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Article — Published Version

Promoting human-centred AI in the workplace. Trade unions and their strategies for regulating the use of AI in Germany

Transfer: European Review of Labour and Research

Provided in Cooperation with:
WZB Berlin Social Science Center

Suggested Citation: Krzywdzinski, Martin; Gerst, Detlef; Butollo, Florian (2022) : Promoting human-centred AI in the workplace. Trade unions and their strategies for regulating the use of AI in Germany, Transfer: European Review of Labour and Research, ISSN 1996-7284, Sage, Thousand Oaks, CA, Iss. OnlineFirst Articles, pp. --, <https://doi.org/10.1177/10242589221142273>

This Version is available at:
<https://hdl.handle.net/10419/267782>

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Transfer

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DOI: 10.1177/10242589221142273

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Summary

The use of artificial intelligence (AI) is changing the world of work. For trade unions, the issue of how to regulate the use of AI is a central but difficult topic because the technology is still at an early stage and experience on its use limited. Focusing on Germany, this article addresses the following questions: (1) what areas of application and use cases for AI are relevant for trade unions and works councils?, (2) what role do trade union positions and demands play in the political discussion on regulating the use of AI?, (3) what strategies are trade unions using to influence the regulation and use of AI in the workplace?, and (4) what experiences are they gaining during this process? Reviewing trade union strategies, this article shows which concepts of human-centred AI the trade unions are trying to promote, how they try to ensure that works councils and trade unionists get appropriate training to understand the new technologies, and how dealing with AI is changing the way works councils work. The article also shows how the characteristics of the German system of industrial relations influence discussions on AI and the processes of implementing it in the workplace.

Résumé

L'utilisation de l'intelligence artificielle (IA) est en train de changer le monde du travail. Pour les syndicats, la question de savoir comment réglementer le recours à l'IA dans le monde du

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travail constitue un enjeu à la fois capital et difficile, dans la mesure où cette technologie en est encore à ses débuts et où l'expérience de son utilisation est limitée. En se concentrant sur l'Allemagne, cet article aborde les questions suivantes : (1) quels sont les domaines d'application et les cas d'utilisation de l'IA qui sont pertinents pour les syndicats et les comités d'entreprise ? (2) quel est le rôle des positions et des revendications des syndicats dans le débat politique sur la réglementation de l'utilisation de l'IA ? (3) quelles sont les stratégies utilisées par les syndicats pour influencer la réglementation et l'utilisation de l'IA sur le lieu de travail ? et (4) quelles sont les expériences qu'ils tirent de ce processus ? L'analyse des stratégies des syndicats permet de définir les concepts d'une IA centrée sur l'être humain que les syndicats tentent de promouvoir, la manière dont ils cherchent à s'assurer que les comités d'entreprise et les syndicalistes bénéficient d'une formation adéquate pour comprendre les nouvelles technologies, et l'impact de la gestion de l'IA sur le mode de fonctionnement des comités d'entreprise. L'article met également en évidence la manière dont les caractéristiques du système allemand des relations industrielles influencent les débats sur l'IA et les modalités de sa mise en œuvre sur le lieu de travail.

Zusammenfassung

Der Einsatz künstlicher Intelligenz (KI) verändert die Arbeitswelt. Für die Gewerkschaften ist die Frage, wie der Einsatz von KI am Arbeitsplatz reguliert werden soll, ein zentrales, aber schwieriges Thema, denn diese Technologie befindet sich noch in einem frühen Entwicklungsstadium, und die Erfahrungen mit ihrer Verwendung sind begrenzt. Der vorliegende Artikel befasst sich in erster Linie mit Deutschland und geht folgenden Fragen nach: (1) Welche Anwendungsbereiche und Anwendungsfälle für KI sind relevant für Gewerkschaften und Betriebsräte? (2) Welche Rolle spielen Standpunkte und Forderungen der Gewerkschaften in der politischen Diskussion über die Regulierung des Einsatzes von KI? (3) Welche Strategien nutzen die Gewerkschaften, um Einfluss auf die Regulierung und den Einsatz von KI am Arbeitsplatz zu nehmen? und (4) Welche Erkenntnisse gewinnen sie im Rahmen dieses Prozesses? Der vorliegende Artikel stellt Gewerkschaftsstrategien für eine menschenzentrierte KI vor. Diese umfassen Qualifizierungsstrategien für Betriebsräte und Gewerkschafter:innen und Veränderungen in deren Arbeitsweise. Der Artikel zeigt zudem, wie die Eigenheiten des deutschen Systems der Arbeitsbeziehungen die Diskussionen über KI und die Prozesse der Implementierung dieser Systeme beeinflussen.

Keywords

Industrial relations, trade unions, co-determination, technological change, digitalisation, artificial intelligence

Introduction

The use of artificial intelligence (AI) and its effects on the world of work are controversial topics that have been the subject of heated discussion (e.g. Deutscher Bundestag, 2020). While job cuts, reductions in the human workforce's capacity to act, discrimination and surveillance are potential dangers, AI also offers opportunities to develop new products, increase the efficiency of work processes and relieve human workers of the need to perform repetitive and stressful tasks. Some who wish to capitalise on the opportunities of the new technology have called for 'ethical' technology design: technology development, they say, should focus on AI that supports people, is transparent and understandable for its users and has also been tested against potential dangers and biases (Roberts et al., 2021a).

For trade unions, the issue of how to regulate and ensure ‘ethical’ AI use in the world of work is a central but difficult topic because the technology is still at an early stage of development, experience on its use is limited and uncertainties about its further development are substantial (Krzywdzinski et al., 2022b; Matuschek and Kleemann, 2018). Trade unions are trying to use their previous experience with technological change to tackle AI, but at the same time there have been increasing calls for trade unions (and works councils) to fundamentally change the way they work as a prerequisite for successfully influencing the design, introduction and use of AI (Gerst, 2020b).

Against this background, this article addresses the following questions:

- (1) What areas of application and use cases for AI are relevant for trade unions and works councils, and what problems arise in this context?
- (2) What role do trade union positions and demands play in the political discussion on regulating the use of AI in the workplace in Germany?
- (3) What strategies/approaches are trade unions and works councils in Germany using to influence the regulation and use of AI in the workplace?
- (4) What are the experiences of trade unions and works councils and what conclusions can be drawn for the future?

The article shows that relevant AI applications in companies consist not only of the more far-reaching use cases in the field of HR (personnel diagnostics in recruitment or career management) currently highlighted in public discussions. Indeed, key fields of workplace AI solutions are cognitive assistance systems, process monitoring and process optimisation, i.e., applications often less in the focus of the debate. As in the case of HR-related applications, these use cases provoke questions regarding data protection and data quality, but also raise the general question of what skills and forms of work organisation will be needed to use AI technologies to increase job quality and secure employment. Accordingly, trade union strategies should focus not only on establishing rules for data protection but also address how works councils and trade unionists can receive sufficient training to understand the new technologies and be able to oversee their introduction. This involves providing appropriate training and introducing changes in work organisation. The pace and the opacity of technological change, as well as the amount of social innovation involved, may overwhelm works councils. To counter this risk, a change in the way works councils work is necessary, as discussed in this article.

The focus is on the German system of industrial relations, a system with some special features regarding the introduction of new technologies and the influence of labour representatives. In addition to regulation through industry-level collective agreements, German industrial regulations are characterised by extensive co-determination at workplace level, with the introduction of new technologies an important issue for negotiation and compromise-building between management and labour (Bosch and Schmitz-Kießler, 2020; Haipeter, 2020). The article reflects in particular on the experiences of IG Metall, the German metalworkers’ union. Due to the relatively high unionisation rate in the metal sector, these experiences differ from some parts of the service sector or the new area of platform work, where trade unions are struggling to organise activities that remain scattered and precarious (Vandaele, 2018). Nevertheless, lessons for other countries and sectors can be drawn from the trade union experiences reflected in this article, as will be argued in the conclusions.

The article is based on an evaluation of existing research literature and on the experiences gained by the authors in the course of their work. As head of IG Metall’s ‘Future of Work’ department,

Detlef Gerst chairs strategic discussions in the union, oversees the training of works councils and represents the union in discussions on digitalisation with employers' associations and policy-makers. Florian Butollo conducts research on the digital transformation of enterprises and work and was an expert member of the German Bundestag's Study Commission on Artificial Intelligence. Martin Krzywdzinski is a researcher with a special interest and long experience in technological change in the manufacturing sector.

In Section 2, we review the state of research on the use and regulation of AI in the world of work. Section 3 looks at the debates on regulating AI in Germany and the positions of trade unions in these debates, while Section 4 focuses on trade union activities to influence the regulation and implementation of AI in workplaces. The article ends with overarching conclusions.

State of research

Fields of application and AI use cases

In the discussion about the use of AI in the world of work, the numbers being bandied about are hardly small, with the McKinsey Global Institute (2018) predicting '160 billion euros additional GDP in Germany by 2030' (Buxmann and Schmidt, 2019). However, these euphoric forecasts are thrown into sharp relief by the uncertainty in both public and scientific discussions: What can AI really do and how developed is the technology today? What applications already exist and what is the experience with them?

The discourse on AI in the workplace is part of a broader discussion about new concepts of 'algorithmic management', i.e., new forms of technical direction, evaluation, and disciplining of workers (Aloisi and De Stefano, 2022; Kellogg et al., 2020). Although the notion of algorithmic management has several merits, its drawbacks are that it attempts to capture very different technologies and their uses by management in a single term and reflecting just one dimension of AI – the control of work performance (Krzywdzinski and Gerber, 2021). We follow up on discussions of algorithmic management but focus on the specific features of the use of AI technologies in the workplace.

There are different definitions of AI (Marcus and Davis, 2019: 41 ff). Some distinguish between 'strong' AI, defined as resembling human intelligence, and 'weak' AI which basically covers pattern recognition, modelling and deduction algorithms for narrowly defined problems (The Federal Government, 2018). Definitions of 'weak' AI distinguish between two types: classical knowledge or expert systems – the 'good old-fashioned AI' – based on pre-programmed logical operations and deduction rules; and systems based on so-called 'machine learning' and used to identify patterns in huge data sets. This latter type of AI system has become increasingly important, although here, too, there are several different approaches. Knowledge systems and machine learning are frequently combined in applications. Key application areas of AI in the world of work include (Fraunhofer-Allianz Big Data, 2017):

- (1) Cognitive assistance systems. Used in a wide range of activities, these for example guide workers in assembly processes, in picking processes, or in handling administrative processes (Krzywdzinski et al., 2022b). They provide information about the work steps to be performed, possibly with additional information, and in some cases serve to control the execution of tasks. Increasingly, they are being equipped with AI-based speech and image recognition systems to enable intuitive interaction between humans and assistance systems.
- (2) Monitoring and controlling networked systems, for example, in manufacturing. In this case, sensor data are analysed to detect deviations from standard processes and thus

promptly detect any malfunctions or identify causes of malfunctions through so-called ‘industrial analytics’. The classic example is predictive maintenance (Acatech, 2015), where the aim is to detect signs of wear in machines at an early stage and to plan and instruct maintenance activities. The system performs certain tasks previously undertaken by skilled workers, possibly leading, under certain circumstances, to them being replaced by semi-skilled workers.

- (3) Analysis of personnel data, in the form of so-called ‘people analytics’. Several software systems now exist that are purportedly able to automate recruitment processes. AI software can, for instance, analyse a video in terms of speech, facial expressions and gestures to select candidates to be invited for a face-to-face interview, thereby reducing the time needed to process applications and increase applicant diversity (Daugherty and Wilson, 2018). Some studies, however, have come to rather critical conclusions, questioning the way such applications work (for example, whether analysing speech, facial expressions and gestures is really suitable for making HR decisions), or the lack of data protection (Spielkamp and Gießler, 2020; Todolí-Signes, 2019).
- (4) Autonomous vehicles, transportation systems, robots. The term ‘autonomous’ refers to the ability of a machine to function without human guidance, for example moving to a given destination or performing a processing operation (gripping, moving, shifting, assembling, welding), with sensor data analysed to avoid collisions or move the vehicle or robot arm more precisely. Overall, this is an automation technology making some previous activities redundant (Groshen et al., 2019; Leonard et al., 2020). While the deployment of autonomous vehicles for individual mobility is still relatively far off despite all predictions, automated production lines and automated guided vehicles for transportation within factories have been used on a larger scale for some time.

It should however be noted that many of these current applications have been solely introduced in an experimental mode and that only a small proportion of companies have implemented AI applications at all. For example, the German IT industry association Bitkom (2021) reported that only 8 per cent of German companies (mainly large ones) were using AI in 2021. Similar findings are reported by other studies (BMW, 2020; PWC, 2019). While Krzywdzinski et al. (2022a) noted accelerated digitalisation and increasing use of AI in some companies during the COVID-19 pandemic, this acceleration remained limited to certain industries and a minority of companies. For trade unions, however, the topic of AI remains very important, as its significance in the workplace is set to increase.

Challenges of implementing AI

The introduction of AI systems in the workplace requires mutual adjustments to both the technological core and the organisational environment. Machine learning algorithms need to process data that are meaningful in terms of the desired functions, while delivering results that can be understood and used by humans. In computer science and information systems research, one focus relevant to the applicability of AI systems is on ‘explainable AI’ (XAI), i.e., designing AI systems to meet transparency and interpretability requirements (Adadi and Berrada, 2018). As Meske et al. (2022) have noted, there are now various technical approaches that can be implemented depending on the nature of the data and AI approaches used. ‘Feature attribution’ approaches show how certain data characteristics contribute to model results. Other approaches use selected data to illustrate how the model works. Some approaches attempt to produce an accurate, formal representation of the model, while others work with ‘surrogate models’, i.e., interpretable models intended to

resemble the true black-box model. In the following, we shall not focus on this technically oriented discussion.

In organisational research, the main discussion regarding the implementation of AI systems is about the criteria for achieving transparent and understandable AI in organisations. This research comes to several conclusions: The first key point concerns the careful definition of the objectives of the AI model and the appropriate selection of the specific AI variant. In an analysis of an AI system used by the Danish Business Authority to check registration documents and annual reports by companies for potential inaccuracies, Asatiani et al. (2020) showed that model development required a close exchange between developers and users. Case studies in the sociology of labour have also suggested that the introduction of AI-based assistance systems would not be possible without employee participation (Research Centre for Education and the Labour Market (ROA) and INPUT Consulting gGmbH, 2020; Van den Broek et al., 2021). This is because the processes of configuring machine learning algorithms (e.g. selecting data, defining the learning model) and building knowledge bases require a sound understanding of relevant causes and effects and thus human expertise (Baethge-Kinsky et al., 2018; Butollo et al., 2019; Walker, 2017).

The second issue relates to the quality of the data with which AI systems are trained and later used. In a feasibility study on the implementation of preventive maintenance at a railway company, Marsh et al. (2016) showed that appropriate data sets can often only be produced with intensive user involvement. Asatiani et al. (2020) and Van den Broek et al. (2021) argued that the data must also be continuously reviewed by experts.

The third issue pertains to the interpretation and verification of results by humans. In the cases analysed by Asatiani et al. (2020) and Van den Broek et al. (2021), all critical cases indicated by the model were checked and validated by humans.

Organisational research thus emphasises that, when seeking to achieve meaningful and usable outcomes, it is important to ensure AI users' participation in developing the models, selecting and maintaining data, and interpreting and verifying the results. What is rarely addressed in organisational research, however, is the role of employee representatives.

To date, the influence of employee representatives on AI development and implementation in the workplace has mainly been discussed from a legal (and occasionally a sociology of work) perspective. Research has focused primarily on issues of data protection and discrimination. AI systems (especially in the form of machine learning systems) are very 'data hungry'. They require large amounts of data, the production of which implies the collection of personal data in operational work processes and thus risks of surveillance or at least a violation of data protection rules (Bales and Stone, 2020; Kim and Bodie, 2021; Moore, 2019; Todoli-Signes, 2019).

The risk of discrimination is clearest in the use of AI in personnel selection, recruitment and workforce development (Asatiani et al., 2020; Daugherty and Wilson, 2018). Specific challenges arise with respect to ethical issues: how good is the quality of the data and to what extent does it reflect a discriminatory status quo? How transparent are the system's decision-making criteria? How can discrimination be ruled out? Is it acceptable to base selection decisions solely on such systems or should human review be required?

Overall, research to date shows that implementing AI technologies presents a number of challenges set to grow in importance in the future. These concern the changes in skill requirements and work organisation that accompany AI and the dangers of surveillance and discrimination. As shown above, organisational research shows that only intensive user involvement in model development, data verification and interpreting model results leads to meaningful and understandable AI systems. To reap the benefits of these technologies for employees and to avoid their dangers, works councils and trade unions need to exert influence on the technology implementation

processes. Yet we have very little experience and research on how employee representatives can best influence technology implementation. This is the subject of our following analysis.

The regulatory discussion in Germany

In Germany, trade union action strategies are developing in the context of a multi-faceted discussion. On the one hand, there is the perceived global race for leadership in AI technology. In contrast to Industry 4.0 applications where German companies and developers have a strong position, in the field of AI applications technological leadership tends to lie with tech companies and research-intensive universities in the USA (Zhang et al., 2022). Significant momentum has also come from China, where substantial private investment in the field of AI research has gone hand in hand with strong government support (Lee, 2018; Roberts et al., 2021b). German policy-makers have identified weaknesses in transferring research results, such as low levels of AI-related patent applications (Deutscher Bundestag, 2020). Accordingly, increasing Germany's (and Europe's) competitiveness in the field of AI is a central goal of the 2018 AI strategy developed by the German federal government (The Federal Government, 2018) and the federal states or *Länder* (Jobin et al., 2021).

On the other hand, there has been a resurgence of corporatist coordination between the state and associations. Discussions on digitalisation and Industry 4.0 (Haipeter, 2020; Pardi et al., 2020) and in other fields (e.g. Busemeyer et al., 2022) in the context of the COVID-19 crisis (Fuchs and Sack, 2021; Lechowski et al., 2021) have featured intensified coordination between state and corporate players.

In line with this development, the German government's AI strategy includes an explicit commitment to the 'responsible development and use of AI that serves the good of society' and to a 'broad societal dialogue' on its use (The Federal Government, 2018: 7). Key steps in achieving these goals include the development of a dialogue on the 'human-centred' use of AI in the world of work, strengthening co-determination in this area, and the development of a dialogue on the development and use of AI systems complying with data protection law. Human-centred AI is defined as 'primarily focused on the well-being and dignity of people', 'bringing social benefit', and 'preserving the self-determination of people as agents and their freedom to make decisions' (Deutscher Bundestag, 2020). This is also consistent with the European-level discussion on 'ethical' AI (Roberts et al., 2021a), as the debates on the EU regulation of AI provide an important frame for developments in Germany (Justo-Hanani, 2022).

The corporatist orientation of the German AI strategy can be observed at several points. First, company and employee representatives were involved in the consultation and expert bodies that played a role in developing the German AI strategy. One example is the German Bundestag's Commission 'Artificial Intelligence – Social Responsibility and Economic, Social and Ecological Potentials' established in 2018 and including corporate and trade union experts. It presented a comprehensive report in 2020 (Deutscher Bundestag, 2020), the basic consensus of which was that AI had enormous economic and social potential that should be specifically promoted and shaped. The Commission's guiding principles were the goal of attaining human-centred AI and the idea that AI development in Europe should fulfil ethical maxims of individual self-determination and freedom from discrimination. However, the focus on compromise also entailed limitations. For example, the Commission ultimately failed to formulate a joint recommendation on a system of risk classes (so-called 'criticality') for AI that would subject high-risk applications to stricter political regulation. There were also differing views on innovation policy, with some participants advancing neoliberal views while others argued for an increase in technology funding to enable a strategic economic and industrial policy able to address future societal issues ('mission-oriented innovation').

Looking at the use of AI in the workplace, the Commission's recommendations were largely consistent with trade union positions, emphasising the need to systematically monitor how AI use impacted employment. Fears of a far-reaching substitution of labour were met with scepticism. The Commission argued that the autonomy of human work should not be restricted when AI and human systems work together, stating that the ability of workers to understand and judge automated decisions should be promoted. It suggested conducting research on which new skills will be required and correspondingly expanding education and training efforts. It also called for a modernisation of co-determination, to tackle the new challenges arising from the dynamics of AI systems and their lack of transparency. Works councils should therefore be able to participate 'just as effectively in the definition of the objectives and configuration of AI systems as in the evaluation, operation and further development of the socio-technical conditions of use' (Deutscher Bundestag, 2020: 321, authors' translation).

A second indicator of the corporatist nature of the AI discussion in Germany is the involvement of trade unions in AI standardisation processes. Standardisation is part of the German government's AI strategy and is coordinated by the German Institute for Standardisation (DIN) and the German Commission for Electrical, Electronic & Information Technologies (DKE) (Wahlster and Winterhalter, 2020). In line with the AI strategy, standardisation involves societal stakeholders, including trade unions. The goal is to develop standards for AI data models, security, criticality and quality criteria.

Finally, the third indicator of the corporatist orientation in the AI debate is the reform of co-determination. Even before the discussion on AI started, the German Works Constitution Act (BetrVG) contained relatively favourable rules for employee representatives. Generally speaking, when technical innovations are introduced, German works councils have the right to be informed and consulted over the plans in good time (§90 BetrVG). In addition, all technical systems that can be used for controlling performance and behaviour are subject to co-determination under §87. Nonetheless, there were discussions on the extent to which co-determination needs to be further specified with respect to AI systems and, in particular, whether works council resources need to be significantly strengthened. The Works Council Modernisation Act, which came into force in June 2021, represents an initial and still very cautious response to this debate, providing three innovations with regard to AI:

- (1) Works council consultation rights: When AI systems are introduced, the works council can request the involvement of an expert, to be financed by the company, to assist the works council in assessing the mode of operation and consequences of the technology.
- (2) Works council information rights when technical innovations and changes to work processes explicitly include the introduction of AI applications (§90).
- (3) Works council co-determination rights in the case of recruitment, transfers, regrouping and dismissals also apply when AI applications are used in these HR processes (§95). This implies that the introduction and use of AI in these areas requires works council consent and that all decisions made when working with these systems must be verifiable by the works council.

However, a general right of co-determination in the overall process of company digitalisation, as demanded by the trade unions, was not implemented (Albrecht and Görlitz, 2021).

Despite the influence of trade unions on the German regulatory discussion about AI in the workplace, it should be noted that the conflicting objectives between the goal of increasing competitiveness in the field of AI and the claim of responsible, 'ethical' AI have not yet been fully resolved in the strategic guiding documents. While there is consensus between politics, business and trade

unions that a human-centred application of AI should be promoted and that technologies undermining human autonomy should be rejected, the instruments used to achieve a progressive AI policy have so far been insufficiently spelled out. The continuing controversies surrounding how precisely to classify AI risks and how to regulate the introduction of AI have resulted in a rather cautious approach by policy-makers.

Trade union strategies for dealing with AI

Trade union debates

German trade unions have predominantly discussed AI with a view to exploiting the technology's potential and limiting its risks. There has been no effort to prevent or delay AI. Based on previous trade union experience, the dominant belief is that AI use in the employment relationship can be regulated and that the risks can be managed. From the perspective of unions, using AI in the workplace can have several benefits. AI can help companies ensure their competitiveness and thus safeguard jobs. From the perspective of German trade unions, AI reinforces a long-term trend toward higher skills (Autor et al., 2020; Bellmann and Widuckel, 2021). The German vocational education system provides a good basis to cope with this trend and the German trade unions see it as one of their major goals to ensure that companies invest enough in vocational education and further (re-)training. Of course, the impact of AI on skills depends on managerial strategies. Management could try to use the new technologies to deskill employees or polarise skill requirements in the workplace. However, this is not determined by the technology but is a management strategy that must be prevented by works councils.

Due to these potential benefits, IG Metall wants companies to develop strategies on how to implement AI technologies. As recently as 2019, an internal union survey conducted by IG Metall revealed what the union considers to be an alarming finding, namely that around half of companies have no or no informed digitalisation strategy (IG Metall, 2019a). Regarded as a risk to long-term employment security, the union saw this as a reason to support works councils in initiating appropriate strategy development processes in their companies (Gerst, 2020a).

Even though trade unions see the use of AI as an opportunity, they are also aware of its risks (DGB, 2020; Krzywdzinski et al., 2022b): AI expands automation options and could thus lead to employment losses (Dengler and Matthes, 2019), possibly resulting in 'technology stress' due to constantly changing requirements and excessive demands (Tarafdar et al., 2015). The processing of personal data by AI applications could jeopardise privacy protection and create potential for surveillance (Spielkamp and Gießler, 2020). AI-based HR systems could discriminate against specific groups if trained with discriminatory data sets. The use of AI-based assistance systems could result in a loss of agency for employees (Brayne and Christin, 2020).

However, German trade unions characteristically see these risks as manageable, as exemplified by the discussion over the impact of AI on employment. While there is no doubt that AI applications have the potential to substitute human labour, a theoretical automation potential is not yet a risk, as far fewer activities are being automated than the automation potential would suggest (Krzywdzinski, 2021; Pfeiffer, 2016). Operational experience shows that automation is often simply too expensive or not an adequate substitute for human labour.

Trade union activities

Based on the assumption that technology can be shaped, German trade unions are participating in discourses in politics and society and influencing legislation. They are participating in the two

think-tank platforms, ‘Industrie 4.0’ and ‘Learning Systems’. Both platforms bring together societal stakeholders to exchange ideas, form opinions and formulate recommendations for policy-makers and companies. Trade unions are in regular discussion with politicians in the federal and state governments. Examples include the Focus Group on Artificial Intelligence and the AI Observatory – two initiatives of the German Ministry of Labour and Social Affairs that bring together stakeholders to exchange views on the use of AI. IG Metall is also actively participating in the German AI standardisation processes and the formulation of the AI Standardisation Roadmap (Wahlster and Winterhalter, 2020). However, trade union influence in these bodies is quite low. This is not due to limited access to the relevant discussions, but to the fact that participation in the standardisation process requires resources not available to trade unions.

German trade unions are intensively discussing their positions on the European Union’s planned AI Regulation, conducting *inter alia* discussions with IndustriAll and with politicians in the Bundestag and the European Parliament. The German trade union confederation DGB and the Brussels liaison office of IG Metall are playing a key role here. Coordinated statements on the AI Regulation have been drafted by the DGB (2020). German trade unions are advocating that any AI application that processes personal data should be considered high-risk and require certification by independent third parties.

Strengthening works councils and their role in AI implementation is of great importance for German trade unions. In relation to AI, this is primarily a matter of making more effective use of pre-existing co-determination rights. With this goal in mind, several activities have been launched to support works councils in advancing a discussion on the strategy over the use of AI in their companies and also to identify gaps and problems in corporate planning. The 2021 collective agreement for the metal industry enables company-based ‘future-proof collective agreements’ (*Zukunftstarifverträge*), further developing the existing ‘supplementary collective agreements’ to be concluded in the event of a crisis at a plant, under which an employer guarantees investment and capacity utilisation, while IG Metall makes temporary concessions to safeguard employment. These *Zukunftstarifverträge* can be implemented if the union sees the need to secure investments in the future of a plant, even when there is no acute crisis. Before such a collective agreement is signed, there must be a consultation between the works council and management on the plant’s strategy. The aim is to prevent works councils having to take a defensive position as a result of management mistakes and being forced to accept job losses and pay cuts.

There are also measures to raise awareness among works councils. One example is IG Metall’s Transformation Atlas (IG Metall, 2019c). Developed in workshops in more than 2000 companies, it is used to introduce works councils to the topic of digitalisation and AI. IG Metall has also developed two tools for analysing and planning digitalisation processes and the introduction of AI. Using the ‘Company Map’ (*Betriebslandkarte*), employees work together with the works council to visualise expected changes due to digitalisation (IG Metall, 2021). A second tool, the ‘Digitalisation Compass’, enables works councils to analyse a company’s digitalisation strategy and to assess its consequences for employees (IG Metall, 2019b). In addition, there are numerous projects aimed at boosting the expertise and capabilities of works councils: ‘NRW Arbeit 2020’, ‘Arbeit und Innovation 4.0’, a newly founded ‘Zukunftszentrum Künstliche Intelligenz NRW’ (Future Centre for Artificial Intelligence, NRW) and a large-scale trade union-funded project entitled ‘IG Metall vom Betrieb aus denken’ (‘think IG Metall from the company level’), in which 1200 trade unionists were trained in topics such as project management and organising, with the aim of using discussions over technological change in companies to strengthen the participation and organisation of employees.

The trade unions have learned from these projects how effective co-determination can be initiated. Overall, however, unions’ experience is that works councils are dependent on external

support to guide AI implementation projects. The Works Council Modernisation Act, outlined in the previous section, will make this easier. However, there are several major challenges. First, in many cases, trade unions perceive works councils' approaches as too conservative and defensive. Many works councils hesitate to engage in strategic planning discussions with management on open-ended (and partially experimental) digitalisation processes. Instead, a wait-and-see attitude prevails. From the perspective of the trade unions, however, works councils must play an active role in shaping digitalisation and involving employees in this process.

Second, to be able to engage in strategic discussions and planning of digitalisation projects (including AI), works councils must change the way they work. More specifically, they have to develop a stronger process orientation (Gerst, 2020b). In the past, when a new technology or process was introduced, works councils focused on clearly identifiable problems, trying to regulate them with the help of plant-level agreements before the change was introduced. Due to the openness and indeterminacy of the current technology introduction processes, this approach is often no longer adequate (Matuschek and Kleemann, 2018). As the specific consequences of introducing a new technology are not known at the very beginning, the active co-determination of works councils within the planning and technology design process is needed. Trade unions are pushing works councils to conclude agreements on procedural issues with company management, describing how management and works councils will interact in the technology implementation process.

Finally, trade unions are convinced that employees need to be more involved in developing goals and demands with regard to AI. This is only possible if co-determination becomes more flexible and faster.

New works council practices

While it is not easy to initiate such changes, examples now exist which show how works councils can develop a strategic perspective on AI implementation processes and establish a process-based way of working (see also Niewerth et al., 2022). In the following we discuss three examples illustrating the key aspects of change in works councils due to the introduction of AI technologies (and digitalisation in general):

- (1) *Influencing company strategies*: At IBM in Germany, an agreement on the use of AI systems was concluded in 2020. It stems from a joint project by the works council, HR representatives and AI experts at IBM that began in 2019 (Herrmann, 2022). In this project, a framework agreement was developed: first, it defines standards for AI systems with regard to transparency, interpretability, non-discrimination and quality assurance. Second, it establishes the basic principle that all AI systems at IBM have to ensure that decisions are not made by the AI system, but by humans. The agreement establishes a classification of AI systems – ‘from AI systems whose recommendations only inform those affected, to basic automated decisions about humans’ (Herrmann, 2022: 44), with the latter being prohibited at IBM. Third, the agreement establishes an AI Ethics Council for IBM Germany to monitor and further develop the agreement.
- (2) *Establishing long-term, procedural co-determination*: The agreement for the implementation of Industry 4.0 projects at Airbus (Harbecke and Mühge, 2020) seeks to establish strategic cooperation between the works council and management regarding Industry 4.0 technologies. At the same time, it establishes a process in which different works council levels (from group to department level) can participate in strategy-building processes. A framework agreement aiming to establish a constructive dialogue between management and the works council has been concluded. It includes rules for introducing new

technologies and for the training of those involved. Technology introduction processes begin with the preparation of project profiles by the managers in each case. These describe how the technology will be introduced, the employee groups affected and the expected effects on work. A managerial steering committee (responsible manager and HR representative) and a works council steering committee are then established for each project. They jointly decide on how the technology will be introduced. All projects are coordinated at company level in the central steering group made up of management and the works council.

- (3) *Increasing participation*: The joint strategy agreement to promote works council work at Merck (Massolle, 2021) centres on a reorganisation of works council work, enabling it to deal with the challenges posed by digitalisation. Digitalisation projects often exceed the capacities and expertise of works councils due to their large number and complexity. The agreement focuses on new ways for the works council to delegate work. It stipulates that the works council can form committees and working groups that also include employees without a works council position. The aim is to be able to involve broader groups of employees. These employees are entitled to further training to prepare them for this task. According to Massolle (2021), the company accepted the agreement because management recognised that the works council could not shoulder the upcoming tasks alone and that a change in its *modus operandi* and a distribution of the work to more people were necessary for co-determination to function properly.

The described approaches of strategic, procedural and participatory involvement of works councils in the introduction of AI technologies (and also other technologies) are only possible when there is a strong works council and, moreover, when the works council and management trust each other. This is especially true for the core of the ‘German model’ of industrial relations (Müller-Jentsch, 2003) – what Schröder (2016) calls the ‘first world’ of German industrial relations. However, this ‘first world’ is shrinking. In many companies and industries, works councils (and unions) are too weak to play this role, or relations between works councils and management are too tense. Accordingly, trade union activities such as the ‘IG Metall vom Betrieb aus denken’ project or the Transformation Atlas always pursue two goals. They seek to advise works councils on how to deal with new technologies, while at the same time supporting trade union organising activities in the workplace. In many companies, this is necessary to create the basis for developing and implementing strategies on AI, digitalisation and other issues.

In many companies, process-based approaches to implementing new technologies will fail due to management resistance. In these cases, German unions support works councils in using co-determination rules to force management to cooperate. In some workplaces, for example, works councils have used their rights to slow down (or even stop) projects until management finally agrees to sign a cooperation agreement on the introduction of new technologies. In some companies, however, cooperation between the employer and the employee representatives in dealing with new technologies cannot be achieved, leading to constant conflicts and often hindering the implementation of new technologies.

Conclusions

In this article, we have examined the areas and use cases in which AI is being deployed in the world of work, the role of trade unions in political discussions over the regulation of AI, and trade union strategies on the use of AI in the workplace.

The most common applications of AI concern offering support and guidance to employees through cognitive assistance systems, monitoring and controlling equipment ('industrial analytics'), analysing HR data ('people analytics') and autonomous transport systems. This list already shows that AI is less focused on replacing human labour and more on optimising and controlling processes. The key problem areas for employee representation are therefore the changes in skill requirements associated with the use of AI (and the prevention of deskilling), the question of employee data protection, the dangers of discrimination due to distorted data or algorithms, and the question of safeguarding human autonomy vis-à-vis AI systems. To ensure a human-centred design of AI in the face of these problematic situations, research emphasises the importance of carefully choosing AI models, paying attention to the quality of data and ensuring human verification of all results. In terms of organisational processes, this implies the intensive involvement of AI users in the choice of AI models, the choice of data and the interpretation of results.

German trade unions have taken up these points in their demands and positions in the discussion on regulating the use of AI. Against the backdrop of a re-strengthening of corporatism in Germany after the global economic crisis and the COVID-19 crisis, trade unions have been closely involved in several discussion platforms and standardisation committees on AI. With their positions, they have certainly been able to influence the political discussion in Germany.

However, the political discussion also emphasises the need for Germany and the EU to remain competitive in the development of AI compared to the United States and China. The tension between this goal and that of an 'ethical' AI has not been resolved. For this reason, conflicts are already emerging as to what the general principles of AI system design mean in practice. These disputes will likely continue, for example, on the question of the classification of AI systems and their assignment to different risk classes – a point on which no consensus was reached in the discussion in the AI Commission of the German Bundestag, and which is now similarly controversial at European level (European Commission, 2021).

In the daily practice of trade unions (and works councils) in Germany, AI is not a phenomenon that can be treated in isolation but is a building block of a comprehensive digital transformation process. Yet, this peculiar strand of technology also involves several new challenges due to the impact of AI systems on decision-making and their perpetual evolution.

Applying not only to Germany and the metal sector but also to other countries and sectors, three findings are important here. First, that employee representatives (in the German case, works councils) do not merely adopt a reactive and defensive stance toward digitalisation projects (and the introduction of AI). Unions must push companies to develop a strategy on the introduction of AI. They must also make sure that this strategy follows the principles of human-centred technology design. Second, to do this, employee representatives must adopt a more process-oriented way of working. Decisions on the use of AI are not a one-off event. Employee representatives will need to engage in an ongoing strategic dialogue with management and establish work processes and committees to guide the introduction of AI and other technologies continuously and over the long term. Third, employee representation resources and procedures need to be reorganised. The task of monitoring the many digitalisation projects (including AI projects) exceeds the expertise and resources of many works councils in Germany. Initial experiences show that a promising path might be to actively involve external experts as well as workers themselves in the technology introduction processes. This democratisation of co-determination could be a way of dealing with technological challenges. It needs, however, supportive political regulation, as in the case of the German Works Council Modernisation Act.

With regard to the transferability of these approaches to other (European) countries, it should be noted that they are based on specific framework conditions. First, they are embedded in extensive trade union activities to strengthen plant-level organising and the competences of plant-level employee representatives. Second, they are accompanied by extensive trade union activities at

national level to influence political discourse, national AI strategy and standard-setting in this area. Third, Germany's co-determination legislation and the current strengthening of corporatist cooperation have a supporting effect. The union approaches outlined here can be implemented in other countries and sectors where a strong employee representation backed by sufficient resources exists. Where this does not exist, the basis for influencing technology implementation processes must first be created through organising and also strengthening trade union influence at national level.

The outlined cases of a strategic, procedural and participatory involvement of works councils show the possibilities for new strategies to be developed, proactively shaping the introduction of AI technologies on behalf of employee interests. Yet, as they are still experimental in nature and rely on soft regulation, their tangible returns still need to be seen. What is more, there is a risk of employee representatives being overwhelmed by the complexity and speed of change in the regulation of AI. Already observed in Germany, this also applies to other countries. When there are trusting and cooperative relationships between management and works councils, a strategically oriented, process-based approach to implementing AI is possible. This is not the case however in many companies where the implementation of technologies such as AI is characterised by conflict and where the position of the works council and trade union is much weaker.

Funding

This work was supported by the Federal Ministry of Education and Research of Germany (BMBF) [grant number 16DIII21].

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