned above, an empirical model is proposed and tested.

The remainder of the article is structured as follows: The next section provides an overview of the conceptual framework of our study. This includes derivation of a definition of digitalization focused on the individual employee, and characterization of the particularities of the underlying service context. A preliminary study is then described, and hypotheses are derived. After presenting the methodology, including data collection and measurement of the variables, the empirical results are summarized. The article concludes with a discussion and implications for managerial practice, as well as details of the study's limitations and an outlook on further research.

2. Conceptual Framework

2.1. Digitalization of Service Work

Although digitalization is a megatrend (Lee et al. 2019), it seems to be difficult to define this concept clearly. A literature review by Schmidt and Drews (2016, p. 970) shows that out of 52 selected articles on the effects of digitalization on business models in the financial industry, only four provide a clear definition of digitalization. In addition, the terms "digitization" and "digitalization" are often used interchangeably. However, digitization simply refers to the process of converting analogue information to digital (Gobble 2018; OED Online 2010a), whereas digitalization is, for example, defined as "the adoption or increase in use of digital or computer technology by an organization, industry, country, etc." (OED Online 2010b) or rather as "the use of digital technologies to change a business model and provide new revenue and value-producing opportunities" (Gartner Inc. n.d.).

It is striking that both conceptual definitions fail to refer to the individual affected by these developments. However, such reference is crucial in order to understand the impact on the service sector in which the working individual's actions are a decisive factor (Wirtz and Jerger 2016). Therefore, we developed a more comprehensive definition that takes into account the effects on the individual. We define digitalization as the introduction or increased use of information and communication technologies (ICT) by (working) individuals, organizations, industries, and societies, with the characteristic consequences of acceleration, increasing abstractness and flexibility, and individualization of processes and outcomes.

In the context of digitalization, specific topics, such as the implementation of new technologies (Onnasch et al. 2014), have already been extensively researched. In addition, there are initial studies on the effects of digitalization and the introduction of new technologies in non-manufacturing industries (Tarafdar et al. 2015). However, studies that focus on changing work processes and their impact on employee performance outcomes are lacking. To explore the impact of digitalization on service workers, we focus specifically on KIBS.

2.2. Knowledge-Intensive Business Services

There are several conceptualizations of KIBS in the relevant literature (Muller and Doloreux 2009). According to den Hertog (2000) and Miles et al. (1995), KIBS can be defined as services that rely on professional knowledge. KIBS providers supply services that are knowledge-based, whereby most of their clients are other businesses, so knowledge-intensive activities tend to be business-related and relatively expensive by nature. Value-added activities in KIBS are composed of the collection, formation, and distribution of knowledge by means of vigorous and frequent interactions between the service provider and client companies (Bettencourt et al. 2002; Mustak 2019). Usually, the client's staff cannot benefit from the strategically important knowledge provided by KIBS without advice, as in the case of the adoption of ICT (Wood 2002). This kind of support refers to the role of KIBS as service-mediated facilitators for innovation (Bilderbeek and den Hertog 1998; Miles et al. 1995) and illustrates the role KIBS can play in digitalization processes.

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Tax consulting is highlighted in this paper as an example of a knowledge-based service setting (Dunbar and Phillips 2001) that belongs to one sub-sector of KIBS referring to the statistical classification of economic activities in the European Community (NACE Rev. 2) alongside other business activities, such as accounting, bookkeeping, and market research (European Commission 2009, p. 15; Eurostat 2008; Schnabl and Zenker 2013).

2.3. Tax Consulting as a Specific Case of Knowledge-Intensive Business Services

At this point, the specific KIBS case of tax consulting, and its particularities, will be characterized. This industry serves as a good example in the digitalization context, as the business model of tax consulting has gone through various stages of the development cycle towards Industry 4.0 starting in the second half of the last century (Egner 2018, p. 3). Tax consultants are of particular importance in every tax system, as they help clients to understand existing tax codes and to fulfil their tax liabilities (OECD 2008, pp. 13–14). Compared to other non-audit services, tax services can have a direct impact on clients' income and cash flows as tax consultants try to maximize their clients' after-tax income for a given level of risk (Klepper and Nagin 1989; Omer et al. 2006). Typical activities undertaken by tax consultants that serve these purposes include, for example, tax compliance, tax accounting, tax planning, and dispute resolution. Decisive factors for the tax consultant's behaviour within these activities are, among others, client, legal, and personal responsibilities, or financial and reputation risks, whereby the mentioned personal responsibilities are directly linked to the tax system's regulation in a specific country (OECD 2008, pp. 15–16).

There are several regulatory approaches that aim to protect clients from inappropriate tax advice – one example of a tax system with a very high level of regulation can be found in Germany (comparable with Austria, China, and Japan). The German tax consultancy profession has a long history and a long-established legal organization resulting in a regulated professional monopoly for tax practice (Blaufus et al. 2017; Thuronyi and Vanistendael 1996). In Germany, tax consultants are required to pass an official taxation exam in order to become chartered and able to provide tax advisory services (Frey 2018). Most tax consultants have a university degree in economics or law, and at least two years of work experience (Blaufus et al. 2017). In less extensively regulated tax systems, such as that of the United States, even individuals without qualifications or professional training are allowed to work in tax consulting (Thuronyi and Vanistendael 1996).

Looking back on the characterization of KIBS provided previously, it is important to know that German tax consultants have a high education level on average, and their services are more expensive compared with other countries. However, this does not necessarily lead to higher or lower expected economic benefits for clients (Blaufus et al. 2017). Furthermore, tax consultants are obligated by German tax consultancy law to undergo further training (StBerG 2016, § 57 para. 2a). Previous studies have also shown that tax knowledge generally has a positive effect on the ability to identify tax issues, whereby declarative tax knowledge – which refers to tax laws and is conveyed through exams – improves the likelihood that the individual can identify potential tax issues, while procedural knowledge – which is gained via practical experience – has no influence on quantitative performance (Bonner et al. 1992; Frey 2018). The strong regulation of the tax system and the high education level reinforce the above-mentioned reasons why the German tax system is most suitable for an investigation of KIBS.

Two tax advice jobs with very different job demands are compared in this study, performed by TCs and ATCs [1]. According to the legal basis (StBerG 2016, § 33), TCs have the task of advising, representing, and assisting their clients in tax matters, in handling their tax affairs, and in fulfilling their tax obligations in the context of their mandate. With regard to the framework curriculum, the training for ATCs only enables them to undertake occupational tasks related to tax advice (StFachAngAusbV 1996, annex 2, p. 4). Generally, ATCs carry out preparatory work connected to tax declaration, the examination of tax assessments, and preparation of the tax audit, which is of great relevance for the work of TCs. At this point, it is also important to note that TCs are liable for the quality of work of ATCs, and are also responsible for the organizational framework of the tax consultancy office. As a result, it is usually possible to characterize TCs as tax experts, but also as freelancers, entrepreneurs, and managers (Riedlinger and Fischer 2018, p. 372). The role of German TCs as business consultants, and their resulting close collaboration with clients for value co-creation through a dyadic problem-solving process (Aarikka-Stenroos and Jaakkola 2012), will be discussed later in this article.

2.4. Digitalization in Tax Consultancies

The tax consultancy industry has undergone a fundamental change in recent years. The legally forced digitalization with respect to electronic balances, tax statements, and electronic government is changing the work in German tax consulting substantially (Kunde 2013). However, most publications on tax consultancies are based on rational considerations (e. g. Beck et al. 1996; Klepper and Nagin 1989) and overlook the attitudes and behaviour patterns of working individuals in tax consulting services; in particular, the impact of digitalization has not yet been empirically investigated.

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Due to the lack of extant empirical results, we developed a new scale to measure the level of digitalization of the workplace in tax consultancies (see section 4.2). By surveying TCs and ATCs during the process of scale development, an in-depth understanding emerged of tax consultancy industry members' perceptions of digitalization and how it affects their work. Examples of the digitalization of work in tax consultancies include, for example, digital bookkeeping, document management systems, digital document transfer, use of cloud services, and substantial time saving. Furthermore, TCs and ATCs were found to differ in their response behaviour with regard to the impact of digitalization on their work.

3. Preliminary Study and Formation of Hypotheses

3.1. Explorative Interviews

In order to gain an initial insight into how TCs and ATCs perceive digitalization in the tax consulting industry, a preliminary study was conducted; this is summarized below. Due to the lack of literature on digitalization's effect on service work, qualitative data was initially gathered by means of an interview study.

A total of 14 semi-structured interviews with employees of tax consultancies (10 ATCs, four TCs) were conducted to explore the effects of digitalization on their work activities and the resulting consequences of these effects. The interviewed participants reported a shift towards more challenging job tasks, with increased control obligations and an acceleration of their work in the course of digitalization. They also highlighted a decomposition of complex work assignments into subtasks processed by different employees. In addition, a high level of technology-based communication, both among employees and between them and their leaders or clients, was found to be a major consequence of increasing digitalization. These findings show similarities to our abovementioned definition of digitalization. Concerning the impact of digitalization for working individuals, most ATCs expressed some kind of anxiety caused by digitalization, which would presumably result in lower job satisfaction for the ATCs due to their specific work structure. However, TCs did not mention such consequences. These findings are taken into account for the following hypotheses development in order to be assessed empirically.

3.2. Hypotheses

As mentioned previously, there are major differences between the activities of TCs versus ATCs. Our starting point for comparing the influence of digitalization on the work of both professions is the assumption that the two groups differ with respect to the level of digitalization in the workplace. Due to TCs' more demanding job, associated entrepreneurship, and responsibility for the firm, it can be assumed that the impact of digitalization on TCs' work is stronger than that on ATCs' work. Thus, we hypothesize:

H1: Compared to ATCs, TCs judge their workplace to have been subject to a higher degree of digitalization.

Based on the initial exploratory findings above, it can be concluded that digitalization affects work requirements, work content, and resources. A theoretical model in the work context that addresses these factors and attempts to explain the emergence of stress and health restrictions, as well as motivation and performance, is the JD-R model (Demerouti et al. 2001). As specified in the model, there are two general categories of factors associated with job stress: job demands and job resources. Job demands, such as high work pressure or an unfavourable physical environment, are associated with psychological and physiological costs, leading to strain and burnout. In addition, job resources including social support or autonomy increase motivation and may buffer the aforementioned impact of job demands on job strain (Bakker et al. 2003; Bakker and Demerouti 2007).

Wang et al. (2017) attempt to include the adoption of ICT in the workplace in the JD-R model. The authors assume, in line with the JD-R model, that resources moderate the relationship between job demands (technological and non-technological stressors) and job performance. This assumption serves as the basis for the derivation of our hypotheses below. The central job demand analysed in this study is the level of digitalization in the workplace. Following the approach of Wang et al. (2017), we focus on two different dimensions of psychological outcomes of work by analysing the impact of digitalization on job satisfaction and work engagement. Job satisfaction is defined as "a positive (or negative) evaluative judgment one makes about one's job or job situation" (Weiss 2002, p. 175). Job satisfaction is seen as an attitude (Brief and Weiss 2002), whereas work engagement is seen as a description of experiences that is shaped by an individual's work (Christian et al. 2011). Therefore, work engagement can be considered as the opposite of burnout, being defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al. 2002, p. 74).

Previous studies suggest that there might be some negative effects of digitalization on employees (ATCs in this research). The additional expenditure caused by reshaped work processes leads to increased demands, and these changes are always accompanied by the fear of employees not being able to cope with them (Riedlinger and Fischer 2018). Moreover, fears regarding job losses, which are stigmatized in the public debate (Arntz et al. 2016), result in

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reservations about digitalization, as was also evident in our preliminary interviews. Several empirical studies investigating the influence of ICT also propose a negative impact of digitalization on the outcomes mentioned above. Ragu-Nathan et al. (2008) provide evidence that an individual's stress experienced due to the use of ICT can decrease their job satisfaction. Ter Hoeven et al. (2016) emphasize that communication technology use can increase work engagement through enhanced accessibility and communication efficiency, and decrease work engagement through the greater incidence of interruptions. Assuming that ATCs' level of digitalization in the workplace is lower than that of TCs, so that they cannot take full advantage of the opportunities offered by digitalization, and have reservations about digitalization, the negative effects are expected to predominate. In concordance with the participants' statements in our preliminary study, we hypothesize:

H2: The higher the degree of digitalization at ATCs' individual workplace level, the lower are their (a) job satisfaction and (b) work engagement.

At this point, we assume that the hypothesized relationship between digitalization as a job demand and job satisfaction respectively work engagement as job outcomes is moderated by job resources, as assumed in the JD-R model. In this model, internal (personal, e. g. self-efficacy) and external (organizational, e. g. job characteristics) resources can be distinguished (Demerouti et al. 2001; Wang et al. 2017). Due to the aforementioned fears and reservations of ATCs about digitalization, and the fact that they are more likely than TCs to carry out executive tasks because of their dependent position, we expect that, in particular, external resources at task level can buffer the negative impact on job outcomes.

A suitable concept to illustrate the task level of resources is the job characteristics model proposed by Hackman and Oldham (1976). According to these authors, five job characteristics that foster the emergence of psychological states can be distinguished. Skill variety, task identity, and autonomy are analysed in the following as three central characteristics of the work itself. Skill variety is defined as "the degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the person"; task identity is described as "the degree to which a job requires completion of a 'whole' identifiable piece of work; that is, doing a job from beginning to end with a visible outcome"; and autonomy refers to the experienced responsibility for the work outcomes, and is defined as "the degree to which the job provides substantial freedom, independence, and discretion to the individual in scheduling the work and in determining the procedures to be used in carrying it out" (Hackman and Oldham 1976, pp. 257–258).

As the job characteristics model suggests, job characteristics with higher motivational potential will lead to greater job satisfaction compared to characteristics with lower potential (Hackman and Oldham 1976). Finally, we assume that the level of digitalization of work leads to lower job satisfaction and work engagement in the case that job characteristics are unfavourable. If employees already have jobs characterized by, for example, high autonomy, the negative effect of digitalization should be buffered. Hence, we hypothesize:

H3: The impact of digitalization on ATCs' (a) job satisfaction and (b) work engagement is moderated by the job characteristics skill variety, task identity, and autonomy.

The impact of digitalization on tax consultants will be considered below. Referring to the role of tax consultants as business consultants, Elster (2018) highlights the potential for tax consultants to act as advisors in digitalization matters. Furthermore, Riedlinger and Fischer (2018) consider digitalization as an opportunity for tax consultants to increase clients' loyalty due to the consultants' expertise. These insights could be explained with reference to the knowledge-intensive character of the service, and should be associated with a higher interest of TCs in digitalization matters.

As suggested in *H1*, we expect TCs' workplaces to have a higher level of digitalization due to their more demanding job and their role as an entrepreneur. Ten Brummelhuis et al. (2012) show that the daily use of new ways of working, which are characterized, for example, by high scopes of action and the use of modern communication technologies, leads to higher work engagement. These results are similar to those found by Ter Hoeven et al. (2016). In conjunction with the preliminary reflections on the JD-R model, we suggest that the level of digitalization has a positive impact on TCs' work engagement. In line with *H2*, we also suggest a positive impact on TCs' job satisfaction. Consequently, we propose the following hypothesis:

H4: The higher the degree of digitalization at TCs' individual workplace level, the higher their (a) job satisfaction and (b) work engagement.

TCs should have greater external job resources, such as job characteristics, compared to ATCs, due to the formers' more demanding activity. It can therefore be assumed that digitalization has less influence on their activities since, as already mentioned, TCs are more intrinsically motivated to deal individually with aspects of digitalization. This can be explained with reference to two aspects. On the one hand, by supporting clients, who are deeply rooted in analogue procedures, in issues concerning digitalization. On the other hand, there are clients whose companies are technologically advanced or whose core business centres on digital products and services. This latter group expects to be consulted by TCs in terms of ICT on equal terms

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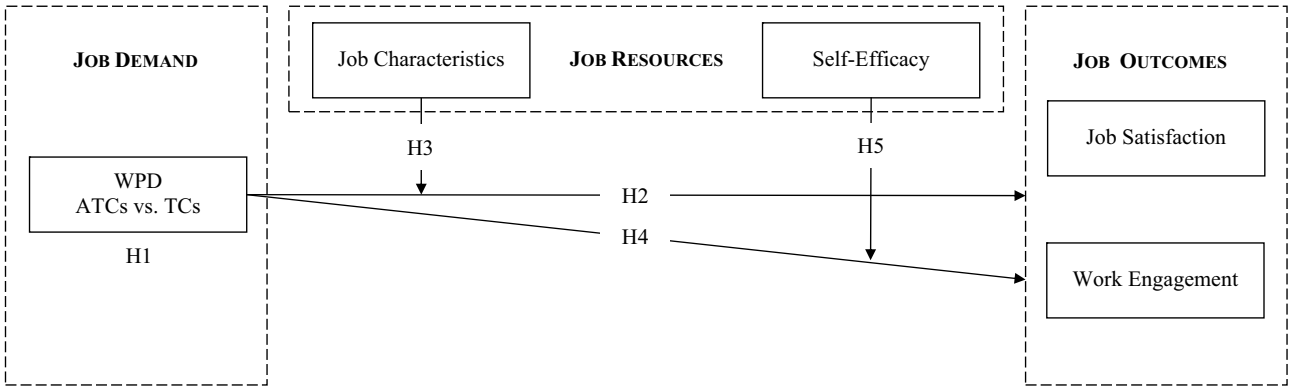

Fig. 1: Research model

(Elster 2018). To take control of their very demanding job by means of digitalization, it can be expected that TCs need high personal resources such as self-efficacy (Xanthopoulou et al. 2013). Self-efficacy refers to "individuals' perception of their ability to perform across a variety of situations" (Judge et al. 1998, p. 170). By summarizing several empirical findings, Xanthopoulou et al. (2007) recognize that the possession of greater personal resources helps individuals to cope with demanding conditions. In addition, finding adequate solutions results in enhanced engagement (Xanthopoulou et al. 2013), which could also be assumed on the basis of the JD-R model. Hence, we hypothesize:

H5: The impact of digitalization on TCs' (a) job satisfaction and (b) work engagement is moderated by self-efficacy.

Fig. 1 summarizes the hypothetical relationships in the research model, with the degree of digitalization on the workplace level (WPD) as an independent variable that directly influences job outcomes such as job satisfaction and work engagement. The different relationships are moderated by internal (self-efficacy) and external (job characteristics) job resources.

4. Empirical Study

4.1. Research Design and Sample Properties

We conducted an online survey in which we invited employees of tax consultancies to participate. The survey consisted of a short introduction, measures for the variables, and descriptive statistics. A total of 457 individuals took part, of whom 191 ATCs and 94 TCs were considered and are briefly characterized in the following.

Among the ATCs, 79.6 % were female, the average age was 36.26 years (*SD* = 13.23), and their mean work experience in the tax industry was 14.68 years (*SD* = 11.35), ranging from one to 44 years. By contrast, only 45.7 % of the TCs were female, with a mean age of 41.74 years (*SD* = 10.32) and an average of 19.54 years (*SD* = 10.57) of professional experience, ranging from one to 49 years, at the time the survey was conducted.

4.2. Measurement and Operationalization

When the research activities began, there was no reliable and valid instrument for assessing the degree of digitalization in service companies with special regard for the working individual. Inspired by the procedure recommended by MacKenzie et al. (2011), a new scale has been developed that is able to measure the level of digitalization in tax consultancy workplaces (Müller et al. 2018). Three fundamental steps determined the procedure: Initially, a broad pool of digitalization indicators was collected with a standardized online survey (*N* = 106) and divided into categories in accordance with the principles of qualitative content analysis (Mayring 2014). The answers were grouped into 20 categories and served as input for the formulation of items that were then transferred into the second survey. The objective of the second survey was to reduce the initial item pool into a manageable quantity. Therefore, participants (*N* = 49) from the first study were asked to rate the items in terms of relevance for digitalization in general, and for their job in particular. Additionally, the initial item pool was ranked by a group of four experts. Ultimately, the number of items at the end of this stage was 22. Subsequently, a third survey was conducted with employees from tax consultancies (*N* = 77), with the aim of providing a first assessment of quality criteria and creation of the final version. Consequently, nine of the 22 items were removed from the scale based on item-total correlations.

The content validity of the remaining 13 items establishing the digitalization scale can be assumed. First, the scale development process focused on a previously defined construct, suggesting that the scale content exactly reflects the conceptual definition. In addition, content experts reviewed the items to increase the likelihood of including relevant content in the scale (DeVellis 2017, pp. 84–85). Finally, certain components of the scale, such as scanning or use of ICT, derive from digital transformation, supporting

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Variables	*N*	*M*	*SD*	*α*
Level of digitalization in the workplace	185	2.96	.73	.79
Job satisfaction	178	3.83	.83	n.a.
Work engagement	190	4.57	1.15	.94
Skill variety	191	4.00	.72	.68
Task identity	191	4.09	.81	.64
Autonomy	191	3.84	.78	.77
Self-efficacy	191	3.77	.68	.86

Notes: n.a. = not applicable

Tab. 1: Descriptive statistics of the ATC sample (N = 191)

Variables	*N*	*M*	*SD*	*α*
Level of digitalization in the workplace	94	3.50	.76	.84
Job satisfaction	92	4.04	.84	n.a.
Work engagement	94	4.80	1.04	.93
Skill variety	94	4.35	.60	.71
Task identity	94	4.24	.75	.61
Autonomy	94	4.20	.68	.72
Self-efficacy	94	4.13	.58	.88

Notes: n.a. = not applicable

Tab. 2: Descriptive statistics of the TC sample (N = 94)

the content validity of the scale. The full scale for measuring the workplace level of digitalization in tax consultancies can be found in *Tab. A1* in the appendix. All items were measured on a five-point Likert scale ranging from "1 = strongly disagree" to "5 = strongly agree".

To measure job outcomes and moderator variables, only scientifically established scales were used (all responses generally used five-point Likert-type scales as described above). Job satisfaction was measured with a single-item measure ("Please rate your overall job satisfaction"); five faces were used as a response scale based on the attitude measure by Kunin (1955). For work engagement, we relied on the short version of the Utrecht Work Engagement Scale (UWES-9; Schaufeli et al. 2006), which contains nine items (e. g. "At my work, I feel bursting with energy"). The three job characteristics skill variety (three items; e. g. "At work, I have frequently changing, diverse work tasks"), task identity (two items, e. g. "My work is designed in a way which allows me to create whole products from start to finish"), and autonomy (three items, e. g. "Are you able to plan and organize your work independently?") were assessed with the short questionnaire for job analysis by Prümper et al. (1995). Self-efficacy was measured with the shortened version of the occupational self-efficacy scale by Rigotti et al. (2008) (six items, e. g. "I feel prepared for most of the demands in my job").

Tab. 1 presents mean scores, standard deviations, and reliability indices (Cronbach's α) of the study variables in the ATC sample. *Tab. 2* represents the same indices for the group of TCs.

4.3. Results

In the following, the steps taken during analysis are explained in addition to the respective hypothesized relations. All hypotheses were tested using SPSS 25; for the indirect effects we used the PROCESS macro. *H1* predicted that compared to ATCs, TCs would judge their workplace to have been subject to a higher degree of digitalization. Therefore, an independent samples *t*-test was conducted to compare both occupational groups. There was a significant difference between ATCs' ($M = 2.96$, $SD = .73$) and TCs' ($M = 3.50$, $SD = .76$) digitalization scores ($t\,(277) = 5.794$, $p < .01$). These results suggest that TCs judge the degree of digitalization of their workplace to be more extensive than do ATCs, so *H1* is accepted.

To analyse the relation between the level of digitalization in the workplace and psychological outcomes of work, we chose to use the bivariate Pearson correlation to test *H2* and *H4*. *Tab. 3* provides an overview of correlation coefficients of all measures in the group of ATCs, while *Tab. 4* shows these results for TCs.

H2 predicted that there would be a negative correlation between the level of digitalization in the workplace and ATCs' job outcomes – i. e. job satisfaction and work engagement. Unexpectedly, the results indicate a positive correlation with both outcomes, whereby there is only a relatively small statistically significant linear relationship ($r = .221$, $p < .05$) with job satisfaction (Cohen 1992). Thus, *H2* is rejected because greater satisfaction appears to be obtained with an increasing level of digitalization in ATCs' workplaces, which was not assumed on the basis of the exploratory interviews.

In *H4*, we predicted a positive correlation between the level of digitalization in the workplace and TCs' job outcomes. The results show a significant correlation, with a small effect size ($r = .290$, $p < .005$), between the level of digitalization and work engagement. *H4a* is rejected, as there is no significant correlation with job satisfaction. Consequently, *H4b* is accepted, since an increase in the level of digitalization in the workplace also increases TCs' work engagement. In addition, to analyse the influence of possible control variables, PROCESS model 1 (Hayes 2018, p. 584) was used to check whether age and gender act as moderating variables. However, there is no significant influence of age or gender on the relation between the level of digitalization in the workplace and the psychological outcomes of work.

Due to the medium to large strength of correlations with the potential moderator variables there should be no mod-

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Variables	1	2	3	4	5	6
1. Level of digitalization in the workplace	–					
2. Job satisfaction	.221**	–				
3. Work engagement	.118	.587**	–			
4. Skill variety	.195**	.389**	.506**	–		
5. Task identity	.177*	.337**	.410**	.525**	–	
6. Autonomy	.204**	.389**	.420**	.471**	.472**	–

Tab. 3: Pearson correlations – ATCs

Variables	1	2	3	4
1. Level of digitalization in the workplace	–			
2. Job satisfaction	.118	–		
3. Work engagement	.290**	.501**	–	
4. Self-efficacy	.333**	.356**	.500**	–

Tab. 4: Pearson correlations – TCs

erating effects, but it was deemed likely that these job resources act as mediators. *H3* and *H5* were tested using PROCESS model 1 (Hayes 2018, p. 584), though without significant findings; thus, *H3* and *H5* are rejected. However, some prior empirical findings have suggested a mediating role of resources between job demands and outcomes (Boyd et al. 2011). In order to explain the influence of internal and external resources on the significant relations, in line with the hypothesized moderations, mediations were tested using PROCESS model 4 (Hayes 2018, p. 585). *Tab. 5* provides an overview of the indirect effects in the analysed mediation models.

H3 suggested that job characteristics as external resources would have an impact on the correlation between the level of digitalization in the workplace and job satisfaction in the ATC group. Due to a lack of significance, work engagement was excluded from the mediation analysis. Looking at the indirect coefficients, it is clear that the job characteristics skill variety and autonomy mediate the relation between the level of digitalization and job satisfaction. The mediation path via task identity is not statistically significant. In addition, the direct effect of digitalization (b = .25, p < .01) is no longer significant after including the mediator variables (b = .14, p = n.s.). This means that skill variety and autonomy fully mediate the relation between the level of digitalization in the workplace and job satisfaction (see *Fig. 2*).

H5 predicted that there would be an impact of self-efficacy as an internal resource on the relation between the level of digitalization in the workplace and work engagement in the TC group. Job satisfaction was excluded from the mediation analysis due to a lack of significance. The results indicate full mediation because the direct effect of digitalization (b = .40, p < .01) is no more significant after including self-efficacy in the model (b = .19, p = n.s.). This confirms the assumed indirect effect (see *Fig. 3*).

In summary, it can be stated that the positive effect of digitalization at the workplace level shown in the results can be explained by the fact that changes in demands have a positive impact on external (job characteristics; ATCs) and internal (self-efficacy; TCs) resources, which, in turn, have a positive impact on ATCs' job satisfaction (R^2 = .24) and TCs' work engagement (R^2 = .27).

5. Discussion and Implications

The purpose of this paper was to theoretically and empirically examine the impact of digitalization at the work-

	Effect	BootSE	BootLLCI	BootULCI
ATCs (WPD – JS)				
Total	.114	.046	.032	.209
Skill variety	.051	.033	.003	.129
Task identity	.017	.021	–.021	.064
Autonomy	.046	.029	.001	.112
TCs (WPD – WE)				
Self-efficacy	.206	.075	.078	.374

Tab. 5: Overview of the indirect effects

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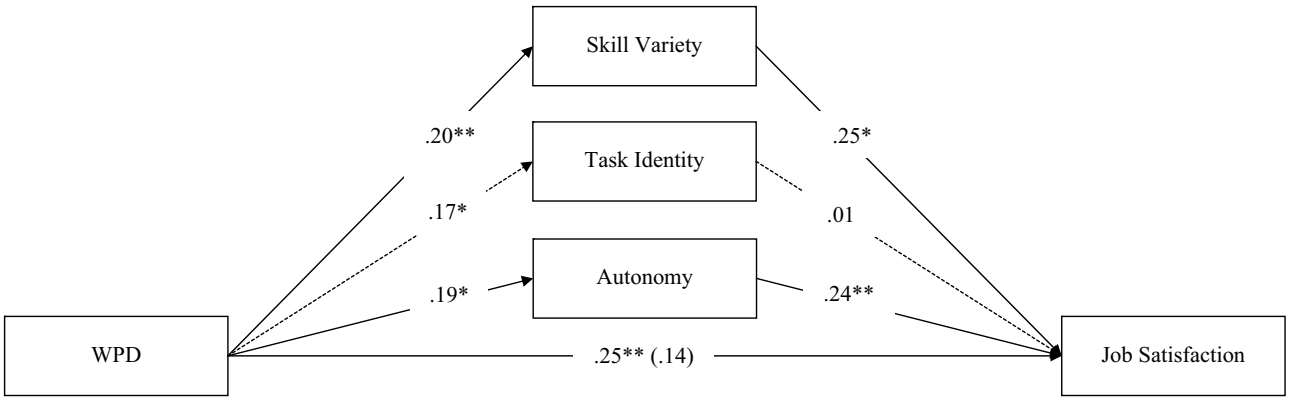

Fig. 2: Impact of digitalization on ATCs' job satisfaction, mediated by job characteristics (N = 173)

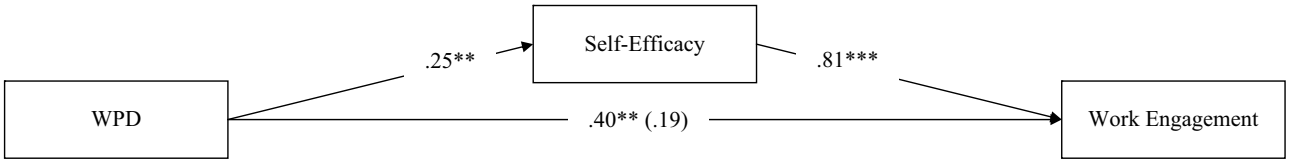

Fig. 3: Impact of digitalization on TCs' work engagement, mediated by self-efficacy (N = 94)

place level on subjectively perceived work outcomes in the context of KIBS. We identified and evaluated not only the direct effects on psychological outcomes of work, but also possible indirect effects on this relationship. To the best of our knowledge, no theoretical considerations concerning these effects have yet been made in a focused service context, or indeed the tax consulting industry as an example of KIBS. For this reason, a first empirical approach to consider the perceptions of employees of German tax consultancies was conducted via an explorative interview study. We found differences in the response behaviour of two different occupational groups, TCs and ATCs, which were empirically investigated. Based on the JD-R model, we analysed the extent to which the level of digitalization in the workplace and job outcomes are related, and how these relationships differ between TCs and ATCs. Since there is no extant reliable and valid instrument capable of determining the degree of digitalization from the perspective of employees, a new scale was developed for the further analysis. This scale was used in a survey of 285 employees from different tax consultancies in Germany.

First, we analysed the extent to which the perceptions of ATCs and TCs differ with respect to digitalization in the workplace. The available data provide empirical evidence that TCs judge the degree of digitalization in their workplace higher than do ATCs. Furthermore, the results show a statistically significant positive correlation between the level of digitalization in ATCs' workplace and their job satisfaction. This finding is contrary to the diffuse fears expressed in the preliminary interviews. Such a discrepancy can be explained by, among other things, the fact that employees tend to associate negative emotions with digitalization, as media coverage stirs up fears of job losses (Arntz et al. 2016). In fact, however, ATCs seem to perceive the impact of digitalization on their work positively, which leads to increased job satisfaction. For the group of TCs, a significant positive relationship between the level of digitalization in the workplace and work engagement was demonstrated, which, as expected, has a motivational effect in jobs with high knowledge intensity and responsibility.

The hypothesized moderation effects could not be proven due to the strong direct effects of digitalization on the job resources job characteristics and self-efficacy. Thus, contrary to the hypothesized moderating effects, full mediations were empirically confirmed. It was shown that the level of digitalization in ATCs' workplace has a positive effect on the two important job characteristics skill variety and autonomy, leading to increased job satisfaction. Highly digitalized work tasks of ATCs seem to be more multifaceted, and the scope of action seems to grow as a consequence of digitalization. For TCs, it was assumed that the job characteristics were higher due to their more demanding activities, which was also reflected in higher scores on the respective scales. In this occupational group, complete mediation between the level of digitalization in the workplace and work engagement was demonstrated through self-efficacy. Based on the consideration that, caused by digitalization, high job demands result in requirements for active coping, it seems that the majority of TCs are able to handle it well. This experience leads to increasing self-efficacy and consequently higher work engagement. In this case, digitalization thus has a motivating effect on TCs, which can be explained by the fact that TCs are highly involved in digitalization because of their entrepreneurial status.

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The main contribution of this article to the theoretical discussion of digitalization issues is the insight that technological development can have different positive effects on job outcomes depending on employees' task areas. This finding is of particular importance for further research on KIBS, as technological innovations are often introduced and accompanied within the scope of these services (Bilderbeek and den Hertog 1998). Furthermore, the findings of this study can be used to derive implications for managerial practice. In the context of accounting and comparable knowledge-intensive business activities, it is important to avoid highlighting points that could trigger anxiety and instead encourage employees to consider the possible advantages of digital change. In addition, the resulting challenges can lead to a higher self-efficacy of employees in highly digitalized workplaces, which may ultimately lead to higher work engagement.

This paper is subject to some limitations. In this study, we conducted a cross-sectional survey with a single time of measurement. The results should therefore be validated in longitudinal studies. It should be borne in mind that digitalization is a long-lasting, continuous, and multifaceted process that can take place simultaneously on several levels. It may be that the next steps of digitalization, such as the redesign of services through artificial intelligence (Huang and Rust 2018), will lead to more dramatic job changes within KIBS; thus, longitudinal studies in the future may find different results.

The findings of this paper suggest further questions with regard to digitalization that may be of particular importance for service work in KIBS and services in general. A new scale was developed in the service context mentioned above, raising the question of transferability to other business activities, as well as to KIBS in general. In addition, the validity of the scale should be further analysed. This is currently being investigated in the KODIMA project, and, along with related subjects, could also be explored in further research. In order to derive concrete recommendations for the design of workplaces by minimizing stress resulting from digitalization, and to contain potential weaknesses of the purely subjective view, the additional use of an objective work analysis procedure is required. In addition, the transferability of our results to other KIBS should be examined empirically. These areas will be investigated in the further course of the cooperative KODIMA project.

Notes

[1] The official German professional titles are *Steuerberater* (TCs) and *Steuerfachangestellte* (ATCs).

Appendix

No.	In my job …
1	… I can define keywords in computer programs.
2	… I use software for automatic text recognition (OCR).
3	… I use software to convert data.
4	… I use cloud-based services.
5	… I use software (e. g. DATEV software) that allows my clients to check tax returns before submitting them to the tax authorities.
6	… I exchange documents electronically with other authorities (e. g. banks, health insurance companies).
7	… I can dial into the office network via an ASP system from home.
8	… I have access to information at any time.
9	… I exchange documents electronically with my clients.
10	… I work paperless.
11	… my clients can use client ASP via the Internet to utilize special program applications, e. g. to enter bookings themselves.
12	… I use software that allows automatic linking of receipts and bookings.
13	… I capture notes (e. g. from telephone calls) electronically.

A1: Final scale for measuring the level of digitalization in the workplace

References

Aarikka-Stenroos, L. & Jaakkola, E. (2012). Value Co-Creation in Knowledge Intensive Business Services: A Dyadic Perspective on the Joint Problem Solving Process, *Industrial Marketing Management*, 41 (1), 15–26.

Arntz, M., Gregory, T., & Zierahn, U. (2016). The Risk of Automation for Jobs in OECD Countries: A Comparative Analysis. *OECD Social, Employment and Migration Working Papers No. 189*, Paris.

Bakker, A.B. & Demerouti, E. (2007). The Job Demands-Resources Model: State of the Art, *Journal of Managerial Psychology*, 22 (3), 309–328.

Bakker, A.B., Demerouti, E., Taris, T.W., Schaufeli, W.B., & Schreurs, P.J.G. (2003). A Multigroup Analysis of the Job Demands-Resources Model in Four Home Care Organizations, *International Journal of Stress Management*, 10 (1), 16–38.

Beck, P.J., Davis, J.S., & Jung, W.-O. (1996). Tax Advice and Reporting under Uncertainty: Theory and Experimental Evidence, *Contemporary Accounting Research*, 13 (1), 49–80.

Bettencourt, L.A., Ostrom, A.L., Brown, S.W., & Roundtree, R.I. (2002). Client Co-Production in Knowledge-Intensive Business Services, *California Management Review*, 44 (4), 100–128.

Bilderbeek, R. & den Hertog, P. (1998). Technology-Based Knowledge-Intensive Business Services in the Netherlands: Their Significance as a Driving Force behind Knowledge-Driven Innovation, *Vierteljahrshefte zur Wirtschaftsforschung*, 67 (2), 126–138.

Blaufus, K., Hechtner, F., & Möhlmann, A. (2017). The Effect of

https://doi.org/10.15358/2511-8676-2019-4-209 - Generiert durch IP 87.77.219.58, am 21.04.2026, 15:09:04. © Urheberrechtlich geschützter Inhalt. Ohne gesonderte Erlaubnis ist jede urheberrechtliche Nutzung untersagt, insbesondere die Nutzung des Inhalts im Zusammenhang mit, für oder in KI-Systemen, KI-Modellen oder Generativen Sprachmodellen.

Tax Preparation Expenses for Employees: Evidence from Germany, *Contemporary Accounting Research*, 34 (1), 525–554.

Bonner, S.E., Davis, J.S., & Jackson, B.R. (1992). Expertise in Corporate Tax Planning: The Issue Identification Stage, *Journal of Accounting Research*, 30 (3), 1–28.

Boyd, C.M., Bakker, A.B., Pignata, S., Winefield, A.H., Gillespie, N., & Stough, C. (2011). A Longitudinal Test of the Job Demands-Resources Model among Australian University Academics, *Applied Psychology*, 60 (1), 112–140.

Brief, A.P. & Weiss, H.M. (2002). Organizational Behavior: Affect in the Workplace, *Annual Review of Psychology*, 53 (1), 279–307.

Christian, M.S., Garza, A.S., & Slaughter, J.E. (2011). Work Engagement: A Quantitative Review and Test of Its Relations with Task and Contextual Performance, *Personnel Psychology*, 64 (1), 89–136.

Cohen, J. (1992). A Power Primer, *Psychological Bulletin*, 112 (1), 155–159.

Demerouti, E., Bakker, A.B., Nachreiner, F., & Schaufeli, W.B. (2001). The Job Demands-Resources Model of Burnout, *Journal of Applied Psychology*, 86 (3), 499–512.

den Hertog, P. (2000). Knowledge-Intensive Business Services as Co-Producers of Innovation, *International Journal of Innovation Management*, 4 (4), 491–528.

DeVellis, R.F. (2017). *Scale Development: Theory and Applications* (4th ed.), Los Angeles, SAGE.

Dunbar, A.E. & Phillips, J.D. (2001). The Outsourcing of Corporate Tax Function Activities, *The Journal of the American Taxation Association*, 23 (2), 35–49.

Egner, T. (2018). *Digitale Geschäftsmodelle in der Steuerberatung*, Wiesbaden, Springer Fachmedien.

Elster, H. (2018). "Das Zusammenwirken von Unternehmen und Steuerberatern/Wirtschaftsprüfern als Erfolgsfaktor auf dem Weg ins digitale Zeitalter", in Bär, C., Grädler, T., & Mayr, R. (Eds.). *Digitalisierung im Spannungsfeld von Politik, Wirtschaft, Wissenschaft und Recht*, Berlin, Springer Gabler, 67–75.

European Commission (2009). *Challenges for EU Support to Innovation in Services – Fostering New Markets and Jobs through Innovation*, Luxembourg, Publications Office of the European Union.

Eurostat (2008). NACE Rev. 2. Statistical Classification of Economic Activities in the European Community. *Eurostat Methodologies and Working Papers*, Luxembourg, Office for Official Publications of the European Communities.

Frey, L. (2018). Tax Certified Individual Auditors and Effective Tax Rates, *Business Research*, 11 (1), 77–114.

Gartner Inc. (n.d.). Digitalization. Retrieved from https://www.gartner.com/it-glossary/digitalization.

Gobble, M.M. (2018). Digitalization, Digitization, and Innovation, *Research-Technology Management*, 61 (4), 56–59.

Hackman, J.R. & Oldham, G.R. (1976). Motivation through the Design of Work: Test of a Theory, *Organizational Behavior and Human Performance*, 16 (2), 250–279.

Hayes, A.F. (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* (2nd ed.), New York, Guilford Press.

Huang, M.-H. & Rust, R.T. (2018). Artificial Intelligence in Service, *Journal of Service Research*, 21 (2), 155–172.

Judge, T.A., Erez, A., & Bono, J.E. (1998). The Power of Being Positive: The Relation between Positive Self-Concept and Job Performance, *Human Performance*, 11 (2–3), 167–187.

Klepper, S. & Nagin, D. (1989). The Role of Tax Preparers in Tax Compliance, *Policy Sciences*, 22 (2), 167–194.

Kunde, D. (2013). Digitale Kanzlei. Spürbarer Fortschritt, *SteuerConsultant*, 6 (6), 38–41.

Kunin, T. (1955). The Construction of a New Type of Attitude Measure, *Personnel Psychology*, 8 (1), 65–77.

Lee, Y.-Y., Falahat, M., & Sia, B.-K. (2019). Impact of Digitalization on the Speed of Internationalization, *International Business Research*, 12 (4), 1–11.

MacKenzie, S.B., Podsakoff, P.M., & Podsakoff, N.P. (2011). Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New and Existing Techniques, *MIS Quarterly*, 35 (2), 293–334.

Mayring, P. (2014). *Qualitative Content Analysis: Theoretical Foundation, Basic Procedures and Software Solution*, Klagenfurt, Beltz.

Miles, I., Kastrinos, N., Flanagan, K., Bilderbeek, R., den Hertog, P., Huntink, W., & Bouman, M. (1995). Knowledge-Intensive Business Services: Users, Carriers and Sources of Innovation. *EIMS Publication No. 15*, Brussels.

Montealegre, R. & Cascio, W.F. (2017). Technology-Driven Changes in Work and Employment, *Communications of the ACM*, 60 (12), 60–67.

Müller, C., Hummert, H., Traum, A., Görs, P.K., & Nerdinger, F.W. (2018). Entwicklung von Skalen zur Erfassung des organisationalen bzw. arbeitsplatzbezogenen Digitalisierungsgrades (ODG/ADG-Skala) in Steuerberatungskanzleien. *Rostocker Beiträge zur Wirtschafts- und Organisationspsychologie Nr. 19*, Rostock.

Muller, E. & Doloreux, D. (2009). What We Should Know about Knowledge-Intensive Business Services, *Technology in Society*, 31 (1), 64–72.

Muro, M., Liu, S., Whiton, J., & Kulkarni, S. (2017). *Digitalization and the American Work Force*, Washington, D.C., Metropolitan Policy Program Brookings Institution.

Mustak, M. (2019). Customer Participation in Knowledge Intensive Business Services: Perceived Value Outcomes from a Dyadic Perspective, *Industrial Marketing Management*, 78 (3), 76–87.

Olbert, M. & Spengel, C. (2017). International Taxation in the Digital Economy: Challenge Accepted?, *World Tax Journal*, 9 (1), 3–46.

Omer, T.C., Bedard, J.C., & Falsetta, D. (2006). Auditor-Provided Tax Services: The Effects of a Changing Regulatory Environment, *The Accounting Review*, 81 (5), 1095–1117.

Onnasch, L., Wickens, C.D., Li, H., & Manzey, D. (2014). Human Performance Consequences of Stages and Levels of Automation: An Integrated Meta-Analysis, *Human Factors*, 56 (3), 476–488.

Organisation for Economic Cooperation and Development (OECD) (2008). *Study into the Role of Tax Intermediaries*, Paris, OECD Publications.

Oxford English Dictionary (OED) Online. (2010a). Digitization. Retrieved from https://www.oed.com/view/entry/240886#eid12789985.

Oxford English Dictionary (OED) Online. (2010b). Digitalization. Retrieved from https://www.oed.com/view/entry/242061#eid189542747.

Parasuraman, A. (2000). Technology Readiness Index (TRI): A Multiple-Item Scale to Measure Readiness to Embrace New Technologies, *Journal of Service Research*, 2 (4), 307–320.

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Prümper, J., Hartmannsgruber, K., & Frese, M. (1995). KFZA. Kurz-Fragebogen zur Arbeitsanalyse, *Zeitschrift für Arbeits- und Organisationspsychologie*, 39 (3), 125–132.

Ragu-Nathan, T.S., Tarafdar, M., Ragu-Nathan, B.S., & Tu, Q. (2008). The Consequences of Technostress for End Users in Organizations: Conceptual Development and Empirical Validation, *Information Systems Research*, 19 (4), 417–433.

Riedlinger, R. & Fischer, C. (2018). "Das Berufsbild des Steuerberaters im Zuge der Digitalisierung", in Bär, C., Grädler, T., & Mayr, R. (Eds.). *Digitalisierung im Spannungsfeld von Politik, Wirtschaft, Wissenschaft und Recht*, Berlin, Springer Gabler, 365–375.

Rigotti, T., Schyns, B., & Mohr, G. (2008). A Short Version of the Occupational Self-Efficacy Scale: Structural and Construct Validity Across Five Countries, *Journal of Career Assessment*, 16 (2), 238–255.

Schaufeli, W.B., Bakker, A.B., & Salanova, M. (2006). The Measurement of Work Engagement with a Short Questionnaire: A Cross-National Study, *Educational and Psychological Measurement*, 66 (4), 701–716.

Schaufeli, W.B., Salanova, M., González-Romá, V., & Bakker, A.B. (2002). The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach, *Journal of Happiness Studies*, 3 (1), 71–92.

Schmidt, J. & Drews, P. (2016). "Auswirkungen der Digitalisierung auf die Geschäftsmodelle der Finanzindustrie – Eine strukturierte Literaturanalyse auf der Grundlage des Business Model Canvas", in Nissen, V., Stelzer, D., Straßburger, S., & Fischer, D. (Eds.). *Multikonferenz Wirtschaftsinformatik (MKWI)*, Ilmenau, Universitätsverlag Ilmenau, 967–978.

Schnabl, E. & Zenker, A. (2013). Statistical Classification of Knowledge-Intensive Business Services (KIBS) with NACE Rev. 2. *evoREG Research Note* #25, Karlsruhe.

Singh, J., Brady, M., Arnold, T., & Brown, T. (2017). The Emergent Field of Organizational Frontlines, *Journal of Service Research*, 20 (1), 3–11.

Steuerberatungsgesetz (StBerG) 2016.

Tarafdar, M., D'Arcy, J., Turel, O., & Gupta, A. (2015). The Dark Side of Information Technology, *MIT Sloan Management Review*, 56 (2), 61–70.

ten Brummelhuis, L.L., Bakker, A.B., Hetland, J., & Keulemans, L. (2012). Do New Ways of Working Foster Work Engagement?, *Psicothema*, 24 (1), 113–120.

Ter Hoeven, C.L., van Zoonen, W., & Fonner, K.L. (2016). The Practical Paradox of Technology: The Influence of Communication Technology Use on Employee Burnout and Engagement, *Communication Monographs*, 83 (2), 239–263.

Thuronyi, V. & Vanistendael, F. (1996). "Regulation of Tax Professionals", in Thuronyi, V. (Ed.). *Tax Law Design and Drafting*, Washington, D.C., International Monetary Fund, 135–163.

Verordnung über die Berufsausbildung zum Steuerfachangestellten/zur Steuerfachangestellten (StFachAngAusbV) 1996.

Wang, W., Kakhki, M.D., & Uppala, V. (2017). The Interaction Effect of Technostress and Non-Technological Stress on Employees' Performance. *Paper presented at the Americas Conference on Information Systems*, Boston.

Weiss, H.M. (2002). Deconstructing Job Satisfaction: Separating Evaluations, Beliefs and Affective Experiences, *Human Resource Management Review*, 12 (2), 173–194.

Wirtz, J. & Jerger, C. (2016). Managing Service Employees: Literature Review, Expert Opinions, and Research Directions, *The Service Industries Journal*, 36 (15–16), 757–788.

Wood, P. (2002). Knowledge-Intensive Services and Urban Innovativeness, *Urban Studies*, 39 (5–6), 993–1002.

Xanthopoulou, D., Bakker, A.B., Demerouti, E., & Schaufeli, W.B. (2007). The Role of Personal Resources in the Job Demands-Resources Model, *International Journal of Stress Management*, 14 (2), 121–141.

Xanthopoulou, D., Bakker, A.B., & Fischbach, A. (2013). Work Engagement among Employees Facing Emotional Demands: The Role of Personal Resources, *Journal of Personnel Psychology*, 12 (2), 74–84.

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Managing Editor: Prof. Dr. Martin Benkenstein, Institute for Marketing and Service Research, University of Rostock, Ulmenstr. 69, D-18057 Rostock, Phone: +49 381 498-4376, Fax: +49 381 498-4378, E-Mail: martin.benkenstein@uni-rostock.de

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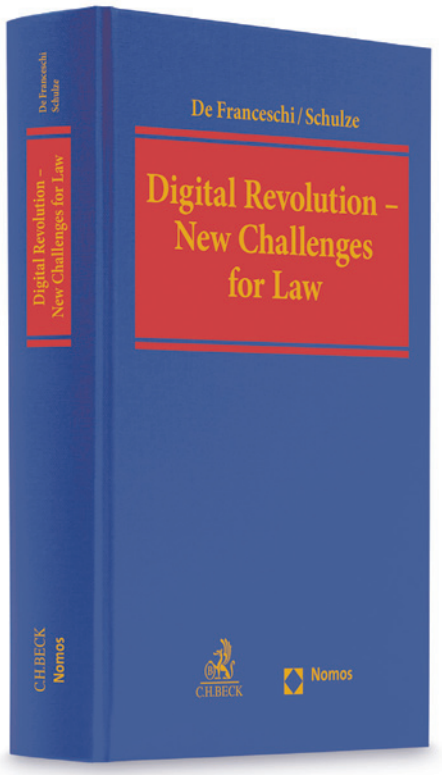

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Data Protection, Artificial Intelligence, Smart Products, Blockchain Technology and Virtual Currencies

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About the editors:

Prof. Dr. Alberto **De Franceschi** is associate professor of Private Law at the University of Ferrara (Italy). He is co-chairman of the European Law Institute's Digital Law Group, co-editor of the Journal of European Consumer and Market Law (EuCML) and of The Italian Law Journal. He has been acting as a consultant to the Italian Ministry of Justice in the legislative process for the adoption of EU Directives 2019/770 on the supply of digital content/services and 2019/771 on the sale of goods.

Prof. Dr. Reiner **Schulze** is Director of the Centre of European Private Law at the Westfälische Wilhelms-Universität Münster (Germany), Council member of the ELI, and has been co-chairman of the European Law Institute's Digital Law SIG from 2015 to 2018. His present research interests focus on European private law, in particular the legal effects of the digital revolution on the law of obligations in Europe and the draft of a European Busi-ness Code.

Co-edited by Prof. Dr. Michele Graziadei, Prof. Dr. Oreste Pollicino, Dr. Federica Riente, Prof. Dr. Salvatore Sica, and Prof. Dr. Pietro Sirena.

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