PART III
Case study insights: glances into changing job autonomy of service workers

11. Objective

The aim of the two previous parts of this thesis was to establish the theoretical and conceptual basis for the interplay between job autonomy and ADM in service work (Part I). By means of semi-quantitative studies, comparability in the extent of job autonomy in various service branches was established (Part II). Both parts serve as preliminary work for the third part of this thesis, which approaches the influence of ADM on job autonomy in a qualitative way. The qualitative approach to this topic thus complements and completes all previous considerations. Finally, neither a purely theoretical-conceptual nor a semi-quantitative approach can provide an in-depth answer to the question of the possible influence of ADM on job autonomy. This multi-method approach combining quantitative and qualitative elements aims to create as holistic a picture as possible of the relations between job autonomy, ADM, and service work.

Part III of this thesis is devoted entirely to the assessment of employees', company representatives', and experts' views on the influence of ADM on job autonomy. The focus is not only on the intervention of technology in work processes but also on the conditions under which this influence comes to fruition and for which employees (e.g., profession, qualification, or position in the company) this influence may apply. As in the previous analyses, the focus lies on the subjective perspective of employees on how their working conditions have changed using ADM systems. This subject perspective is obtained in the form of semi-structured interviews.

In line with the preceding theoretical and conceptual distinction between LAS and HAS, two branch cases are selected for further analysis: outpatient care (healthcare sector) and banking (financial industries). The social significance and precariousness of the healthcare sector were not only made clear in recent years during the COVID-19 pandemic. Even before 2019, this branch was in a constant state of tension between a shortage of skilled workers, increasing economization, and the need to ensure care quality. More than any other branch, it is characterized by interaction work, especially by women.

In parallel, the demands on good care work have increased: In addition to greater organizational effort (e.g., documentation of care services), the clinical conditions of people in need of help and care have become more complex. Digital technologies are not widespread in the care sector and have so far been used primarily in the planning and administrative areas. The effects of using digital technology on employees

have not been researched thoroughly and must be interpreted as ambivalent (Chap. 13.1). A holistic software solution for digital work processes, including ML-based shift and tour planning, serves as an ADM example in outpatient care.

In banking services, by contrast, the consequences of automation were felt early on in terms of shrinking employment and organizational transformation. The branch is intensively driven by economic constraints and, at the same time, fulfills the role of a link between the real economy and the financial economy, as well as between companies and private individuals. It is indispensable for the provision and retention of liquidity in our prevailing economic system. As Breisig et al. (2010, p. 287) note, there is hardly any other branch in which marketization is practiced as intensively as in retail banking. Digitalization manifests in increased task division and specialization, but also standardization and a closer integration of clients into banking processes, which ultimately leads to shifts in tasks away from employees and towards clients (Chap. 14.1). However, both banking and care work have in common a high degree of interaction work. An integrated client approach management system for private clients, which essentially provides product recommendations, serves as an ADM example in banking services.

Regardless of the high proportion of interaction work in each case, with outpatient care and banking services, there are two extremes facing each other: one with rising and sustained demand for employment; the other with declining employment. One with moderate access to and penetration by digital tools; the other with transformation processes, in some cases lasting many years, during which ADM has a more profound impact on work. Also, regarding the change in job autonomy within the past few years, both branches are further drifting apart: Overall, healthcare workers lost degrees of freedom at the workplace, while those in finances were able to record minor gains (Chap. 8.4). The aim of Part III is to provide qualitative interpretations and descriptions of these developments. This includes the characterization of changes in the seven job autonomy dimensions using ADM systems, the conditions under which they come to fruition, and their contextualization in the theoretical-conceptual considerations. In this analysis, it is assumed that the characteristics of job autonomy differ not only according to branch (or occupation, qualification, etc.) but also depending on the embedding of the technical system in work processes.

This qualitative approach in the form of company case studies is intended to generate findings regarding the connection between ADM and job autonomy that are not possible using only quantitative methods. After the separate assessment of the case studies (Chap. 13 and 14), some

selected expert insights on the cases but also on subsequent challenges in dealing with ADM are offered (Chap. 15). A critical examination of some limitations of this case study approach methodically frames Part III (Chap. 16). In a final step, the results of the company case studies are compared, embedded in the current scientific debate, and placed in relation to the state of research and theoretical concepts (Chap. 17).

12. Method: understanding and conduct of case studies

As the design of qualitative social research at its core reflects the detailed procedure of a study (Mayring, 2016, p. 40), the subsequent remarks comprise a description of the qualitative design (case analysis), the qualitative techniques used (data collection, preparation, analysis) and thus the rough structure of Part III: Case analysis in the form of company case studies serves as the central element of the qualitative design, which is implemented using selected qualitative techniques. A precise case definition, i.e., a breakdown of the criteria for selecting a particular case, is essential (Chap. 12.1). The core sources of information are formed by problem-centered interviews (Chap. 12.2 and 12.3), which are processed by means of summary transcription and analyzed based on a qualitative content analysis (Chap. 12.4).

A company case study consists of various elements: a branch profile (Chap. 13.1 and 14.1) and a case synopsis (Chap. 13.2 and 14.2), which not only lists references to the results of the previous chapters but also reflects the current state of knowledge on employment conditions and technology use in the respective branch. This is followed by a description of the case company, employee structure, specific work organizational properties (Chap. 13.3 and 14.3), and the use of technology in the work process (Chap. 13.4 and 14.4). The interview analysis along the job autonomy dimensions (Chap. 13.5 and 14.5), the consideration of technical barriers (Chap. 13.6 and 14.6), and conditions for changes in job autonomy (13.7 and 14.7) form the core analysis of a case company study.

The analytical framework of a case analysis is particularly suited for analyzing complex social systems (Mayring, 2016, p. 41), i.e., grasping the complexity of a research object and the people acting within it under the conditions in which they act. In the present case, the complexity of a case results from the interaction of employees with an ADM system, which in turn is subject to the conditions of working in a specific organizational structure.

Case analysis is a particularly appropriate method for addressing this research topic because ADM systems have not yet penetrated the entire working world, and purely quantitative data sources are scarce or distorted by the rapid pace of technological development. In practice, the application of many (learning) ADM systems is still characterized by trial phases and profitability considerations due to their heterogeneous

degree of maturity. Thus, one way of analyzing the impact of ADM use on employees is a case-by-case approach.

The aim of the company case studies is to capture the handling and conditions of using an ADM system from the perspective of employees in as much detail as possible. In this way, even the smallest nuances of the impact of technology use in the work process are documented. The difficulties of implementing and analyzing company cases lie in their immanent exemplary character, from which conclusions and implications at the branch or sector level can only be drawn with great care.

In the present study, problem-centered interviews (Mayring, 2016, pp. 66–72) form the core elements and the most extensive sources of information. Although the extent and complexity of these interviews are at the expense of the number of interviews conducted, this is to be compensated for by the depth of the interviews and the addition to the findings of the semi-quantitative Part II. Ultimately, the complexity of a case also takes into account the previous experience of employees and their specific working environment (Mayring, 2016, p. 42).

12.1. What is a case?

Fundamentally, a case is the organizational unit of a company. Approaching the selection of a particular company requires the fulfillment of certain content-related criteria, which initially relate to the selection of branches and specific ADM application examples. For both focus branches and ADM examples, several cases come into question for this qualitative analysis.

The selection of the focus branches is based on the theoretical-conceptual preliminary work (Part I) and the semi-quantitative studies (Part II), as well as the availability of and possible access to branch experts and companies. The selection criteria are described along the findings concerning job autonomy, service work, and ADM tools: Concerning job autonomy, i.e., the variable of greatest interest, one branch each is selected from the previous distinction between LAS and HAS (Chap. 1.5 and 5). Striking examples are trade, logistics, accommodation and food services, or healthcare and social services in the first case; information and communication, finance and insurance, or business-related services in the second case. These branches are particularly distinct from one another in terms of the extent, impact, and benefit of job autonomy from the point of view of employees. The findings of the Autonomy Index (Part II) support this selection.

Furthermore, examples of branches are chosen that reflect the specific characteristics of service work, i.e., there are employees in the con-

sidered branch that perform a fair share of interaction work. Hence, their work is highly dependent on their interaction with service recipients. The point in the work process where the technology is used naturally plays a key role. However, even within the service sector – or rather, within companies – there is a wide range of possible applications to choose from. To get as close as possible to the core activities of the service sector, examples are chosen that are close to the interaction between employee and service recipient. In this sense, the focus lies on the tasks and job autonomy of *frontline service workers*. This also excludes pure monitoring or cross-sectional ADM systems from the analysis.

Lastly, the penetration of digitalization processes is used as a further criterion for selecting case examples. A comparison of particularly digitized and less digitized branches can provide additional insights and allow more far-reaching interpretations of the dependence between job autonomy and the existing degree of digitalization. Ultimately, the selected branches must engage companies in which ADM is used in everyday work. The systems are in actual use in the case company. This excludes systems that are currently undergoing basic research or are only available as demonstrators. The description of a before-and-after situation regarding the use of the system as well as the mapping of the implementation phase, if applicable, provides particularly valuable insights regarding the change in job autonomy.

All the above criteria are met by the following case studies: More detailed reasoning on why outpatient care and banking services are chosen is provided in the concluding remarks of Part II (Chap. 10), in the description of the interview initiation and conduct (Chap. 12.3), as well as in the respective branch profile at the beginning of each case study. However, the final selection also considered access to the branch and companies, prior knowledge of the branch's characteristics, and the interests of the author. Overall, this is a non-random procedure that must accept a selection bias (also Chap. 15).

12.2. Data collection

All interviews count as problem-centered interviews (open, semi-structured, qualitative), which are particularly suitable for theory-led research with specific research questions (Mayring, 2016, p. 71). The interviewee is given important degrees of freedom in answering, while the interviewer can orient herself to the interview guidelines. The semi-structured nature of the interviews proves to be the most suitable method for the question of how ADM systems influence job autonomy in the service sector. They

presuppose prior knowledge on the part of the interviewer and interviewee on the specific topic but leave room for explorative elements.

The chosen methods ultimately represent an interpretative process in which the interviewer acts as an interpreter of what is said (Mayring, 2016, p. 10). In this sense, the interview is also an artificially created situation in which, in this case, the daily work of the interviewee is discussed. The success of the interviews depends on establishing a relationship of trust with the interviewee, which in the present cases was achieved through maximum transparency and clarification of the research objectives and content.

There is hardly any alternative approach to problem-centered interviews, such as exclusive field research (e.g., participant observation), because of the focus on the subjective perspective of employees (Menz & Nies, 2018, p. 277). This subjective perspective cannot be observed but must be asked from the employees' point of view (Mayring, 2016, p. 66). The interview enables a stronger subject-relatedness, which is reflected in the later descriptions, interpretations, and attempts at generalization. The semi-structured nature of the guidelines facilitates the subsequent comparability of the interviews within the evaluation (although ad hoc queries within the course of the interview are not ruled out). In this respect, a certain degree of standardization proves to be advantageous.

The interview guidelines are based on the theoretical and conceptual findings of this thesis. The questions are open-ended and can be answered by the interviewees according to their own expertise and interpretation (Mayring, 2016, p. 67). Accordingly, possible answers are not predefined. However, they go beyond simply querying the change in the seven job autonomy dimensions. Especially with a topic such as the use of (learning) ADM, which is still a novelty in many service companies, explorative moments during the interviews cannot be dispensed with.

Exploratory and guideline questions are supplemented with ad hoc questions if applicable. In addition, the interview guidelines have been minimally adjusted depending on the interviewee and the branch. Interview guidelines were piloted in a pre-test with people who are similar to the interviewees in terms of position, qualifications, and branch. This step ultimately served for practice purposes for the interviewer and as a content corrective.

The research topic is addressed in two stages: by surveying employees and conducting selected contextual interviews in their companies, and by carrying out follow-up expert interviews with representatives from politics and related scientific fields. The expectations of employee interviews are clear – employees describe their subjective perception of job autonomy using ADM systems. The associated context interviews (with, e.g.,

management, technology providers or IT staff, and employee representatives) provide additional background information on the embedding of the ADM system in the company.

The expectation of the follow-up expert interviews is not only that the interviewees offer specific knowledge on the research topic, but also that they do so from their institutional or professional perspective. In this way, the information gained from the interview is also evaluated in terms of the role of this institution within a particular network or field of action. The expert interview is therefore not only based on the provision of expert knowledge in the subject area but also on expert knowledge that is linked to certain decision-making authority (Menz & Nies, 2018, p. 281). This expert knowledge is used in particular to critically question the case-based empirical findings in light of the employee interviews.

Initially, *context interviews*, which are methodically classified as expert interviews, serve to gain a basic understanding of the company's organization, the functionality and embedding of the ADM system, as well as the resulting objectives and implementation of the technology from the company's perspective. At the content level, the aim is to clarify the organizational and technical characteristics of the ADM system and to provide basic (also technology-independent) information about the organization of work and objectives in the company from various perspectives. In essence, context interviews are divided into four thematic blocks (Figure 20 | Appendix):

– functions of the technical system in the company,
– efforts caused by the system,
– work organization,
– influence on employees.

In this way, they form the prerequisite for the downstream employee interviews. After all, contextual methods also serve to elaborate on and situate the results of the key methods (Menz & Nies, 2018, p. 276). For the context interviews in companies, 60 to 70 minutes per interview are estimated in advance. When selecting interviewees for context interviews, personal characteristics such as age or sex are secondary. A balanced ratio is desirable but cannot be guaranteed. The decisive criteria are position in the company and availability. A maximum of three to four context interviews are conducted per company.

This is followed by the central *employee interviews*, which have at their core the questioning of the change in the seven dimensions of job autonomy. The employees are thus not only to describe the general handling and organizational conditions of the ADM system but are also to be guided by specific questions to describe the facets of job autonomy

in their work processes. In essence, employee interviews are divided into three thematic blocks (Figure 21 | Appendix):

– subjective perception of the technical system in everyday work,
– influence on autonomy dimensions,
– overall assessment.

In this respect, problem-centered interview guidelines are the main approach, although they can also contain narrative elements within the description of the general handling of the ADM system. Narrative elements are particularly useful when it is difficult to uncover subjective structures of meaning (Mayring, 2016, p. 74). This is the assumption made to some extent in this qualitative study. The interview guideline is strictly oriented toward the seven dimensions of job autonomy defined.

All questions about changes in these dimensions are to be answered by the interviewees in the context of their experience with the respective ADM system. For interviews with employees, 60 to 90 minutes per interview are estimated in advance. When selecting the interviewees for the employee interviews, three main requirements are defined: They are capable of reflecting on the working conditions with and without the technical system. Furthermore, there is a balanced representation of different qualification levels, working time models, and sex. Overall, the demographics of the entire workforce in the company and the branch are targeted. Due to the small number of cases, however, this information is not analyzed systematically but is included selectively in the interview evaluation. At least four to five interviews with employees are conducted for each company.

In the last step, *expert interviews* are conducted to define the possible influence of ADM on job autonomy from a political, scientific, and company partnership perspective. The aim of these interviews is to critically evaluate the empirical results of the company case studies and to situate them in the current state of research. The expert interviews therefore build on the company cases and facilitate the validation of the theoretical and quantitative preliminary work. For this purpose, insights from the context and employee interviews are specifically mirrored to the experts. Based on these, the influence of using ADM systems on job autonomy is discussed. In essence, employee interviews are divided into two thematic blocks (Figure 22 | Appendix): The discussion of the respective case study results and the conditions for autonomy-promoting technology use.

Finally, the expert interviews are intended to raise the research perspective from the employee and company level to the branch level and thus also fulfill an additional exploratory function in the research design (Menz & Nies, 2018, p. 280). For expert interviews, 60 minutes per

interview are estimated in advance. When selecting the interviewees for the expert interviews, emphasis was placed on a balanced gender ratio. Other decisive criteria are the field of expertise and availability. A total of four interviews were conducted for this purpose. The ADM-related fields of expertise are in the following areas:

- regulation, strategical foresight, public administration,
- occupational health and safety, standardization,
- technology development, research funding, care technologies,
- labor law, workers' participation.

12.3. Interview initiation and conduction

A total of 20 interviews were conducted, partly digitally and partly in person, whereby the personal exchange generally offered advantages in terms of subject-relatedness, openness, and flexibility in the conduct of the conversation. All interviews were audio-recorded. For a list of interviews, interview type, interviewee specification, interview day, and duration, see Table 27 | Appendix. Each interview was followed by the preparation of a postscript. This step resulted in the subsequent recording of impressions and content reflexes beyond the immediacy of the actual interview. It also served to reconstruct and retrospectively characterize the conversation and was thus intended to support the interpretation process.

The interviews were conducted according to the semi-structured interview guidelines. At the beginning of each interview, the aim of the research project, the research question, and the embedding of the interview in the thesis were explained. The order of questions was situationally changed. Likewise, depending on the course of the interview, some questions were omitted because they had already been answered. Overall, the time frame set for the employee interviews (60 to 90 minutes) was largely adhered to. The context and expert interviews were occasionally arranged with a more flexible time frame based on the consent of the interviewees.

For Case I, the research of a concrete case study in the form of a company in outpatient care was carried out via the technology provider, who was already known to the author as a pioneer in ADM-based software solutions in care from previous research. In a blog post on the website, the provider advertised the successful introduction of their software solution at an outpatient care service. The managing director of this care provider was contacted by email and asked for an exchange appointment. During this initial online meeting with the managing director and care

manager, the exact goals, procedure, and scope of the research project were explained. The company was found to meet all the necessary criteria to qualify for a case study.

Hereafter, within a time frame of four weeks (October to November 2022), four presence days were completed at the company location, during which most of the interviews were conducted, a presentation of the company's goals, organization, and use of technology took place, and an accompaniment of an employee at a shift was made possible. The technology provider was contacted separately and asked via video conference about the specifics of their technical system. A total of three context interviews were followed by five employee interviews. All interviews were conducted in separate rooms with the interviewees, who were first given a brief introduction to the research question and its relevance. All employees were given a consent and privacy statement, and the right to withdraw. The necessity of audio recording and anonymous data processing was explained.

For Case II, several universal banks, which, according to previous online research, use ADM, were contacted by email with a request for cooperation. The selection of the companies contacted was based not only on compliance with the content-related selection criteria described above but also on the aspect of feasibility at the company's location. The present example was the only one to respond positively to this inquiry. From the first contact to the first interview, a period of just under four months passed, during which three meetings were held with board members and higher-ranking employees of the company to isolate a concrete use case of ADM that could be considered for the research project and to convince the company that a collaboration is of mutual interest.

The sheer size of the company, including multiple levels of hierarchy, considerably prolonged this concretization process. Within a time of twelve weeks (April to July 2023), four presence days were completed at the company location, during which the majority of the interviews were conducted, and a presentation of the company's goals, organization, and use of technology took place. A total of four context interviews were followed by four employee interviews. The spatial conditions as well as the concrete conduct of the individual interviews are comparable with Case I.

The initiation and conduct of the complementary expert interviews were much less complicated and seamless than the case studies. Selected experts were contacted directly with an interview request via email, which was followed by positive responses without exception. Since the expert interviews were intended to mirror and discuss the results of the case studies, it was important to schedule them after most context and

employee interviews. Within a time of four weeks (June to July 2023), all interviews were conducted digitally.

12.4. Data preparation and analysis

The audio files of the interviews form the basis for the transcription and evaluation by means of qualitative content analysis. The interviews are transcribed in the form of a summary. Only content that subsequently proves to contribute to answering the research question is selected. In this way, the interview material is reduced, systematically standardized, and generalized at the beginning of the analysis (Mayring, 2016, pp. 94–95). Voice inflections and pauses on the part of the interviewees are neglected. This form of transcription is particularly useful for processing large amounts of material if the focus of analysis is on the content-related components (Mayring, 2016, p. 97).

The summary transcription of all interviews forms the starting point for the detailed interpretative evaluation and has the advantage that the essential interview content is transcribed in a concentrated form. Depending on the length of the interview, the transcriptions comprise three to five pages. The interviews are first analyzed in German using the software MAXQDA. The English translation takes place after the interpretation has been completed to minimize misunderstandings.

The interviews are analyzed using qualitative content analysis, following Mayring (2010). This technique is characterized in particular by its step-by-step material analysis with strict methodical control (Mayring, 2016, pp. 114–115, also in the following). In comparison to quantitative analysis approaches, this allows the context of material elements as well as latent structures of meaning to be considered while still giving room for interpretation to striking case examples. In essence, it develops a system of categories from the interview material. This category system secures essential information, sorts it, and ultimately allows a systematic interpretation of the information.

In detail, this qualitative analysis relies on the summarizing content analysis, which reduces the material to essential content that, while ultimately abstracted, still allows conclusions to be drawn about the source material. The development of the category system essentially follows an inductive approach with deductive elements, i.e., the formation of categories is based on the interview content and was concentrated step by step. A deductive element is only found in relation to the application of the theory-based dimensions of job autonomy, which are used as a structuring factor for the analysis of the material. The category system

formed serves as the central interpretation of the interview material. The category system was initially developed along Case I and transferred to Case II to create maximum comparability in the analysis. The analysis of the expert interviews follows a less complex method. Since the interviews were rather similar to exchanges and discussions of the case study results, their analysis resembles more of a summary. The core content and expertise of the experts are offered in condensed form.

13. Company Case I: good practice in outpatient care

13.1. Branch profile: outpatient care

The introductory branch profile contextualizes the case study results. It summarizes key assumptions and findings on the care sector from preliminary work, describes the average degrees of job autonomy for care workers, and addresses the organizational particularities of outpatient care. Finally, the branch profile also provides an overview of technology adoption in the care sector as well as selected research findings on the impact of technology use on care workers.

13.2.1. Retrospective: What do we know so far?

Previous considerations on the extent of job autonomy in the service sector (Chap. 1.5) initially reveal the following branch profile: Healthcare workers, which include outpatient care, typically perform LAS. They are among those workers who report the least scope for shaping their work. This is reflected not only in the large share of workers with little influence on the amount of work they do, but also in terms working hours and ability to plan work independently. This picture of a highly intensive and stressful job is completed by a constant feeling of being rushed and interrupted at work. More than one-third of employees are forced to make quality cuts at work. From this aggregated perspective, limited job autonomy of healthcare workers is obvious (Table 1).

The branch analysis along the seven job autonomy dimensions follows a similar path (Chap. 8.1): human health and social work activities, the statistical reference for outpatient care, clearly fall into the field of less autonomous branches with relatively little job autonomy. What is remarkable, however, is that the development is less reflected in the content-driven job autonomy dimensions such as Task and Method Autonomy. With Method Autonomy, the branch even departs from other LAS. Perhaps the high degree of interactional work both enables and requires the possibility of determining the way of working independently and situationally. However, the fact that healthcare services are also strongly guided by external performance goals, i.e., price constraints and econo-

mization efforts by insurers and private health providers, is reflected in the lowest level of Criteria Autonomy in the entire service sector.

The aforementioned intensity of work in healthcare replicates the lowest degree of Scheduling Autonomy across all service branches. This means that employees have little influence on work scheduling, speed, and independence from interruptions, which suggests that work is highly situational. Unsurprisingly, healthcare services are comparable to other typical person- or object-related professions in that Working Time and Locational Autonomy indicate relatively few degrees of freedom. Interestingly, the branch also stands out in that Interactional Autonomy is considerably below average. This indicates a higher degree of dependence on colleagues and superiors, little support from them, as well as the need to constantly assume responsibility and make compromises. Overall, the working conditions in healthcare services paint an extremely heterogeneous picture of job autonomy. This may also be an indication of the richness of work demands.

The analysis of the average change in job autonomy between 2012 and 2018 (Chap. 8.4) indicates declining job autonomy in all dimensions: Job autonomy in healthcare services has decreased in the period under review. Not only are there considerable losses in the content-related dimensions of job autonomy (Task and Method Autonomy), from which almost all service branches suffer. Additionally, it is also the time- and performance-based aspects of job autonomy that are losing ground in the field of healthcare services. This means that the branch's employees are becoming entangled in the autonomy-restricting tendencies of person- and object-related services. If there is one assumption that should be taken from these findings into the qualitative approach, it is the following: The combination of decreased degrees of Method Autonomy and, at the same time, more intensive and performance-related work suggests constant conflicts at work in the sense of contradictory work requirements.

The observation and perception of increased work demands, for example, in the form of higher workloads, is additionally confirmed when progressing digitalization in the healthcare sector is considered. For more than half of the employees, the amount of work has increased, resulting from digitalization. Similar trends apply to the need to handle several work processes simultaneously and the feeling of being monitored and controlled at work. However, the question of changes in the scope for decision-making at work yields somewhat interesting results. Compared to all other service branches, most employees in the healthcare sector report that digitalization has not brought any changes for them (Table 17 |

Appendix). Regardless of digitalization, decision-making authority often seems to remain with healthcare workers.

Since these findings deal with digitalization in general and in retrospect, no direct assumption is made about the influence of ADM systems on job autonomy in healthcare. However, based on the theoretical and empirical considerations so far, work in the branch is characterized by high intensity and organizational constraints. The creation of new degrees of freedom at work is a central solution to provide some relief from these burdens. As will be shown later, the use of technology may contribute to this.

13.2.2. Employment, content & work demands

Within the care sector, a constant area of tension arises between a shortage of workers, the maintenance of qualitatively good care, and the work-organizational (and thus directly economic) predetermined caring reality (Kumbruck & Senghaas-Knobloch, 2019, p. 154). There are clear differences in terms of care provider, related work organization, services offered, and the status of digitalization (Wolf-Ostermann et al., 2021, p. 35). Particularly due to the high proportion of private care providers (67 % in 2021, Destatis, 2023b), the usual economic objectives and organizational structures are assumed for these facilities. However, they resist this logic in terms of pricing structures, which can only be changed in partially regulated negotiations with health and care insurers – and thus also affect the staffing levels in care companies.

To express the disproportionate employment on a labor market level: Care work is a cross-regional shortage occupation. As of 2021, a total of around 1.7 million care workers are employed in Germany (subjects to social security contributions, Bundesagentur für Arbeit [BA], 2023a, p. 4). Over 80 % of employed care workers are women; almost half work part-time (BA, 2023a, pp. 10–11). The gender ratio is even more pronounced in outpatient care, which counts a total of around 430 thousand workers, most of them care workers, 85 % of whom are women (Destatis, 2023a). Care workers face an increasing number of people in need of care. In 2024, the German care insurance funds counted just under 5.6 million people in need of care. Many of them are cared for in professional outpatient settings, i.e., just under one million people (Bundesministerium für Gesundheit [BMG], 2024, p. 1; Destatis, 2023b). In both outpatient and inpatient contexts, the number of people in need of care has increased massively in recent decades. The number of people

cared for in outpatient settings has more than doubled in the past 20 years (Destatis, 2023b).

The media and scientific portrayal may distort the actual picture: Outpatient care settings form the main pillar of care for the majority of people in need. The key actors are both professional care workers and informal caregivers (partners, children, other relatives, neighbors). By law (§ 3 SGB XI), people in need of care should be cared for at home in an outpatient setting for as long as possible. Therefore, the importance of good working conditions in outpatient care can hardly be underestimated.

The range of tasks performed by care workers in the outpatient setting is potentially very extensive (nursing and care measures in line with SGB V and SGB XI). It ranges from support in household and everyday management of persons in need of assistance, their medical and nursing care, to professional counseling of informal caregivers involved (BMG, 2023). What stands out about care work in the series of service activities is the work close to the human body, which partly involves invading the intimate sphere and privacy of people in need of care.

Care work consists to a considerable extent of administrative tasks, but the interactive part of care work is still an underestimated, albeit highly demanding one. Kumbruck and Senghaas-Knobloch (2019, p. 142) describe that the quality of the care activity depends on the ability of the care worker to shape the interaction relationship with the person in need of care in such a way that the latter allows the actions and does not resist them. The interaction between the person providing care and the care recipient is interspersed with feelings and emotions on both sides. The subjective part of the work is expressed in the essential interaction work, i.e., in dealing with one's own as well as other people's emotions (Kumbruck & Senghaas-Knobloch, 2019, p. 144).

There is plenty of empirical evidence that care professions have to work in a permanent pressure situation in addition to physical strain (e.g., DGB-Index, 2023, p. 2). Many care workers very often or frequently feel rushed or under time pressure (76 %), do not receive important information (89 %), are faced with demands that are incompatible with each other, or have to cut back on the quality of work outcomes (DGB-Index, 2018a, pp. 7–8). The latter point may have devastating consequences for people in need of care. Experts in the care sector tend to expect a further increase in psychological stress among care workers in the future (Glock et al., 2018, p. 34). This assessment is all the more drastic in light of the fact that care workers are absent from work more often than most other professions (M. Meyer et al., 2021, 469; Techniker Krankenkasse [TK], 2019, p. 25).

The specific conditions between inpatient and outpatient care may well differ: more frequent requirements for minimum performance, as well as less support from supervisors and colleagues, to the disadvantage of outpatient forces; in contrast, less loss of breaks, deadline and performance pressure, interruptions, and parallelism of work processes, as well as less frequent working to the performance limit, in favor of the outpatient setting (Petersen & Melzer, 2022b, pp. 7–9). However, outpatient care workers more often report emotional exhaustion and problems switching off from work (Petersen & Melzer, 2022b, p. 10) – clear indications of work without temporal limits, which is possibly even more pronounced in the outpatient than in the inpatient setting.

From an organizational point of view, outpatient care is characterized by work away from the team in the private rooms of those in need of care with strong mobility requirements (Petersen & Melzer, 2022b, p. 2). Personal exchange with colleagues and supervisors (e.g., team meetings or handovers) becomes even more important for care workers as they work alone on a daily basis. A major challenge of working alone is that no quick on-site help can easily happen. Hence, the communication and information requirements are particularly high, especially regarding handovers, which can rarely be performed directly between colleagues.

Partially unplannable work rhythms are a major organizational challenge (Bleses et al., 2018, pp. 21–23). Unplannable situations occur daily when caring for people. However, unpredictable, non-plannable moments in outpatient care do not only have to occur due to health emergencies. Likewise, non-billable, hidden services arise that are not covered in care documentation. Examples include cleaning up, reading documents aloud, getting the mail, or simply being there for the person (examples in Lezock & Klewer, 2014, p. 34). The task-related and work-organizational challenges in outpatient care accumulate, especially in the decentralized nature of work. Again, reliable communication and information channels are all the more important.

A considerable amount of time in outpatient care is spent traveling (mainly by car). Very often, there is not enough time planned for these patient-to-patient trips (Petersen & Melzer, 2022a, p. 1). Atypical working hours and constant availability are the norm. Specifically for the outpatient setting, there are so-called shared services, which include longer breaks between working hours during the day (Petersen & Melzer, 2022a, p. 1). Furthermore, working schedule uncertainty is a major problem. More than half of all outpatient care workers are always or often affected by unforeseen changes. These aspects of uncertainty and stress are often intensified at the management level (Petersen & Melzer, 2022a, p. 2). According to Janson and Rathmann (2021, p. 352), this demand

for flexibility represents a constant source of stress, which should be countered in particular by granting job autonomy.

In this sense, the promotion of job autonomy goes hand in hand with the issue of higher recognition of care professions, which has accompanied the discipline for many years. Potential dimensions of upgrading care professions include staffing levels, working hours, and professional development opportunities (Schildmann & Voss, 2018, p. 6). Within these dimensions, many elements of job autonomy can be identified: More appropriate staffing levels would allow greater freedom to shape and plan work. The same applies to flexible and, above all, more reliable working hours. The upgrading of care professions and job autonomy can thus certainly be thought of together. More recent research suggests that the use of technology in care has quite some positive effects, but – as this case study also shows – these depend largely on the organizational conditions of work.

13.2.3. Job autonomy in (outpatient) care & technology use

There is comprehensive empirical evidence on the basic work and strain situations of care workers. However, research approaches addressing care technologies are mostly limited to the effects on care recipients (e.g., Lutze et al., 2021) and, to a lesser extent, to the influences on care workers in the inpatient setting (e.g., Fuchs-Frohnhofen et al., 2017). Many studies tend to focus on evaluating the implementation of technology, determining acceptance among stakeholders, and the integration of technology into everyday care (e.g., Hülsken-Giesler et al., 2019; Saborowski & Kollak, 2015; Weber et al., 2022). So far, there are hardly any setting-specific insights into the requirements and needs for the use of novel AI systems, including learning ADM, in care (Wolf-Ostermann et al., 2021, p. 2) – this is especially true for outpatient areas. Findings on the organizational or psychosocial effects of using these systems in the care context are virtually nonexistent (Wolf-Ostermann et al., 2021, pp. 19–20). This is at least partly attributable to the fact that AI systems are mainly used in medicine, i.e., in diagnosis, surgery, therapy, radiology, drug development, or healthcare management (Neu et al., 2022, pp. 50–52), not in care work.

There is hardly any precise data on the actual use of digital systems, let alone ADM in the care sector. A rarity is Braeseke et al. (2020, p. 39) depicting digital technology in outpatient care: Almost three-quarters of outpatient services use organizational software, e.g., for tour planning and time recording. Mobile devices for internal communication are also

widespread (80 %). More than half of all care providers use technical tools to support the care of people. Haug (2021, p. 192) adds that only a few outpatient services use digital documentation systems (29 %) or monitoring systems (9 %). Except for the use of mobile devices, outpatient facilities are thus considerably less digital than inpatient facilities. The use of technology is clearly dependent on the number of clients, i.e., on the size of the company. It increases with the number of clients (Braeseke et al., 2020, p. 40). What remains is the realization that in many care facilities, digitalization is still (if at all) limited to digital documentation, personnel resource planning (PEP), and efficiency calculation. Healthcare statistics distort the reality here. Medical work and hospitals are permeated with digital elements. However, these are to be distinguished from care facilities because, for a long time, they were regarded as areas in which technical support was neither necessary nor desirable (Daum, 2017, p. 13). A certain *time lag* is suspected in the information technology support of care facilities compared to hospitals (Hielscher, 2014, p. 19).

The reduction of care work to purely interactional elements, where technical aids only interfere, fits into the well-known de-professionalization narrative around person-centered and social services. However, a distinct shift away from this attitude is visible. On the one hand, this may be due to the demographic and employment-related pressures for change in the care sector (Hielscher, 2014, p. 13). On the other hand, technical services for care are now available at lower barriers, with higher reliability and being easier to handle in everyday work.

The fact that care work has not been intensively technologized to date is not attributable to a lack of acceptance or affinity for technical innovations, as may be suspected (Evans et al., 2018, p. 1). Care workers tend to be positive, curious, and not very fearful of new technologies (Merda et al., 2017, p. 123; Rösler et al., 2018, p. 17). Technical support systems receive the greatest rejection when malfunctions occur or no time is provided to use (and learn) them (Saborowski & Kollak, 2015, p. 136). Technical innovations are also viewed critically if they risk a loss of interaction quality with people in need of care and an increase in their isolation. Consequently, the use of technology is particularly rejected if the interaction work is negatively influenced (e.g., Sävenstedt et al., 2006, p. 22). Ultimately, the usefulness and usability of assistive technical systems depend on development and implementation (preferably participatory, Lutze et al., 2019, pp. 223–226) and reliable functionality, but also on basic technology acceptance by care workers (overview in Krick et al., 2019, p. 7) and the care setting (e.g., Hülsken-Giesler et al., 2019). In this context, there is even the possibility that care workers perceive

themselves in direct competition with the technical system in the care process (Saborowski & Kollak, 2015, p. 138).

The actual benefits of digital technologies in care have hardly been systematically proven for care recipients, let alone for care workers (Lutze et al., 2019, p. 221). Many findings on the effects of technology use on care workers are ambivalent at best. Rather, the potential for time relief or the dangers of overburdening care workers with even more tasks are frequently reported (Daum, 2017, p. 36). Whether the effects are relieving or easing the burden, increasing the amount of work, or decreasing the effort, as well as granting autonomy or creating additional restrictions, remains largely unclarified. There are indeed reports of relieving effects using technology. However, the potentially positive effects are often overshadowed by increasing work intensification, time pressure, and incorrect use of the technology (Tisch & Meyer, 2020, p. 695).

For example, recent case studies on the effects of care technologies on the tasks, processes, and workloads of care workers in Germany and abroad describe a frequently relieving and thus large added value for the everyday life of care workers in an inpatient context (Lutze et al., 2021, p. 104). These findings indicate that the use of digital technologies has a considerable impact on the work processes of care workers. A positive effect of using digital technologies in care is often cited as the creation of a common information base and improved communication channels.

The use of digital, mobile devices for care documentation, which makes access to real-time information available at the Point of Care (PoC), proves to be particularly effective (Lutze et al., 2021, p. 132). This also results in a stronger focus on the work location close to the person in need of care. Information is available in a more condensed and clearer form. In combination with sensor systems, there are fewer unforeseen situations.

Indications of the autonomy-enhancing effects of using digital technology come from the perception of being able to handle the systems competently and to carry out digital documentation promptly. Care workers report an improved ability to plan tasks and an increased sense of security through monitoring (Lutze et al., 2021, p. 38). The variety of work tasks is increased; monotony and interruptions of the workflow are reduced. In some cases, the new possibility of working from home is reported (Lutze et al., 2021, p. 92). However, the study also indicates that digital technologies do not assist in complex decision-making (Lutze et al., 2021, p. 108). Thus, in crucial situations, the decision-making authority remains with care workers.

Just a few years ago, it was attested to outpatient care that hardly any digital technology would be used to support both care workers and

recipients. This may in part have to do with the need for the sovereignty of care receivers in their own homes (Braeseke et al., 2017, p. 6). As it is made clear above, this is only true to some extent; technical aids for administration and organization are used – albeit depending on the specific tool and the size of the company.

Important digital systems in the outpatient setting include digital care documentation (1) and systems for tour planning and service recording (2) (Braeseke et al., 2017, pp. 9–11). The latter systems comprise two central functions: performance and tour planning for care workers and the possibility of mobile (flexible) recording of services provided to the patient. Both form central elements of the technical system in the case study.

In the case of digital documentation (1), the consequences for the employees have so far been quite ambivalent from a research perspective. Generally, the implementation of new technologies carries the risk of standardization. Technical applications are bound to a certain degree of formalization and rule-basedness. For example, regarding the use of an electronic patient file in hospitals, it was found that the job autonomy of employees is rather restricted (Petrakaki & Kornelakis, 2016, p. 233). Although care workers initially perceived the technology as conducive to information access, at the same time, documentation efforts increased as synchronization problems arose between systems. This even led to the point where employees purposefully bypassed the system and avoided its use to maintain sovereignty over their work process (Petrakaki & Kornelakis, 2016, pp. 233–234). However, it is also evident that it is not the use of a technology on its own that has led to increasing standardization and less job autonomy, but that the (increasing) requirements for care documentation already include standardization and formalization (Lutze et al., 2021, p. 120).

In contrast, there are examples where using tools for digital documentation has reduced the time required for administrative tasks (Lutze et al., 2021, p. 67). After all, a certain degree of formalization also contributes to process quality and consistency. The extent to which digital care documentation is beneficial to company control mechanisms has hardly been investigated to date. In principle, it allows for checking care services performed in real time and drawing conclusions about the productivity of individual care workers. Care work thus becomes much more transparent (Hielscher et al., 2015, p. 12). The consequences are again a question of employee data protection as well as corporate strategies. This at least raises the question of the extent to which digital documentation is also perceived as a form of control (Hielscher et al., 2015, p. 13).

Digital shift and tour planning (2) replaces time-consuming analog planning (especially for the care managers) and enables a relatively sim-

pler reaction to short-term changes (e.g., cases of illness or traffic jams). Thus, it is also about the dynamic adjustment of planning in contrast to static pre-planning in analog settings. The very complexity of creating shift and tour planning for care services, which ultimately results in mathematical matching, makes the use of learning systems attractive for the planning process (Karl, 2022, p. 12). For the care worker on tour, this includes using a mobile device that logs work time (Daum, 2017, p. 19).

Thus, a change in work processes is expected using shift and tour planning (as well as digital documentation of service delivery). The proportional increase in the flexibility of work planning initially suggests an expansion of the degrees of freedom for (managerial) employees (Daum, 2017, p. 37). From the company's point of view, great potential for efficiency is expected in the coordination of care services (Hahnel et al., 2021, p. 10). Travel times can potentially be reduced, and staff can be deployed more efficiently. This may also have a positive impact on the working hours and conditions of care workers (Hahnel et al., 2021, p. 17).

Outpatient care facilities that use tour planning and service recording systems could potentially see several improvements that are not limited to economic interests only. There are also signs of increased quality of care as well as subsequent client satisfaction. However, statements on a possible improvement of working conditions and the quality of outpatient care workers are only possible to a limited extent. In the cited study, about two-thirds of respondents concede that the use of the systems has reduced the stress of employees, and just under half state that it allows them to spend more time with those in need of care (Braeseke et al., 2017, p. 14). Disadvantages mentioned by users of tour planning and performance recording systems include the complexity of the systems. Apparently, there is a discrepancy between the manageability of these systems in practice and the technical performance spectrum. However, what is hardly judged negatively by users are organizational and financial attractiveness as well as acceptance by care workers and care recipients (Braeseke et al., 2017, pp. 14–15).

Specifically, learning systems in shift and tour planning can potentially have beneficial effects as they can include a variety of information in the decision-making process, i.e., for example, individual care wishes and needs, availability and qualification of employees, but also route specifications (Wolf-Ostermann et al., 2021, p. 25). Accordingly, the optimization problem should ensure that the skills and availability of care workers are adapted as optimally as possible to the care recipients and that information flows are guaranteed across stakeholders.

However, an often-neglected factor in this calculation is that this data must first be systematically collected, implemented in the systems,

and sustainably maintained. Automated tour planning in particular is regarded as having the potential to have the highest feasibility in the set of requirements (Wolf-Ostermann et al., 2021, pp. 25–27). Robust studies on the impact of using ML-based service and route planning systems are not currently available (Karl, 2022, p. 12). What is clear, however, is the expectation level and these systems. Workloads in shift and tour scheduling are to be minimized, and optimized tour scheduling in turn is to lead to time savings for care workers (Karl, 2022, p. 12).

This form of digitalization of outpatient care work clearly contributes to transparency in terms of time and content of work. The consequences of this transparency are still difficult for employees to assess (Daum, 2017, p. 19). It depends on the utilization of these technologies as a control instrument by management. Thus, increases in deadline and performance pressure for care workers are possible. Care workers themselves see the danger of increasing time pressure and savings in personnel associated with the use of modern technologies (Rösler et al., 2018, p. 17).

13.2. Case summary

"If you want to work at [case company], you have to work digitally, and you have to do it from the very beginning," which is how the managing director describes the company's technology-related organizational framework. This approach is both a resource and a requirement for employees. It is a selling point, especially for younger care workers, but those digital tools must also be learned and applied correctly. From the company's point of view, digital work comprises investment costs and continuous maintenance, as well as the utilization of optimization potentials in administration and planning. Finding out what it entails for employees is the aim of this case study.

The company example is an outpatient care service in a rural area in Eastern Germany, which was founded in 2021 and employs a total of eight people, including the managing director (IT specialist) at the time of data collection. Working hours are reduced. Great importance is attached to the reliability and predictability of working hours. The company's capacities are not yet fully utilized on the client side. The employees combine many years of experience in the care profession, mainly in the inpatient setting, yet the team is relatively young. Distinctive features of outpatient care include working alone in the rooms of people in need of care with high mobility requirements.

This company example uses a highly integrated software solution that moves administration, accounting, work scheduling, and planning

completely into the digital space. Tour planning is ML-based. On tour, care documentation is recorded via ML-based voice input; handovers as well as performance and working time are recorded on networked tablets, which also provide access to the tour plan and care-relevant information on the clients. The goals of technology use are standardization, process reliability and quality, and enabling remote work. The desired efficiency gains are evaluated in combination with employee and client preferences.

The statements of the employees interviewed paint an overall picture of considerably increased job autonomy using the technical system. The employees report more self-determined work situations due to the reduction of time spent on documentation and performance recording, the increase in flexibility regarding the place of work, and more efficiently designed tour plans. Autonomy-strengthening moments are recorded across all job autonomy dimensions. The satisfaction with and functionality of the system is described as clearly positive. However, technical malfunctions and misuse can have the potential to restrict job autonomy. Overall, the technical support for planning and administrative work is perceived by employees as promoting autonomy – but it also does not interfere with the core of care work, i.e., the interaction work with people in need of help and care.

The learning elements of the system mainly express themselves positively in terms of content-, goal-, and intensity-related dimensions of job autonomy (Task, Method, Criteria, Scheduling Autonomy). New freedoms through process digitalization are more likely to be recorded in working time and location-related job autonomy dimensions, as well as regarding cooperation in the team and with clients (Working Time, Locational, Interactional Autonomy).

The changes in each job autonomy dimension accumulate in a series of potential positive effects on working conditions: a contribution made to the quality of care, improvements regarding workload, and an easing of interaction work. The conditions for creating positive experiences of job autonomy in dealing with the system are essentially nourished by organizational aspects: the absence of utilizing performance-related employee data as a control instrument and the visible prioritization of client requirements in all phases of everyday care work.

The case study is structured as follows: The description of the case company and its organizational characteristics (Chap. 13.3) is followed by the embedding of the technical system in the daily work processes of the employees (Chap. 13.4). The emphasis is placed on the learning aspects of the system (Chap. 13.4.2). This is followed by the central case analysis, i.e., the description of the ADM system influencing the seven

job autonomy dimensions (Chap. 13.5). In addition, technical hurdles and problems in dealing with the system are identified (Chap. 13.6), and finally, the effects and conditions of changed job autonomy are discussed (Chap. 13.7).

13.3. On company and employees

The company case study is based on an outpatient care service founded in 2021 and located in a rural area in Eastern Germany. As an outpatient care service, the company takes on six central areas of responsibility for people in need of help and care:

- care counseling (e.g., on financing and organizing care),
- housekeeping support (e.g., shopping, cleaning),
- other support activities (e.g., organizing leisure activities, exercises for mobilization),
- basic care (e.g., personal hygiene, nutrition, mobility support),
- medical treatment care (e.g., wound care, medication, insulin therapy),
- respite care (e.g., care and provision when regular caregivers are unavailable).

At the time of data collection, eight people are employed in the company: the managing director (trained/studied IT specialist), a care manager, four care professionals (3-year vocational training), and two care assistants (1-year vocational training/semi-trained). Two care workers are male. All employees work full-time (35–40 hours per week). Most of them have been working in the care profession for several years. The interviewed persons are aged between 22 and 52 years. The average age (approx. 35,5 years) in the company is relatively low for the care sector. The number of fixed clients totals 34, ranging in age from 12 to 91, with a clear majority over the age of 70. There are a variable number of clients who only claim short-term services. Most clients receive services corresponding to care levels 2 to 3.[49] According to its own statements, the company is not yet working to full capacity with this number of clients, which is why the acquisition of new clients accompanies the daily work of the employees just as much as the recruitment of new care workers.

49 In relative terms, the care level of people in need, which in the insurance sense represents the degree to which a person requires care and roughly translates into care-related efforts, is on average somewhat lower in outpatient settings than in the inpatient sector (Bundesministerium für Gesundheit [BMG], 2024, pp. 1–2).

The allocation of care duties is guided by the respective qualifications of the staff, i.e., medical treatments must only be carried out by professionals. Care assistants tend to take over housekeeping activities, other supporting tasks, and basic care. This can be deviated from, e.g., if necessary, care professionals can also take over the typical tasks of care assistants.

Planning and organizational tasks are divided between the managing director and the care manager. Business management and financial matters are the responsibility of the managing director and founder. A unique feature of his role is his background as an IT specialist, which is the reason for the strong affinity and interest in a high degree of digitalization in the company.[50] The day-to-day care business is the responsibility of the care manager, who makes decisions on all care-related issues. In particular, she takes over client management and work planning for the care workers. In work planning, a distinction must be made between shift planning and tour planning. Shift planning refers to the determination of the shift weeks for a staff member and is done, if possible, six weeks in advance. Tour planning refers to the scheduling of the exact sequence of individual deployments to clients on a given day. The tour plan can always change at short notice.

Compared to other outpatient care services, the working hours are slightly shorter, from 07:00 a.m. to 09:00 p.m. (usually 06:00 a.m. – 22:00 p.m.). The weekly schedule varies greatly from person to person. Basic shift models for care workers include early, late, day, and shared shifts, as well as on-call duty. Office shifts are usually only covered by the managing director and the care manager. Maintaining an appropriate work-life balance is a high priority for the company. Many employees state that they have also chosen the company because the working hours are shortened and little work is done on weekends, not on public holidays or at night. Generally, great emphasis is placed on the regularity and reliability of the working hours.

The distinctive feature of this team composition and cooperation lies in their previous experience: Most of the employees had worked in an inpatient setting before joining the company, i.e., in hospitals or care facilities for the elderly. In the outpatient setting, there was little previous experience, which led to an ongoing joint learning process regarding

50 While no representative data is known on the qualifications of managing directors in care companies, it is reasonable to assume that they generally have a background in care or business administration. A particular affinity for the integration of digital systems into the work of the case study company can be legitimately assumed.

the organization of work. This is also reflected in the distribution of tasks, which was changed repeatedly in the work process, for example, particularly affine people take on more tasks in the areas of sales and marketing.

It is evident among many of the interviewees that previous experience in the inpatient setting has dissolved a partly negative attitude towards outpatient care (which was often already established during vocational training). Work in the outpatient setting is described as more routine, less physically stressful, and with less responsibility, but also less standardized. There is a greater sense of security in everyday working life, also because less serious medical cases are treated in the outpatient setting. According to the employees, the feeling of safety is maintained when working away from the team because communication channels between colleagues are always open, and solo work, which is potentially extended by the possibility of working remotely, is thus not perceived as such at all. The care manager aptly describes, "If the team works, then it is also possible to work alone and with fewer people".

The company refrains from calculating to the minute or even to the second for individual deployments with clients. A "piecework processing of clients" under sometimes "unrealistic and absurd" time assumptions, which are determined by external price specifications, is not supposed to happen in the company. In this respect, the case study differs from larger care services and at least tries to avoid the ongoing economization of healthcare to some extent. Of course, as in any other company, performance and productivity are weighed up. Target/actual times in route planning are compared, and attention is paid to an optimized matching of more expensive skilled workers and cheaper assistance services. The crux of the matter is that this multitude of time- and location-bound data has so far not been used to intensify work but to lead to more efficient processes, which is welcomed by all involved. This is not to say that the company is not profit-oriented; it simply does not push rationalization and intensification to an unbearable limit for care workers.

However, the company cannot completely escape the given socio-economic and legal conditions in (outpatient) care. The most critical socio-economic factor influencing its ability to survive is the legal framework for financing and billing care services. The company is externally controlled in the pricing of its services, as these are set by health and care insurance funds for certain periods of time. Possible surcharges on these prices depend on the clients' willingness to pay and are usually only in the low single-digit percentage range.

It is hardly possible to react to short-term price changes in operating resources and other necessities, such as increased prices for energy and

fuel in 2022 and beyond. Such developments pose enormous challenges for small care services in particular. The competitive situation between care services in the region is putting additional pressure on the company – both in terms of recruiting staff and new clients. According to the company, there is hardly any cooperation, for example, regarding the workload of individual care service providers. There is an overall lack of regional coordination of care services, which leads to the assumption of considerable losses in efficiency and quality regarding the deployment of staff and the care of people in need.

13.4. ADM usage in the work process

The company uses a technical system developed by one of the current market leaders in software solutions for the social economy in Germany. The system was available to all employees when the company was founded. The goals of implementing the technology are described in a comparable way by all parties involved: The aim is to achieve standardization, process reliability, and quality, as well as independence of location, which should also result in an improvement in working conditions. A direct influence on the core activities of care work is not intended, but rather the optimization of all organizational processes leading to these tasks.

"That we can all work in a uniform way" forms the core of the technology use and refers not only to the increase in standardization (e.g., no handwritten documentation), but also to the minimization of media disruptions[51], and the central availability of information independent of location and time. Overall, business objectives are accompanied by ensuring the highest possible quality of care-related processes. It goes without saying that using the technology serves to increase business efficiency. However, the optimization of staff scheduling, and the location-independent nature of the technology also facilitate fewer burdensome conditions and flexibility options for care workers.

51 Cross-linking with other systems: Although it is intended that the processes run as free of media disruptions as possible, if not exclusively within the system, this does not succeed with regard to all business and organizational elements. The parallel use of MS Office applications and MS Teams can hardly be avoided (especially calendar and email functions). Other, lower-threshold communication channels, such as telephone and messenger services, are also used.

13.4.1. Basic functional spectrum

The company uses almost the complete range of services included in the software solution. Open functionalities are precisely defined hierarchically and reflect the division of tasks. This means that employees, in particular, only have access to a limited number of applications that they need for their daily work. Essentially, the overall system comprises modules for:

- administration and accounting,
- personnel resource planning (PEP), both in stationary use by the managing director and care manager in the office,
- care and service documentation,
- recording of working time, and care services, both in mobile use by care workers.

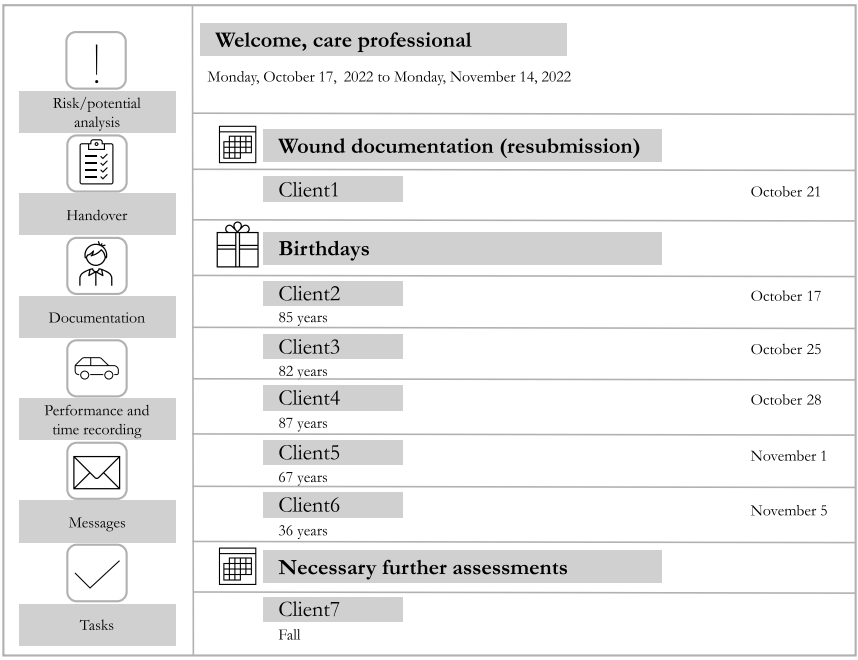
The software solution for administration and accounting forms the basis for all other modules of the system, especially PEP, because all the necessary data is stored, from the clients' background data to their diagnoses and illness histories to staff data. Furthermore, it enables the digital mapping of essential company processes, from the preparation of offers/contracts for clients to prescriptions from doctors' orders and their billing. Data entry is only partially automated. The function of administration and accounting is used exclusively by the managing director and the care manager, which is why it plays only a subordinate role in the following.

PEP refers to shift and tour planning. Due to the small number of employees in the company, shift planning is still done manually, but it is feasible with technical support. Tour planning uses the learning elements of the ADM system. It is based on individual deployments, i.e., stays and service provision for a single client. This turns tour planning into an extremely complex planning step because, on the one hand, it must consider requirements for the care service, which can be provided for an unrestricted or restricted period of time.

On the other hand, the provision of these services is linked, in particular, to the qualifications and availability of the employees. With qualification, the dynamics of individual tours usually increase, since complex treatments can only be carried out by professionals but are often limited in time (e.g., administration of medication for a period of two weeks on a doctor's order). In addition, there are routes and traffic situations that must be used as efficiently as possible between clients. The care manager is responsible for planning the tours.

The care and service documentation, as well as working time and performance recording, are centrally accessible for employees via tablet. The

Figure 11: Home screen on tablet for employees, Case I



Source: Provided by the case company, October 2022. Own replica.

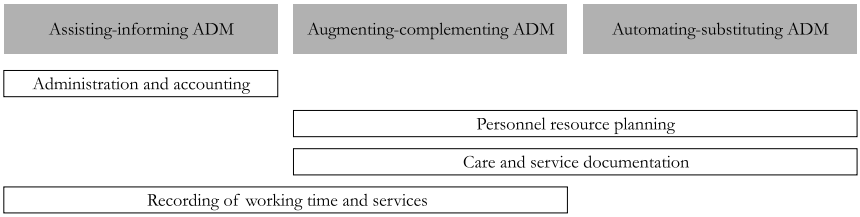
essential functions are directly displayed on the home screen (Figure 11): handover book and documentation, as well as performance recording and, if applicable, specific duties. In addition, important, daily updated information (e.g., wound documentation and client birthdays) is listed. Within the handover book and the care and service documentation, colleagues are informed about the course of illness, state of health, or other care-relevant data, which are also recorded for accounting purposes. The documentation can include text or images and uses ML-based voice input for the former. The tablet is not only a tool for documentation but also a central means of communication between care workers. However, acute communication solutions remain messenger service and telephone.

The working time and service recording refers to two distinct functions: Working time recording includes the digital start and end of each deployment, as well as the start and end of a shift, by simply clicking on the respective point on the tablet. This information on time is indispensable for the exact billing of services in the respective situations

and means nothing else than that the employees start their service with a click as soon as they are sitting in the car and start the assignment with a click as soon as they arrive at the first client of the day. Service recording describes the digital checking off of individual tasks that must be completed for a client. In the case study, all tasks are already checked off in a default setting, so it forms more of an overview of pending tasks.

The four functions of the system are categorized differently according to the depth of their intervention in work processes (Figure 12 and fundamentally, Chap. 3.3):

Figure 12: Classification in ADM categorization, Case I



Administration and accounting fall into the category of assisting-informing ADM, as they only enable digital processing and networking and are thus considered prerequisites for all other functions. In particular, it is the simplified access and presentation of information that constitutes this function. PEP contains elements of augmenting-complementing as well as automating-substituting intervention in work processes. For the work of the care manager, this signifies that tour planning is automated to the greatest possible extent, but that post-processing is carried out based on knowledge and experience. Since the latter work step is predominantly perceived as a positive corrective, an assignment is considered a supporting, complementary element.

Care and service documentation is assigned to both categories. Work steps are automated, especially through voice input. Ultimately, care workers must remember to provide all the necessary documentation services and record their contents; the initiation is assumed to come from the care worker. The system provides the formal framework and, if necessary, reminds the user of certain documentation requirements, which justifies the complementary character. The recording of working time and services is an assisting-informing aspect of the system. It digitizes the recording of the time cornerstones. However, it also takes the form of a guidance system by giving an overview of the time sequence of work and showing all the services that must be provided for a client, so that

a complementary working relationship also arises between this function and the care worker.

13.4.2. Elements of learning ADM

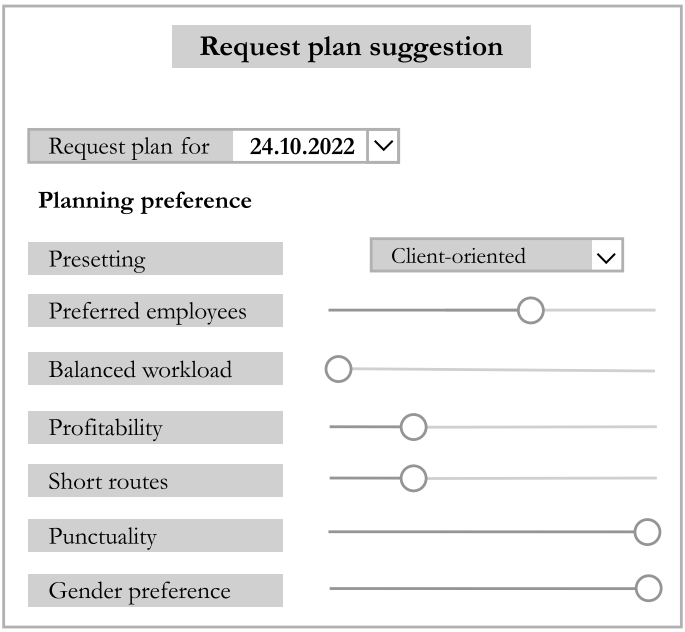
Most of the functionalities described fall under the digitalization of work processes and rule-based ADM from a technical perspective. However, those are closely linked to learning ADM, as it is fundamentally based on digital processes. In combination with the highest possible data quality, digital processes enable the use of learning elements of the system. Two functions of the system use learning functions, largely referring to ML: tour planning and voice input.

On the staff side, the data basis for calculating a tour is the shift time, fixed/desired times, place of residence, and qualification. On the client side, the care effort and, if necessary, the time schedule, as well as individual preferences regarding time, a certain care worker, and his/her sex, are considered. If only these restrictions were included in the tour planning, the system would rather count as a pure mathematical optimization problem. However, pattern recognition is added when data comparing target/actual tour times, repeated staff-client assignments, as well as real-time traffic conditions and traffic rhythms via traffic models are taken into account. These data can be weighted differently for the calculation of the tour. Depending on the planning preference, employee-oriented, client-oriented, economically efficient, and a standard setting are available. In the company, client-oriented weighting is selected (Figure 13).

The results of the automated tour planning are not used without post-processing. This need for post-processing in tour planning interferes most clearly with the care manager's work areas in terms of technical functionality. Although the ML-based suggestion of the tour plan could be adopted, the consideration of client and employee preferences based on experience gives reason to deviate from this plan. For example, individual deployments are exchanged, travel times are changed, or deployment times are varied. The high degree of standardization in the algorithm specification also has a restrictive effect on planning. Employees benefit indirectly from automated tour planning in that more efficient planning is available for them and short-term changes can be rescheduled much more quickly, i.e., from capacities freed up for the vital role of the care manager.

The ML-based voice input function is not supplied directly by the technology provider but is integrated into the hardware of the tablet.

Figure 13: Weighting for client-oriented preference in tour planning, Case I



Source: Provided by the case company, October 2022. Own replica.

The underlying language models can therefore not be accessed or influenced by the provider or the company. It is essentially used within the context of documentation by care workers. As will become clear in the following, this functionality should nevertheless not be underestimated because it enables the low-threshold use of times and ways that would otherwise not be available. The voice-to-text function replaces manual typing and has a considerable influence on the scope of administrative tasks for employees. However, it does not always function seamlessly: An internet connection is necessary, and care-specific terms are sometimes not recognized (Chap. 13.6).

13.5. Influence on job autonomy

13.5.1. Overall evaluation

The overall assessment of the technology use and its functioning is consistently positive across all employee groups (care manager, professionals, and assistant care workers). The most important tasks in everyday care are covered. Critical voices are only raised if technical malfunctions occur, which proves the high importance of the reliable functioning of the technology and technical infrastructure.

Satisfaction with the handling, learning, and usability of the system is high overall, although this assessment is only valid because the core of the care work, i.e., the interaction work on and with the client, is only indirectly influenced. Technology is regarded as an aid to enable administrative and planning tasks, to have a constant overview of them, and ultimately to fulfill them. What counts for care workers also applies to the care manager: Only in combination with experience and knowledge does the system function as a support tool in everyday work. Thus, despite the positively assessed functioning, deviations from the recommendations of the system do not only occur occasionally but are normality.

Autonomy-enhancing elements in dealing with the system as well as positive tendencies regarding workload relief are clearly recognizable: A contribution is made to the quality of care, work is noticeably eased, and interaction work is facilitated in some cases. Autonomy-increasing moments are found in all job autonomy dimensions. The question of whether care workers perceive their work with the system as more self-determined is answered in the affirmative throughout. However, this self-determination is not expressed exclusively through the functionalities used by the system but is centrally conditioned by the possibility of deviating from system specifications. This opportunity for action is accompanied by the constant compulsion to determine the (subjectively) correct combination of technology, experience, and knowledge. From the workers' perspective, however, this negotiation process is perceived as clearly fostering job autonomy.

The assessments of relieving and supporting moments in dealing with technology are more ambivalent. Reliefs are not clearly distinguishable from increases in job autonomy, i.e., what is considered to be conducive to job autonomy is often also perceived as relieving from work burdens. Potential burdens are essentially nourished by two sources: the possible occurrence of technical hurdles, especially if they cannot be solved by the employees themselves, and the fundamental necessity to use the system or

its permanent integration into the work process in the sense of *thinking of it*. Ultimately, employees are driven by the will to complete all tasks as independently as possible.

Table 9: Effects of the ADM system on employees and care manager, Case I

Autonomy Dimension	Positive effects (+)	Negative effects (–)
Task Autonomy	– Information access and standardization – Lower work quantity	
Method Autonomy	– Execution of care work unaffected – Deviation from system instructions – Reminder feature	
Criteria Autonomy	– Higher sense of security – Better results in tour planning	– Reliance on planning and information – Nuances of performance measurement
Scheduling Autonomy	– Time gains – Sequence of tasks unaffected – Work speed unaffected – Higher predictability of the tour – Breaks unaffected	– Sequence of clients given
Working Time Autonomy	– Gains in time off work – Higher predictability of work schedule	– Risk of delimitation
Locational Autonomy	– Information at PoC – Location-independent administrative tasks – New meaning of office – Home as place, start and end of work	
Interactional Autonomy	– Higher quality of information and communication – Administrative tasks away from client – Support from colleagues	

In the following, the positive and occasionally negative effects of using the technical system are described systemically according to the respective job autonomy dimension (overview in Table 9). Which influences, in particular, can be attributed to learning ADM? As already described above, the digital, rule-based, and learning ADM elements of the system are closely interwoven – as are their effects on job autonomy. Effects that can be attributed to a particularly high degree to the learning elements of the system are highlighted separately. In the following, a distinction is made between effects on care workers and those influences that *also* affect the care manager.

13.5.2. Job autonomy dimensions

Task Autonomy

Task Autonomy asks about the possibility of choosing work tasks independently, task variability, changes in the amount of work, as well as the availability and holistic nature of tasks and information. In the case study, positive changes in the dimension of Task Autonomy are expressed primarily in the improved access to information within the framework of process standardization. Mild autonomy-strengthening moments result from a partly reduced work quantity for employees and the care manager. If no technical hurdles occur (Chap. 13.6), no negative influences on Task Autonomy can be identified.

Information access and standardization (+)

The transfer of all care-related documentation duties as well as patient-relevant information to the digital system is reflected in the experience of more holistic information in everyday work, which is entered into the system in a standardized form and passed on to colleagues. This mainly concerns tour and shift schedules, service recording, documentation, and client-relevant information (e.g., diagnoses). Although much of this data is still entered into the system manually or by voice input, where in an analog case data was available in various locations, there is now much greater clarity and centrality of the data, which is also distorted by fewer media disruptions.

Employees have instant access to a shared database to perform tasks from any location via tablet. Information and communication flows between care workers are centralized and standardized, which results in, for example, early meetings in the office or ad hoc arrangements being eliminated. There are considerable time delays in passing on information in the analogous setting, which are minimized by the system's networking aspect. A higher quality of the available data results not only from location-independent, immediate access but also from the unalterability and sheer readability of the information. This has a positive effect on the transparency of tasks.

Clarity, centrality, access, and higher quality, especially of client-relevant data, are core elements and intentions of system use. They essentially contain enabling moments in care work, i.e., a changed, process-securing data basis for decision-making. Ultimately, the high availability of information also pays off in terms of care workers' sense of security. The system informs, reminds, and helps not to forget anything. What might

be considered banal in other work contexts is of enormous importance in care because access to information, with all its complexity, also provides relief.

Lower work quantity (+)

Information access and standardization go hand in hand with more diversified, but at the same time reduced, workloads for care workers. What sounds counterintuitive at first is the result of the elimination of information arrangements, i.e., the improved availability. Information contexts can be accessed more qualitatively. This applies again to information relevant to the smallest details (e.g., course of illness) as well as to organizational aspects such as tour planning, which does not have to be constantly remembered. This gives employees the perception of working more efficiently. Thus, efficiency gains are understood as an objective of care workers because searching for information and scheduling tours are administrative tasks that employees also want to optimize.

Less workload is also expressed for care workers in faster documentation and performance recording, which are made possible by the functions of the tablet – many tasks that had to be done by hand in the analog case are finished with a click on the tablet or a brief voice input. Information access and process standardization are considered prerequisites for these efficiency gains.

The care manager, whose task is to organize staff scheduling, also experiences a lower daily workload. Shift and tour planning are centrally supported by the learning element of the ADM system, which takes over the manual planning. Admittedly, this is more of a pre-planning, because a post-processing of the ADM-based tour plans is usually necessary. Nevertheless, this pre-planning also results in considerable time savings for the care manager. After all, the daily tour planning in particular often has to be adjusted ad hoc, be it due to staff absences or short-term changes in the needs of the clients. Since ADM-based tour planning is perceived overall as a positive corrective and support tool, autonomy-promoting tendencies are assumed despite the need for reworking by the care manager. The amount of work is reduced (Task Autonomy) and the corrective function of the system supports the execution of the planning activity (Method Autonomy). In combination with knowledge and experience, better work results (Criteria Autonomy) can thus be achieved in less time (Scheduling Autonomy).

The care manager considers the preferences and needs of care workers and clients, which the system cannot yet optimally achieve. Deviations from the original system proposal are the norm, not the exception.

However, it is a fact that the automated staff scheduling is perceived by the care manager as a great relief in her daily work. Ultimately, this facilitation is only made possible by accepting the system's error-prone nature. The automated staff scheduling is not perceived as an obligation but as a suggestion. Thus, an interplay between control of the system and the perception of the system as a corrective (e.g., in capacity planning) arises because, under the condition of correct data entry, the system also contributes to process reliability.

Method Autonomy

Method Autonomy asks for the possibility of determining procedures, ways, and tools for the performance of tasks. Within the dimension of Method Autonomy, autonomy-strengthening elements are essentially visible in the non-intervention in the interaction work with clients, the possibility to deviate from the suggested staff scheduling by the technical system, and its corresponding reminder functions. The indirectly supporting components of the system thus have a methodically strengthening effect, whereby the work with the clients and the performance of care activities are less influenced. If no technical hurdles occur (Chap. 13.6), no negative influences on Method Autonomy are evident.

Execution of care work unaffected (+)

The fact that all care activities on and with the client are carried out largely unaffected by the system should be distinguished from a deliberate deviation from the tour planning. The planned time frame for the interaction work is given, but the actual implementation of a task is the responsibility of care workers and their assessment of the care-related necessity. The content and organization of the care time are at the disposal of care workers and clients. Of course, in the case of tasks in treatment care, there are greater ties to the preservation of qualitative care, but these remain uninfluenced by the system overall. Ultimately, it is a combination of acting to the best of one's knowledge and conscience as well as the client's wishes.

Deviation from system instructions (+)

The conscious, active deviation from the ADM-based tour plan testifies to the perception of methodical degrees of freedom at work. Both the care manager and care workers occasionally deviate from the recommendations and specifications of the system. However, this is not a deviation

without reason but rather a situational weighing of the meaningfulness of a work step for the client's well-being. Experience-based assessments are usually preferred to system recommendations. How exactly a task is carried out at the client's is up to the care workers. The system's suggestions are always subject to review, and the perception of self-determination in this review is high.

The priority in decision-making in the daily work routine is constantly oriented towards the appropriateness of a measure for the client. Finally, there are nuances in care work, such as the situational condition of a client or the rejection of a measure, which cannot be planned for by the technical system. These situations are unpredictable, thus requiring subjectifying work actions that are largely incompatible with the formality and standardization of the technical system. The role of the system is ultimately again that of a corrective and non-binding suggestion.

Reminder feature (+)

The reminder function of the system follows the effects of information centrality and standardization on its autonomy-strengthening properties. Reminder functions of the system range from the simple indication of clients' birthdays to the resubmission of information on wound documentation. The reminder elements thus cover different care complexities in the sense of supporting interaction work up to medical care. These reminder functions are reflected in an at least partial easing of situational action by creating greater plannability. Since these reminders can also be viewed prior to a deployment. This higher level of plannability also helps in preparing for work with the client. However, the reminders are not to be understood as instructions but as suggestions. In particular, the meaningfulness in terms of care is assessed based on experience.

Criteria Autonomy

Criteria Autonomy asks to what extent the criteria for the evaluation of one's own work performance can be determined by oneself, which work objectives can be set and pursued, and to what extent responsibility is taken for these. The change in Criteria Autonomy thus also depends on the work objectives that care workers set for themselves. When asked in which situations care workers consider that they have done their job well, the answers were unanimous: when all the clients' needs have been met and they express a feeling of gratitude and satisfaction, the day has been well filled and all tasks have been completed.

There are no deviations between care workers in this assessment, and it marks motivation and work objectives in care at the same time. Using the technical system does not directly influence the assessment of when work was well done. The criteria for evaluating work remain self-determined. However, the technology supports the fulfillment of these goals because it gives scope to consider and serve the client's needs in many ways. The technology itself does not give any instructions; these result from the care needs of the clients and originate from the care manager.

Nevertheless, deploying the technical system has more ambivalent consequences for Criteria Autonomy. In a positive sense, the creation of greater security at work and better work results for the care manager can be mentioned. However, there is also greater dependence and a partial transfer of responsibility to the system. Signs of performance and productivity measurement are visible. Further restrictions can occur if technical barriers (Chap. 13.6) arise.

Higher sense of security (+)

Care workers perceive the use of the system as working in higher security. Security refers to the feeling of having thought of everything and not having forgotten any task, person, or service. For employees, *ticking off* individual services and clients in particular is a security-enhancing factor that gains relevance, for example, with new and unknown clients. The system helps to avoid errors, and care workers are usually sure that everything is done when it is marked as finished in the system.

In addition, the degree of standardization introduced strengthens care workers' sense of security because all information and messages from colleagues are always available in the same form, structure, and quality. Thus, deploying the system also contributes to safeguarding the quality of care. This perception depends essentially on trust in the quality of the stored data, the assumption that the information is correct, and that the system functions properly. This perception of a higher sense of security is an ambivalent aspect regarding Criteria Autonomy, since relinquishing responsibility in the sense of relying on the system also contains elements of restricting job autonomy (see below).

Better results in tour planning (+)

Although automated tour planning is usually reworked, for the care manager, this option means more than just reduced workload, methodical freedom, or time gains; it also refers to better work results. The combination of automated drafting and individual adaptation of the tour plan

reflects process reliability since all necessary information is also included in the planning. For the care manager, this results in all relevant data being brought together during staff scheduling and that any incorrect or over-planning is pointed out. The system indicates errors in planning and thus acts as a welcome corrective. All error indications or further remarks on the part of the system can be ignored at any time. The recommendation and notes are not a requirement.

Reliance on planning and information (–)

The reliance on planning and given information is closely related to a higher sense of security. According to unanimous descriptions, the system "keeps the employees' backs free" regarding organization, time, and performance planning. The overview and plannability of work tasks are increased, and the next work step does not always have to be immediately thought of and planned in advance. Employees rely on the functioning of the system and the correctness of the stored data and processes. The daily structure does not have to be constantly remembered. This reliance on the system is thus partly equivalent to relinquishing responsibility for one's own daily routine and thus has autonomy-restricting tendencies. However, this example also clearly shows that supposedly autonomy-restricting aspects of the system do not necessarily have to go hand in hand with a negative perception in the sense of burdening care workers.

Nuances of performance measurement (–)

The rejection of exploiting work pressure to the maximum was emphasized several times by care workers, the care manager, and the managing director. Performance and productivity measurements do take place and are evaluated. However, the amount of time- and location-related data has not been used for work intensification so far. Only one indication of such a tendency can be identified: Shortly before the scheduled time for a deployment with a client expires, a message appears on the tablet that there is one minute left for the completion of the tasks. This instrument is intended to be a means of informing the care manager in time about the extension of the deployment or to end the deployment in a short period of time. Care workers are either unaware of the expiration of this minute or reject it completely, sometimes judging it very negatively and ultimately ignoring it. Obviously, this information triggers a heightened sense of stress among them. No consequences arise from ignoring the notice, which speaks for the company's credo of *no rushing*.

The processing of the last minute is regarded as potentially conflictual and restrictive of job autonomy as far as it does not make sense for care workers, especially since there are small buffer times between assignments anyway, and this instrument could easily be removed from the view of the tablet by the management. It must therefore be assumed that this notice is aimed at speeding up work, which runs counter to self-determined goal-setting and achievement in the sense of Criteria Autonomy.

Scheduling Autonomy

Scheduling Autonomy asks to what extent the sequence, prioritization, timing, and speed of task completion can be determined, break times can be chosen, and interruptions and uncertainties can be dealt with. Positive influences of the system use are particularly visible in terms of time gained for both care workers and care manager, as well as in the fact that the sequence of tasks for clients remains undirected. The speed of work remains self-determined in the perception of care workers. The ability to plan the tour is increased, and break times can be largely arranged. The fact that the order of the clients is strictly prescribed by the system has a slightly restrictive effect on job autonomy. Further restrictions can occur if technical barriers (Chap. 13.6) arise.

Time gains (+)

Additional time becomes available to care workers through faster documentation of care activities. Using the tablet, this is possible regardless of location and relatively independent of time. For example, places and times that were previously not available can be used for these tasks (especially travel times between clients). Immediate documentation of all information is usually not possible in the analogue case but must be done at least in part in the office. A more seamless integration of this task into the work process thus becomes possible, which also reduces the risk of forgetting information.

This does not mean that these times and places must be used, but rather that they are additional opportunities. Time gains are conditioned, in particular, by the possibility of voice input. This not only offers enormous time advantages compared to handwritten documentation of information but also to digital typing of documentation. These advantages are more considerable as the documentation obligations for care workers have increased considerably in recent years. Even though some care-specific terms are not recognized by the system's voice input, the quality

of this form of documentation is considered high. Some employees even describe this voice input function as what really makes the system practical and brings the greatest added value to everyday life. This timesaving (little as it may be) is also used by workers to spend more time with clients.

The care manager as well as the care workers also benefit from other time savings from using the system. These are mainly expressed through simplified tour planning. Even if these are reworked by the care manager, the proposed tour planning, especially through the resubmission of already planned tours, holds enormous savings that can be deployed for other tasks. This also means that a higher degree of parallelism of tasks is possible. Likewise, the care manager gets the security of having thought of all the details of planning, but at the same time retains the upper hand in determining the tour plan. The time saved by the care manager should not be underestimated, as it is not uncommon for tour planning to have to be rearranged several times a week, yet it does not lose any of its complexity. It gives the care manager the leeway of not having to keep capacities free for these imponderables and unplannability. The care manager can only exploit these time savings if she provides not only experience of client and staff needs but also of the possible incorrect outputs of the system.

Sequence of tasks unaffected (+)

Although the technical system provides a framework for the performance of work tasks, the prioritization and sequence of individual tasks can be determined by the workers themselves. Both factors – prioritization and sequence – result from the experience-led care necessity. Scheduling Autonomy therefore remains uninfluenced according to the perceptions of care workers. Within performance recording, precise time guidelines are given for the completion of all tasks with a client. However, the deviation within a certain range is planned for. The decisive factor in the consequence of this deviation is how it is handled in the organization.

Not only the directly interaction-related tasks at the clients, but also the administrative-planning tasks can basically be arranged independently by the care workers as long as they are completed within a certain time frame. In this respect, using the system creates new freedoms in that times and tours can also be used for these tasks, independent of a specific location. The complexity of planning and administrative tasks may thus be equalized in terms of both time and space.

Work speed unaffected (+)

Time savings, for example, through faster documenting, do not result in work being intensified. This is supported by the fact that the care workers describe being able to largely determine the speed of their work themselves. Although time constraints are set by the tour planning with buffer time, they still perceive their work speed as self-determined. The care manager and the managing director recognize that employees work at different speeds anyway and that these cannot be squeezed into time frames that are precise to the second. Care workers are also not supposed to be faster than specified. Rather, the scheduled services should be completed for the client.

However, this planning only includes the beginning and end of the respective deployment at the client's, not the time spent on site. The intention of planning is, of course, that there is no time wasted. This awareness among care workers appears to be a condition for the perception of a self-determined work pace.

Higher predictability of the tour (+)

Work in care is work in unplannability. One can only try to reduce this unplannability. A way to do this is to have the possibility of accessing the shift and tour schedule at any time. What, without using the system, had to be looked at every morning in the office, and possibly short-term changes could only be seen then, is now permeated by a higher level of plannability due to the easy access to information via tablet. Care workers often view the next day's schedule the evening before they go on duty and check it again in the morning to make sure it is correct. This access to information makes it possible to start the working day from home. Transparency and plannability go hand in hand because there is also clarity about the consequences in the event of a necessary deviation from the tour plan. In particular, the short-term nature of tour changes can at least be somewhat mitigated by making update messages visible to all care workers on the start screen. However, elements of uncertainty, exemplary when entering the house of a client, always remain.

Breaks unaffected (+)

As far as breaks are concerned, according to care workers, self-determination continues to prevail to a large extent. In principle, certain time windows are set for taking breaks. However, the system does not change

the fact that these breaks can be taken freely within the time slots. The tablet's location independence also enables taking breaks in places that were previously out of the question, such as at home. The autonomous moments when taking breaks are not dependent on the system but are inherent in care duties.

Sequence of clients given (–)

The order in which individual clients are dealt with, i.e., the sequence of a tour, is predefined. Of course, this also applies in a technology-free setting, but in this scenario, it is always necessary for care workers to think about and visualize the next work deployment. This step is partly eliminated by using the system, and, according to the care workers, part of the responsibility is transferred to it. There is a much greater overview of one's own daily schedule and its structure. This again shows the difference between the system's framing and the execution of the actual task. The planning is present, but the actual execution is not. The pre-structuring of the system hardly allows for independent deviations. This also serves to safeguard the quality of care and guarantee the sensible timing of certain care activities.

Working Time Autonomy

Working Time Autonomy refers to the extent to which it is possible to determine the beginning and end of working time and to influence total working time, overtime, or on-call duty. Positive effects on Working Time Autonomy are visible in time savings at the beginning and end of a shift as well as higher certainty in shift planning. Possible autonomy-restricting tendencies become apparent in relation to an increased risk of delimitation between private and professional life.

Gains in time off work (+)

Care workers not only gain time at the task level but also in terms of their total working time. These translate into new opportunities to work in a more location- and time-independent way. Optimized route planning essentially enables savings in travel time, which not only brings added value to the individual's everyday working life but is also precious for the company in an economic sense. Ultimately, care workers are much quicker to engage in value-adding activities when travel times are low (which are hardly counter-financed). Care workers benefit most from starting and finishing work at home. There is no need to go back to the

office for ad-hoc changes to the schedule. Semi-automated route planning thus results in optimized daily scheduling.

Higher predictability of work schedule (+)

Similar to the greater plannability of everyday work in relation to the tour schedule, the accessibility of the shift schedule also brings security and transparency for care workers. Although a certain degree of uncertainty remains, the overall accessibility of the shift plan, the latest a couple of days in advance, conveys the feeling of planning sovereignty over one's own working day in the near future and thus the perception of higher degrees of freedom in the interaction of work and leisure.

Risk of delimitation (–)

According to the care workers' assessment, there are no noticeable tendencies towards increasing delimitation, but at least the danger of delimitation must be pointed out. The possibility of remote work, especially access to client information and staff scheduling from home, opens the potential for the dissolution of boundaries. Access to information about the next working day serves essentially to secure and plan one's own work. In this respect, the possibility is positively assessed by the care workers, but this working time is hardly ever billed; it is done in free time. At least if these tendencies increase in the future, there is a danger of an additional delimitation of the already emotionally stressful work. It must be noted that care workers evaluate this form of delimiting work differently; some see it as a possibility to shift documentation tasks into the private sphere, while most perceive it only as a short source of information and not as part of their actual work.

Locational Autonomy

Locational Autonomy asks about the possibility of determining the place of work within or outside the regular workplace. The availability of information at the PoC at the right time and the shift of administrative tasks away from the client clearly strengthen job autonomy using technology. The office takes on a new meaning as a social space. Care workers' homes are added as a new locality at the beginning and end of service. Autonomy-restricting aspects can hardly be identified in terms of locality. Implicit self-restrictions, for example, in relation to coming to the office, are based on voluntariness and are not technically induced but organizationally desired.

Information at PoC (+)

The location-independent availability of all care-relevant information has a positive impact on the job autonomy of care workers at the task level. In concrete terms, this means that all information can be accessed at the PoC, i.e., where it is most urgently needed, even in an emergency. The convergence of all information should not be underestimated, especially if one recalls the analogous case where information is distributed in the office, at the client's or simply in the care workers' memory. The availability of information at the PoC conveys centrality and security, even in emergency situations, not to fail due to the non-accessibility of important data (e.g., contact information of treating doctors or medication plans).

Location-independent administrative tasks (+)

The possibility of carrying out care documentation at any location creates new freedoms for care workers. It is not tied to the client's home or office and can be done on the road, between client visits, or in other familiar places. In addition to the basic time savings due to faster documentation via voice input, places that were not previously available can be utilized for this task. For example, workers report that documentation is often done in the car or on the way from the client to the car. This has several advantages, including the fact that this task can be actively moved away from the client and that there is less danger of a documentation backlog after the tour has been completed. The latter not only relieves care workers, at least in part, of the burden of completing an often unpleasant and time-consuming task but also contributes to the quality of care if the documentation can be checked off immediately after the visit to the client. Notes in between or possible media disruptions are eliminated. Aspects of convenience also come into play when, in exceptional cases, documentation can be moved "to the couch".

New meaning of office (+)

The need to come to the office has basically disappeared for all care workers with the use of the technology. Nevertheless, they come to the company's premises, albeit less frequently than necessary in the analog case. Why is that? Ultimately, it is the team idea that drives them. While care workers spend most of their working day away from the team, they all report how much they benefit from strong team structures in the background. The ratio between working time spent in the office, on the road, and with clients has changed relatively little using the system. In the man-

agement area, the ratio is largely unchanged, but this is based on personal preferences. The care manager, in particular, tends to reject working from home. Care workers spend by far the most time with clients – estimated at 75 % of the time. Time spent in the office has decreased, but for no person (although technically possible), to zero.

In relation to job autonomy, this shows that the principle of voluntariness creates new degrees of freedom. Interestingly, the importance of the office for the team also seems to have changed. Exchanges now take place less about care- and client-specific topics; after all, all this information is stored within the technical system. Rather, the exchange shifts to coping with emotional tensions and stresses, whether resulting from work or private life. Of course, people still exchange information about work-related topics, document information together, and draft reports. However, this collaboration in the office seems less coercive. There is a more conscious coming together, actively seeking closeness with colleagues.

Home as place, start and end of work (+)

The basic possibility to access work-relevant data from home and to start and finish work there is described by care workers as extremely autonomy-enhancing, even if the actual work done at home is rather small. Starting and finishing daily trips from home takes away the feeling that care workers make unnecessary journeys and waste time – avoiding this as much as possible is also strongly in their interest. Work-life balance has increased. Work with clients, i.e., interaction work, which also constitutes the meaningful character of their work, can be started a lot earlier. The aforementioned access to shift and tour schedules as well as client-specific information has a positive effect by creating planning security, which is urgently needed in this job. Very few care workers report working from home more extensively, and if so, only in exceptional cases.

Interactional Autonomy

Interactional Autonomy asks about the dependence of one's work on other people, be they colleagues, supervisors, or clients, and how work is influenced by them. When asked to what extent cooperation and interaction with clients, colleagues, or other sectoral actors are affected by the technical system, all care workers stated that they do not perceive any direct changes, especially in dealing with clients. In particular, questions arose about changed agreements, handovers, further information and communication flows, or dependencies on other actors. Influences

using the system are nevertheless visible, even if the respondents do not perceive them directly as such. In particular, the quality of information and communication between care workers has been strengthened. A considerable innovation is the possibility of removing administrative activities from the clients' premises. Autonomy-restricting moments cannot be identified in the interactional area.

Higher quality of information and communication (+)

The transfer of information and communication flows to the digital world, and thus their availability and standardization independent of time and place, have an indirect autonomy-strengthening effect for care workers. They are more independent of their colleagues and can do their work independently and without consultation. The aim of using the technical system was to make data available to all care workers in the same quantity and quality. The formal standardization of this information results in a clear transparency of contents, entries, and completed tasks. This change also creates security in maintenance and trust with colleagues. After all, the system can hardly be bypassed by care workers in terms of time stamps. The simple abandonment of handwritten entries also contributes to error prevention and the quality of information and communication.

Administrative tasks away from client (+)

Care workers utilize the time gained to spend more time with clients. Even if it is not a lot of time but rather a few minutes, it is still quality gained with the client, which is welcomed by both sides. The possibility of location-independent documentation and the completion of other administrative tasks not only brings job autonomy gains regarding the location of care workers. It also offers the possibility of not having to do these tasks at the client's place. This approach of removing administrative tasks from the client's home as much as possible has positive interaction consequences for both sides, clients and care workers. The latter can spend their time with the clients, only interacting and providing care. They are not forced to perform administrative duties, as clients do not always understand that these must be fulfilled. In the end, the tablet as a work tool does not always have to be taken with the client but can also remain in the car.

By taking this step, care workers may be relieving themselves of emotional stress. Not only is the necessity of documenting on site sometimes difficult for clients to understand. Also, the documentation may not be

free of constraints when clients are on site. In particular, documenting emotional problems with clients is a burden or may not be possible if the person in question is looking over your shoulder. So, this also has the effect of increasing the privacy of care workers and reducing the need for emotional labor. The clearer separation between interaction and administration thus has advantages in terms of the quality of both care for the client and work for employees.

Support from colleagues (+)

The new forms of digitality in information and communication flow visibly influence the relationship between care workers in the team. Care-relevant information has been moved to the digital realm, which means that interaction between colleagues can drift more clearly into the private sphere. The new importance of the office already described opens new scope for mutual support. Where handovers and arrangements with clients were necessary and in the foreground before, there is now more space for the everyday support of colleagues.

There is an open culture of discussion regarding the functionality and optimization possibilities of the technical system. The handling of the system is learned together; central training by the provider only took place at the beginning of the introduction for the management level. It is also clear that new time has been created to support each other emotionally, to strengthen team cohesion, and to respond to the needs of individual team members.

13.6. Technical barriers, misuse, and areas of improvement

The technical functionality of the system is described and perceived as positive by all interviewees in the company regarding the coverage of daily care and business routines. The system's reliability is considered high. Nevertheless, system failures and technical barriers still occur in some areas. Improvements in the scope of functions have also been mentioned. The cause of these difficulties cannot always be traced back to the system; they may also be attributed to a lack of technical infrastructure in the region or to incorrect handling of the system on the part of the care workers. Regardless of the cause, these technical hurdles have an influence on job autonomy – usually a negative one, as will be shown. These types of unforeseen efforts with the system are briefly outlined below and differentiated according to the affected group of people, i.e., care workers and care manager (Table 10).

Table 10: Impact of technical barriers on employees and care manager, Case I

	Task Autonomy	Method Autonomy	Criteria Autonomy	Scheduling Autonomy
Technical barriers (employees)				
Failing technical infrastructure	Higher work quantity			Time losses
Patchy synchronization	Lack of information	Procedure possibly unclear	Work goals questionable	Time losses
Missing functions	Higher work quantity			Time losses
Technical barriers (care manager)				
Usability issues		Work tool selection		
Manual corrections	Higher work quantity			Time losses
System coverage	Information overload			

Failing technical infrastructure

Fundamentally, there is no ability to work in the company if there is no access to the system – for example, in the case of power or server failures. These situations turn out to be particularly problematic because care workers can hardly influence their solution. The same applies to access to the internet or network coverage in the region. On the one hand, the structural conditions in the offices occasionally lead to network failures. On the other hand, there are locations in the region where mobile internet access is not or only to a limited extent possible. The latter may have an impact on the mobile activities of care workers: The documentation and access to care-relevant data usually work without an internet connection (local data storage), which is the main function of the tablet. But since the voice input function relies on digital voice models, its use is impossible in offline mode. Network and system failures that are regionally or locally determined do not flow directly into the consideration of the job autonomy dimensions because they are system-independent. Only the voice input function can be evaluated as such and, in the event of occurrence, potentially has a detrimental effect on the amount of work (Task Autonomy) and the time required (Scheduling Autonomy).

Patchy synchronization

Incorrect data synchronization is a problem for care work that should not be underestimated. This mainly occurs when the tablet is not connected to the internet (even for a short time). The problem is best illustrated by an everyday example: A care worker completes a deployment with a client in the morning, starts the assignment on the tablet, performs all the listed tasks, ends the assignment, and, if necessary, directly carries out the documentation and reporting on the assignment. The data for this process should be stored in the system and be accessible to the next colleague who is on site at noon for another deployment with the same client.

If this does not happen, several cumulative situations of uncertainty can arise, such as the fundamental lack of information (Task Autonomy), which can result in the care procedure being characterized by uncertainty (Method Autonomy). In addition, it is also possible that the work objectives are unclear (Criteria Autonomy) and that there is at least a lot of extra work (Scheduling Autonomy). The danger, both for clients and care workers, is that there may be duplication of work or that certain tasks are not fulfilled. This problem is currently only compensated for in the company by working in an experience-based and situationally knowledgeable way, i.e., employees constantly question and check work tasks.

Missing functions

Some desirable functions of the system are mentioned by care workers, which do not represent a malfunction but indicate that the system is worthy of improvement. On the one hand, the missing learning function of the voice input was listed – although it works well overall, certain care work-specific terms (e.g., decubitus) are not recognized and corrected manually. However, the system does not remember these corrections. On the other hand, the care-specific presetting and selection options for documentation and reporting are still expandable (e.g., description options for wound documentation). Overall, the missing functions mentioned refer to care-specific scopes and information layers (e.g., also reanimation information for clients), which can potentially result not only in additional work (Task Autonomy) but also in greater time expenditure (Scheduling Autonomy).

Usability issues

The different usability of stationary and mobile management tools is not perceived as a malfunction but nevertheless as a limitation. The functions of administration and accounting are only available in the office. Staff planning could be done by the care manager on the tablet, but the use of functions on the PC is regarded as more convenient and well-structured. Usability therefore restricts the choice of work tools and, thus, Method Autonomy at the management level.

Manual corrections

Several work situations can result in manual data corrections in the system, usually by the care manager. For example, in the case of individual deployments with clients, it can easily happen that these are started or ended too early/too late due to mistyping. Since accurate time recording is highly relevant for billing and administration, these errors cannot be ignored. However, since the care workers cannot correct them themselves on the move, the care manager must make changes on the PC. Another cause of minor manual rework is the occasional incorrect transfer of client data from month to month. Even if the frequency of this type of correction is limited, it does create additional work for the care manager, reducing Task and Scheduling Autonomy.

System coverage

Although present in a mild form but nevertheless repeatedly reported by management, there is a certain degree of information overload due to the range of functions and the complexity of the system. This does not apply to care workers on tour, as the range of functions on the tablet is reduced to the essentials of everyday business. In practice, however, especially for the care manager, questions of presentation and prioritization often arise in the PC version of the system. The menu navigation and scope of functions are not yet fully suitable for everyday care practice in the company. Many functions and menu items are simply not needed/used. Others are hidden in the menu tree. This information overload also potentially affects Task Autonomy.

Finally, these hurdles, misuses, and suggestions for improvement have occurred with decreasing frequency since the introduction of the system. However, when they do occur, they may partly nullify the positive effects on the job autonomy of the care workers and the care managers or potentially turn them into negative ones.

13.7. Impact and conditions of changed job autonomy

Work in care thrives on a high work ethic, connectedness, and responsibility for clients. The prioritization of client needs acts as a broad tenor in the assessment of the relevance and usability of the technical system. It is valued as assistance if it supports care work and contributes to care quality. As soon as the recommendation of the system differs from one's own assessment of the fair care of clients, it is deviated from. In this context (and actually in relation to entreployees), Voß (2012, p. 370) outlines the necessity of self-professionalization: Under conditions of delimitation, workers have to develop individually and situationally what their professionalism and quality of service are and how they deal with the given circumstances without giving up their professionalism.

The analysis of changed job autonomy must also be evaluated in light of this. The technical system clearly creates more scope for action and decision-making for care workers. This is perceived very positively because they see and experience the added value that the technical system can bring to their own everyday work. However, the results should not be overestimated, as the direct interaction work with clients, which at the same time functions as a constant work effort and resource for meaning, is only influenced to a small extent. Hielscher (2020, p. 42) describes this form of technology use as *instrumental pragmatism*, which provides that technology is used situationally as it is needed but is not in the focus of interaction work. In view of the highly tense work situation in care, however, it is advisable to make use of any potentials regarding working conditions, coordination, and efficiency.

The described changes in each job autonomy dimension accumulate in a series of positive effects of technology use, which are intended to underline these potentials: a contribution made to the quality of care, improvements regarding working conditions, and an easing of interaction work.

A contribution to ensuring the quality of care is directly derived from the process standardization that using the system entails. The availability of information and new communication channels, as well as their quality, were increased by the formalization step. All necessary care-relevant information and the overview of the tour plan are available to every care worker in the same form and structure, most notably at the PoC. In combination with the fact that the core of care work, in particular interaction work and the exact execution, sequence, and prioritization of related tasks, is only influenced to a small extent using the system,

this results in a higher sense of security in everyday work and thus also enables a higher quality of care.

The changed tasks of the care manager contribute to this assurance of care quality in that the corrective functions of the automated tour planning and, overall, the new digital-conditioned centrality of the data lead to an improvement in the planning results. These more efficient results should not be underestimated in that they not only contain a purely economic added value for the company but also optimize the distribution and coordination of tasks for care workers, which should also lead to a lower workload.

Aspects of workload reduction for care workers are achieved in two ways: On the one hand, using the technology has resulted in a reduction of administrative efforts. The intensity of the necessary pre-planning of a tour has decreased as the daily schedule and the services to be provided are constantly transparent. Being able to depend on the system and not constantly think about the next task at hand relieves the pressure on care workers. Furthermore, documentation and communication channels are available without media disruption and in standardized form. In particular, the possibility of voice input creates time savings and streamlines the daily work routine.

On the other hand, the flexibility of time and place has a clear liberating effect. Care workers can operate location-independently, organize their work speed more freely, save travel time due to the start/end of the shift, as well as access information from home. The ability to plan work independently has thus increased and contributed to the overall facilitation of work. For the care manager, too, there is a clear gain in time and a reduction in the amount of work, especially due to the automated scheduling of tours, which only takes a fraction of the analogue time, even if there is a need for postprocessing. These urgently needed freed-up capacities for the care manager make their work slightly less intensive.

Even though the demands of successful interaction work can never be completely minimized, moments of relief are identified using the system. The aspect of cooperation with clients and dealing with one's own emotions is facilitated as long as administrative work is moved out of the client's rooms and the time gained is used for working with them. The interactional aspects of care work with the client can thus be intensified, and the potential for conflict due to the necessity of administrative tasks is reduced.

The cooperation and emotional work in the team are also simplified because, on the one hand, the quality of information and communication has increased, and thus conflict potentials and dependencies have decreased. On the other hand, new spaces for growing together in the team

are created by shifting large parts of care-relevant communication to the digital realm, thus creating more time and space for mutual (also private and emotional) support, for example, in dealing with technology. Ultimately, in addition to these interventions in cooperation and emotional efforts of care workers, the facilitation of planned, rational action, as is necessary for administrative tasks, leads to relatively more job autonomy in the performance of situationally demanding interaction work.

The conditions for the realization of these positive effects in changed job autonomy can be distinguished between technical and organizational ones. The technical conditions include aspects already described: Technical hurdles, malfunctions, or incorrect use by care workers must be minimized as much as possible. Fulfillment of this condition is easier in the case of corrections that are caused by the care workers themselves, who can be remedied through greater sensitivity, experience, and training in the use of the system. Obstacles that cannot be overcome by the company itself are more challenging. In terms of software reliability and technical infrastructure, the company is, to a certain extent, exposed to these externalities.

Maximizing the underlying data quality is another technical condition for the positive shaping of job autonomy. The care manager summarizes that "The system is only as good as we maintain it". She is also the one who must manage the main part of the manual data administration and entry. It would certainly be desirable to automate this step as much as possible. The company is dependent on third parties in that the exchange of data between clients, doctors, or health insurance companies hardly works without media disruption, so manual entries are still indispensable. This point is connected to the third technical condition, namely the striving for a holistic system, freedom from media discontinuities, and the avoidance of isolated system solutions.

The organizational conditions for creating positive experiences of job autonomy in dealing with the system are essentially nourished by the corporate philosophy, "We all know how it should not be". All care workers have had unpleasant work experiences in various constellations regarding stress, cooperation, and planning in care. They are determined to counteract a renewed setting of poor working conditions and the rush to provide care, with the promotion of job autonomy being both a condition and an objective of this endeavor.

The non-utilization of performance-related employee data, which is basically available in large quantities in the form of time and location-related data, as a control instrument and for optimizing performance is an essential organizational condition. Of course, target-performance comparisons are carried out in particular in tour planning. However, it

is recognized that individual care workers need different lengths of time for assignments; some complete them faster, some a little slower. If the quality of the work is good and deviations are within a certain range, the work targets are achieved. There are no consequences for non-compliance. This factor is closely linked to the distribution of tasks between the managing director and the care manager. Recognition of professional boundaries takes place through a clear separation of care-related and business management considerations. In the former, both client and staff preferences are considered in the planning process. Significant importance is attached to planning and proportionality in the distribution of tasks, which also noticeably strengthens team cohesion.

In the day-to-day use of the technical system, the final condition for achieving positive job autonomy is that the use of technology and the reliance on the system should only take place in consideration of experience and knowledge about clients and care workers. Blind trust in the technology outputs hardly takes place. Certainly, this restriction also entails additional work compared to full automation, for example, tour planning, but it also requires the setting and experience of autonomy of action, in which one can and should always act at one's own discretion. The necessity of subjectifying work action is thus not rendered obsolete by technology but rather acquires an even greater significance in daily work.

What ultimately remains questionable is whether the organizational conditions of non-utilization of performance-related data and thus the rejection of work intensification, as well as the view of the technical system not as a requirement but as a corrective-supplementary support tool, will also be maintained if the company continues to grow and efficiency gains turn out to be smaller.

14. Company Case II: universal bank in change mode

14.1. Branch profile: banking services

The opening branch profile fundamentally places the case study findings into perspective. It summarizes important findings about the banking branch from earlier research, discusses the average levels of job autonomy for bank advisors, and focuses on the organizational peculiarities of banking services. Finally, the branch profile offers a summary of technology use in the banking industry as well as study findings on how technology use affects bank advisors.

14.2.1. Retrospective: What do we know so far?

Previous considerations on the extent of job autonomy in the service sector (Chap. 1.5) initially reveal the following branch profile: Employees in financial and insurance activities, the statistical reference for banking services, typically belong to autonomous services. While many employees have little control over the amount of work they do, a considerable share have freedom over their work schedules, the planning of their work, or the ability to contribute their own ideas. Especially in the working time situation, fewer restrictions are evident compared to other service branches. Weekend work is a rarity, and night work is practically non-existent – at least in official statistics. Moreover, even before the COVID-19 pandemic, a large proportion of employees were able to work remotely (37 %, DGB-Index, 2020, p. 20). However, a particularly high work intensity shows how these degrees of freedom are exploited. Employees in finance are often under time pressure, interrupted, and exposed to contradictory work demands (Table 1). Thus, the typical characteristics of autonomous work are identifiable in the finance sector, but so are areas of conflict that may indicate a disruption within the group of autonomous services, as the following results show.

The analysis of the branch along the seven job autonomy dimensions confirms this impression (Chap. 8.1): Again, financial services fall into the top range of autonomy profiles on average. However, the scores for the individual autonomy dimensions paint a more heterogeneous picture. In terms of Task and Method Autonomy, the branch loses ground in com-

parison to other autonomous branches, indicating that there is less self-determination in terms of the amount, type, or variety of work done. Employees in the branch also report pressure to perform and reach certain targets. However, considering Scheduling Autonomy, the branch again shows higher levels of job autonomy, i.e., the ability to plan and prioritize work and to deal with interruptions. The highest levels of Working Time Autonomy are found in finance across the entire service sector.

Finally, the branch shows above-average values in terms of Interactional Autonomy, i.e., the degree of support and dependency on colleagues, superiors, or service recipients. Overall, financial services also serve as an example of the attempt in work organizations to compensate for the dwindling scope for action regarding the content and objective of work with greater freedom in setting the time and place.

The previous analysis of changes in job autonomy between 2012 and 2018 (Chap. 8.4) paints a picture of slightly increased job autonomy: The job autonomy gains are very moderate in total and extremely moderate compared to other autonomous services such as information and communication or real estate. Considerable losses are recorded, in particular, for Task and Method Autonomy, which confirms ongoing tendencies towards more standardized and monotonous work. Scheduling Autonomy and aspects of working time have virtually remained constant. Only Criteria Autonomy shows a high increase, which goes in line with the developments of other autonomous services. This indicates that performance targets may be set more independently. In combination with decreased task- and method-related features of job autonomy, these developments describe a working environment with more standardized ways of conducting certain tasks.

Additionally, reviewing the relationship between job autonomy and digitalization provides some valuable insights into the branch. Exemplary, increased work intensity is reflected in the fact that at least half of employees in finance both complain that the processes to be overseen simultaneously and the total amount of work have increased with digitalization. For most employees and service branches, digitalization has little, if any, positive impact on decision-making. The same applies in principle to the finance industry, but compared to other services, a particularly large share of employees describe their freedom of decision-making as having been restricted. However, the proportion is still moderate (Table 17 | Appendix). In banking services in particular, two-thirds of employees also report increased control and monitoring at work and, in most cases, only very marginal opportunities to influence the way in which technology is used at the workplace (Roth & Müller, 2016, p. 55). These results may suggest that the use of ADM systems in this branch

also leads to a decline in job autonomy as far as employees' freedom of decision is concerned.

The initial situation in the banking sector thus reveals a picture of opposing developments regarding job autonomy. The type, method, variability, and amount of work can be determined less often. Working time and location aspects of work counteract this autonomy-restricting tendency. The question arising is in which direction the possibilities of self-regulation in terms of work goals, dependencies, and interactions with service recipients are evolving.

14.2.2. Employment, work organization & perpetual structural change

"The bank advisor has become obsolete" (Kanning, 2017). This or similar titles accumulated around the German financial branch, especially in the 2010s. To what extent the profession may have become obsolete due to digitalization is only a minor question in the following. However, light is shed on the pressures for change to which this profession and the branch are subject. For this purpose, it is essential to briefly outline the changes in the financial branch over the past 10 to 20 years. The distinctive feature is the early start of the digital upheavals, which helped to join the group of digitalization pioneers within the service sector. It is also the depth of change, which has not stopped at the digitalization of work processes but encompasses entire business models and has thus had a considerable influence on employment in finance in recent years.

Overall, financial and insurance services make up only a smaller part of the service sector (4 %, Table 15 | Appendix), and the proportion of female employees is average at 55 %, as is the part-time rate (29 %, Figure 18 | Appendix). Employment and apprenticeship rates have been declining for years. In 2022, around 970,000 people were assigned to this branch. Employment stagnated between 2018 and 2022 (Table 16 | Appendix). This makes finance and insurance one of the few service branches not to have grown. This fact alone indicates that it is undergoing change and that different transformation processes are playing out than in other service branches.

There have been reductions in employment, particularly among full-time employees and people with no formal education or vocational training. At the same time, the trend towards higher qualification among employees is observable (Burkert, 2019, p. 4). This puts pressure on employees with classic vocational training and additionally reduces the supply of previously respected and high-quality entry opportunities in the branch.

For a long time, bank advisors were considered an exceptional case among professions because there were particularly many secondary school graduates among the trainees, and the profession of the bank advisor was considered extremely prestigious (Haipeter, 2006, p. 58). However, today's bleak job prospects for bank advisors are not due to a lack of adaptability to changing organizational and business forms. Rather, it is reduced demand for the sales skills that are at the core of bank advisors' work (see overall in Haipeter, 2006).

Essential aspects of a neo-Tayloristic organizational change have become apparent in the financial sector over the past decades (Büssing & Glaser, 1998, p. 591), which can hardly be separated from the use of technical systems: In addition to the reorganization of business segments and the regional reduction of the branch network, employment was massively reduced. The reduction of the branch network follows a far-reaching structural change in the financial sector that began in the 1990s and took place in particular in corporate restructuring in the form of centralization and process automation (Büssing & Glaser, 1998, p. 591). This depletion of the branch network gained further momentum in the mid-2010s (M. Schwartz et al., 2017, pp. 1–3).

However, this trend is the result of corporate mergers rather than outright market exits. The capacities of the banking sector have hardly changed in response (Buch, 2018, p. 9), but a market concentration is evident, the aim of which is to take over entire market segments. Centralization and specialization of trade thus go hand in hand in the lean banking model of the 1990s (Büssing & Glaser, 1998, p. 591). In particular, the dismantling of the branch network could only take place through extensive automation processes that shift access to products for clients into digital omni-channel constructs. The starting point for these restructurings is increased cost pressure on the financial industry (deteriorating cost-income ratio, declining return on equity) as well as, especially in the recent past, low interest margins (Burkert, 2019, pp. 9–10).

Likewise, overall societal trends have an impact on employment in the financial sector: Globalization has led to the outsourcing of tasks, especially at large banks (Brown, 2011, p. 51). Demographic change influences the demand for banking products and the regional density of banking services (Burkert, 2019, pp. 9–10). Digitalization also creates a changed state of competition in the branch. FinTechs and BigTechs offer new financial products and can be in a competitive or cooperative relationship with traditional universal banks (Beier et al., 2016, p. 2; Glock et al., 2019, p. 18). What they have in common with younger direct banks is that hardly any physical business presences are created, but instead, interaction with clients is completely online.

It is important to distinguish between traditional universal banks with (still) extensive branch networks (e.g., Deutsche Bank, Sparkassen, or Volksbanken) and newer direct banks (e.g., ING-DiBa, or the so-called neo bank N26) with little or no stationary branch presence for clients. Many employment trends, such as staff or branch reductions, do not apply to the latter. Traditional universal banks usually refer to the structures and characteristics discussed below.

Already at the beginning of this structural change, a polarization of qualification requirements, quality of work, and job autonomy was predicted for the finance branch. Büssing and Glaser (1998, pp. 591–592), for example, expected that only a part of the financial sector workforce will be employed in qualified, autonomy-strong jobs with client interaction, while another part experiences devaluation, dequalification, and insecurity in their employment relationships. Both groups also face time flexibility as a work requirement. The authors should be right in many respects.

However, at least in traditional banks, bank advisors still play a vital role in terms of sales targets, as they are the employees with the most client contact. They function as an intermediary between complex financial products and empowered clients, who are increasingly performing tasks that were previously the responsibility of bank advisors. A division between employees in banking is made by means of the front and back offices. The front office refers to employees who are in direct contact with clients, for example, who accept client requests at the bank counter. Back office employees manage banking operations such as transactions or loan processing. They rarely have direct contact with clients. In parallel, there are sales experts or bank advisors who specialize in certain financial products.

Automation and organizational transformation may affect these groups in different ways (Zanker & Drick, 2011, p. 133). In the past decade, specialized sales staff has increasingly been subject to an optimization logic, which is expressed in an even greater shift away from client advice towards a business orientation based on sales figures only. This means that salespeople are told in detail what productivity (products sold per period) should be achieved within client sales. The extent to which the product offered corresponds to the client's wishes and the quality requested is often of secondary importance. This presents not only clients but also salespeople with burdens and contradictory requirements (Roth, 2012, p. 12). In a comprehensive study on new management strategies in banks, Breisig et al. (2010, pp. 139–141) describe extremely short control phases, usually lasting a month or sometimes a week, in which key figures and targets, such as the number of contracts

concluded and client meetings conducted, are collected and analyzed at both the team and individual level. This change testifies to more intensive conditions, as the performance indicators of employees were previously evaluated in an annual cycle.

The challenges for companies in the financial sector include increased competition, changing market conditions, and shifting client demands. Companies are responding by cutting costs and trying to attract new clients (Roth et al., 2015, p. 39). The measures taken to implement these goals fall under the umbrella term *industrialization of finance* (e.g., Meutgens, 2014, pp. 239–240; Roth et al., 2015, p. 39). According to Roth et al. (2015, p. 42), this industrialization is taking place along the three dimensions of standardization, automation, and specialization, although the developments in these three areas are not always clearly distinguishable. Likewise, quite different effects of these three movements on the job autonomy of employees and task variety can be assumed.

Standardization primarily affects the product range and the process design in sales and the back office (Roth et al., 2015, p. 42). Employees report an increasing feeling of being interchangeable as employees because the IT-based product standardization hardly allows for variations in process execution. Work instructions and individual process steps are predetermined.

Qualifications and professional experience thus become partly obsolete (Roth et al., 2015, p. 43). Shortly after the financial crisis, highly standardized work processes for employees in banking could be identified. This is paralleled by a system of work monitoring and control. This combination clearly contributes to a decrease in employees' scope for action and responsiveness to unplannable work situations (Roth, 2012, p. 54). Automation is closely linked to standardization tendencies. Fully automated processes (e.g., payment and credit transactions) are also called dark processing[52] in finance (Roth et al., 2015, p. 44).

Specialization, in combination with standardization and automation, manifests itself in the greater separation of sales and back office processes (Roth, 2012, p. 45), which particularly distances employees from the holistic nature of their jobs. The processing of product sales is shifting further to back office operations. This is also where centralization comes into play, as back office work is no longer conducted at all locations. Fewer tasks remain for individual branch employees, especially since dig-

52 Dark processing refers to the distribution and processing of client requests being fully automated. The intervention of bank employees is supposed to take place only in individual cases for post-processing or error correction (Meutgens, 2014, p. 246).

italization implies that tasks are increasingly being outsourced to clients (Roth, 2012, p. 46).

Certainly, it can be positively argued that the processes described have led to a reduction in the workload (elimination of simple tasks, less error-proneness) of employees in banking. Yet, the share of routine tasks performed by employees is expected to continue to decline in the future (Glock et al., 2019, p. 52). However, the lack of holistic tasks due to the separation of administration and sales, a de-skilling of many employees, and higher demands on a few specialized employees seem to outweigh this (Glock et al., 2019, pp. 55–56). Roth et al. (2015, p. 56) go as far as to speak of a two-class workforce. The result is less job autonomy and a devaluation of work. The scope for action and decision-making by employees in banks is mostly expected to continue to decrease further in the future (Glock et al., 2019, p. 51).

The industrialization of finance is paralleled by internetization. The transfer of analog products and services into digital ones, on the one hand, aggravates the reduction of staff and, on the other hand, increases the demands on the digital knowledge and time flexibility of the remaining employees (Roth et al., 2015, p. 55). The latter refers to the consequences of internetization from the client's point of view. Financial products can be accessed at any time. Thus, the expectation arises that client inquiries can also be processed by bank advisors at any time. In this context, there are not only new debates about extended working hours (partly implemented in the form of outsourced service centers), but also concerns about the increasing unpredictability of workloads due to the unpredictability of client inquiries (Roth et al., 2015, p. 61).

Expert estimates on the future significance of interaction work in banking are not yet clear. They suggest a reduced share of interaction work (Glock et al., 2019, p. 52). It can be assumed that the future relevance of interaction work will develop differently depending on the occupational field. Direct advisory work, however, is becoming less frequent but more digital (Roth et al., 2015, p. 48).

Ultimately, these developments are also inherent in increasing competitive behavior and decreasing social support (Laaser, 2016, p. 1013). This development is even more worrying, as collegial behavior among coworkers and the perceived meaning of work have long been seen as integral work resources (Roth, 2012, p. 56). Since employees who are in direct contact with clients are also particularly affected by emotional demands and required to hide their personal feelings at work (Roth, 2012, p. 56), it is important to discuss what new burdens and restrictions on job autonomy these employees will be exposed to in the context of using technologies.

14.2.3. Job autonomy in banking services & technology use

Work in finance is permeated with technological applications. Some voices even go so far as to claim that banking and technology are synonymous (King, 2019, p. 249). Indeed, the financial branch is among the leaders in terms of the degree of digitalization in Germany. A substantial number of employees are already using learning applications (38 %, DGB-Index, 2022b, p. 16). The branch has an exceedingly high proportion of digital processes, digitized services, and use of digital tools (BMWi, 2018, pp. 21–33). However, digitalization and the use of digital technologies are not so much drivers of structural change in the financial branch, but rather a reaction to increasing rationalization efforts. Thus, no single technological innovation can be cited as the decisive factor for changes in the branch.

Traditional universal banks, in particular, are equipped with extremely heterogeneous technical structures. Work processes are based on individual solutions, silo applications, and a mixture of in-house and external applications (Glock et al., 2019, p. 65). Traditional banks are thus faced with the challenge of creating compatibility between IT systems and consolidating the in-house software landscape. Banks see themselves in the necessity of implementing operational efficiency goals, which are considered the driver for the standardization and automation of tasks in the front and back offices (Brühl, 2017, p. 6).

Learning ADM applications are now believed to achieve further process and product improvements with the enormous amounts of data in the financial branch. Processes are expected to be streamlined and products offered in a more individualized way (Deutscher Bundestag, 2020, p. 153). Indeed, ML-based guidance systems in client service have already led to productivity gains, especially for lower-skilled workers (Brynjolfsson et al., 2023, pp. 13–14). Such developments thus contribute to the empowerment of certain employees but also deprive qualified personnel of their status in the company. Similarly, it has been shown in some cases that client satisfaction and employee loyalty develop positively (Brynjolfsson et al., 2023, p. 22).

The hope of a further increase in efficiency is immediately apparent in the possible use of AI systems in the financial arena (Neu et al., 2022, p. 30). However, reducing this to purely efficiency-enhancing measures is a simplification. In view of the increasing competition in finances, client loyalty and addressing the right client with the right product in a holistic and tailored manner are decisive targets for banks. AI-based software solutions for predicting client preferences and probable success rates are used across the entire banking spectrum (Neu et al., 2022, p. 30). Targets

of these systems are often referred to as the next best offer or the next best action.

As far as the use of data-intensive ADM applications is concerned, long-standing regional universal banks in particular have competitive advantages because they not only have a large client base and their transaction data (Leonhardt & Wiedemann, 2017a, p. 168, 2017b, p. 25) but are also perceived as more trustworthy than their younger and sometimes much more digital competitors (van Geenen et al., 2015, p. 138). However, this data treasure is both a curse and a blessing for universal banks since the use of client data is rigidly bound to data protection and finance specific[53] regulations, which completely prohibit many analysis options at the individual level, force anonymization or only open them up selectively.

Consent to access and use the given client data (Leonhardt & Wiedemann, 2017a, p. 169) thus has a gatekeeper function in the relationship between the application potential of learning systems and actual usability. Similarly, traditional universal banks in particular lack the right technologies to use their wealth of data (Leonhardt & Wiedemann, 2017a, p. 168).

The sheer mass of data, which is further enriched by banks' omnichannel presences, is suitable for processing by the current range of ML methods and could hardly be processed in real time by bank advisors in a similar way (King, 2019, p. 246). For example, robo-advisors (ML), chatbots/virtual agents (NLP), or models of client behavior (DL) currently rely on these methods (King, 2019, p. 244). Learning systems are thus available in various applications for banking. In the front office, chatbots, creditworthiness checks, and robo-advisors are particularly worthy of mention (Glock et al., 2019, p. 28).

Direct interaction with clients is thus affected in many ways. Front desk tasks in branches have been reduced but are also less in demand due to digital offers. In the back office, automated processing and credit and risk management are essential tasks. The extent to which the quality of the products offered to all clients can be achieved through the often-

53 The use of algorithms in banking is subject to additional regulations compared to traditional private companies due to their specific importance for the monetary affairs of the entire economy. These include, in particular, that the responsibility for ADM-based decisions lies with the company management and that there must be a minimum level of explainability and transparency in decision-making by ADM (BaFin 2018, pp. 37–38).

propagated absence of technical bias (King, 2019, p. 246) is hardly debated at present.[54]

Insights into the consequences of ADM use on employees in banking, especially bank advisors and front desk service workers, are still scarce. This may also be due to the fact that process digitalization, system consolidation, and the translation of existing systems into learning ADM systems are difficult to separate from each other. The specific influence of learning systems on job autonomy and working conditions can therefore only be assumed based on previous findings on digitalization processes in finance. One difficulty (as is so often the case) is that it is hard to identify which systems use advanced data analysis or which already use ML. Examples for the further development of technical support systems for employees in client service are ADM-supported recommendation systems (1) and automated credit scoring and allocation (2).

In the application of such systems, banking does not escape the well-known conflict between individualization and profitability (e.g., Leonhardt & Wiedemann, 2017b, p. 26), i.e., how individually and time-consuming can financial advice and services be offered to optimize profit margins? Regional banks with stationary branches have too low profit margins to offer individual advice to a broad mass of clients. Client segmentation, i.e., the grouping of clients according to their assets, among other things, also determines how much time is available for individual advice, regardless of the technology. Recommendation systems (1) are used to increase the completion rates of these advisory attempts. This means that conflicts between individualization and profitability should be broken down as far as possible with technology (Leonhardt & Wiedemann, 2017b, p. 26).

Recommendation systems are designed to better serve the needs and wishes of clients. They are supposed to make more holistic offers and thus ultimately also increase closing rates (Leonhardt & Wiedemann, 2017b, pp. 25–26). These systems use the descriptive and transactional data of clients to calculate which products could be purchased. Recom-

54 So far, studies have shown that ML in credit approval processes can have various consequences for the social welfare of individuals and society, i.e., that they can contribute to inequality or help to smooth it. The direction of the impact depends on the presence of algorithmic bias against specific groups (e.g., gender bias), see Bauer et al. (2020, p. 5). The more biased the system is, i.e., the more the built-in algorithms reproduce inequalities and discriminations in given data, the more likely individual and social welfare is reduced (Bauer et al., 2020, p. 5). In this context, however, it has also been shown that flawlessly functioning systems (although it remains questionable to what extent these exist in reality) significantly outperform credit agents (Bauer et al., 2020, p. 29).

mendation systems are used to actively approach clients with a specific product at a specific time.

Recommendation systems can be divided into context-independent (static) and context-dependent (dynamic) logics (Leonhardt & Wiedemann, 2017b, p. 27). By default, recommendation systems operate context-independently, i.e., they use known descriptive and transaction data about the client. It is therefore the classic information on income, cash receipts, travel behavior, spending preferences, or marital status that is used in client analyses. Context-sensitive recommendation systems use situational, time-, and place-related client data, provided that the corresponding data is available, and use these for equally situational offers. This can be, for example, the offer of travel or casualty insurance when transactions are made to travel agents or abroad (Leonhardt & Wiedemann, 2017b, p. 27).

Depending on the functional scope of the recommendation system, various effects on bank advisors are likely. In any case, the client approach is usually not completely automated, i.e., bank advisors do not become completely obsolete. They continue to play a considerable role in sales. However, they are deprived of their job autonomy regarding the manner and content of addressing the client. This also calls into question the strongly experience-based approach of bank advisors.

Furthermore, restrictions are to be expected regarding the scheduling of work. The breaking up of traditional time regimes may be exciting if the recommendation system determines, for example, that certain clients can only be reached after 8 p.m. Are bank advisors supposed to be more flexible? To what extent bank advisors will rely on the recommendations of the system and whether they will also take responsibility for the performance results if they are deprived of the autonomy to decide how and when to approach clients remains questionable.

Credit scoring and allocation (2), as a second example, fundamentally uses ADM to evaluate the extension and prices of credits (van Overbeke, 2022, p. 2). From a corporate perspective, they are intended to speed up credit decisions, increase the volume of checks, and minimize risks. Previous technical solutions to support and automate credit scoring have also been based on basic ADM procedures (regression, decision trees). These mainly use structured data on the financial history of a client to be checked. The novelty of the application of ML methods in this area lies in particular in the evaluation of unstructured data to assess creditworthiness. This even includes data that only has slightly to do with the financial situation of private bank clients, such as social media activity and mobile phone use, to obtain a "more nuanced view" of the financial stability of clients (Financial Stability Board [FSB], 2017,

pp. 12–13). This also applies to corporate clients. For example, newspaper articles are also searched for information on the creditworthiness of companies (Friedrich et al., 2021, p. 57).

The example of the home credit sector illustrates particularly well the impact that the introduction of automated credit scoring can have on bank advisors: The assessment of the creditworthiness of clients and the subsequent decision on granting a loan were almost completely automated in the UK[55] (Terry et al., 2022, p. 673). The job autonomy of credit agents to influence credit decisions was drastically curtailed with this step. This has also created new tensions in the interaction between credit agents and clients, as previously qualified, creditworthy clients are no longer classified as creditworthy by the system (Terry et al., 2022, p. 674).

The decision is made by the system, but the conflict with the client must be settled by the credit agents themselves. This form of automation is regarded as a safeguard for credit agents to protect them against the granting of bad loans that will not be repaid (Terry et al., 2022, p. 674). The use of the system is thus also regarded as a tool for error prevention. The change in job autonomy, however, is the surrender of any responsibility for the credit decision because the assessment is made by the technology. This change in the relationship between the credit agent and the client may, therefore, also have a certain relieving effect on credit agents. However, it undermines the client's commitment to repayment, which was previously also based on a strong agent-client relationship (Terry et al., 2022, pp. 676–677).

Companies should therefore not question the benefits of a qualitative agent-client relationship but positively emphasize them. After all, with a multitude of product offers, clients still prefer the human consulting

55 Particularly in international comparison, the automation in German banking, especially in credit scoring and lending, was slower for a long time. In the financial hub of the United Kingdom, algorithmic credit scoring was quickly adopted in the 1980s, and employees in this area were replaced. In Germany, although automation and digitalization processes were introduced in a similar way, the complementary use of these systems was initially undertaken (van Overbeke, 2022, p. 5). The purely quantitative assessment of credit risk was enriched by qualitative information from employees (C. Lane and Quack, 2002, p. 31). Thus, it can be assumed that not only bankers but also executives were able to maintain their job autonomy, at least in part, for longer. It was not until sometime later that the German banking system reacted to cost and rationalization pressures by cutting jobs across the board, which can also be attributed to changes in the institutional and regulatory framework (van Overbeke, 2022, pp. 5–6). From today's perspective, however, the German finance system has aligned with the more market-oriented international financial systems in terms of automation and employment consequences.

service provided by the bank advisor to the detached digital transaction (Zerfaß, 2016, p. 204). The stability of client relationships seems to be linked to changes in job autonomy in bank sales. Besides this, the challenge of the following case is also to identify ADM-specific influences on the work of bank advisors and whether they differ from known phenomena of digitalization.

14.2. Case summary

"It's a nice tool to target and activate sleeper clients" – This quote from a bank advisor emphasizes the key added value of the ADM system, namely, to target unattended/passive clients. However, it also implies that the system is considered by advisors as a complement to their work. From the bank's perspective, the focus lies on achieving sales targets. The two views do not contradict each other, as both are concerned with addressing and advising clients in a holistic manner, which is supposed to be supported by the technical system. Nevertheless, bank advisors find themselves in a constant conflict between sales goals and client needs, which the ADM tool now intervenes in.

The case study company is a traditional universal bank in Eastern Germany with over 70 branches. Its main objective is to provide financial services to private individuals, businesses, and public institutions, while its profit orientation remains unchanged. The central players involved in client business are the sales control team, which is responsible for ensuring that the bank's sales targets are achieved, and the approximately 280 bank advisors, who are the primary contacts with clients. Depending on their seniority, an advisor manages a client base of up to 1.000. The day-to-day work of bank advisors mainly consists of client meetings, in which work is done to meet individual sales targets.

The case company uses a holistic technical system for addressing clients, the core of which is making product recommendations. The essence lies in addressing the right client with the right product at the right time. The system uses ML to calculate clients' affinities for certain products and links these to time windows in which a purchase is particularly likely. This provides bank advisors with a supplementary tool and provider of ideas to complement the individual client approach system (including resubmission). On the functional side, the system thus fulfills the tasks of automated client selection and the creation of alternative courses of action for advisors.

The statements of the employees surveyed point to a predominantly positive picture of the ADM system. Increases in job autonomy are noted

in several areas of work. In particular, advisors feel empowered by the fact that they are freed from the rigidity of the client approach, both in terms of content and timing. In addition, the system appeals to previously unattended/passive clients, which opens up a new clientele. Advisors feel supported in achieving their sales goals, while their actual interaction work with clients is largely unaffected. However, there was a long way to go before these positive effects were achieved because the quality of the system's results was riddled with errors at the start of implementation, and its acceptance suffered as a result. Extensive follow-up work by sales control and advisors improved the quality of the system significantly.

Elements promoting job autonomy in dealing with the system occur in particular in the content-, method-, and goal-related dimensions (Task, Method, Criteria Autonomy). However, under certain circumstances, these are also countered by autonomy-restricting tendencies, such as the partial lack of transparency and inadequate information or the inherent control mechanisms of the system. The positive effects on job autonomy of bank advisors, nonetheless, outweigh the negative effects at the time of the study.

The changes in the dimensions of job autonomy have ambivalent effects on advisors: While there is certainly an improvement in advisory services, both in quantitative and quantitative terms, the day-to-day work is facilitated. However, the work of advisors is also riddled with more contradictions. The distinct organizational conditions for creating positive job autonomy experiences are the preservation of experience-based interaction work with clients and the use of the ADM system as an option, not an obligation.

The case study's remaining chapters are organized as listed: A description of the case company's organizational traits (Chap. 14.3) and the integration of the technological system (Chap. 14.4) is followed by a highlighting of its learning elements (Chap. 14.4.2). The major case analysis, which describes the impact of the ADM system along the seven job autonomy dimensions, is then presented (Chap. 14.5). The impacts and conditions of altered job autonomy are further investigated (Chap. 14.7), preceded by a list of technical difficulties with the system (Chap. 14.6).

14.3. On company and employees

The company case study is based on a traditional universal bank located in Eastern Germany. As a universal bank, it provides an extensive range of services for its clients, such as:

– basic financial services (e.g., cash and payment transactions),
– lending business (e.g., granting of loans),
– deposit business (e.g., savings deposits),
– investment business (e.g., securities trading) and
– other financial and investment services (e.g., life insurance).

The bank's assignment is to provide access to funds and transaction opportunities for the broad population in a regional context, to guarantee financing alternatives for companies, to promote housing construction, and to provide municipal bodies with financial resources. Even though the branch network and thus the number of employees had to pay tribute to the turbulence of the financial market in the past 20 years, the bank still maintains a broad physical network to remain accessible for clients. Compared to other banks, the company has a large, but shrinking, client base.

The bank is embedded in a multi-level organizational structure. It is integrated into a financial group with a total of approx. 280.000 employees in Germany. Each bank in the group has a regional focus. The case study bank employs about 1.500 people and covers a large region, including both urban and rural areas. It is part of a regional association, which is preceded by a supra-regional umbrella association. The umbrella association acts as an interest representative of the individual banks in the association and defines the basic market and business strategy. This also includes the use of technical systems.

In addition, various service providers operate for the umbrella organization, i.e., they implicitly belong to the banking group. The most important for the case study are the IT service provider, which supplies the technical infrastructure, also for the ADM system, and the service provider for risk management, which has developed the system's algorithms. For the following considerations, it is important to understand that the umbrella organization, including the service providers, is in a supplier-client relationship with the case study bank.[56] Individual banks may (or must) purchase products from the service providers. Particularly

56 Another organizational body is the workers' council, which is legally legitimized and able to co-determine the introduction of new technologies in the company. From the council's point of view, there is a relationship of trust between them and the management that has been built up over many years. So far, there is no company agreement on how to deal with the ADM systems; this would follow if the employees also expressed concrete needs. This reactive behavior on the part of the council is also due to the fact that there is simply a lack of capacity to build up ADM skills. The legally possible invocation of co-determination rights on the use of technology is considered a last resort measure.

regarding using the ADM system, conflicts of interest are evident because of this relationship, which has been reflected in the time-consuming implementation phase.[57]

The organizational structure of the bank is no less complex, so only the immediately relevant aspects for the contents of the case study are mentioned below, in particular, the users of the technical system and the stationary sales units, i.e., the work of bank advisors in the active client business. For these bank advisors, sales management (Vertriebsmanagement) is the central pace-setting organizational unit. Sales management is divided into the sales control unit (Vertriebssteuerung), which directs the stationary trade in branches, whether private or business, and the internet branch unit. The approximately 20 employees manage all client segments and sales units. They are responsible for the retail business, i.e., private clients, with the majority of the bank's 500.000 clients. Their task is to manage resources, i.e., to ask about the most profitable use of advisory services.

Sales control operates as a central actor in this case study, as it plays a key role in shaping the specific tasks of a bank advisor. Their analyses determine the targets of the individual advisors in a branch. In this way, sales control, as the designation surely suggests, also functions as a kind of control instance that demands relevant results from advisors. Not surprisingly, the relationship between sales control and advisors can be described as ambivalent and conflictual, at least at times.

The interviewees in the bank also include members of sales control and management, but mainly bank advisors in direct contact with clients. All of them are members of the ADM test group. The interviewees are mostly between 40 and 53 years old at the time of the interviews and have undertaken similar career paths at the bank. Starting with school-leaving qualifications and an apprenticeship as a bank clerk, the advisors and senior advisors have also completed specific training as business administrators, some as business economists. In higher positions, a univer-

57 The case study bank is a pilot bank to test the recommendation system. After successful testing, the system was rolled out across the entire banking group. Within a test group, employees from all branches exchange information with sales management to adjust the quality of the ADM results. The advisors within the test group have been working with the ADM results daily for several months. The rollout of the ADM system was postponed several times in the case study bank because the quality of the results was unsatisfactory. The service providers promoted it as a plug-and-play solution, which quickly turned out to be a misjudgment. In-house rework and fine-tuning of the system were carried out over several months, so it was not until mid-2023 that the overall rollout was completed.

sity degree is not uncommon but not necessary. It is worth noting that almost all of the interviewees have been working at the bank since their vocational training, some for well over 30 years. They may have changed positions, but not their employer. The underlying attractiveness of the bank as an employer can hardly be disputed.

A total of eight people were interviewed, four of them in the course of the context interviews: the chairperson of the worker's council, an executive board officer, the head of sales control, as well as a data analyst in sales control. The four employee interviews were conducted with two senior advisors and two advisors, three of whom had additional branch responsibility. The bank advisors all work in different branches. The interviewees in the context interviews were mainly men (three); in the employee interviews, they were mainly women (three). Half of the interviewees work full-time with 39 hours per week. The other half works part-time at 32 to 35 hours.

The organization and division of labor in the bank is classically hierarchical, i.e., top-down from the board of directors via the sales department to the branch directorates, branches, and individual advisors. The bank in the case study counts more than 70 branches with around 280 (senior) bank advisors in retail business in August 2023. The employees of a branch are made up as follows: the head of branch, a few product specialists, senior advisors and advisors, and service staff. The group of senior advisors differs from advisors in a few respects: Senior advisors counsel more affluent clients, i.e., those with a higher business relevance for the bank. They spend more time advising individual clients, and their client base is smaller. A rough estimate is 300 to 500 clients for senior advisors and up to 1.000 clients for advisors.

At the branch and advisor level, which is depicted here, there are rather flat structures between branch management, advisors, and service staff. Branch managers are usually active in a hybrid function as managers and in client business. In some examples, advisors also share branch responsibilities. The sense of accountability of all employees in a branch is the reason for a flatter organizational structure. The advisors, in particular, are each responsible for their own personal sales target fulfillment. For advisors, tandem structures with service employees are also essential, i.e., they can transfer certain tasks to the service employees in a guiding function (push relationship).

The typical working day of a senior advisor or advisor is characterized by client meetings lasting up to two hours each. Advisors usually arrive at the bank before 9:00 a.m. (branch opening) to hold team meetings and prepare for individual client appointments. From 9:00 a.m. onwards, client appointments are lined up, so follow-up work and processing must

wait. However, advisors are free to organize their client appointments and processing time within the working hours. The only determining factors are the opening hours of the branch and the statutory working time regulations.

In practice, the clocking component of a working day, i.e., which clients are approached at a certain time, is based on the individual resubmission systems of the advisors. This means that most advisors have their own system and procedure for regularly approaching clients, which they have built up over years. Experience-based interaction with their clients is at the core of their advisory work. In most cases, they know many of their clients personally. However, this only applies to actively attended clients. Every advisor has a certain number of unattended/passive clients. As will be shown in the following, the ADM system complements the experience-based approach to active clients by attempting to access unattended clients.

Irrespective of the technology used, advisors work towards their individual sales targets, which are set annually. They are derived from the calculated potential of the respective client base and, in practice, signify that an advisor should sell a certain number of individual products. The exact targets of an advisor are set by the sales management, which receives the expectations regarding sales performance from the board of directors. The top-down setting of work targets is problematic in that they distribute key performance indicators based on expectations of market development but do not ask what can realistically be achieved bottom-up. In other words, advisors are in a constant state of conflict between contradictory requirements on the part of management expectations and simple client demand. Ultimately, it is up to each advisor to find a strategy for dealing with this conflict.

Positive monetary incentives for advisors are linked to the achievement or even surpassing of targets, just as negative incentives are linked to non-achievement. The task of sales control is to support advisors in achieving their goals. In practice, this vague description is expressed in the fact that it is fundamentally left up to advisors to decide how exactly they achieve their sales targets. However, sales control intervenes in the achievement of targets, especially in the data analysis of client potential. So, it is not the case that advisors can perform their work completely free of constraints. In part, they are given instructions by the sales control department.[58] One interviewee expressed it more cynically with the

58 The weekly monitoring of sales progress is actually done in a very visible and timely way, namely by means of a traffic light system. If the traffic light is green, advisors know

words, "The good employee is only the one who achieves his goals". However, if they achieve their targets, by whatever means, advisors move in a relatively justification- and conflict-free space.

As a link to the socio-economic conditions in which the advisors and the bank operate, it is important to mention that the bank can hardly afford any consequences in terms of personnel if the targets are not met. As in many regions and branches, shortages of skilled workers are clearly noticeable in the case study company. The current age structure of the workforce suggests that this problem will worsen. The fact that the bank can hardly offer its employees the same financial conditions as some private banks makes the situation even more difficult.

Both issues, the age structure and competitiveness, affect not only the employees but also the clients. On the one hand, from the bank's perspective, it is obvious that the average age of its client base is high and that, in the long term, this must lead to a reduction in the still comfortable client base. For younger clients, other, more digital banks that convey a less traditional image of finance are often more attractive. On the other hand, other financial institutions are also more attractive to clients because they can offer cheaper products through fewer advisory services.

The bank is very aware that it cannot win the price war in the industry. Its strategy is based on client loyalty, which is created through a strong bond between advisor and client. The bank wants to offer higher-quality advisory services and differentiate itself from the competition by attaching significant importance to holistic advisory services. This means that not only individual products are sold to the client, but that security in all areas of life is to be provided through appropriate products. The (physical) advisory service provided by the employees is thus also a core element in securing the bank's future.

However, the bank cannot rely on mere client loyalty. Clients' requirements are constantly changing. This means that the digitalization of processes and accessibility for clients play a key role. In this context, the bank has some catching up to do compared to other banks. Interestingly, the advisors do not necessarily feel the changed client preferences. The demand for physical consultation remains high. The general trends in

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that they have achieved their goals in the past week. If 95 % of the targets have been achieved, the traffic light turns yellow, and below that, it turns red. In view of these indicators, it is certainly an ambitious self-assessment tool. It seems only logical that it is also an instrument for monitoring performance. However, it must also be added that there are no immediate consequences in the short term if the targets are not met.

banking over the past 20 years, i.e., the reduction of branches and employment, did not stop at the case study bank. However, it has become increasingly clear that clients still demand a physical presence and the preservation of cash transactions.

Finally, the macroeconomic situation of the past years also posed several challenges for the bank. The lengthy period of low interest rates proved to be particularly problematic, especially as the bank has a high surplus of liabilities, i.e., clients have a lot of money on deposit. By contrast, there are only a few companies that need liquidity, so the bank is forced to take greater risks in generating returns. Meanwhile, these tensions caused by low interest rates have eased.

14.4. ADM usage in the work process

The ADM system, the impact of which is being examined, is supplied by the service provider of the bank's umbrella organization in terms of both technical infrastructure and content. It is a tool of client approach management and fundamentally comparable to a recommendation system of clients who are particularly likely to purchase a certain product.

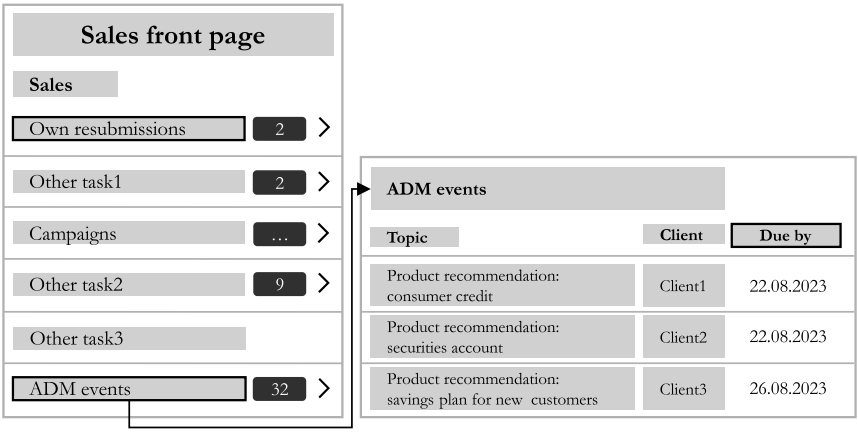
The goals of using the technology are manifold. Unsurprisingly, the primary objective is to expand the effective business, i.e., to increase the closing rates. Basically, the system is intended to support advisors in achieving their sales targets and to distribute resources as sensibly as possible, not only within the group of advisors, but also in sales control. In particular, the valuable advisory time should be used as effectively as possible. Client permeation is not only to be increased in terms of content and time but also the principle of the holistic nature and quality of service offered to clients is to be pursued. Especially passive and unattended client potentials should be activated by using the system.

The desired increase in closing rates is not only reflected in the bank's business results but also has the potential to positively influence the advisor's personal experience of success. This can only thrive if the right clients are approached at the right time. The assessment of objectives is further complicated by the fact that the technology use was imposed by the umbrella organizations and that the company never shared a statement with the staff formulating the system's goals.

14.4.1. Basic functional spectrum

The technical basis for the daily work of each advisor is the core banking system, which was recently supplemented by a new sales frontend. The sales front page (also *event system*) provides an overview of all the advisors' tasks. The entries under sales tasks are particularly important for the advisor's sales goals. All daily client appointments, resubmissions, reminders, campaign tasks, and, most recently, ADM events are listed (Figure 14). The ADM system is considered a supplementary proposal to an advisor's own resubmission and appointment system. On the sales front page, the ADM suggestions are listed alongside other sales tasks. The target set by sales control is that the maximum number of sales-related tasks for advisors must not exceed 50.[59] ADM events are available to the advisor for a total of two weeks, after which they are deleted, and the affinities are recalculated after a certain period of time. This two-week period is for testing purposes and is intended to provide sufficient time to work on the proposal.

Figure 14: Cutouts of sales front page and exemplary list of ADM events, Case II



Source: Provided by the case company, August 2023. Own replica.

59 Due to the ongoing improvement efforts, the maximum number is still 100 for technical reasons.

One implicit goal of implementing the ADM system is to replace the campaign-based client selection system. At present, this approach is still being used in parallel, but only for a limited period. As the campaign system will be discussed in more detail in comparison to the ADM, the approach is only explained briefly: The data analysts in sales control select client lists based on predefined parameters, e.g., a certain age or income structure. In contrast to the ADM-supported selection, the selection criteria of a client are usually transparent, as it comprises a classic manual selection of clients for time-limited topics.

These expert selections can hardly cover the mass of clients, and, above all, it is difficult to identify new structures within the client base. The selection of topics and clients is rather based on the experience of past years. The client lists are passed on by sales control to the advisors for processing. This explanation of the campaign system is so important because some effects of the ADM system are particularly well understandable in contrast to this previous system.

The idea underlying the ADM system is not just to develop a recommendation system but to follow the principle of a client relations management system in the long term, i.e., to provide a holistic approach to client management, including contact channels, content, and recommendations specifically for each client group. So far, the case study bank has only worked with product recommendations. From the advisor's perspective, an ADM event appears as a recommendation of a match between a particular client and a specific product at a certain point in time. The advisor has this information and the invitation to act, i.e., to contact the client, but as a rule, no reason is given as to why this matching is calculated. Consequently, advisors usually research a reason for the conversation themselves before the client meeting. The conversation can hardly begin with the statement that the person in question was selected automatically. This problem will be discussed in more detail later.

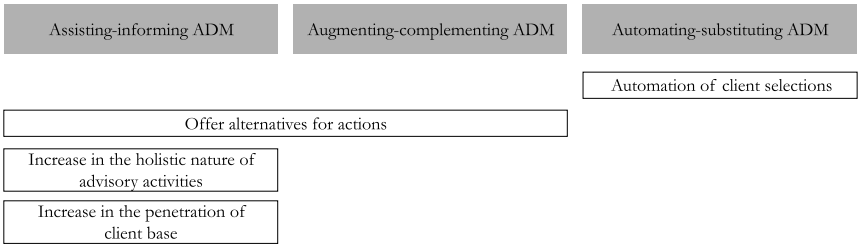
In a nutshell, the functions of the ADM system only cover one aspect (compared to four in Case I), i.e., it provides product recommendations for selected clients for a certain time period. To get more precise about the depth of the system's intervention in bank advisors' work processes, a more nuanced look at the functions is attempted. Rather, these are tasks that the system performs for advisors or in cooperation with them:

- automation of client selections,
- offer alternatives for action,
- increase the holistic nature of advisory activities (quality),
- increase penetration of client base (quantity).

Automated client selection recommends clients who are highly likely to purchase a product right now (right client, right time, right product). In this way, the system offers an alternative course of action for bank advisors. The emphasis must be, however, on the character of the system as a possibility for action, in contrast to the campaign-based system, which is more like a set of instructions for action. With the automated client selection in combination with the experience-based choice of clients from the ADM offer, it is possible to improve the holistic nature of the client consultation as well as increase client penetration. The system thus enables both qualitative and quantitative intervention in client business.

The four functions of the system are categorized differently according to the depth of their intervention in work processes (Figure 15 and fundamentally, Chap. 3.3):

Figure 15: Classification in ADM categorization, Case II



Automated client selection clearly takes on a substitutive character in the work of bank advisors. However, this remains the only function of the ADM system that frees users from a specific task, i.e., their own selection within the client base. All other functions take more of a complementing or assisting role, especially in the advisory activity. The offer of an alternative course of action is reflected in the work of advisors, with its assisting-informing elements as well as the augmenting-complementing aspects. Complementing, of course, means the complementary character of the ADM system, which supplements their own range of actions and can raise the value of the results of their work to a higher level. Assisting-informing refers to the system describing an alternative and not a compulsion to act, i.e., the system gives advisors an information basis on which they make a decision. The increase in the holistic nature of the advisory approach and the penetration of the client base are considered consequences of these new action alternatives and are counted as assisting-informing functions of the ADM system because they provide information on how these two points can be achieved but do not have a supportive effect on the implementation.

14.4.2. Elements of learning ADM

As the very existence of the test group suggests, the initial version of the recommendation system that was brought to the bank by the umbrella organizations did not prove to be fully operational. Expectations and reality have drifted far apart, much to the bank's distress. The result is a great need for additional in-house work. As the head of sales control aptly put it, "The artificial intelligence just has to be taught intelligence, and we are of course happy to assist with that". Neither the technical infrastructure nor the content of the algorithm are in the hands of the case study bank, which is why details of its design are not available.

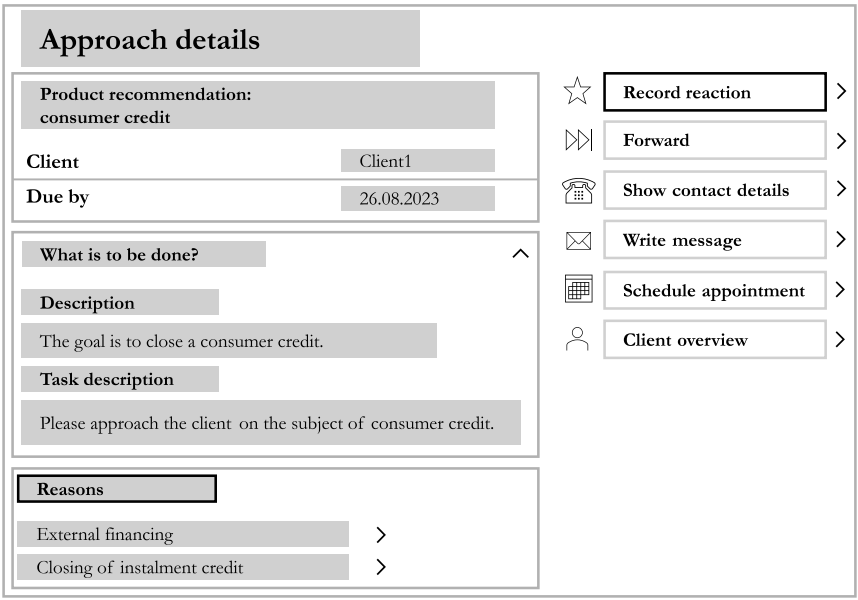
Apart from these conceptual obstacles, the system requires some time to learn, i.e., to improve its results. The combination of this learning mechanism and the rework within the test group allowed the system results to improve considerably during the observation period. In contrast to Case I, no separation between process digitization and the learning elements of the system is necessary in this ADM example. At its core, the system consists of an ML-based recommendation system.

What data is used for the system in the first place? The answer is mostly descriptive and transaction data from both attended and unattended clients.[60,61] However, the potential and depth of information contained in this data should not be underestimated. The bank has more than just rigid socio-economic data at its disposal. Specific life events and preferences can be read from the transactions, such as when a child was born (via a child benefit transaction) or what a person's travel or consumption preferences are. The possibilities for drawing conclusions about affinities and risk potential from this wealth of information are enormous. All this information is also fed into the ADM system, although it rarely provides a complete picture since many clients have accounts with several banks.

60 Only clients who have agreed to the General Data Protection Regulation (GDPR) are included in the ADM calculations. The bank has no legal access to the data of other clients for processing. All parties involved are extremely sensitive to compliance with basic data protection rules.

61 Interestingly, the model was not trained with data from the case study bank but with data from other banks within the bank group. The heterogeneity within the bank group thus already implies a certain flaw in the system. For example, a distinction must be made not only between institutions in urban and rural regions but also between particularly wealthy regions and corresponding changes in client demand. The basic model supplied is now being further developed with in-house data.

Figure 16: Exemplary ADM event with approach details, Case II



Source: Provided by the case company, August 2023. Own replica.

The recommendation system is based on two components: data analytics scores (DA scores) and a house-specific parameterization. DA scores are static affinity calculations and were used even before the ADM system was developed. These 50 DA scores are the same for all banks in the banking group. Like the basic model of the recommendation system, the DA scores originate from the umbrella organizations. However, the way in which the DA scores are calculated is largely transparent to sales control.

In contrast, the selected parameters are set specifically for each bank and provide the ADM support with a site-specific framework for its recommendations. Depending on the product, sales control can use the parameterization to manually narrow down the targeted client group according to socio-economic factors such as age, marital status, occupation, or place of residence, or, for example, more financially related factors such as income, savings capacity, creditworthiness, and assets. Sales control decides exactly which events, i.e., recommendations for which products, are played out to advisors in the case study bank. At the time of the study, four ADM events were in operation: liability insurance, loans, and two securities products (savings plan and securities account).

In the future, around 25 products are to be recommended via ADM. From the advisor's perspective, such an ADM event consists of information on the recommended product, the targeted client, and the time window for completion (Figure 16). The advisor is provided with brief descriptions of the product and task, and for certain product recommendations, short reasons for the algorithmic recommendation. For each referral, it is possible to mark a reaction in the form of a reaction code, i.e., an indication of how the advisor has dealt with the referral and what consequences have arisen (e.g., making an appointment with the client).

In comparison to the campaign approach, clients who show certain affinities according to DA scores are not simply selected, but payment flows and comparable client groups are utilized. In other words, a comparison of similar client groups, such as *other clients who also bought product X*, is mainly performed. The model therefore relies heavily on pattern recognition processes. Client behavior is compared over time and based on their complete product range, not simply based on age or income, but on the basis of all available data. The probability that a client is interested in a product is thus recalculated repeatedly, and the client profiles are sharpened over time.

14.5. Influence on job autonomy

14.5.1. Overall evaluation

Bank advisors give the ADM system a positive overall rating. Troublesome sources of error associated with the initial implementation have been minimized. In particular, the advisors consider the system's function as a provider of ideas and information to be positive, as it can also have a beneficial effect on the fulfillment of sales targets by enabling the acquisition of new/passive clients. The system enriches the work of advisors in many respects and helps to wake up *sleeper clients*. As long as the quality of results continues to increase, the advisors' attitude towards the ADM system remains predominantly positive. When there are noticeable moments of support in dealing with the system, the openness for intervention in one's own work increases. The fact that additional product recommendations are provided certainly plays a role. The quality of the ADM suggestions has increased considerably during the test phase, but further improvements will be necessary. Nevertheless, a high degree of experience on the part of the advisors and non-intervention in the actual interaction with the client are conditions for the successful use of the ADM system.

Regarding the impact of the ADM system on the job autonomy of bank advisors, i.e., bank employees who interact with clients to a high degree, predominantly affirmative trends can be identified. Positive effects include an improvement in the quality and quantity of advisory services as well as an easing of certain work steps, which have the potential to contribute to the achievement of sales targets. Autonomy-enhancing elements of the ADM system are apparent in almost all job autonomy dimensions. Compared to Case Study I, however, there are also considerably more contradictory effects. The freedom to interact with clients remains predominant, and it is difficult for the technology to intervene in this interaction. The interviewees also assume that their own self-determination will be preserved in the future, which could seemingly only be shaken by the possible pressure to use the system. Some advisors feel even more self-determined resulting from the replacement of the campaign system and the greater variety of topics that come with it. As long as the tasks set remain workable, the advisors are positive about the newly created options for action.

A slight, albeit not yet substantial, feeling of relief has emerged among some advisors. This impression, in turn, is closely linked to the

Table 11: Effects of the ADM system on employees, Case II

Autonomy Dimensions	**Positive effects (+)**	**Negative effects (–)**
Task Autonomy	– Supplementation of task variability – Holism of advisory service increased – Less workload in client selection	– Non-transparency and missing information – Higher workload with passive/ new clients – Higher workload for advisors, not seniors
Method Autonomy	– Options for action expanded by recommendation – Execution of advisory work unaffected	– Semi-prescriptive following of system instructions
Criteria Autonomy	– Support for target achievement – Replacement of campaign system	– Work through an infinite to-do list – The question of control
Scheduling Autonomy	– Time gains – More independent prioritization, mid-term – Work speed and breaks unaffected	– Sticking to the right timing, short-term – Parallelism of tasks – Dealing with unpredictability
Working Time Autonomy		– (Flexibility demands)
Locational Autonomy	– (Remote work optional)	– (Decisive client demand) – (Competition with online branch)
Interactional Autonomy	– More individualized advisory services – (Facilitated teamwork)	– Emotional demand with new clients

functional quality of the system and the critical path of the system's control potential. The topic of a *new lightness* in dealing with the ADM system as a suggestion for action will be taken up more often in this context. The greatest burdens that advisors must cope with at work remain unaffected by using the technology. This refers to the interaction work, which, although it clearly brings meaning and motivation into the daily work routine, also involves the greatest effort for bank advisors.

The following systematized description of the benefits and occasionally drawbacks of using the technical system is organized along the seven job autonomy dimensions (overview in Table 11). Some effects are not directly related to the use of the ADM system but rather to the new sales frontend and basic digitalization processes (in brackets). Similarly, the effects that are in particular due to using the ADM system, which is at its core ML-based, are highlighted to distinguish them from the impact of replacing the campaign system. At first glance, this overview suggests a large number of negative effects of ADM use, but it also simplifies the weighting of the positive effects. The fact that the system is currently perceived in a predominantly positive way and that the negative moments also partly reflect potential and expectations is revealed in detail in the following description of the individual effects.

14.5.2. Job autonomy dimensions

Task Autonomy

Task Autonomy asks about the possibility of choosing work tasks independently, task variability, changes in the amount of work, as well as the availability and holistic nature of tasks and information. Within the case study, positive changes in the dimension of Task Autonomy are expressed via three effects: the perception of complementing the variability of tasks, the associated increased holistic nature of the advisory approach, and the elimination of time-consuming selection processes to identify unattended/passive clients. These changes are countered by the lack of information on the reasoning behind the client recommendation as well as additional efforts due to follow-up research. Further restrictions can occur if technical barriers (Chap. 14.6) arise.

Supplementation of task variability (+)

As the ADM system prospectively replaces the campaign-based, i.e., monothematic, mechanism of addressing clients, employees perceive the diversity of their acquisition options as considerably increasing. Although the acquisition core remains the individual experience-based client management, the ADM events pave the way to more holistic client care that moves away from long-term thematic references. Using the system thus reinforces the idea of the availability of any product offered to clients. If the campaign-based system stood for a thematic focus, the new system offers thematic diversity and the idea of opening the tunnel vision regarding products and clients. Employees noticeably welcome this development.

However, the ADM system offers a supplement to existing acquisition possibilities. This means that advisors' own support system of resubmission, based on the assumption that it formulates the qualitatively best acquisition approaches, has priority over the ADM events issued. This understanding of prioritization is shared by advisors and sales control. The prioritization of experience-based tasks, in connection with the capping of the maximum number of acquisition approaches displayed, has the consequence that no client recommendation events are reported to the advisor if there are enough self-scheduled appointments with clients. In other words, if the calendar is full, the ADM plays no role in advisory work. The ADM-implied client proposals can therefore be more effective when appointments need to be filled or capacities are still free.

The central consequence of the ADM use is that rather passive clients and new product clients (sleeper clients) are included in the active advisory activity, i.e., those who are already clients of the bank but have never or rarely been advised directly. Previous client selections have not yet taken these individuals into account. From the advisor's perspective, they are new clients, as they are not yet part of the personally known client spectrum but are purely formally assigned to them. Advisors hardly have the capacity to research these people themselves, with a client number of up to 1.000 and corresponding ongoing advisory appointments and case processing. Advisors describe the setting in relation to the acquisition of passive clients as the proverbial search for a needle in a haystack. This pile is now being reduced by the ADM system. Especially for new or younger advisors who do not yet have a wealth of experience with their client base, this approach proves to be helpful. After all, for them, everything is new.

The use of the technical system thus offers advisors two kinds of variability: that of topics and that of clients. The phased thematic binding

(campaign) is completely dissolved, and in the best case, one also gets to know other clients. This increase in variability depends on the individual client base and the client potential-oriented performance targets.

Holism of advisory service increased (+)

Closely related to the new variability of topics and clients for advisors is the idea of a more holistic client service. The possibility of addressing clients individually by means of the system reflects the increased orientation away from the product towards clients. Products are not sold excessively but are offered considering the client's portfolio, needs, and liquidity. The goal of holistic client care reflects the bank's corporate philosophy, which wants to empower clients to make their own decisions about financial matters. The system fits into this advisory approach by not only breaking down client affinities but also adapting the approach channel and exact content. The system should therefore not only recommend action but also function as a complete client-relationship approach.

From advisors' perspectives, the increased holistic nature of the advisory work is expressed in a greater overview of the breadth of the client base. The system thus functions as a source of information and recommendations on how to achieve higher client penetration and exploit yet-untapped client potential. The target corridor of this more uniform approach is not exclusively the signing of new products but also the qualitative improvement of the advisory service, which offers new products for clients or even creates access to advisory services that were previously closed.

Less workload in client selection (+)

Permanently developing new acquisition opportunities is one of the core tasks of bank advisors. This affects active clients who have already purchased the bank's products but are often no longer sufficient to meet the set performance targets. With an average rate of 50 % of unattended/passive clients, the potential to unlock is huge. Unsystematic and time-consuming individual client selections are now automatically issued by the technical system. Ultimately, it is up to advisors to evaluate the ADM proposals, but at least they save the effort of selecting them in the first place.

Especially the search for clients with a high affinity for a certain product, for which the performance targets of an advisor have not yet been met (e.g., certain number of loan deals), is facilitated in this way.

Without technical support, this search is complex, lengthy, and demanding for advisors due to the abundance of data, as it requires understanding and the ability to interpret, for example, a client's transaction behavior. Advisors describe the change as a *new lightness* in client selection that replaces a more cumbersome campaign system. This ease is not only noticeable for advisors but also for their service partners at the front desk. Research and communication tasks are often shared in tandem, and since the effort is now reduced, collaboration between both parties is facilitated.

Non-transparency and missing information (–)

The non-transparency of the ADM-supported client recommendation describes one of the essential changes using the system. Why a certain affinity for a product is calculated for a client cannot be determined in detail. Advisors therefore lack the information to carry out certain parts of their work. From the advisors' perspective, this naturally calls the acceptance of the system into question. In practice, advisors lack arguments for addressing the client, which must first be researched (given data protection consent) and increase the demands on their ability to interact. The difficulty lies in the fact that a catch must be found as to why the client is actively approached in the first place. This also means that the advisor must create incentives for the client to engage in the conversation. The simple statement that the client has been selected by a technical system is hardly accepted by them. In any case, this reasoning does not correspond to the advisory requirements of the employees in terms of quality. The campaign-based system, in contrast, is characterized by greater transparency, as the selection criteria of the clients are known and communicated (e.g., evaluation of all clients between 18 and 25 with a regular income of a certain amount).

The missing or inadequate chain of argumentation is a major driver of additional efforts. From advisors' perspectives, the extent of the negative influence caused by the lack of transparency in acquisition events depends primarily on the functional quality of the system. If these are promising and prove to be correct, the effort required for follow-up research is considered to be less serious.

Higher workload with passive/new clients (–)

Higher workloads and efforts with passive or new clients are closely related to the non-transparency of ADM events. The additional efforts to address these clients do not necessarily have to be lengthy (e.g., change

in income), but may well result in finding a completely different pretext for the client approach (e.g., reference to the current economic situation, interest rate situation, special conditions). In this respect, advising known clients is less demanding work, especially in comparison to the initial meetings with newer clients.

However, the actual additional workload depends heavily on the client base and advisors' individualized approach to client meetings and acquisitions. The needs of advisors to either prepare extremely carefully for an appointment with an unknown client or to approach the new conversation more situationally based on experience differ greatly. In any case, there is a requirement to make the added value of a certain product or service visible to the client. The fact that this requirement is associated with additional work due to the non-transparency and lack of completeness of information through the ADM is known to sales control and is accepted as a requirement for advisors.

Higher workload for advisors, not seniors (–)

Not only the attempt to acquire passive or new clients can result in considerable additional work for bank advisors, but also the size of the client base. Since regular advisors have a much larger client base to look after compared to senior advisors, sometimes twice the number of client networks, the additional work using the ADM is also reflected disproportionately in this group, as are the associated tandem service partners. However, it is not only the sheer size of the client base that is decisive for a possible unequal distribution of the workload, but also which specific products are issued via the system. Portfolio investments, lending, or insurance appeal to quite different client groups.

This immediately raises the question of the extent to which using the ADM system results in a downward shift in the workload for the company. This is contradicted by the fact that advisory times for seniors take longer, so the effort can be the same in the end. Overall, there is still no experience with this interaction of hierarchical levels/professional specializations and using the ADM, and therefore there is little awareness. Whether quantity balancing is necessary in the long term cannot be conclusively assessed. The danger clearly exists, but may depend on the exact client base, the regional area of work, and thus, to a certain extent, on chance.

Method Autonomy

Method Autonomy asks for the possibility of determining procedures, ways, and tools for the performance of tasks. Methodical degrees of freedom in work, especially those involving clients, are supported by the technical system. This is particularly due to the fact that the options for action of advisors are expanded, provided the system is regarded as a source of information and ideas. The fact that the direct advisory activities, i.e., the conversation with the client, remain largely unaffected in their implementation is also perceived indirectly positively. Some respondents experience slightly restrictive moments in their work, in that they consider the use of the system and compliance with the specifications as implicit obligations. Further restrictions can occur if technical barriers (Chap. 14.6) arise.

Options for action expanded by recommendation (+)

Considering the technical system as a source of information and ideas shows the central advantage for bank advisors: It offers new options for action that not only help to overcome restrictive routines but also enable individual performance goals to be achieved. The campaign system has tempted advisors to provide monothematic and assembly-line advice without discussing other products and topics with clients. This highlights a fundamental conflict between routine and a holistic approach to client support.

The ADM system supports the reopening of this tunnel vision by showing options for action without advisors having to feel directly bound to them: For example, an advisor reported a recommendation to talk to a senior client about securities trading. This product and clientele had not been thought of together before, but mathematically, there was a high affinity for the client. To the surprise of the advisor, the product was signed. The client completed the trade for the benefit of her grandchildren. This example shows how the system may function as a source of ideas for advisors. This is especially true for younger or newer colleagues who have little experience with their client base and therefore would rather accept suggestions for action.

Advisors can evaluate all ADM events relevant to them on an overview screen and select the product recommendations that they perceive as most promising. What equally speaks for the character as an option for action is that advisors do not directly adhere to the product recommendation, i.e., they also exercise the flexibility to address other topics in the client dialogue and to respond to the client's needs ac-

cording to the situation. This is where the experience-based nature of the decisions clearly comes into play. The client recommendations can initiate a conversation or even draw attention to a particular client in the first place, but who is contacted and which products and offers are discussed is up to the advisor's freedom of action. Active deviation from recommendations for action is currently practiced. However, bank advisors must make this connection themselves, which is therefore based to a considerable extent on experience and a sense of interaction.

Execution of advisory work unaffected (+)

The fact that ADM events are currently treated as an option for action and a recommendation for addressing clients implies that the core of bank advisors' work, i.e., advisory activities with clients, remains unaffected. Although technical support can be the reason for discussions with unknown clients and corresponding additional work, the way of dealing with clients, whether known or unknown, is still beyond control. It is at the advisors' discretion how to proceed with the interaction. This is absolutely necessary, as a successful client conversation requires a high degree of interaction work and situational responsiveness.

The advisors report that the client is not supposed to have the feeling that the conversation is being conducted in a technical manner. This does not correspond to the advisory approach of the bank and the individual advisors, who claim to respond to the individual needs and interests of the client. Advisors are therefore only externally controlled in the client discussion as far as they have to react to these unpredictable demands of the client. Bank advisors consider this fact to be the decisive momentum in terms of perceived job autonomy.

Semi-prescriptive following of system instructions (–)

Even if the instructions of the technical system are declared as an alternative course of action and the client interaction is not prescribed in its procedure, the actions of some advisors are still influenced. Precisely because of the time-fixed nature of the ADM instructions, some advisors feel increasingly compelled to work through them and to address clients accordingly. Some advisors experience a feeling of compulsion to act simply because of the existence of the suggested ADM advice. Whether and to what extent this feeling arises also depends on the branch, the associated leadership and communication, as well as the advisors' performance goals.

In any case, it may be perceived as a work instruction, as it is subject to the rule of sales control. Advisors describe their perception partly as

an implicit feeling of pressure to lead the ADM instructions to success, which results from the hierarchical relationship between advisors and sales control. Other advisors, however, do not perceive the technical support as a constraint but rather as a real extension of their scope for action and still try to serve the exact ADM cause. It is not so much coercion that is at work for them, but rather a more targeted and thematic approach to clients. In contrast to the former, these advisors would rather try out and experience the quality of the results themselves.

Criteria Autonomy

Criteria Autonomy asks to what extent the criteria for the evaluation of one's own work performance can be determined by oneself, which work objectives can be set and pursued, and to what extent responsibility is taken for these. Thus, Criteria Autonomy is largely influenced by personal *and* internalized corporate work objectives. If asked when exactly bank advisors feel they have done their jobs well, the answers are unanimously: The self-definition of when decent work has been done is closely linked to the presence of interaction work, i.e., when the day is filled with (preferably) pleasant client encounters. In any case, advisors do not perceive it as a good day's work if no client conversations have taken place. The feeling that clients have left the meeting satisfied, that they have been helped, and that a relationship of trust has been established between advisor and client is a great asset for their motivation and satisfaction.

Of course, advisors are also bound to sell products according to their advertised performance goals. But clients should not be *talked into* certain products. After all, advisors want to be able to "look themselves in the mirror" at the end of the day. The conscience of having empowered clients as much as possible to make their own decisions plays a key role. Not surprisingly, a particularly good day at work is described as one in which pleasant discussions with clients could also be provided with business results. Advisors consciously distinguish between *advisory* and *sales* activities, which do not necessarily coincide. Each advisor deals with this conflicting relationship, which is characterized by contradictory demands, at his or her own discretion.

Considering the specifics of Criteria Autonomy, using the ADM system is an extremely ambivalent factor regarding targeting work goals. The support in achieving personal sales targets, which for some were already apparent after a brief time, and the replacement of the campaign-based selection system are perceived as positive. In contrast, obvious signs of work intensification and the expansion of control mechanisms

are identified, the full potential of which is not yet noticeable for advisors. Further restrictions can occur if technical barriers (Chap. 14.6) arise.

Support for target achievement (+)

While the company's credo is that it is fundamentally irrelevant in which way and by which means advisors achieve their sales goals, the bank would still like to provide them with a supportive tool in line with the described operational goals of the technical system. In fact, advisors also share the perception that the system supports them in achieving their own sales objectives. Especially the possibility to address topics and products at the right time, where the achievement of sales goals is still incomplete, is shown to be valuable. With ADM support, a more precise alignment with the individual performance goals for advisors is possible. The flexibility of topics with a fixed time has a positive effect. With the quality of the system recommendations, i.e., the references to clients who also purchase a product, the probability of support and, thus, the generation of a new personal sense of achievement, naturally increases. The fact that it is often not transparent for advisors (and sales control) in detail why a certain client was selected is less important at this point if the operating results are right.

If the processing of the ADM approaches is also treated as a work objective, both in the case of success and in the negative case of client rejection, a reaction code can indicate to the sales control that the information has at least been processed. The work done is thus documented, even if no economically relevant result could be achieved. For advisors, however, there is also the possibility to control the amount of work within a limited framework by allowing an ADM event to elapse according to the two-week period.

Subsequently, the affinities of the clients are rescored, possibly resulting in a different product recommendation that better fits the advisors' target fulfillment. This can also be considered flexibility in terms of personal target achievement. However, as the system does not change the client base or their calculated potential, there are external limits to the support of target achievement.

Replacement of campaign system (+)

The replacement of the campaign-based selection system for clients is considered a separate positive factor influencing job autonomy, even though it has already been mentioned several times before when advisors

described this very change as exceedingly positive. This is due to the rigidity of the campaign approach, both in terms of content and time. The compulsion to work through the client list within the term, or the need to justify if it was not worked through completely, resulted in a noticeable and intense pressure situation. Often, these campaigns were almost impossible for bank advisors to complete and manage in their daily work. Likewise, from the advisors' perspective, there was a noticeable time-limited specialization on a certain topic, which often blocked the way for other topics in the sense of "blinkers" and thus closed off options for action.

The rigidity of the campaign system, i.e., the product focus, also leads to the fact that client meetings are more conflictual, especially when a client group absolutely must be addressed. In this respect, it might also be argued that the demands on the advisors' ability to interact are higher in the campaign-based system. In other words, the achievement of sales goals is strengthened in the ADM context, which is supposed to show higher chances of success in advising. Interestingly, using the ADM system conveys a reduced feeling of external control and work pressure in the advisors' own actions, although the technical system comes from the same level of the company, i.e., sales control. It is the same colleagues who influence which acquisition events are issued to bank advisors.

From advisors' perspectives, however, the decrease in external determination results from the aforementioned greater variety of topics in everyday working life and the possibility of a greater focus on sales goals. This finding is interesting as far as the employees of sales control themselves perceive the work of advisors as more externally determined with the ADM, presumably due to the higher technology penetration of work processes. This perception of the advisors being less externally determined can be explained by the fact that acquisition approaches can be selected individually. Additionally, there is (so far) no obligation to work through the new acquisition results until the end. Working through the entire process is not possible anyway because the ADM recommendation list is constantly being replenished, as the next section will show.

Work through an infinite to-do list (–)

A major change associated with the use of the ADM recommendations is an organizational one and less focused on the target corridor of the client meeting. For this, the following background information on the pre-ADM setting is essential: Advisors' task list for the current day or a specific period is displayed on the sales front page (Figure 14). At the

top of the list are the appointments with clients that were either made by the client or by the service partner, i.e., a self-determined number of appointments and tasks for resubmission. Further tasks could be added, for example, by the campaign system or cooperation partners. In any case, there was a time-limited number of tasks that had to be completed, a finite to-do list.

The properties of the ADM system have now been implemented in such a way that those client recommendations are filled up daily. How many ADM events there are depends on the number of other acquisition approaches, because there is currently still a cap on the number of tasks (max. 100). Currently, 50 ADM events are issued per advisor for a fortnight, i.e., five per day. This is how the amount of work is currently controlled. In any case, the task display changes for advisors, who now see an almost infinite to-do list in front of them in which new ADM events are added all the time, so that the task list reaches 100. This list of tasks can usually not be completed.

The idea of an implicit intensification and increase in the amount of work is obvious, even if the credo of non-coercion in ADM assignments continues to apply. The assessment of the extent to which the compulsory use of the system will change in the future is discussed ambivalently, even if the company has so far spoken out against it. Most bank advisors, however, are taking a relaxed approach to the infinite to-do list. They are concentrating on their self-imposed deadlines and tasks, and the feeling of pressure to work through the list at all costs has not yet arisen. It also plays a role in that client suggestions or events that cannot be dealt with within the two-week period are displayed by the system again after some time, so no client is immediately lost if action is not taken immediately.

However, the question that ultimately arises is: What happens to the advisors if they can never fully complete their tasks? Will they continue to focus exclusively on their personal sales targets, or will the never-ending to-do list take its toll eventually, with motivation and self-efficacy suffering? The answer to this question essentially depends on the degree to which there will be a compulsion to work through this list completely at some point. Thus, the potential for control that the system holds must also be discussed, since the possibly subtle means of pressure used by the management is the indirect control mechanism of self-assertion of corporate goals. This quickly turns possibilities and suggestions into implicit work directives.

The question of control (–)

Hardly any of the advisors interviewed explicitly referred to the ADM system as a control instrument, although it can be just that. Sales control is able to evaluate exactly which system events have been processed and possibly also which results have been achieved in advisory meetings. The technical possibility of tracking the general use of the system and its successes is given. As is often the case, it depends on how this information is used from an organizational perspective.

First of all, it must be mentioned that within the framework of the ADM approach, there is a concrete evaluation tool by means of so-called reaction codes. These reaction codes are supposed to be used by bank advisors after a system recommendation has been processed. They include, for example, contact attempts with/without interest, mail viewed, with appointment/without appointment, or conclusion yes/no. Even supposedly negative reactions, such as the client not being reached after several attempts, can be mirrored by advisors. If a suggestion is not processed, the system notes the occasion as having expired and recalculates the affinities. The response codes go much further than the example shown. If the advisor fills in the codes correctly, the successes or failures of the ADM recommendations can be evaluated precisely.

According to company statements, no personal data of individual advisors is evaluated in terms of use and success rate; only the direct supervisor can view this data, which, however, gives the impression of individualized evaluation possibilities. Finally, there is activity controlling, which does not refer to a client's reactions to a contact attempt but how advisors move within an ADM event: Do they at least open the event? What actions follow afterwards? The combination of activity protocols and reaction codes naturally provides a lot of data about the advisors' continuous work methods. According to the company's perspective, this data should also be utilized, but in what way remains unclear. How these technical means will affect advisors is therefore not foreseeable in concrete terms. However, the risk of increasing direct or indirect control is present.

According to the advisors, the extent to which the system functions as a control instrument depends on the consequences of not meeting the sales targets. If advisors do not meet their personal performance targets, it may be used "in control constellations". This statement does not come from the advisor but is from the company. In fact, several company representatives share a desired control mechanism behind the system, initially with the objective of determining whether it is used (perspectively, how successfully it is used). The signs are on work instructions and constraints.

Scheduling Autonomy

Scheduling Autonomy asks to what extent the sequence, prioritization, timing, and speed of completing a task can be determined, break times can be chosen, and interruptions and uncertainties can be dealt with. The effects of the system's use on Scheduling Autonomy are double-edged: Autonomy-enhancing moments are visible in relation to time gains and freer prioritization of tasks. However, the design of the system recommendation binds advisors to a certain timing when addressing the client. The parallelism of topics can have intensifying effects. The predictability of work processes is probably not supported by the system. Further restrictions can occur if technical barriers (Chap. 14.6) arise.

Time gains (+)

Time gains for bank advisors should be considered in close connection with the reduced amount of work due to the elimination of individual selections and queries. Additional work due to new clients or specific client bases may or may not occur. In any case, advisors predominantly report time gains that are reflected in more advisory time. Increasing advisory time, because only this can usually lead to operationally effective results, is also an elementary corporate objective of using the system. The more analogous variant of the individual selection of specific client groups by the advisor and service partner repeatedly proved to be extremely time-consuming and unsystematic. With this task, there was always the question of time and the chance of success. Mostly, there is no idle time at all in which these research and analysis tasks can be completed. Where should it come from? The daily routine of bank advisors, with up to five client meetings and additional follow-up paperwork, is extremely compressed. The ADM system is at least supposed to relieve them of the individual selection work. Not only advisory time but also service time can be used more intensively using the technical system. However, the time gains are limited. After all, no additional time is granted for using the system, but it does replace the campaign system.

More independent prioritization, mid-term (+)

When it comes to the possibility of organizing work tasks more freely, the comparison with the campaign-led system, which provides for topic focusing with a duration of about two months, comes into play again. In addition to the self-scheduled appointments with clients, the prioritization of topics with the aim of working through the campaign lists is

clearly predefined. Using the ADM system, this rule is broken. There is a shift from temporally focused sales campaigns to permanent sales activities to address a broader spectrum of clients. Even if only one system is replaced with a novel approach, the temporal opening of topics and products makes an essential difference in terms of prioritization. The prioritization rhythms shift from a two-month cycle to a two-week cycle (duration of an ADM event). The use of the system is much less of an interference in the daily routine of advisors (presumably because its use is not compulsory).

Overall, an advisor's task prioritization remains within the following rough framework: experience-led tasks within resubmissions, ADM-supported recommendations, and clerical work. A single working day can be planned independently as far as possible, which also means that there is a higher degree of advisors' control regarding the timing of contact with clients compared to the campaign. Whether or not ADM events are used is only decided if time resources are available, which depends on the individual work schedule. There are no further instructions on how to use the system or how to integrate it into the daily routine.

Work speed and breaks unaffected (+)

From advisors' perspectives, self-determination continues to prevail regarding work speed. According to their statements, the technical system has no influence on work speed, at least at first glance. To what extent the implicit feeling of pressure to process ADM events within the set deadline is also reflected in work speed remains open for the time being. In any case, it remains questionable to what extent work speed can be increased even further without massively intervening in the daily work processes. Furthermore, the ADM system has no influence on the setting of breaks. A fixed time window is planned for all advisors, which can be moved if necessary but is not influenced by the technical system.

Sticking to the right timing, short-term (–)

What can be treated positively in terms of job autonomy under the keywords of self-determined prioritization or individualized client advice also leaves room for time constraints in the daily work of advisors: paying attention to the right timing of the client approach in ADM events. As a reminder, the technical system not only calculates which clients are likely to show a particularly high affinity for a certain product but also couples these recommendations to a certain time window. The client will most likely purchase the product now, not in 6 months (e.g., credit card

or travel cancellation insurance in summer). An important trigger point, which also determines the system's chances of success, is time, because hardly all clients want to purchase the same product at the same time (campaign system).

For advisors, this technical peculiarity may result in a compulsion to act, which means that current events must also be processed in a timely manner. In this sense, one can certainly speak of a work intensification that is developing subliminally but is already perceived by advisors. The fact that an ADM recommendation takes into account a time component for the client may have some advantages already mentioned in terms of achieving sales goals, but it also brings with it the danger of being permanently rushed. The deadline of two weeks for completion is not a rough guideline but is linked to the event in the sales system by means of a precise expiration date and is therefore always visible to advisors. One difficulty for advisors in implementing the correct timing lies in the fact that the scheduling of client appointments can usually only be staggered and not within a two-week period. The reason for the meeting may already have passed by the time of the appointment and, in the worst case, may be irrelevant for the client, which again requires a situational reaction on the part of the advisor.

Parallelism of tasks (–)

Similar to the right timing, which has both positive and negative potentials for the job autonomy of advisors, the new variability of topics must also be viewed ambivalently. It places new flexibility demands on advisors in that there is a permanent diversity of topics, which could be interpreted as an increased parallelism of topics and products. Admittedly, this parallelism does not necessarily have an immediate negative effect on advisors. It probably also depends on the success rate of using the system. It is possible that the diversity of topics and parallelism is perceived more as an opportunity if it also produces effective business results and more as a requirement if the usefulness of the technical system is questioned. In any case, there should be sensitivity to higher flexibility requirements for advisors, who must react to new topics even more than before. The danger, in turn, lies in an increasing compression of work in terms of time, which advisors have not yet actively reported. Ultimately, in their opinion, the client sets the pace for the working day.

Dealing with unpredictability (–)

Advisors are naturally used to dealing with the partial unpredictability of their own work. Unpredictability is an elementary component of interaction work and, therefore, from an advisor's perspective, should also be linked to the emotional challenges of dealing with clients. Situational demands and reacting to client needs are part of everyday life for bank advisors. With the use of the system, the unpredictability of the content within the advisory activity is increased even more because the clients are usually unknown and experience in dealing with them cannot be relied on. Advisors explicitly report the need for situational action in connection with the ADM.

This unpredictability may subside over time, but it determines the workload, especially at the beginning of the interaction. The client's demand for a certain product can always change, and topics discussed in the consultation can take an unforeseen turn. It is often a balancing act for advisors between reacting correctly and taking ADM recommendations or legal requirements into account. In this regard, using the ADM is considered both a cause of uncertainty and a problem solver.

Working Time Autonomy

Working Time Autonomy refers to the extent to which it is possible to determine the beginning and end of working time and to influence total working time, overtime, or on-call duty. At the time of the interviews, the ADM system had no immediate influence on the self-determined working hours of bank advisors. In essence, working time is determined by advisory meetings with clients. These can also take place during off-peak hours or breaks, by arrangement. Client inquiries outside of these offers are intercepted within the bank's online services. In both cases, the use of the ADM system initially has no influence. However, the system also has the potential to incorporate more time-related components, e.g., the availability of clients or the time-related coupling of certain products, into the affinity calculation and thus also to intervene in the free working time organization of employees. This is explicitly a potential danger, not a reality.

Flexibility demands (–)

The advisors' working hours are fundamentally experience-based, for example, with regard to when exactly a client is contacted or when appointments are made. Independent of technically supported client approaches,

advisors understand that client requirements for the time availability of services have changed. The business model with broad client consultation, advisory time windows, and linking to online product offers is only appealing to a certain client profile. There are also client groups that simply cannot be reached with these offers. Standard opening times lose clients, so, for example, extended working hours in the evening and at weekends are also discussed. In this context, the ADM system should be understood as an element that has the potential to break the previous tradition of the bank. After all, one of the core functions of the system is not only to bring the right product to the right client but also to suggest it at the right time. Why should this recommendation refer to a two-week radius and not to a specific period of the day? Linking ADM events to a tighter time frame could massively interfere with the existing work rhythm of advisors and force them into atypical relationships far outside of traditional working hours.

These considerations in the case study are only theories. But they are all the more important because their consequences for advisors can be extremely serious. They are potentially faced with nothing less than increased flexibility requirements in terms of time, which could add further density to a task that is already stressful from an interactional point of view. The dissolution of working time is just as much a matter of debate as the reduced predictability of the content and time of tasks. Both consequences can potentially contribute to further strain for advisors.

Locational Autonomy

Locational Autonomy asks about the possibility of determining the place of work within or outside the regular workplace. Regarding the use of the ADM system, it is difficult to identify a connection to the workplace of bank advisors. The digitality of processes opens new freedoms regarding the place of work. However, an ADM-related influence on Locational Autonomy exists only potentially. Under the dimension of Locational Autonomy, the question of the division of physical and digital tasks may be discussed. This can refer to the possibility of working remotely as well as the ambivalent relationship to the online branch or digital client service. Ultimately, client requirements have a decisive impact on the location of advisors' work, regardless of the technology used.

Remote work optional (+)

The fundamental possibility of working remotely is practically conditioned by a new sales frontend that enables technical access to sales tasks. Telephone or online consultations, which are being offered increasingly, can be performed well in the home office or remotely, as can follow-up client appointments and detailed research on individual products and clients. Basically, it is possible to work completely remotely; even crucial client support can be handled on the go. However, many of the advisors interviewed do not take advantage of this option at all. Reasons for this are the fact that they are more accustomed to working in the branch, their experiences of higher success rates in direct discussions with clients, and their willingness to interact directly with clients.

In fact, bank advisors report that they invite clients to the physical branch in particular because, in that constellation, clients have actually taken time for the advisory session and do not just casually follow the explanations of an advisor in the home setting or on the road. In other words, the clients are more focused and open to the advisory dialogue if they actively take time for it in the branch environment. Of course, the interaction work on site is also facilitated because the client's facial expressions, gestures, and body language are much more assessable than only the words spoken.

Thus, advisors are bound to the branch office with the core of their task. At least there is the possibility of mobile working for all tasks of planning, processing, or client contact, which gives advisors some new degrees of freedom. In particular, the digitalization push towards home offices is largely due to the developments within the COVID-19 pandemic.

Another game of thought regarding advisors' places of work might be the following: It is possible that affinity recommendations are linked to a certain time, similar to Working Time Autonomy, but also to a specific location where the client is likely to purchase a product or service. It is possible that the client would prefer to be advised at home. So far, the bank has not planned for this development either. Although the recommendation of clients' channel affinity is to be expanded in the future, i.e., which communication channel is most promising for a reaction depending on the client, nothing is to change regarding the primary place of work. Nevertheless, there is a need for sensitivity regarding a balanced relationship between flexibility demands and possibilities.

Decisive client demand (–)

What has already been indicated under the location-related degrees of freedom regarding remote work, namely the decisive factor of client demand, is contrasted with the flexibility options of advisors due to the bank's business model. The bank's specific clientele expects a physical location for advice and thus inevitably ties advisors to the branch, whether they want to make use of digital advisory methods or not. Ultimately, this coincides with the experience of advisors, who see a higher chance of success in their work in a face-to-face conversation. Nevertheless, the clients' desire for personal advisory services limits even the small amount of freedom that advisors can create for themselves in terms of work location. With changing clientele, which is already a result of demographic change, major changes are to be expected, which may work in favor of Locational Autonomy. So far, the flexibility opportunities of advisors can hardly be matched with client needs.

Competition with online branch (–)

From the bank's business perspective, it is irrelevant which channel is used to sell a product or service to the client: the online branch or the physical branch, i.e., the bank advisor. The revenue is the same. The advisors themselves, of course, have a different relationship to the place where a client buys a product because, for them, only the transaction in the physical branch pays into their own performance targets. The offer of the online branch thus acts as competition to direct client advice. Advisors prefer to transfer clients to the online business before they lose them completely to another bank. However, it is preferable for clients to remain in the advisors' own client base.

If the online presence of the bank is declared as a place, it is possible to identify lines of conflict between the interests of the bank and the advisors, which also affects the job autonomy of the latter. The bank has a fundamental interest in diversifying within the framework of online branches and physical branches. In practice, this means nothing other than moving more tasks and products to the online business, where processes are automated and more tasks can be assigned to the client. The ADM support can also be understood as part of this automation process as it potentially contributes to clients moving from the advisors' client base to the online branch, for example, if their time requirements simply cannot be met by advisors.

Ultimately, advisors have the great advantage that the success rates for face-to-face transactions are high, and the physical advisory business is

still very important. There is no sign of a deviation from this corporate credo or a move towards a purely digital bank. The competition with the online branch is therefore only occasional, but it may expand in the future with ADM support. So far, the system does not influence the distribution of tasks between the online branch and bank advisors, and the latter usually retain the authority to interpret the location of a client's service.

Interactional Autonomy

Interactional Autonomy asks about the dependence of one's work on other people, be they colleagues, supervisors, or clients, and how it is influenced by them. When asked to what extent cooperation and interaction with clients and colleagues are affected by the technical system, most bank advisors stated that there is no influence on interaction work. With reference to Method Autonomy, the exact procedure and the way of dealing with the client remain largely unaffected by the technical system. The client meeting can still be structured individually. It is the advisor-client relationship that is decisive, not the technical construct of the ADM tool. The conclusion is that the self-determination of advisors regarding interaction work remains intact.

Nevertheless, some tendencies regarding changed Interactional Autonomy are identified in the following, which advisors have not yet recognized for themselves, such as the possibility of more individualized advisory work or changed teamwork. Finally, a major change in the introduction of the ADM system is the increased interaction with new clients, which brings specific challenges. Finally, another question arises, even if it cannot be answered conclusively: What does using the ADM support actually do to the client? Further restrictions can occur if technical barriers (Chap. 14.6) arise.

More individualized advisory services (+)

Since one objective of using the ADM system is to better respond to clients' needs, partly to anticipate them and to open advisors' views towards new client-product matchings, one can speak of a more individualized advisory possibility. More promising counseling in terms of content may lead to a pleasant, less demanding advisory meeting, which results in a positive effect on advisors' Interactional Autonomy. Bank advisors are more detached from the rigid specifications of the campaign system and receive recommendations for more individualized advisory services due to the time-bound nature of the ADM support. The potential to address clients with the right product at the right time, sometimes with a product "that they

themselves do not yet know they need," is noted particularly positively by them. Overall, according to the first experiences of advisors, the counseling services with the ADM supplement are closer to the needs of the clients.

The emphasis must again be on supplementation. As a reminder, advisors describe that relying exclusively on the ADM events would lead to a great deal of standardization, including in the client dialogue. However, there must always be the possibility to actively react to clients' questions and not sell them a useless product. Individualized advisory work is therefore only possible through a combination of experience-led action and the new suggestions of the ADM system, whose greatest strength, as already mentioned, lies in its role as a source of ideas. In addition, the time freed up by the elimination of time-consuming individual selections by the advisor may also benefit the time spent on client meetings. The final evaluation of this development must remain open for the time being. On the one hand, the individualized advisory time should, of course, be maximized as much as possible because it generates relevant business results. On the other hand, the proportion of working time that advisors spend with clients is already so high that the limits of their workload have been reached for some. It is difficult to imagine accommodating even more advisory work into this scenario. If one excludes the intensity of interaction work and considers the pure time spent with service recipients, bank advisors perform even more interaction work than the caregivers from Case I, for example.

Facilitated teamwork (+)

Simplified collaboration between colleagues, between advisors and their service partners, has only been hinted at and is not so much due to the use of the ADM tool as to the new sales frontend, which facilitates the distribution of tasks. Service staff can view the sales tasks of their advisors and provide support as needed, or they are guided by advisors to contact specific clients. The ADM plays a role in that the client recommendations are often subject to a clear division of labor. Service staff contact recommended clients, and advisors conduct the meeting.

Communication about the progress of work takes place in person and via the representative system. Less effort for both sides and thus easier cooperation result from the elimination of extensive selection work, which is now taken over by the ADM system. In this way, additional efforts in the acquisition of new clients can also be partially compensated for. The joint processing of lists in the campaign management system, which is often a burden, is no longer necessary and allows for an intensified use of service times.

It is not only between advisors and service staff that the replacement of the campaign system is perceived as facilitating. Between advisors and superiors, i.e., usually branch management, fewer lines of conflict have emerged so far (which is of course also due to the fact that the use of ADM is not yet compulsory). For example, the status of processing campaign lists no longer must be reported to the supervisor. This control element is therefore omitted. However, superiors like to use the ADM approaches to give advisors recommendations for achieving their sales goals. Again, only the non-coercive use of the ADM tool implies the easing of the instructional relationship between sales management, branch supervisors, and bank advisors.

Emotional demand with new clients (–)

The setting of emotional demands in the client conversation, especially with new clients, is initially technology-independent because they are rooted in the challenges of interaction work. In this case, however, the ADM support triggers more conversations and interactions with new and unfamiliar clients, which many advisors describe as particularly challenging and for which they use more preparation time. To clarify the exact part of interaction work: It is less about actively processing, using, and influencing the clients' feelings. This belongs to the more routine activities of a bank advisor. Rather, this point is intended to illustrate the handling of bank advisors' own emotions (emotional labor) and unforeseen situations. The emotional challenges are therefore also to be considered in close connection with dealing with the unpredictability of the work under the point of Scheduling Autonomy. As already described, there are higher workloads with new clients. Even the first contact can be very time-consuming, not to mention the preparation for the meeting.

Working without ADM recommendations is more feasible since predictability is relatively high and the preparation effort is usually moderate. These two points are combined in the first meeting with new clients because the elements of the unknown are much more extensive from the advisor's perspective. Of course, experienced advisors can react to the respective needs of the client and steer the conversation in the desired direction, but especially in ADM-initiated situations, it is often a gratuitous walk between fulfilling the corporate expectations of the bank and the actual needs of the client. This conflict is constantly on the shoulders of advisors.

The objective of an advisor when talking to new and unknown clients is to build up a long-term relationship that is as intensive as possible and to lay the foundations for this in their first approach. However, the process of building trust often takes years. Advisors therefore also place the highest

demands on themselves in these situations. Some describe their preparatory work with new clients as working meticulously to minimize elements of uncertainty. It is of course impossible to predict what the client will really be like, which is why the elementary challenge of interaction work often arises via ADM events. In addition, there is the danger that the affinity calculations of the technical system may not be correct, and, in the worst case, clients may be alienated by the wrong approach.

These descriptions are not meant to suggest that advisors shy away from situations with new clients altogether. They do not. However, the interactions are made more challenging by the factors of unpredictability and unplannability, which is why advisors should strike a balance between experience-based work and these elements of unplannability, if only for their own protection. Again, this implicitly speaks against the compulsory use of the ADM system.

14.6. Technical barriers, misuse, and areas of improvement

In general, technical malfunctions and obstacles do not paralyze the work of bank advisors. Even without automated client selection, they can perform their usual work tasks. The ability of advisors to deal with malfunctions is therefore considered to be high. The technical functionality of the system is meanwhile regarded as quite positive, i.e., considerably increased compared to the beginning of the test phase. However, the accuracy of the client recommendations still has potential for improvement. Because of previous inaccurate results, the general acceptance of the system is open to debate. These sources of error and uncertainty have a partial negative impact on the job autonomy of advisors (Table 12).

Table 12: Impact of technical barriers on employees, Case II

	Task Autonomy	Method Autonomy	Criteria Autonomy	Scheduling Autonomy	Interactional Autonomy
Technical barriers (employees)					
Inaccurate results – Wrong client – Duplication with resubmission – Right client, wrong content	Higher work quantity	Missing options for action	Target achievement impeded	Additional time and unpredictability	Client alienation
Risk of non-acceptance	Higher work quantity	Option for action rejected		Additional time and unpredictability	

Inaccurate results

One difficulty that appeared, especially at the beginning of using the ADM system, is the fact that advisors perceived that the wrong results were being proposed, i.e., both the *wrong clients* and in matching with the wrong products. This applies, for example, to clients who have no real financial means at their disposal to take advantage of, such as recipients of social security benefits. For advisors, these clients are usually quickly identifiable. However, clients were also suggested who, at first glance, were not candidates for a particular product. As a rule, advisors can only judge based on experience whether a client is a suitable candidate for a given product or service. The difficulty lies in remaining open to suggestions that are less promising but that turn out to be new opportunities worth closer consideration. The fact that the technical system delivered incorrect results could be overcome relatively quickly via selected exclusion criteria by sales control. So-called KO criteria, such as the basic liquidity required by the client, are decisive. Likewise, it is important to select the right time for the affinity calculation.

Another source of error is the recommendation of products and services that have already been purchased by active clients. This also includes, for example, recommendations for clients that were already included in bank advisors' *resubmission system* or products that the client already owns. This source of error can be minimized easily by means of exclusion criteria. The advisors' knowledge and experience of their client base are required, which can identify and rectify these problems quickly. If this experience-based recognition of already known client-product matches fails to work, there is still a risk of duplicates and, in some cases, of alienating clients with false approaches.

A continuing problem is that the right clients may be recognized by the ADM system, but the *wrong product with the wrong or outdated content* may be recommended. Similar to the duplication of already-known clients, there is a risk of alienating recipients with the wrong content. Once again, the advisor must make decisions based on experience and, if necessary, resort to a recalculation if there are doubts about the recommendation. From the advisor's perspective, it is still possible to approach the client about other content despite the incorrect recommendation and thus still reach a conclusion. In any case, there are elements of uncertainty and strain on advisors' ability to interact.

The three above-mentioned malfunctions add up to the concept of inaccurate ADM results, which result in extra work (Task Autonomy) as well as additional time and uncertainty (Scheduling Autonomy) for further use by advisors. If the results are recognized as incorrect, the ADM

event is no longer available as an option for action (Method Autonomy), which disrupts the achievement of sales targets (Criteria Autonomy). An immediate danger is that the delicate relationship between the advisor and the client is shaken (Interactional Autonomy).

Risk of non-acceptance

The fact that there is a risk that advisors do not accept the ADM system and therefore refuse to use it is not a classic malfunction but rather a consequence of this in combination with the black box character of the application. Above all, the fact that there were many mistakes at the beginning of the implementation and that word quickly got around about the poor quality of the results lies like a shadow over all efforts to gain acceptance for the system. One could draw a comparison to the term "technological myopia" (Susskind & Susskind, 2015, p. 44), which describes the underestimation of the perspective capacities of a technology due to current shortcomings.

According to sales control, the challenge of creating acceptance among advisors is so important because at least the quality of the results of the campaign system was high. However, this statement contradicts some of the advisors. In addition, it is possible that the advisors reject the system because they want to retain as much authority as possible over the interpretation of their work in relation to the technical system. In this context, the management and sales control teams also recognized that there was a lack of communication about the goals, capabilities, and problems of the ADM system. Objectives for using the technology were not clearly stated, and advisors were not asked for their feedback right at the beginning (or preferably before implementation). However, this is also due to the bank's integration into the umbrella organization.

The extent to which the non-transparency of ADM events poses a problem for advisors and leads to non-acceptance is also a matter for discussion. As already described, the ADM events provide only brief reasons, or no reasons at all, for the selection of a particular client. To a certain extent, therefore, advisors' trust in the technology is required if the system results are not to be fundamentally called into question. This trust in the technology, or as one management representative put it, "the advisors' faith" in the system, is only achieved if the results of the ADM system are as accurate as possible.

The non-acceptance of the system and its black box character can manifest itself in additional efforts for advisors due to missing information (Task Autonomy) as well as additional time required for processing

(Scheduling Autonomy). The element of uncertainty in the use of the system may have a particular impact and lead to an active rejection of the option for action (Method Autonomy). Technology acceptance in this case study appears to depend on a combination of functional quality, communication, and transparency.

Finally, these obstacles, errors, and suggestions for improvement have occurred with decreasing frequency since the start of the test phase. The learning capabilities of the system based on the bank's own data should further minimize the occurrence of inaccuracies and improve the quality of results. Collaborative work on error reduction continues within the test group, with other pilot banks, and with the umbrella service providers.

14.7. Impact and conditions of changed job autonomy

Traditional universal banks like the case study company, which try to reach clients with a high physical presence and proximity, are largely dependent on the skills of their bank advisors. Their business model is based on the ability of bank advisors to interact with clients and the level of trust between them. This raises the question of where technology can be usefully deployed to support advisory work and to allocate scarce resources optimally. It is an increasingly delicate and conflict-laden situation in which bank advisors have to operate to satisfy the bank's corporate interests, the client's needs, and ultimately the expectations and hopes for their own work.

Interestingly, in a similar case study by Nies (2015, p. 167) on the tension between content and corporate requirements for bank advisors, the respondents describe their expectations of their own work in *exactly* the same terms: They must still be able to look themselves in the mirror. Accordingly, the conflict between the demands of work content, i.e., responsibility towards clients, and sales-oriented performance management forms an irresolvable contradiction (Nies, 2015, p. 241). This contradiction is also reflected in the present case study, whereby the ADM system contributes to both the quality of client advice and management control.

The influence of using the ADM system on job autonomy must be considered within this scenario. In principle, its potential is promising, as it allows advisors to address unattended/passive clients. At the same time, the system loses weight in everyday work or does not appear at all if the advisors' wealth of experience is large and sales targets are achieved anyway. The more interesting and more ambivalent consequences of sys-

tem use occur when the sales targets (from the management's point of view) are insufficiently addressed or there are temporary capacities in the advisors' calendars.

The analysis of the ADM system along the seven job autonomy dimensions has isolated specific changes and effects in the work of advisors. These are summarized along three distinct lines: the qualitative and quantitative improvement of advisory services, substantial relief tendencies, but also considerably more contradictions in the daily work routine.

The influence of the ADM system on the quality and quantity of advisory services is attributable to several components. First, the targeted approach to affine clients increases the quantity of the active client base, and they are also addressed with a broader range of products. The expansion of advisory services to include unattended and new product clients is closely related to the greater variability of tasks for advisors. But it goes beyond increasing the sheer volume of products and services; using the system also enables more specific responses to client needs. After all, the system attempts to do just that: identify clients with particularly high affinities for a product. In a qualitative sense, this represents a more individualized advisory service that attempts to implement the concept of holistic client approach and support. A possible side effect is that the ADM approach frees advisors from conflicting or non-target client interactions because these are simply not suggested. Important for implementing the improvement of qualitative and quantitative advisory performance is that the system does not influence the conduct of the actual advisory meeting with the client or the self-determined prioritization of the client interaction. The support of the advisory services with the client ultimately contributes to the achievement of sales objectives.

Supporting or even relieving elements in the handling of the ADM system result predominantly from the elimination of the campaign system and less workload in the individual selection of clients. Advisors report favorably not only on freed-up time but also on the possibility of organizing their day-to-day work more independently without having to work through campaign lists. Their daily work routine is less tense. The ADM system's ability to organize and prioritize tasks, combined with the variability of tasks and the broadening of options for action in everyday work, have a particularly supportive effect on advisors. In essence, it is the perception of fewer time constraints and more decision-making scope at the work process level that has a particularly beneficial effect on advisors. Again, if the recommendation is of a suitable quality, it is also possible to speak of a reduction in the workload by supporting the achievement of sales targets.

The perception of several positive effects associated with the ADM system is partly clouded by the fact that, under certain circumstances, a number of new contradictions arise at work. Although the elimination of the campaign system provides new prioritization options in the medium term, the pressure to adhere to the deadlines for ADM events could cancel out these opportunities in the short term. The new variability of tasks is accompanied by a higher degree of parallelism, which may have an intensifying effect on the work of advisors. The implicit obligation to use the system also stands in the way of the new options for action that have emerged for bank advisors. Furthermore, the reduced workload resulting from the elimination of individual selections is canceled if higher emotional demands, workloads, and a lack of information arise with new clients.

Elements of unpredictability are always present in the application of the system, as new possibilities are accompanied by new uncertainties. Therefore, when applying the ADM recommendations, there is the question of the situations in which using the system might have a densifying and contradictory effect on advisors. This problem is particularly evident when it comes to supporting sales target achievement. Advisors overwhelmingly report that it helps them to achieve their work goals, while at the same time, with an infinite to-do list, they are faced with a plethora of ADM-initiated tasks that are almost impossible to complete.

The conditions for positive effects of using the system to unfold are both technical and organizational, with the technical aspects mainly being listed under the technical hurdles in the previous chapter: In particular, the objective needs to remain improving the quality of the system's results. The support potential for the successful achievement of sales goals, the creation of positive client experiences, and ultimately the acceptance and positive impact on the job autonomy of advisors depends centrally on the quality of the ADM results. Prospectively, the quantity of the outcomes in terms of the breadth of the product range must also be expanded. It is essential to maximize the quality of the data, including its completeness, to eliminate the errors mentioned above, and to check the time frames of the data used. All these points have already been worked on by sales control. One difficulty, however, is that the quality of the ADM system's results is impossible to assess conclusively, since even an exceptionally good client recommendation still depends on the advisor's ability to successfully implement these suggestions in the client interaction.

Another technical condition is to increase the transparency of the system. This is quite possible through the further development of the ADM system with in-house client data and by building up the expe-

rience of sales control and advisors. This increase in the transparency of the reasoning behind an ADM event has the potential to eliminate a major autonomy-restricting element in using the system. However, the case study bank is still in a dependent relationship with the umbrella organization and the service providers.

From an organizational perspective, the preservation of as large a proportion of self-determined interaction work as possible is essential for the creation of positive moments of job autonomy. This is not to question the fact that maintaining interaction work is also in the interest of the bank, as it is a decisive element for operational success. Rather, it is a question of using experiential knowledge in dealing with clients. For some advisors, the shift away from experience-based work, for example, within the framework of their own resubmission system, is already foreseeable resulting from using the ADM system. For them, the question arises as to the proportionality of experience-based work and ADM recommendations in the long term.

Ultimately, the preservation of experience-based interaction work will be determined by comparing the success rates between advisors' own resubmission system and ADM recommendations. At the moment, the experience of advisors with the client base is still indispensable. But especially in view of the demographic impact on employment potential, the role of bank advisors may also change in the future. Some within the company have gone as far as to predict that these very employees with a wealth of experience will become extinct. This may present opportunities for younger and new colleagues, but ultimately, the potential loss of experience-based interaction work also erodes moments of meaning and motivation in advisory work.

The final organizational component describes the question of the control capabilities of the ADM system, or rather, how they are used by the company. As has already been emphasized several times, there is currently no obligation to process the abundance of ADM events. What happens, however, when choice becomes imperative? Using the ADM tool is accompanied by the creation of comparability between bank advisors and the reproducibility of results beyond an individual bank. The control potential inherent in the system is obvious. Whether it is also perceived as a control instrument by bank advisors ultimately depends on the consequences that arise if the system is not used and the sales targets are not achieved. The understanding of the system objectives differs to some degree between management and advisors. Advisors tend to perceive the enabling moments while using the system.

For company representatives, the potential for control is evident, while advisors are ambivalent about it. Ultimately, only the advisor who

does not fulfill his targets has a problem. This slightly exaggerated formulation is meant to illustrate how much the system can support a comparison of productivity and heat up a work system that is already permeated by competition. In concrete terms, of course, the question of the system as a means of exerting pressure to increase performance arises. Especially in the case of advisors who do not meet their performance targets and do not work with the technical system, the ADM is negotiated as leverage. A deadline for every ADM event tends to change this perception for the worse.

The critical path is clearly the negotiation of the system's recommendations as a constraint or an opportunity to act. So far, there is more of a feeling of a relieving effect. The advisors themselves, however, are at least questioning the remaining use of the system as an option for action. Some advisors actually expect that, at least in part, the system recommendations will be interpreted as a work obligation. They look forward to this development with concern.

15. Experts' views: pending issues and power imbalance

In supplementary interviews, experts from the areas of

- regulation, strategical foresight, public administration,
- occupational health and safety, standardization,
- technology development, research funding, care technologies,
- labor law, workers' participation

were requested to critically assess the case study results within the scope of their expertise. This step not only serves to validate the previous findings but also to identify the need for action and critical development stages of ADM in the future, which go beyond the boundaries of this sociological research approach. At the core of these issues is the subject of labor law and regulation. The statements refer mainly to learning ADM.

With all experts, a consensus emerged regarding the fundamental perspective on ADM and its integration into work processes: The use of ADM in its current form is considered a threat to (service) workers. ADM is rated as a key inequality amplifier at the corporate and economic level, whether these systems are used in the company merely as one digital work tool among many others or whether its controlling properties take over the pacing of work processes altogether. Well-known technology-related substitution and polarization theories are brought into play, according to which the upper pole, a small group of highly qualified employees, benefits from the complementary and upgrading consequences of ADM use; the middle pole faces increasing substitution pressure; and the lower pole of highly precarious workers only exists because their labor is cheaper than the technical implementation. The extent to which these theses apply to a specific branch or company depends on the specific rationalization logic and optimization interests of companies.

At the core of the experts' demands is that digitalization and the use of ADM systems must not be a perpetuation of the status quo, in which existing labor law is undermined, workers are simply confronted with new technologies in an overwhelming fashion, and co-determination is only a right of workers on paper. People need to be empowered to influence the way they work, regardless of skill level, profession, (and, of course, other socio-economic factors).

Job autonomy is considered a central lever to implement this empowerment. While technically possible, it is ultimately subject to power and distribution struggles between employees and employers. What is

currently being observed, however, is a redistribution of scope and power of action towards the employer.

The experts point to various approaches to countering these developments. They refer to existing rights of co-determination and occupational health and safety, i.e., opportunities to influence the structure of work that are all too rarely used and enforced. Especially regarding the introduction of new technologies, employee representatives have the right to co-determination at the workplace. In practice, however, it is known that in the service sector in particular, co-determination is virtually non-existent in some areas, and employers even actively oppose the involvement of trade unions and the establishment of work councils.

However, the mere existence of a work council is of little help to employees if the council does not make use of its co-determination rights. Ultimately, it is also a question of resources. Works councils must become capable and empowered to have a say. At this point, the legislator in particular is called upon to provide work councils with new means and knowledge so that they are able to actually help shape the use of technology. For example, a one-year pilot phase for the implementation of major new technologies is recommended, followed by a joint evaluation of the impact and effects of technology use on employees.

The results of the case studies have rudimentary shown that participation-oriented technology implementation can succeed – or that rejection may occur if such implementation fails. In the service sector in particular, participation needs to be thought of in broader terms. Not only must the participation of employees in technical and related organizational changes become standard. Service recipients also need to be involved in the introduction of critical technology. One example of this is care work, where it seems very understandable to involve people in need of care in the deployment and selection of technology. Finally, the interactional part of service work also requires the cooperation of service recipients. Yet, the existing interaction demands between service providers and service recipients hardly play a role in technology implementation.

It is not only co-determination and participation formats in the implementation of technology that can be an effective lever for shaping work processes. From the perspective of occupational health and safety, the risk assessment provides a clear means of evaluating the potential hazards of the ADM system for employees. This is fundamentally obligatory for every company, especially when technology is used, but only about half of the companies comply with this obligation.

The scope of the risk assessment is linked to the size and structure of the company, for example, but that does not change the fact that it

is mandatory. Experts suspect that the actual enforcement of this occupational health and safety mechanism by the legislator will make a serious difference to employment conditions. This obligation must be emphasized all the more because risk assessment not only considers the physical hazards for employees but also the risks of psychological strain.

Beyond this existing legislation, the AI Act is a legislative attempt to establish a regulatory approach for ADMs at the European level that follows a risk-based approach. This means that such systems are to be classified into different risk classes, which are accompanied by corresponding compliance and information obligations. For employees, the hope is to bring transparency to the functioning of ADM systems in the workplace and, in particular, to curb massive monitoring functions. From the perspective of the experts, there is an understanding that the legislator has long stayed out of many aspects of technology regulation in favor of collective bargaining. However, because this system is increasingly working to the disadvantage of employees, attempts are underway to counteract this development by setting standards and norms within the framework of the AI Act. The focus is on increasing the transparency of ADM systems. Suppliers must be able to provide information about what a system does and what states it assumes.

In practice, however, there is an awareness that massive lobbying has eroded the sharpness and core of the intended AI Act. The irony again lies in the definition of AI: Whereas in the past, even the simplest data analysis was sold as AI for marketing purposes, now the incentive for companies is to sell their systems as anything but algorithm-based. Because the definition of the AI Act is basically broad, everything that is subject to an algorithm is counted as AI. The incentive situation from the supplier's and company's point of view is therefore clear, namely the possible non-classification of their own product as algorithm-based or intelligent. In addition, only high-risk products are potentially subject to separate testing; below that, only the self-declaration obligation applies.

Following the AI Act, a further regulatory approach is being developed in Germany with employee data protection, as there is currently no corresponding law at all. The GDPR is used for data protection at the company level. In the operational context, however, it has been confirmed several times that the GDPR requirements are not sufficient to protect employees. For example, data that is collected in violation of data protection (e.g., video recordings) may still be used by the employer in court (requirement to use evidence). Data protection is considered to be undermined in many places, and the current labor law and the Works Constitution Act are simply outdated for such cases.

In particular, an employee data protection act must be able to isolate ADM systems that exploit employee data. It is intended as a reaction to the massive increase in behavioral monitoring systems in the workplace. The problem is, how should these systems be defined? Ultimately, all digital systems have the potential to record employee data, and legislators have little influence on how they are exploited in the workplace.

Even if reference is made to the depersonalization of employee data, this does not change the holistic transparency of employee behavior, which ultimately results in a shift in power. In addition, the question of employee data protection also arises in a cross-company context. Monopolization by some large technology providers is already highly visible today. Do these external suppliers also have access to employee data and use it to develop their systems? The possible consequences of this development cannot yet be fully assessed, but the fact is that employee data can potentially be exploited not only by the employer but also by an external capitalist actor that has no relationship of responsibility to the employees.

Overall, the experts' comments paint a picture of a power imbalance between employees and employers in the implementation and application of ADM systems. This imbalance is becoming more pronounced as the use of ADM, which is critical to employment conditions, increases while existing laws and regulatory approaches are not applied and upcoming ones are eroded. Is the overall power of the employer side too strong in the end? Perhaps for now, but fighting for the ability to shape work at least helps workers keep pace.

16. Limitations

The aim of the two case studies was to establish an empirical link between job autonomy and the use of ADM systems by service workers. In addition, the organizational conditions under which job autonomy is positively utilized were documented. Most of the case studies were implemented as planned, and the results generally meet expectations in terms of scope and depth. However, there are some methodical and content-related limitations that need to be mentioned to contextualize the case study results. While the assessment of the case study contents follows in the conclusion (Chap. 17), a selection of particularly striking limits on the methodical side must be mentioned along with the research design: The selection of the qualitative design (case study) and the data collection methods (semi-structured, problem-centered interviews) are the most promising methods and have been sufficiently justified. The holistic approach of case studies as well as the degrees of freedom in the content of semi-structured interviews proved to be successful.

A possible point of criticism arises before the actual implementation and evaluation of the case studies and interviews, namely regarding the selection of branches and companies. As already described, several service branches could have been considered for the analysis. It became apparent that both case study branches have a particularly substantial number of contradictory requirements in the everyday working lives of employees, which is the main reason for the selection. Ultimately, other service branches would certainly have also opened up exciting opportunities for analysis.

The situation is more critical when it comes to selecting specific companies (and interviewees): Since the selection process is non-random, there is always an unavoidable selection bias. For example, it is likely that the company examples are particularly technology-affine representatives of the branches. However, non-random selection procedures are almost impossible to implement in qualitative research, and it is important to note that randomness cannot be equated with representativeness because even randomness has its own statistical variability. The only way to actively counter selection bias is to put the specifics of the sample company into the context of the respective branch, to uncover unique features, and to emphasize commonalities. Of course, the goal must be to achieve the greatest possible objectivity in the evaluation.

Objectivity also proved to be a challenge in conducting the interviews. In a perfect lab-like research setting, randomly selected people in a randomly selected company would be interviewed with the same objec-

tivity each time. Cynically speaking, it is unfortunate that the interviewer and author of this thesis is a human being. However, it is advantageous to make use of this subjectivity in the interview situation, which requires not only flexibility but also empathy for the interviewee.

In this context, the open design of the interviews with free response options proved to be advantageous. The interviewees were given the opportunity to reveal their very subjective perspectives and interpretations. They could develop their own connections and larger cognitive structures in the interview. Implicitly, this also makes it possible to test whether the respondents really understand the research question.

Particularly in the case of the employee interviews, the openness of the interviewees is noteworthy, as they reported willingly and, for the most part, very reflectively on their everyday working lives. One difficulty, however, was to repeatedly direct the conversation to the concrete aspects of technology use. This points to the quite subordinate role that the respective system plays regarding the core of service workers' work. It also became clear that some experience in care work and banking services, as well as reflective ability on the part of the interviewees, was necessary to do justice to the complexity of the research topic.

Content limitations ultimately ask to what extent the two case studies can contribute to answering the research question and to what extent there is transfer potential to other branches. The difficulties in conducting and analyzing company cases lie in their immanent exemplary nature, from which conclusions and implications at the branch or sector level can only be drawn with great caution, as will be shown below.

17. Summary: increasing job autonomy, interaction work at risk?

The objective of the two case studies on outpatient care and banking services involved analyzing the impact of ADM systems on the job autonomy of service workers as well as describing the conditions for creating positive job autonomy experiences with ADM examples that are in actual use. The following comparison of the two case studies focuses less on the structural differences between the branches and the content-related diversities regarding the specific services provided by the companies. The intention behind the focus on outpatient care and banking services was to compare two (alleged) opposites anyway.

However, they are united in two key aspects: (1) the high proportion and importance of interaction work that care workers and bank advisors perform. From the employees' perspective, interaction work with clients is at the core of the motivational and meaningful elements of their work. Beyond both case studies, the predominantly positive assessment of the respective technology resonates with the mostly marginal intervention of the ADM system in the work with clients. (2) In both cases, using the ADM systems has a predominantly positive effect on the job autonomy of care workers and bank advisors. Positive influences can be clearly identified and isolated on almost all job autonomy dimensions. Service employees retain the power of judgment and decision-making in areas of work that are important to them. Once again, the organizational utilization of these increased degrees of job autonomy is crucial for the interpretation of these results.

Based on selected technological or organizational aspects, a systematic comparison of the two cases is attempted in the following, which is intended to enable cross-industry conclusions to be drawn in Part IV. This comparison is conducted along the following characteristics:

- objectives of technology deployment from the employee and corporate perspective,
- functional context and application scope of the ADM system,
- impact on seven dimensions of job autonomy,
- effects and conditions of autonomy-enhancing technology use,
- interplay of technology use and interaction work.

Objectives of technology deployment from the employee and corporate perspective

Regarding the expressed or implicit goals of technology use, the first serious difference between the two case studies emerges: In the outpatient care company, the core objectives were formulated as standardization, process reliability, and quality, as well as independence of location. Employees and the manager shared this view and were able to formulate it unanimously in the interviews. It is important to emphasize that care workers also work towards efficient processes because the search for information, coordination, and planning uncertainties can take up an enormous amount of time. The creation of transparent, efficient processes is a common goal of management and care workers, because it must be assumed that despite high formal demands on care work, there are still great process inefficiencies due to certain unplannabilities.

In contrast, in the example of banking services, the management did not communicate centrally what the objectives of the ADM system were. This means that the perspectives of management and employees on the ADM system diverge. What they have in common is the understanding that the technology should support them in achieving their individual sales targets, increase the quantitative and qualitative comprehensiveness of the client approach, and, in particular, address passive and unattended clients. Consultation time must be used as effectively as possible.

However, management and bank advisors interpret the function of the ADM system differently: On the management side, the elements of performance control are implicitly emphasized, as it is stated several times that it does not matter by what means and in what way the sales targets are achieved by the bank advisors – a clearer formulation to marketization hardly exists.

Bank advisors, by contrast, see a support tool in front of them. They are more interested in advising and selling, i.e., in providing clients with a tailored overall offering. They are well aware of their high degree of freedom and make use of it. However, when it comes to making changes to their own work processes, as in the case of the ADM system, the first question is always to what extent this intervention can be used to achieve sales targets. The formulation of the target corridor was also made more difficult in the company by the fact that the introduction of the system was not initiated by the bank itself but by the umbrella organization.

With reference to the corporate strategy behind the utilization of the respective ADM system (Chap. 5.4), in the case of outpatient care, there are indications of process rationalization and optimization. In the case of

banking services, the control elements of the ADM system suggest labor power rationalization. While the former is associated with unclear effects on job autonomy in theoretical terms, the latter, keeping in mind that financial services are generally considered highly autonomous services, points to further increases in job autonomy.

Functional context and application scope of the ADM system

A review of the respective range of functions and areas of application covered by the ADM systems puts the scope of the different corporate strategies behind using technology into perspective. The technical system complex deployed in outpatient care is considerably more extensive, i.e., it covers more sections of the work processes of care workers than the counterexample in banking services: It initially takes over the digitalization of processes and provides support with learning ADM features at two core points (tour planning and care documentation). The ADM system thus intervenes in almost all administrative and planning activities of the care worker and the care manager and partly automates or at least complements them.

In contrast, at the time of the study, the ADM system in banking services intervenes in the work processes only selectively, and sometimes not at all, provided that the bank advisors' own experience-based system of client resubmission is fully utilized. The system has a completely automated effect only in the context of client selection for product recommendations and otherwise takes on the role of a complementary or even informative instrument. Thus, the client approach management system plays a smaller role in the day-to-day work of bank advisors than the holistic software solution for care workers. In this context, more elements of the ADM system, ranging from complementation to substitution, become apparent in the latter case, while the former plays a more informative and complementary role overall.

However, if the focus is placed solely on the specific learning elements of the respective systems, comparability is restored because both ADM systems introduce learning components into work processes only at certain points. What makes a serious difference between the systems is the factor of transparency. Care workers did not complain about the lack of information due to the system's intransparency. In fact, the system showed its strengths in the preparation, presentation, and consolidation of information. This is also due to the underlying data, for example, in ML-based tour planning, which can be influenced to a large extent by the care manager and care worker. In any case, there is mostly transparency about which data enters the system (e.g., employee or client data).

Intransparency of system outputs, by contrast, is a problem in banking services. There is a lack of reasoning behind the calculation of ADM events, which means that important information is missing when carrying out advisory work. Bank advisors explicitly report the need for situational action that compensates for this information gap. However, balancing mechanisms of necessary compensatory subjectification are not only required for workers in the case of missing information and system intransparency. If technical malfunctions or obstacles, even operating errors, occur (Chap. 13.6 and 14.6), the compensatory skills of care workers and bank advisors are called for.

Impact on seven dimensions of job autonomy

In terms of the influence ADM systems have on the job autonomy of care workers and bank advisors, several positive effects have been identified, although in the case of banking services there are also more contradictions: Task and Method Autonomy both emerge stronger from using the ADM systems, but for different reasons: In care, it is information centralization and standardization, with the parallel possibility of deviating from system specifications as needed. It is a prime example of how formalization and standardization of work do not necessarily have to restrict job autonomy. In banking services, the already high job autonomy is further strengthened by new options for action and higher task variability, although these options for action are also accompanied by new uncertainties regarding the lack of transparency and information in ADM recommendations.

In both case studies, Criteria Autonomy must be assessed as an ambivalent job autonomy dimension: It is evident in both cases that work results are improved and their achievement is supported. However, new control options are inherent in the systems. The quantifiability and transparency of work processes and results are selectively increased. In outpatient care, however, it appears that direct control is the primary feature, since the care workers have a work plan that is precisely described in terms of both content and time. In banking services, the signs point to a continuation of indirect control mechanisms that further specify the target expectations but leave the path to implementation open to bank advisors.

Scheduling Autonomy emerges strengthened in both cases or remains unaffected. The ability to plan one's own tasks is mostly preserved in detail, and in some situations, there is even evidence of time gains. While it remains questionable to what extent a further intensification of already very time-pressured tasks such as care work or advisory services could

succeed at all, there appears to be a tendency in banking services toward a further intensification, which is particularly justified by the time limit of the ADM recommendations.

The influence of technology on Working Time and Locational Autonomy in care work is proving to be an extremely positive development, which, although not attributable to the learning ADM properties of the system, has no less a positive effect on care workers. The remote capabilities of the technical system open up real-time gains and work facilitation in the sense of location-independent access to information. Above all, places and times are made available that were not accessible before the system was used. In this case, however, this is not perceived as intensifying or delimiting work but rather as facilitating. In banking services, no significant effects of the system's use on Working Time or Locational Autonomy could be identified.

As already mentioned at the beginning of this chapter, the impact of ADM systems on Interactional Autonomy is limited since the interaction work with clients is interfered with indirectly, if at all. As far as collaboration with colleagues is concerned, facilitation through standardization of information and communication flows is evident in both cases. In outpatient care, cooperation with clients is facilitated for the care workers as a result of decoupling certain administrative tasks from a specific location. Bank advisors benefit from using the system by being able to offer individualized products and services.

What becomes clear in the comparison of the two cases is that in the example of banking services, as already described under the goals of technology deployment, a clear orientation toward meeting individual sales targets goes hand in hand with the ADM system. The function of the system as an option for action and the partial lack of transparency in recommendations show that it is not so much a question of the path to target achievement. Job autonomy is granted to increase access to clients, both quantitatively and qualitatively. However, more options for action also result in more contradictions in the work, which bank advisors must deal with individually.

Of course, the outpatient care example also aims to support the achievement of work objectives. However, it becomes clear that it is rather the administrative and planning processes on the way to the work objective, i.e., the care work on the client, which are to be optimized by using the ADM system. Certain effects on the job autonomy of care workers and care managers seem to be only a side effect – which in a different corporate context could well have been expressed to the disadvantage of the employees.

Effects and conditions of autonomy-enhancing technology use

Despite these differences in the way ADM systems are utilized, there are overlaps in terms of the subjectively perceived impact on the working conditions of care workers and bank advisors: The quality of the respective services is improved, and employees notice the tendency toward work improvement in their everyday work. The reasons for these perceptions lie in different places: In the case of outpatient care, it is essentially the standardization and centralization of information as well as the possibility of data access regardless of location. This creates a greater sense of security about the information situation for all those involved, which has a positive effect on the quality of the services. The remote capabilities of the system have a particularly positive effect. The two learning elements of the ADM system (route planning and care documentation) play a vital role in the perception of facilitated work.

In banking services, advisors report a more holistic approach to clients. In qualitative terms, in particular, the presentation of new options for action, the possibility of individualized consultations, and the move away from more rigid campaign systems have a positive impact. However, it is the shift away from the campaign system rather than the ADM system under consideration that also has a facilitating effect on bank advisors. Interestingly, they also perceive more time freedom in their daily work, even though the use of the ADM system requires shorter processing windows in principle. Again, this perception can be explained by the use of the system as an option rather than a constraint.

In both cases, the effect of using technology as an autonomy-enhancing element in the work of care workers and bank advisors depends largely on the utilization of performance-relevant employment data as a control instrument and on the sovereignty over the evaluation of one's own work performance. In the case of outpatient care, there is an explicit obligation to use the system. It is an indispensable tool for the selected work organization in the company. This is the crux of the matter, namely that it is somewhat taken for granted as a tool in work processes and is used, if at all, more as a welcome corrective and reminder by care workers and care managers. To date, bank advisors are not obliged to use the system. The system has so far been used mainly on an on-demand basis, and bank advisors can implicitly control whether ADM recommendations are provided to them. The system is not considered to be an absolute necessity for the fulfillment of advisory work.

Both ADM systems harbor control potential. Detailed activity recording and quantification regarding the performance of certain work processes are possible. In outpatient care, these possibilities are even greater

because the system is used permanently, i.e., it covers a large number of work processes and also records location-based data. The fact that this data is currently not exploited in the care company to determine performance and increase workload is due, as already described, to the corporate strategy, which tends to provide for (jointly supported) process optimization and less for control. However, external control of care processes is another reason, because in terms of billing, health and care insurance companies pay a precise sum for working time and performance – and these lead to extremely condensed work situations anyway. Of course, there are ways of increasing the intensity of this system, but these are either finite if the quality of care is not to suffer or can only be achieved by making massive cuts in the quality of care provided.

Management's interest in control by means of the ADM system becomes clearer in banking services. Even if using the system and processing a certain number of ADM recommendations is not mandatory, this is revealed in two aspects: firstly, the constant filling of the sales task list with ADM events (infinite to-do list), and secondly, the new function of the reaction codes, which provide information about the progress of processing a client recommendation. Most advisors do not yet perceive these new control options as clearly visible in their daily work because they are not yet taking up much space alongside their own experience-based client approach. However, should this relationship shift in perspective, the control mechanisms and underlying interests should be urgently reassessed by bank advisors.

Interplay of technology use and interaction work

Both cases have demonstrated that using ADM systems can partially support interaction work, even if it does not directly intervene in it. The facilitation of planned, rational action, as required for administrative tasks, leads to relatively greater job autonomy when carrying out situationally demanding interaction work. The decisive factor lies in action support, not in its substitution. If the ADM system assists employees to act confidently and qualitatively, its positive impact potential will come to fruition. However, if the system takes on the role of an instruction provider, whether in care as a tour planner or pacesetter for care work or as a to-do list for client interactions in banking services, these positive impact mechanisms can quickly be reversed. Both cases are united by the desire for interaction with clients that is as self-determined and direct as possible, i.e., not digital. In contrast, digital communication channels are welcomed when working with colleagues, as long as there are still opportunities for personal exchange.

In this context, it is important to highlight a factor that has received little attention up until now: the different relationship between clients and the services they receive. The requirements for bank advisors are different from those in care work because they ultimately have to sell their services to their clients. However, clients have a variety of financial providers on the market to choose from. Bank advisors compete with other competitors not only within the company but also across companies. In care, this competition between care services is also quite evident, but the dependency and sheer number of people in need of care are incomparably higher.

In connection with this, the self-confidence in using technical aids in care work also appears to be different from that in banking services. At least in the case studies, the ADM system was readily accepted by care workers because the standardizing, automating, and location-independent elements of the system brought obvious advantages from the employee's perspective, but its use in everyday working life appeared to be a taken-for-granted matter that was never brought to the fore. Everything revolves around the quality of care for people in need of help, their individual needs, and how to cover these needs in a tight staffing situation. In this context, the performance of administrative tasks, which the ADM system mainly assumes, takes on the role of an accepted necessity, no more.

This is not contradicted in banking services, where professional and responsible advice to clients from the advisor's perspective is generally given priority over the fulfillment of the company's own sales targets. In this sense, both cases are united by a comprehensive client orientation, independent of the company's economic interests. Nevertheless, using technical support systems in banking services plays a more important role in that it would otherwise not be possible to handle the sheer volume of clients. Thus, using the ADM system also clearly serves the purpose of coping with the given work requirements. This partly explains why bank advisors prefer to perceive such systems as a support tool rather than a control instrument. The principle of control contradicts their everyday work, which is, in their perspective, characterized by many degrees of freedom.

Finally, the question arises of the extent to which there are nonetheless attempts to intervene in the interaction work in the two cases. This follows on from the overarching question of whether a transition from the automation of objectifying work actions, i.e., the well-formalizable, planning-administrative ones, to the attack on the client relationship, i.e., the activity of service workers that creates meaning and demands subjectification, is made possible by utilizing the ADM systems. Does this also allow for cuts in experience-based (interaction) work?

In outpatient care, this development is difficult to envision. Care work is highly dependent on experience-based work, not only because the demands of interaction are so high but also because many work situations and working hours are simply unplannable. Deep cuts in interaction work are hardly possible with the help of technology, and the potential for optimization in planning and administrative processes has yet to be fully exploited.

By contrast, some bank advisors are already questioning the future of experience-based work. The experience-based client management of advisors could increasingly be replaced by ADM systems such as those in the case study company. What consequences can be expected for the quality of services and the quality of work remains unclear. It can be assumed, however, that the holistic nature of the advisory work, which is what the case study company strives for, will be lost. Interaction work is not in jeopardy per se, but the strong emphasis on the subjective contribution of one's own skills and decisions may be diminished. However, from the striking saying, "They don't have to understand it, they just have to sell it!"[62] (Breisig et al., 2010), the available empirical findings are still a long way off.

62 Own translation of "Sie müssen es nicht verstehen, sie müssen es nur verkaufen!" (Breisig et al., 2010, title).