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Digitalization of HR Management Processes at Universities – a Systematic Literature Review[2]

Abstract

This paper examines the digitalization of internal university processes to assess the state of digitalization in HR management at German universities by means of a Systematic Literature Review. The analysis of recent publications on university digitalization reveals that conceptual and empirical data are available for only a few areas, and that concrete implementation measures at the process level remain scarce. The reviewed studies highlight key aspects of digital transformation while underscoring the necessity of technological change. Accordingly, this paper provides a previously underexplored academic perspective on the process level of universities in the context of digitalization.

Keywords

digitalization, digital transformation, processes management, HR

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Digitalisierung von Personalmanagementprozessen an Universitäten – eine systematische Literaturrecherche

Zusammenfassung

Dieser Beitrag untersucht die Digitalisierung interner Hochschulprozesse, um den Stand der Digitalisierung im Personalmanagement an deutschen Universitäten mittels einer systematischen Literaturrecherche zu bewerten. Die Analyse aktueller Publikationen zur Digitalisierung an Hochschulen zeigt, dass nur für wenige Bereiche konzeptionelle und empirische Daten vorliegen und konkrete Umsetzungsmaßnahmen auf Prozessebene nach wie vor rar sind. Die untersuchten Studien heben wichtige Aspekte der digitalen Transformation hervor und unterstreichen gleichzeitig die Notwendigkeit des technologischen Wandels. Dementsprechend bietet diese Arbeit eine bisher wenig erforschte akademische Perspektive auf die Prozessebene von Universitäten im Kontext der Digitalisierung.

Schlüsselwörter

Digitalisierung, digitale Transformation, Prozessmanagement, Personalmanagement

1 Introduction

Higher education development is a field undergoing significant transformation due to various reforms and external influences. The technological expansion of teaching and learning environments, which has been established in universities since the COVID-19 pandemic, has not only initiated a wave of positive change but also revealed the need for a comprehensive perspective on higher education development. Research on the digitalization of higher education has shown that the existing digital solutions implemented across different institutional areas lack unified, comprehensive, and fully integrated processes (Becker, 2011, p. 11). *Tsupari et al.* (2024, p. 261) refer to this as „[…] it should have a processoriented perspective that may be largely neglected in the education digitalization literature".

The process perspective has so far been insufficiently analyzed across various areas of higher education (Castro Benavides et al., 2020, p. 19; Tsupari et al., 2024, p. 260). In particular, within the administrative domain – characterized by complex process structures – there is still a lack of methodologically grounded analyses (Torres Bermúdez et al., 2024, p. 158). Against this background, the present review examines the state of digitalization of processes in the field of human resource management (HRM). These digital transformations set new standards, particularly with regard to competency requirements, work environments, infrastructure, communication, and collaboration among different stakeholders within universities (Onnen et al., 2022, p. 2). This becomes especially evident when considering the diversity of departments within a university. Accordingly, the HRM domain, with its specific areas of responsibility, occupies a central role in the digital transformation of universities (Machwürth et al., 2020, p. 28). In this domain, not only are areas of activity shaped and new staff recruited, but measures for personnel development and retention are also strategically designed. Consequently, HRM assumes a dual role in the course of digitalization: it not only drives its own further development but also contributes to the strategic transformation of the university – for example, through new qualification programs or the use of digital communication tools (ibid., p. 28). The focus thereby lies on the implementation of digital processes that enable university

staff to successfully navigate digital change. A future-oriented university requires the deliberate integration of HRM into organizational development and, thus, into strategic institutional governance (Schramm & Zeitlhöfler, 2004, p. 8; Schulz, 2014, p. 5). However, previous research has shown that both HRM and the process-oriented perspective have received little attention within the context of digitalization (Torres Bermúdez et al., 2024, p. 158).

By means of a *Systematic Literature Review* (SLR) following *Boland* (2024), this paper aims to systematize the current state of research and to derive key insights with regard to the following research questions:

> (1) *What is the impact of digitalization on the process level of HRM in German universities?*
>
> (2) *What impact does digitalization have on HRM at universities, in particular on HR development processes?*

This article is structured into five sections. The first section briefly addresses the key concepts of processes, HRM and digitalization, providing the foundation for the subsequent part, which outlines the Systematic Literature Review approach and identifies the research gap. The third section presents the methodological procedure applied in this study. The fourth section focuses on the presentation of the results and the discussion of the research questions. Finally, the paper concludes with a summary of the main findings and a critical reflection on the conduct of the SLR.

2 Processes in Higher Education

According to *Becker*, processes are defined as a logically and temporally structured sequence of activities that are necessary for handling an economically relevant object (2011, p. 9).

When examining university processes, an analogous classification to that of business organizations can be applied, distinguishing between core, management, and support

processes (cf. Becker, 2011, p. 10; Berglehner et al., 2014, p. 7). Core processes encompass all activities that have a direct impact on the success of a university, such as processes related to the student-life-cycle (Berglehner et al., 2014, p. 7). The underlying management processes pertain to both strategic and operational activities and primarily involve the planning, control, and monitoring functions within the university organization (Becker, 2011, p. 10). Support processes serve to facilitate and ensure the efficient execution – and thus the success – of the core processes (ibid., p. 10). In principle, the digitalization of universities occurs through a continuous evaluation of process innovations, in which analog processes are replaced or complemented by new digital solutions (Gilch et al., 2019, p. 10).

3 HRM processes in Higher Education

HRM processes are classified as support processes, as they ensure the necessary framework conditions for the execution of core processes (Becker, 2011, p. 10). Consequently, analyses of a university's process levels can provide insights into both its "organizational design" (Ditzel, 2013, p. 114) and the specific characteristics of the HRM department, including its interfaces and interconnections with other departments (Lindner-Lohmann et al., 2023, p. 319).

This paper focuses exclusively on the internal processes of staff development within universities. Staff development can be defined as a subdomain of HRM that deals with the

> "systematic qualification of individual employees (= individual staff development) or employee groups (= collective staff development) at all hierarchical levels, moving from a current state towards a defined target" (Rischar, 2003, p. 1, translated).

In general,

> "staff development encompasses methods of education (staff development in the narrow sense) and promotion (staff development in the broader sense)" (Lehner, 2014, p. 159, translated).

Thus, it represents an important support process for the success of universities, as the employee is placed at the center of all process-related activities and actively supported (Lindner-Lohmann et al., 2023, p. 197).

The field of HRM, and particularly staff development, has steadily expanded within universities in recent years; however, it is still far from being comprehensively embedded across the higher education system (Schulz, 2015, p. 39). Owing to this, and in light of continuous influences and transformations – such as those brought about by the Excellence Initiative in Germany (ibid., p. 33), institutional profiling, the emergence of new types of higher education institutions, as well as the introduction of new digital solutions and the resulting changes in staff qualification requirements (Alonso, 2019, p. 332; Pellert & Widmann, 2008, p. 108) – together with the increasing competition within the sector, the necessity of analyzing support processes in staff development becomes particularly evident.

4 Definition of Digitalization

Due to the increasing research intensity in the field of digitalization, multiple definitions have emerged. In academic discourse, a distinction is made between three related concepts: *digital transformation, digitalization, and digitization* (in the narrower sense). Unlike digitalization, the field of *digital transformation* focuses on processes of organizational change that rely on digital technologies to further advance the development of universities (Harwardt, 2019, p. 10). In this context, fundamental transformations of process structures and the technological reimplementation across the entire organization are at the forefront (ibid., p. 10). Within the higher education context, *digitalization* generally refers to the application and use of digital technologies to establish new research, administrative, and teaching and learning

processes (Gilch et al., 2019, p. 12). In contrast, *digitization* denotes the conversion of analog information or structures into digital formats (Loebbecke & Picot, 2015, p. 149).

This paper adopts the definitions of *digital transformation in conjunction with digitalization*, as it aims to examine both the deeper processual changes driven by digitalization and their implications for organizational structures.

5 Systematic Literature Review – Research gap and methodology

5.1 Definition and Research Gap

The increasing research intensity in the field of digitalization within the higher education sector, as well as the heterogeneity of previous studies, provide the rationale for conducting a *Systematic Literature Review* (SLR) (Boland et al., 2024, p. 2). This approach enables a structured, specific, and objective overview of the current state of research on digitalization in higher education – particularly within the field of HRM and its associated process landscape. According to *A. Fink,* a SLR is defined as

> „[…] a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners“ (A. Fink, 2014, p. 3).

To identify the previously described research gap, an initial search was conducted in Scopus on the topic of digitalization in universities and university processes, applying inclusion and exclusion criteria adapted from *Castro Benavides et al.* (2020). The keyword combination (“Systematic Literature Review” AND “Digitalization” AND “Higher Education”) yielded a total of 33 results. These articles were subsequently narrowed down to the publication period between 2020 and 2025, resulting in 24 articles included in this first stage of analysis.

The analysis of these articles revealed that eight studies focused exclusively on the digitalization of teaching, seven on learning outcomes, and one each on examinations and the general needs of students. Furthermore, four articles examined changes in competencies resulting from digitalization, while only four specifically addressed university processes.

The four articles presented in table 1 revealed that a considerable number of publications address technological developments in teaching and changes in competencies, often supported by the introduction of new models (Tsupari et al., 2024, p. 261). The same conclusion was reached by the SLR conducted by Castro Benavides et al. (2020), which illustrates the trend development since 2016 and shows that digitalization efforts in universities have primarily increased in these areas. Both SLRs also identified existing digital solutions as isolated applications, indicating that a comprehensive institutional integration has not yet been achieved (Castro Benavides et al., 2020; Tsupari et al., 2024). As Tsuparis et al. (2024, p. 261) note:

> „Therefore, a comprehensive perspective is needed, with digitalization being implemented in educational institutions at the process level rather than the task (i.e. lecture) level".

Deutsch et al. (2021) focused their SLR on the digital representation of e-government processes and their adaptation within higher education institutions. The SLR by Torres Bermúdez et al. (2024, p. 163) examined the application of models and frameworks in the course of digital transformation in universities, analyzing the extent to which these serve a practical purpose in avoiding isolated solutions. This study concluded that there is currently a lack of scientific work addressing the use of such models for digital transformation, and consequently, that the overall degree of digitalization in universities has not yet been systematically assessed. Overall, the analyses of the reviewed SLRs demonstrate that the digitalization of process levels in universities remains a significant research gap.

Code	Autor	Title	Year	Journal	Digitalization area	Country	Focus	Study type	Methods
S003	Tsupari, K.; Lagstedt, A.; Kauppinen, R.	Revealing the digital transformation, uncovering hidden process dimensions of education	2024	Business Process Management Journal	Processes & Education	Finland	Education processes	SLR + Case Study	Mixed-Methods
S019	Torres,A.; Collazos,C.; Mon,A.;	A Review of the Literature on models or frameworks for Implementation of Digital Transformation Processes	2024	Journal of Computer Science and Technology	Processes		Digital transformation, models for implementing digital processes	SLR	quantitative
S027	Deutsch,C.; Gottlieb,M.; Pongratz,H.	Adoption of E-Government Requirements to Higher Education Institutions Regarding the Digital Transformation	2021	International Federation for Information Processes	Processes	USA, Europa	E-Government processes in universities	SLR & Case Study	Mixed-Methods
S031	Castro Benavides,L.; Tamayo Arias,J.	Digital Transformation in Higher Education Institutions: A Systematic Literature Review	2020	Sensors	Processes		Implementation processes for digital transformation at universities	SLR	quantitative

Table 1: SLR to identify research gap

5.2 Methodology

5.2.1 Research Strategy

The following databases, publisher and journals were included in this study:

Database	Publisher	Journals
FIS (Fachportal Pädagogik)	Universitätsverlag Webler	Journal Higher Education
GoogleScholar	Hochschulforum Digitalisierung	Journal Studies in Higher Education
Universitätsbibliothek Dortmund	Zeitschrift Hochschule und Weiterbildung	Journal Higher Education for Future
	Zeitschrift für Hochschulentwicklung	
	Die neue Hochschule	
	die hochschule	
	MedienPädagogik	

Table 2: Research Outlets

The selection of databases was based on the most relevant scientific literature databases in the fields of digitalization, higher education development, organizational development, and human resource management. The identification of publishers was carried out on the basis of a preliminary literature search in the Scopus database. The publication outlets were selected based on a comparison of the average score reached in three recognized scientific rankings, namely the Scimago Journal Rank, ScienceDirect, and the Journal Citation Reports (Web of Science).

The systematic literature review subsequently conducted in 2024 and included publications in both German and English language. It was carried out using predefined keyword combinations, which enabled a targeted filtering of available articles, while ensuring transparency and replicability (Boland et al., 2024; Castro Benavides et al., 2020). The search string for the entire study included the following combinations:

(„Personalentwicklung“) AND („Hochschule“)
(„Personalentwicklung“) AND („Digitalisierung“)
(„Personalentwicklung“) AND („Transformation“)
(„Personalentwicklung“) AND („Fachhochschule“)
(„Personalentwicklung“) AND („Hochschulsystem“) AND („Strategie“)
(„Personalentwicklung“) AND („Hochschulsystem“) AND („Fachhochschule“)
(„Personalentwicklung“) AND („Maßnahmen“)
(„Digitalisierung“) AND („Fachhochschule“)
(„Digitalisierung“) AND („Hochschule“)
(„Digitalisierung“) AND („ Hochschulentwicklung“)
(„Higher Education“) AND („Digitalization“)
(„Personal“) AND („Digitalization“)
(„Process development“) AND („Digitalization“)
(„Digitalisierung“) AND („Hochschulentwicklung“); („Digitalisierung“) AND („Personalentwicklung“)
(„Digitalisierung“) AND („Personalentwicklung“) AND („Hochschule“)
(„Digitalisation“) AND („Higher Education“)
(„Digitalisation“) AND („Higher Education“) AND („Processes“)

Table 3: Search strings

Search stringsFor the systematic search across publication outlets, particular attention was paid to ensuring that the following keywords appeared in the title and/or abstract of the article:

Digitalization	HRM
Higher Education	Personalentwicklung
Higher Education Processes	Personalmanagement
Hochschulentwicklung	Personalentwicklungsmaßnahmen
Hochschule	Prozesse
Fachhochschule	Digitalisierung
Hochschulstrategie	Digitale Transformation
Hochschulprozesse	

Table 4: Keywords used for SLR

5.2.2 Inclusion and Exclusion Criteria

To systematically conduct the review, it was necessary to define fixed content-related inclusion and exclusion criteria to guide the selection of relevant studies. These criteria were established according to the *PICO framework* (Population, Intervention, Comparator, and Outcome) (Boland et al., 2024, p. 51).

- **Population:** German universities – the study aims to compare different types of higher education institutions in Germany.
- **Intervention:** technologically and digitally modified HRM-Processes
- **Comparator:** Traditional processes are not considered
- **Outcome:** Characteristics of changes in HRM processes due to digitalization – aims to depict a current-state vs. target-state comparison.
- **Time frame:** 2000 to 2024
- **Language:** English and German
- **Setting:** Only fully available articles, conference papers, and publications classified as grey literature are analyzed

Table 5: Inclusion and Exclusion Criteria

5.2.3 PRISMA-Method

To enhance the transparency and reproducibility of the SLR process, the PRISMA methodology was applied (Cramarenco et al., 2023). Accordingly, five procedural steps were followed: (1) the formulation of the research question, (2) the identification of publications, (3) the evaluation of the selected studies, (4) a coded synthesis, and (5) the interpretation of the results (Cramarenco et al., 2023).

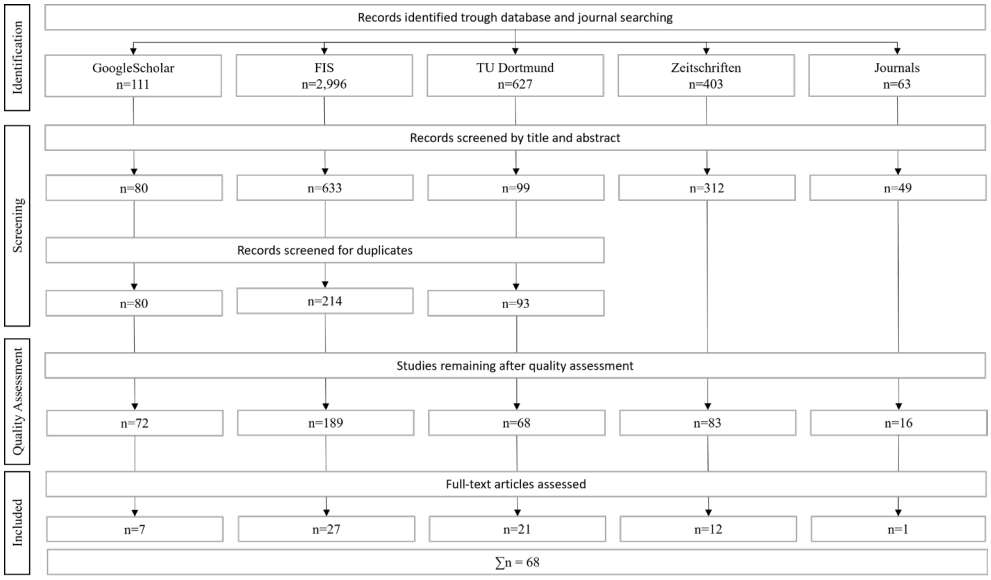

Figure 1: PRISMA Flow Chart

Based on the implementation of the PRISMA approach, a total of 3,734 articles and 466 journal publications were initially identified across the databases. During the screening phase, 3,347 articles were excluded based on their title, abstract, or duplication, leaving 387 publications for further consideration. Within the journal screening process, 105 articles were excluded, and 361 were retained for detailed analysis.

5.2.4 Quality assessment

In the subsequent quality assessment, the remaining ∑*748 articles* were further evaluated using a quality assessment questionnaire. This questionnaire comprised five in-depth research questions related to the field of digitalization in higher education and HRM, designed to determine the methodological and thematic quality of each study:

- Does the article address digitalization in higher education within a scientific context?
- Are digitalization and/or HRM processes examined?
- Are process developments described within the context of universities?
- Do the article present strategies that contribute to the digital transformation of universities?
- Does the article provide insights into funding initiatives for digitalization in the higher education sector?

Each question carried a score of one point, resulting in a maximum quality score of five per publication. Consequently, a total of 68 articles – comprising 55 database entries and 13 journal publications – received the highest quality rating of five points and were therefore classified as Priority-A-articles, which were subsequently included in the analysis.

For data analysis and management, Microsoft Excel and Citavi were utilized. Excel was employed to document all SLR search iterations, retrieved publications, and quality assessments, while Citavi was used to conduct content analysis, including the coding of keywords, thematic categorization, geographical focus, and methodological approach.

6 Results

Figure 2 presents a trend analysis of publications within the research fields of *digitalization, HRM, higher education development*, and *process transformation*. Up to the year 2020, publications in these research areas appeared at a steady rate. However, beginning in 2020 – the first year of the COVID-19 pandemic – a significant increase in the number of publications can be observed. During this period, universities were compelled to develop short-term digital solutions for teaching and learning environments and to maintain academic operations under newly imposed conditions.

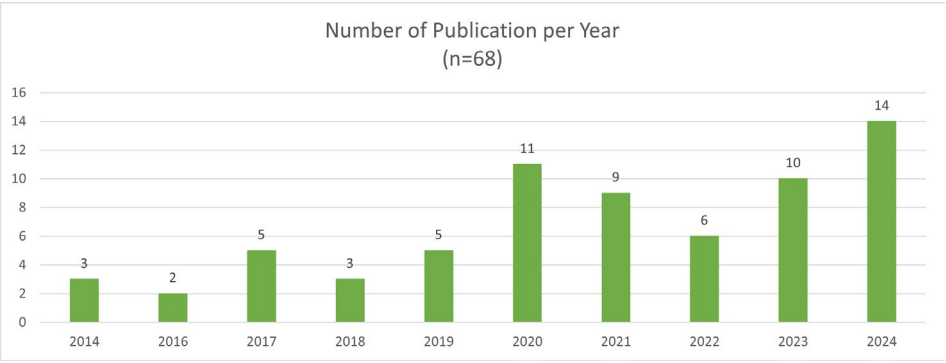

Figure 2: Analysis of publication trends

The 11 articles published in 2020, as presented in table 6, focus on analyses and conceptual approaches to comprehensive and complex transformation processes across entire higher education organizations and their potential for structural and procedural change (Henke & Pasternack, 2020; Rehm & Schulz, 2020). Moreover, these studies examine the shifts and focal developments within human resource development (HR development) in universities in the course of digitalization (Grübler, 2020; Machwürth et al., 2020), as well as the need to reconceptualize research within the context of digital transformation (Hofhues et al., 2018).

Table 6: Identify Literature in 2020

Database	Quality Assessment	Quality Score	Code	Author	Year	Country	Title	Research Field	Methodology
FIS	A	5	C042	Machwürth, S.; Ninnemann, F.; Ramminger, B.	2020	Germany	Zweichefache Herausforderung.Digitalisierung.	Human Ressource Management & Digitale Transformation	Online Census Survey
FIS	A	5	H076	Mayrberger, K.	2020	Germany	Digitalisierung und Digitalität in der Hochschulbildung.	Digitalization in Education and Higher Education Development	Literature Review and Model Development
FIS	A	5	H229	Schulenbur,g K.;Getto, B.	2020	Germany	Digitalisierung als Querschnittsaufgabe der Hochschule	Higher Education Research and Digitalization	Modellentwicklung, Conceptual Contribution
FIS	A	5	H230	Rehm, S.; Schulz, H.	2020	Germany	Digitalisierung durchdenken und gestalten. Ein Plädoyer für strategisches Handeln	Digital Transformation and University Administration	Conceptual Contribution, Case Study
GoogleScholar	A	5	GS008	Hofhues, S.; Schiefner-Rohs, M.; Aßmann, S.	2020	Germany	Forschungsperspektiven auf Digitalisierung in Hochschulen	Higher Education Research and Digitalization	Metanalyse & konzeptionelle Reflexion
GoogleScholar	A	5	GS037	Henke, J.; Pasternack, P.	2020	Germany	Wie die Hochschule durch das Zeitalter des Frühdigitalismus kommen	Higher Education Research	Synthesis and Overview Study, Heuristic Framework
J-Higher Education	A	5	JHR015	Fumasoli, T.;, Barbato, G.	2020	n.a.	The determinants of university strategic postitioning: a preappraisal of the organisation	Higher Education Research and Digitalization	Literature review, Cross-Sectional Analysis
TuDortmund	A	5	TU007	Mikhalkina, E.; Chernova, O.; Gozalova, A.	2020	Russia	Digitalization and the principal-Agent Problem in the higher education	Digital Transformation and University Administration	Conceptual Contribution,
Zeitschriften	A	5	POE081	Grübler, D.	2020	Germany	Digitalisierung und Personalentwicklung - ein Status Quo aus der Sicht einer Personalentwicklerin	Human Resource Management and Digital Transformation	Experience Report – Expert Qualitative Reflection
Zeitschriften	A	5	POE084	Kemner, B.	2020	Germany	Herausforderungen digitaler Transformation in Hochschulen	Digital Transformation and University Administration	Qualitative Expert Interview, Practice-Based Reflection
Zeitschriften	A	5	ZHE007	Graf-Schlattmann, M.; Meister, D.; Wilde, M.	2020	Germany	Kollektive Veränderungsbereitschaft als zentraler Erfolgsfaktor von Digitalisierungsprozessen an Hochschulen	Higher Education Research	Development Change-Management-Model

In comparison, the 14 articles published in 2024 (table 7) place a stronger emphasis on state-level and political strategy development (Schütze, 2024; Shermaine & Williams-Shakespeare, 2024; Tooka et al., 2024). Furthermore, several publications address the new digital infrastructure and the process level of universities, illustrating how different institutional areas can be aligned and integrated within digital transformation processes (J. Fink & Dietinger, 2024; Gernler, 2024; Gilch & Jungermann, 2024). It is noteworthy that 11 of the 14 articles are international studies, thereby providing a broader and more comprehensive insight into the global context of digitalization in higher education.

Table 7: Identified Literature in 2024

Database	Quality Assessment	Quality Score	Code	Author	Year	Country	Title	Research Field	Methodology
GoogleScholar	A	5	GS019	Müller, U.	2024	Germany	Informationsinfrastrukturen in Zeiten von Digitalisierung und Pandemie_Zusammenarbeit in Feld der baden-württembergischen HAW	Digital Transformation and Organizational Development	Qualitative Case Study, Interviews, Document Analysis
TuDortmund	A	5	TU023	Abebaw, Y. A.	2024	Ethiopia	Digitalization of higher ecuation in ethiopia	Digitalization in Education and Higher Education Development	Qualitative Document Analysis, Secondary Data Analysis
TuDortmund	A	5	TU057	Chakraborty, T.; Natarajan, A.	2024	India	Digitalization of higher education	Digitalization in Education and Higher Education Development	Empirical and Conceptual Contribution
TuDortmund	A	5	TU028	Liljeblad, F.; Lillieskold, J.	2024	Schweden	Tensions in Digitalization in Higher Education: Learning from the Past to Guide Digital Transformation	Digital Transformation and Higher Education Research	Case Study, Document Analysis, Qualitative Interviews
TuDortmund	A	5	TU022	Nherea Muchemwa, C.	2024	Zimbabwe	Digitalisation of higher education in Zimbabwe: A Challenging Necessity and Emerging Solutions	Higher Education Research and Digitalization	Qualitative Document Analysis, Conceptual Contribution
TuDortmund	A	5	TU006	Przytula, S.; Sulkowski, L.; Kulikowski, K.	2024	International	Human Resource Management in Higher Education Institutions	Human Resource Management and Digital Transformation	HRM Trends, Case Studies
TuDortmund	A	5	TU021	Schütze, H.	2024	Germany	Digitalization of german higher education and the role of europe	Higher Education Research and Digitalization	Document Analysis, Sekundäranalyse
TuDortmund	A	5	TU008	Shchokin, R.; Semenets-Orlova, I.; Teslenko, V.	2024	n.a.	Digitalization Trends in higher Education	Higher Education Research and Digitalization	Conceptual Contribution, Case Study
TuDortmund	A	5	TU024	Shermaine, A. B.; Williams-Shakespeare, E.	2024	Caribbean	A Study of Digitalization of higher education institutions in the caribbean	Higher Education Research and Digitalization	Qualitative multiple Case Study, Document Analysis
TuDortmund	A	5	TU026	Thanh Thu Le, Thi	2024	Vietnam	Digitalization of Higher Education in Vietnam	Digitalization in Education and Higher Education Development	Document Analysis, Qualitative Case Study
TuDortmund	A	5	TU027	Tooka, T.;, Uchida, N.	2024	Japan	Digitalization of Higher Education in Japan: Challegenes and Refletions for Education Reform	Higher Education Policy and Digital Transformation	Policy Analysis, Secondary Data Analysis
Zeitschriften	A	5	ZHE019	Gilch,H.; Jungermann, I.	2024	Austrian	Vernetzung und Kooperation als Erfolgsfaktor für die Digitalisierung an Österreichischen Hochschulen	Digital Transformation and University Administration	Case Studies
Zeitschriften	A	5	ZHE020	Fink, J.	2024	Austrian	digital blueprint: Die Entwicklung eines interuniversitätren IT-Baukastens	Digital Transformation and University Administration	Developing a Modular IT Toolkit – considered a best-practice model for inter-university digitalization
Zeitschriften	A	5	ZHE021	Fink, J.; Dietinger, T.	2024	Austrian	Austrian University Toolkit- Entwicklung eines digitalen Baukastens aus IT-Tools und Applikationen für die Digitalisierung der Hochschulverwaltung	Digital Transformation and University Administration	Development Project (Design-Based Research) - Modular IT Toolkit

In a further stage of analysis, the 68 articles were examined according to their type of publication (figure 3) and categorized by country of origin (figure 4). It becomes evident that between 2022 and 2024, an increasing number of journal articles was published both in the German and international contexts. Among the leading journals, the *Journal of Comparative & International Higher Education* can be identified as a key international outlet, while the *Zeitschrift für Hochschulentwicklung (ZFHE)* represents a central publication outlet in the German-speaking context.

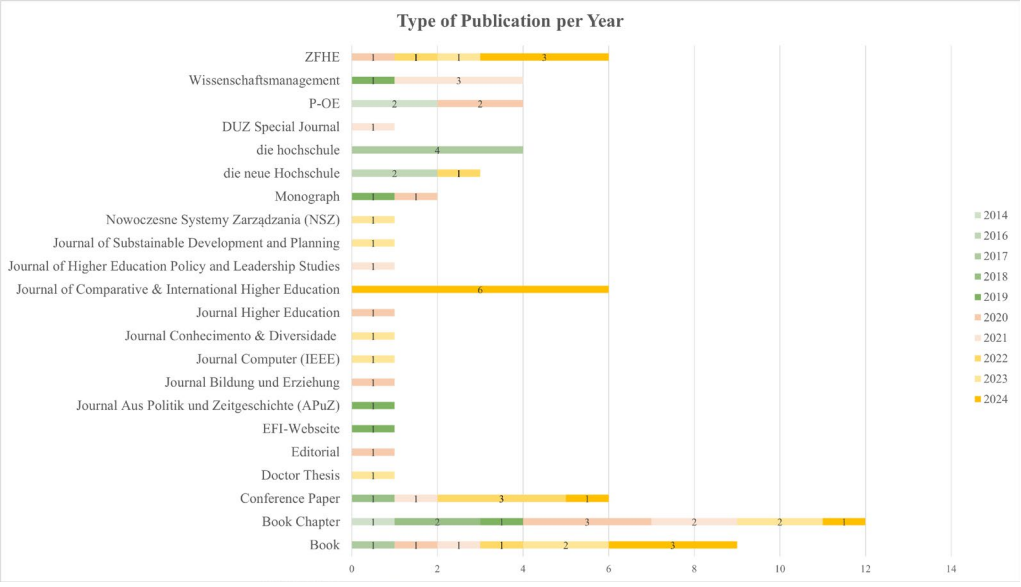

Figure 3: Type of Publication per Year

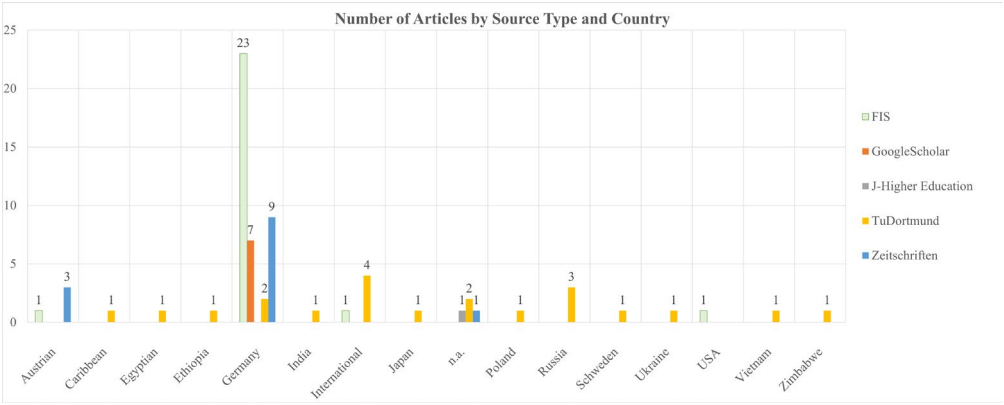

Figure 4: Publication by Country

Building on the previous selection step, which categorized the articles by type of publication and corresponding frequency, table 8 presents the articles published in the *ZFHE* and the *Journal of Comparative & International Higher Education*. The articles published in *ZFHE* address research topics such as collective readiness for change and organizational culture transformation (Graf-Schlattmann et al., 2020); the digital transformation of workplaces and the resulting changes in employees' tasks and workflows (Wassmer, 2022); as well as the adaptation of administrative process structures to create comprehensive digital solutions for universities (J. Fink & Dietinger, 2024; Gilch & Jungermann, 2024). These contributions demonstrate a strong focus on the increasing digitalization of universities, particularly on process design, strategic transformation, and the diversity and transferability of technical solutions. In contrast, the articles published in the *Journal of Comparative & International Higher Education* – all released in 2024 – primarily investigate the influence of political frameworks and governance on the digitalization of the higher education sector. Accordingly, it can be concluded that the journal exhibits a deliberate focus on the trend development emerging from the ongoing digital transformation.

Database	Quality Assessment	Quality Score	Code	Author	Year	Country	Title	Vol | Issue	Type of Publication	Research Field	Methodology
ZFHE	A	5	ZHE007	Graf-Schlattmann, M.; Meister, D.; Wilde, M.	2020	Germany	Kollektive Veränderungsbereitschaft als zentraler Erfolgsfaktor von Digitalisierungsprozessen an Hochschulen	15|1	Paper	Higher Education Res	Development Change-Management-Model
ZFHE	A	5	ZHE009	Wassmer, C.	2022	Germany	Folgen der digitalen Transformation für das Personal und die Raumgestaltung an Hochschulen. Ein Blick in die Zukunft	17|2	Paper	Higher Education Research and Organizational Development	Document Analysis, Expert Interviews
ZFHE	A	5	ZHE017	Kritzinger, S.; Pfaff, K.; Barta, J.; Bernhard, J.; Boomgaarden, H.	2023	n.a.	Digitize! - Computational Social Science in der digitalen und sozialen Transformation	18	Paper	Digital Sociology	Empirical Study on Data Science Methods, Method Development
ZFHE	A	5	ZHE019	Gilch,H.; Jungermann, I.	2024	Austrian	Vernetzung und Kooperation als Erfolgsfaktor für die Digitalisierung an Österreichischen Hochschulen	19	Paper	Digital Transformation and University Administration	Case Studies
ZFHE	A	5	ZHE020	Fink, J.	2024	Austrian	digital blueprint: Die Entwicklung eines interuniversitätren IT-Baukastens	19	Paper	Digital Transformation and University Administration	Developing a Modular IT Toolkit – considered a best-practice model for inter-university digitalization
ZFHE	A	5	ZHE021	Fink, J.; Dietinger, T.	2024	Austrian	Austrian University Toolkit-Entwicklung eines digitalen Baukastens aus IT-Tools und Applikationen für die Digitalisierung der Hochschulverwaltung	19	Paper	Digital Transformation and University Administration	Development Project (Design-Based Research) - Modular IT Toolkit
Journal of Comparative & International Higher Education	A	5	TU023	Abebaw, Y. A.	2024	Ethopia	Digitalization of higher ecuation in ethiopia	16|2	Paper	Digitalization in Education and Higher Education Development	Qualitative Document Analysis, Secondary Data Analysis
Journal of Comparative & International Higher Education	A	5	TU022	Nherea Muchemwa, C.	2024	Zimbabwe	Digitalisation of higher education in Zimbabwe: A Challenging Necessity and Emerging Solutions		Paper	Higher Education Research and Digitalization	Qualitative Document Analysis, Conceptual Contribution
Journal of Comparative & International Higher Education	A	5	TU021	Schütze, H.	2024	Germany	Digitalization of german higher education and the role of europe		Paper	Higher Education Research and Digitalization	Document Analysis, Sekundäranalyse
Journal of Comparative & International Higher Education	A	5	TU024	Shermaine, A. B.; Williams-Shakespeare, E.	2024	Caribbean	A Study of Digitalization of higher education institutions in the caribbean		Paper	Higher Education Research and Digitalization	Qualitative multiple Case Study, Document Analysis
Journal of Comparative & International Higher Education	A	5	TU026	Thanh Thu Le, Thi	2024	Vietman	Digitalization of Higher Education in Vietnam		Paper	Digitalization in Education and Higher Education Development	Document Analysis, Qualitative Case Study
Journal of Comparative & International Higher Education	A	5	TU027	Tooka, T.; Uchida, N.	2024	Japan	Digitalization of Higher Education in Japan: Challegenes and Reflections for Education Reform		Paper	Higher Education Policy and Digital Transformation	Policy Analysis, Secondary Data Analysis

Table 8: Articles published in ZFHE and Journal of Comparative & International Higher Education

Figure 5 illustrates the distribution of research fields represented in the analyzed articles. Out of the 68 publications, 19 focus on the research area of *Higher Education Research and Digitalization*. In contrast, only 6 articles address HRM, while 17 publications examine the administrative domain of universities.

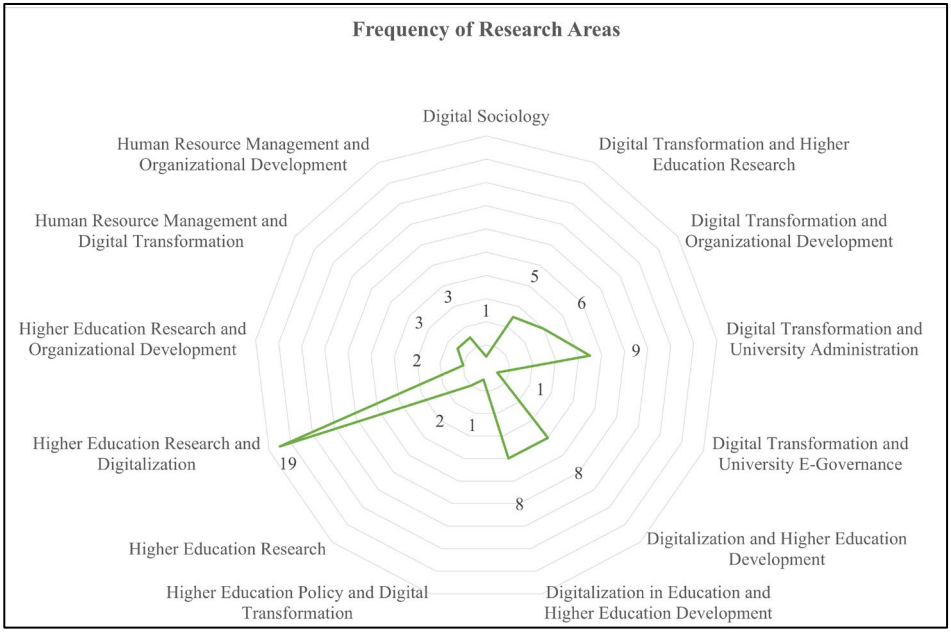

Figure 5: Frequency of Research Areas

7 Discussion

The aim of this paper was to examine the impact of digitalization on the process level of universities. The preceding analyses demonstrated that recent literature no longer focuses solely on teaching and learning contexts, but increasingly addresses more complex solutions for institutional transformation processes in universities. In doing so, it develops practical recommendations and conceptual models to guide these transformations (J. Fink & Dietinger, 2024; Henke & Pasternack, 2020; Rehm & Schulz, 2020). Recent international studies frequently explore the political influence on digitalization in the higher education sector (Le Thu Than, 2024; Schütze, 2024;

Shermaine & Williams-Shakespeare, 2024), in some cases providing cross-country comparisons (Nherera & Mukora, 2024).

Over the years, the research focus has shifted, bringing other areas of universities such as HRM – increasingly into focus. The skills required for both digital teaching applications and transformed processes and job roles have thus become a central aspect managed through HR development in universities (Grübler, 2020; Machwürth et al., 2020; Shchokin et al., 2024). In addition, changing forms of work pose particular challenges for universities, as different employment groups require distinct working conditions (Grübler, 2020). This, in turn, necessitates the creation of new staff development initiatives, which must be more individualized and context-specific, tailored to particular fields of activity (Grübler, 2020; Schulz, 2014). Ultimately, the analyzed articles describe a transformation of universities that is not merely technical in nature, but also encompasses organizational and cultural dimensions of change, both of which are integral components of digitalization (Shchokin et al., 2024).

Moreover, the impact of digitalization on the field of HRM, particularly on HR development, should be examined more closely. Several of the selected studies address the dynamic transformation of HRM, illustrating how competencies and areas of responsibility are changing (Grübler, 2020; Przytuła et al., 2024). Furthermore, they emphasize the close interrelation between HRM, organizational development, and the strategic orientation of universities (Machwürth et al., 2020; Mehrtens Martin, 2014; Schulz, 2014). The literature suggests that HR development, as a central domain within universities, exerts a substantial influence on the organizational and cultural transformation of institutions and can thereby affect their competitive position (Machwürth et al., 2020; Schulz, 2014).

8 Conclusion

This study aimed to generate new insights into the progress of digitalization in universities and serves as a foundation for a subsequent research project focusing on the modeling and implementation of a digitalized HR development process within the context of HRM. The results of the SLR reveal that the process level of HRM functions as a supportive domain, facilitating the achievement of strategic objectives by enhancing the core processes of universities. The analysis of the 68 publications demonstrates that various areas of digitalization have been explored – including administration, HRM, teaching, research, infrastructure, social sciences, and governance. Collectively, these studies illuminate key dimensions of digital transformation and contribute to a more comprehensive understanding of the phenomenon.

However, none of the analyzed articles addresses the concrete implementation or development of digitalized processes within universities. Therefore, future research should adopt more practice-oriented approaches to identify transferable strategies and measures that can effectively support higher education practice.

9 Research Limitation

A limitation of this study is that the data collection was conducted by a single researcher, which may have introduced potential subjective biases. Despite the inclusion of multiple databases and publishers in the search process, it is possible that not all relevant publications were captured due to the specific keyword combinations applied.

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