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Managers in the Era of Digital Transformation: Navigating the Dual Realities of Time

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ABSTRACT

In a professional world that demands instantaneity and immediate availability, digitalisation affects not only the way we work, but also the way we think about work. In this article, we explore how the introduction of new technologies in Belgian companies specialised in different sectors impacts managers as regards their concept of time. We do so by analysing in-depth interviews and providing qualitative evidence of managerial perspectives. In particular, we investigate the extent to which digital tools generate changes in time in relationship to work. We find that, on the one hand, digitalisation *i)* decreases time available due to the rising levels of work pace, workload, and people management. On the other hand, digitalization *ii)* increases time available due to major managerial tasks being substituted by the technology itself. The time saved transforms into either productive and creative time, or 'emptiness' for managers.

1 | Introduction

Today, employment is characterised by flexibility, up-skilling (Illanes et al. 2018), instantaneity and constant availability due to digitalization and an hybridization of the workplace (Petani and Mengis 2023), as well as an integration between robotic and human work (Focacci 2021). As a result, many have started working 'irregular' hours, especially in the freelancing world, and interleaving work with nonwork activities (Gold and Mustafa 2013). An analysis by Bleijenbergh, Gremmen and Peters (2016) on part-time workers shows how career development often depends on how you manage your time, or rather your timing ambitions. This includes thinking about hours worked, working hours, overtime, but also the course of a lifetime. When digitalization is introduced, new dynamic perspectives on time at work emerge. In the case of the German warehouses studied by Gautié, Jaehrling and Perez (2020), technologies have led to deskilling and intensified monitoring. In Neo-Taylorism contexts, time has become the main tool to measure performance. On the one hand, and as shown in the experimental analysis by Angelici and Profeta (2023), when the constraints of time and place of work are removed, well-being and work-life balance increase as workers can work 'smart' (Angelici and Profeta 2023), but the workday is also extended infinitely as employees can work all the time and from anywhere (Miltsov 2021).

Because of digitalization, in the future, how and what work is done will matter more than where and when work is carried out. In addition to learning new digital skills, subjects at work are asked to comply with requests of flexibility, blurred boundaries between private and professional life, and unstructured organisations. According to Dittes et al. (2019), companies will have to face and address several managerial challenges, such as: how to avoid technostress and achieve a better work-life balance; how to align with the prevailing organisational culture and leadership paradigm;

how to be both pioneers and apprentices of digitalization; how to meet employees' different expectations.

Recent research in management reveals three dominant manifestations of the temporal lens, whose interplay unveils interesting tensions: time as resource (organisations and managers utilise time strategically, regulating the pace, timing, and scope of their activities and decisions), time as structure (shared, collective temporal structures enable social order, control, and coordination within teams, organisations, and networks of organisations), and time as process (actors collectively negotiate, enact, and interconnect the present, past, and future) (Blagoev et al. 2024). Sociology of time explores how we perceive, structure, and experience time as part of societies. In particular, it accounts for the concept of time intended as a social construct, affected by techno-economic and cultural factors, the idea being that across countries and over time, time is understood differently. This is, for instance, reflected in the division of time between leisure and work, as well as the cycles that shape our routines (e.g., coffee breaks in the office, holidays with our family), or the impact of technological tools on time (e.g., hyperconnectivity). Temporality intersects with human activity and social structures, now characterised by the gig economy, automation, and remote work. Thus, temporality highly affects how work is organised, executed, and experienced. If in preindustrial times, weather and topography influenced the rhythms of societies, the technological innovations brought by the industrial revolution completely transformed workers' schedules with the synchronisation of work hours. Because techno-economic paradigms create socio-cultural paradigms (Focacci and Perez 2022), the rise of digital tools has given origin to forms of work practically independent of time, including freelance work in different time zones, on-demand services (e.g., delivery), telecommuting. As a result, the concept of temporality has evolved and so have the subjective perceptions of temporality on behalf of workers, who now experience both accelerating work pace and hours wasted switching between technological tools or debugging applications.

In this article, we focus on Belgian middle managers and research and development managers from different industries, including manufacturing, banking, education, logistics, and wholesale retail. Our research question asks to what extent digital technologies change the perception of time for managers. Understanding managers' perception of time is crucial because of several aspects. Such insights matter because "seeing management without temporal dimensions creates blind spots and distortions similar to those experienced when seeing the earth as a two-dimensional map" (Bansal et al. 2020). Compliance with deadlines and goal achievement often characterise a company's success and its managers' performance. Thus, understanding how managers perceive time affects the way in which employees align their efforts to managers' expectations. Secondly, the flexible and ever-changing market requires managers to be able to adapt to change—see pandemic—, with some managers reacting more systematically and more rapidly. Their perception of time, therefore, also affects their capacity and level of adaptability. Digital tools also influence communication, allowing for quick notifications and immediate exchanges of information. Most importantly, managers decide how to allocate certain resources, as well as how to set priorities according to time, ultimately affecting their decision making. As illustrated by Hernes, Simpson, and Soderlund (2013), in addition to considering speed, sequencing, pacing, and duration as part of the temporal experience of management, 'managing in time' also means accounting for the ongoing present and the projections of past experiences on future expectations. In other words, management needs to be studied also according to its temporality, especially as technologies introduced the new temporal norm of flexibility (Nowotny 2005).

In this article, we contribute to the autonomy paradox introduced by Orlikowski and Yates (2002) and Mazmanian, Orlikowski and Yates (2013), which posits that technology simultaneously expands and compresses available time. We examine the freedom and time constraints offered by technology and the temporal reflexivity that leads organisational actors to create and adjust their temporal structures. Through qualitative empirical evidence on Belgian managers, we investigate how digital tools paradoxically both diminish and expand available time by enhancing productivity and creativity, or alternatively, contributing to a sense of emptiness. We further contribute to the literature by introducing the concept of emptiness in the working lives of managers.

The relation to time in the digital age is analysed in Section 2, through a literature review. Section 3 describes the data and methods used in the present study. Section 4 discusses the main theoretical and empirical results, with specific reference to the implications of a reduction in time available (4.1) and those consequent to an increase in time available (4.2). Finally, Section 5 summarises the main findings and concludes with some policy implications.

2 | Literature Review

Gobble (2018) recently explained how the current explosion of technology has provided individuals with increasing power and autonomy. However, autonomy in work has a paradoxical nature as it can both enhance and diminish worker satisfaction and well-being. Breaugh (1999) found that while autonomy can enhance job satisfaction, it can also lead to role ambiguity and increased stress if not accompanied by adequate support and clear expectations. Technology has certainly exacerbated the phenomenon through the 'always-on' culture: communication technologies, for instance, provide flexibility but also contribute to work-related stress by extending the workday (Ter Hoeven and Van Zoonen 2015). This is why several organisations have adopted agile strategies where teams, even if self-organised, maintain control through iterative planning and regular feedback loops. In connection with time, Google has initiated a 20% time policy according to which employees are allowed to spend a portion of their time on projects of their choosing, creating a balance between autonomy and strategic planning.

On one hand, autonomy provides the worker with a greater sense of responsibility and independence, allowing for autonomy in working at their tasks, structuring their schedules and methods, as well as allowing workers to dedicate time and effort to creativity and innovation. The early works by Hackman and Oldham (1976) and Deci and Ryan (2008) highlighted the fundamental role of autonomy in generating job satisfaction and intrinsic motivation in individuals. According to their

model, autonomy makes workers more responsible towards the outcomes of their work, increasing performance and job satisfaction. On the other hand, however, autonomy can give origin to blurred boundaries between work and personal life, stress and anxiety over self-management, as well as feelings of isolation, especially if accounting for the current explosion of remote job positions. This is in line with Mazmanian, Orlikowski and Yates (2013), who studied the effect of using mobile email devices at work, and found a number of contradictory outcomes. If, on the one hand, professionals experienced a sense of flexibility and control over interactions in the short term, on the other hand, collective expectations of their availability increased in the long term, therefore threatening their autonomy.

This autonomy paradox associated with time freedom and time constraints, typical of the contemporary workplace, had been previously discussed by Orlikowski and Yates (2002), according to which organisational actors create, reinforce, and adjust the temporal structures in their daily working lives due to temporal reflexivity on introduced technologies. While many technologies are exclusively sold as time-saving tools, they are also social tools that alter the way we communicate and relate to others. This finding aligns with the research of Choi (2020), who found that the freedom associated with remote work often comes with an expectation of constant availability, creating a sense of perpetual work and reducing overall well-being. As explained by Whiting and Symon (2020), the flexibility generated by digitalization also means carrying out invisible work for digi-housekeeping: time is used for clearing (e.g., junk emails), sorting (e.g., folders), preparing (e.g., reinstallation of software), provisioning (e.g., buying digital equipment), and troubleshooting (e.g., connectivity problems). Here, too, the concept of 'time saved' is put under discussion. When investigating how a team of software engineers used their time at work and why they used it this way, Perlow (1999) observed 'time famine' where individuals had 'too much to do and not enough time to do it'. This also connects to the ideals behind digital calendars, according to which time wasted needs to be minimised following a 'spreadsheet orientation to time' (Wajcman 2019a). Technologies become the mediator between ourselves and the time of our lives—booking time for work meetings, but also the hairdresser or our children's birthday party—, while intelligent time management becomes purely utilitarian and makes us wonder 'what do we want to save time for' (Wajcman 2019b).

On one hand, the advent of digitalization acts as a temporal squeeze, as it diminishes the available time for managers. This compression results from the escalating demands imposed by the integration of technology, including increased workload and complicated workplace dynamics, where multiple and diverse teams need to be managed. The relentless pace of digital advancements intensifies the temporal constraints faced by managers in their day-to-day responsibilities. In other words, technologies generate increased speed and efficiency (Brynjolfsson and McAfee 2014), but also constant availability through platforms like Teams, Slack, and other instant messaging services (Wajcman 2015), as well as longer working hours (Chesley 2014), and potential technostress (Tarafdar, Cooper, and Stich 2019). On the other hand, digital tools serve as temporal liberators, as they allow managers to benefit from newfound stretches of time. This liberation occurs when the introduced technologies take on the mantle of major managerial tasks by automating and streamlining processes that would normally consume significant time. AI can contribute to reducing managers' administrative workloads (Rožman, Oreški, and Tominc 2023), altering time demands (Autor 2015). Routine administrative duties, operational decision-making processes, and data analysis are examples of tasks that may be delegated to digital tools, allowing managers to redirect their attention and time towards more strategic and creative endeavours. Bendassolli (2017) suggests that if work never felt empty, we would not be inundated with information on making work more pleasant or meaningful in contemporary organisational contexts. When managers experience emptiness, it can lead to a professional identity crisis. The autonomy paradox of digital tools reflects the paradox of time at work and, subsequently, the paradox of the managerial role. Managers are encouraged to transition from field experts to coaches, mentors, and teachers, prompting a comprehensive reevaluation and transformation of their functions (Gjerde and Alvesson 2020; Leavy 2023). These transformations can sometimes result in a pathological phenomenon called 'escalating indecision,' where managers engage in practices and constraints that promote a project while simultaneously preventing its implementation or stabilisation (Denis et al. 2010).

For the sociologist Elias (1992), 'timing is based on people's capacity for connecting with each other two or more different sequences of continuous changes, one of which serves as a timing standard for the other (or others).' In other words, time is defined and defines continua of change. As put by Tabboni (2001), it gives meaning to life by letting us establish 'when to work, when to play, when to pray.' This means that, depending on the historical context, the social norms associated with time change as well. The concept of autonomy, and the paradox of autonomy related to time, for instance, discovers its origins in early management frameworks. According to Thompson (1967), the industrial revolution changed the concept of time, and consequently of work, transforming it from task-oriented to clock-oriented. 'A minute subdivision of labour took place in the industry early, facilitating large-scale production' of clocks at the end of the 18th century, when greater synchronisation of labour and 'a greater exactitude in time-routines in any society' (Thompson, 1967). Indeed, as discussed by Lefebvre (2004), rhythms of everyday life help us understand social time and 'the rhythm that is proper to capital is the rhythm of producing.' Taylor's scientific management focused on efficiency and supervision was followed by McGregor's Theory Y, whose focal point was workers' autonomy and self-direction (McGregor 1960). In the postindustrial era, relation to time has become progressively more fragmented due to the rise of digital tools (Tammelin and Anttila 2017). Even art has become 'fast, fluid, fragmented' (Goeting 2022). COVID-19 worked as a catalyst for an accelerated digitalization of work, space, and time, with both positive and negative consequences (Amankwah-Amoah et al. 2021).

In the digital age, time becomes 'internal' to the technology involved (Adam 2005). Working face-to-face requires a different concept of time than working over the internet or on the phone. The time needed to walk is not the same as the time involved in driving a car. Making a fire entails a different amount and disposition of time compared to using a microwave.

Technological change brings about change in the way we understand time and, consequently, produce, work, and live. As discussed by Rosa (2013), acceleration, or the sense of 'speed-up', is a constitutive trait of modernity. 'In the age of globalisation and the u-topicality of the Internet,' individuals seem to experience scarcity of time, on the one hand, as they have to keep up with the speed of the technological world, as well as 'polar inertia' or 'accelerated standstill' (Rosa 2013). In other words, despite the world being accelerated, flexible, and hyper-optional, 'real change' is often not achievable from a cultural perspective. The concept of paralysation is investigated in our article as emptiness experienced at work due to an accelerated and decelerated time perception. Our study delves into the time and autonomy paradox, which suggests technology simultaneously expands and compresses time. We build on the argument that 'free time [becomes] a subject of increasing interest because it [seems] both to contain great promise and to pose a great threat' (Tabboni 2001). By examining how digital tools affect Belgian managers, we reveal that these tools can enhance productivity and creativity, yet also create a sense of emptiness through the ever-changing nature of time. The concept of emptiness experienced by managers may lead to a professional identity crisis, where managers' actions paradoxically support and hinder professional progress.

In the next sections, we describe the data and methods used; we discuss the results; and provide some conclusions.

3 | Data and Methodology

Our analysis is based on 33 interviews carried out with middle and research and development managers from various Belgian companies. The interviews' questions were based on a key search in the academic literature linked to the following concepts: digitisation, digitalization, digital transformation, industry 4.0, the fourth industrial revolution, smart manufacturing, smart production, smart factory, smart factories, cyber-physical system, cyber-physical production system, internet of things, industrial internet, big data, algorithms, robotic process automation, robotic desktop automation, artificial intelligence, digital tools, technological innovation, or specific occupations-related keywords derived from first searches.

Following the identification of questions linked to these keywords, we designed appropriate research protocol and interview guidelines for the selected occupation. The research protocol was organised around a qualitative methodological approach based on semi-structured interviews. As regards the recruitment strategy to create a diversified sample of professionals, we engaged in the recruitment of interviewees by reaching out to the relevant professional associations representing these occupations, which then assisted in disseminating our request. Furthermore, we extended our outreach to potential interviewees through posts on LinkedIn and direct solicitations within our personal networks. Our study employs a purposive sampling strategy, a method of non-probability sampling where the sample is selected based on specific characteristics and criteria defined by the researchers. The primary aim of employing purposive sampling is to gather in-depth insights from a carefully targeted group of professionals. The selection process is planned to include a sufficient number of participants from each category (middle managers and R&D managers) to reach the threshold of saturation. According to Glaser and Strauss (1967), saturation occurs when no new information or themes are observed in the data. To achieve saturation, various strategies are employed to engage participants, ensuring a diverse representation within each targeted professional category. These strategies may include direct outreach, snowball sampling techniques, and leveraging professional networks. The goal is to conduct interviews until saturation is reached, meaning subsequent interviews do not yield significant new insights or alter the research trajectory.

All the interviews were recorded with the consent of the people involved, and then transcribed in full. The empirical data were then analysed using NVivo software. The coding grid was drawn up jointly by the researchers involved and validated by triangulation.

As regards the sample analysed, the middle managers interviewed were mostly men, while the seniority at their companies varied, ranging from a minimum of 1 year to a maximum of 34 years. A total of ten male managers and five female managers were registered, excluding those with no information available. We observed six managers with a seniority in the 10–15 years range, seven in the 1–6 years range, and three with a seniority between 16 and 25, and one with a seniority of over 30 years. Research and development managers were older on average, with a maximum of 57 years. During interviews managers were asked a series of questions, ranging from demographic and contextual details to digital perceptions. We investigated managers' seniority in the company, age, gender, sector of employment, size of the company, and technologies used. We then proceeded to ask questions on work content; specifically, we asked questions on the job content (work tasks), effective use of digital tools, and working conditions. We further investigated their employment conditions in relation to the use of digital tools and employment relations, in terms of actors involved in the digitization process, topics discussed, frequency of meetings. We were also interested in understanding how tasks were distributed following digitalization and how work organisation evolved, if it evolved, with the introduction of digital tools. Finally, we asked questions about quality of working life post-digitalization, and perceptions of the digital tools themselves.

As regards the analysis, we proceeded to encode the information derived from interviews into the above-mentioned generic categories, or grandparental nodes, as well as into more detailed parental nodes. For each category, information was retrieved directly from the interviews. After the interviews were analysed and the information compiled for each category, we proceeded to identify patterns for managers belonging to different sectors and positions. The concept of temporality and time was not an explicit topic of the interviews for all questions. However, a relevant number of questions directly asked managers about their perception of time: how digital tools determine their work pace; the ways in which their work schedules are determined and their flexibility; their working times; the regularity of team meetings; the amount of time spent by managers in interacting with staff and their wellbeing; and the

extent to which their job is sustainable over time. Most importantly, the complex relation to time at work emerged as a permanent concern of our respondents across all questions, also those not directly related to temporality. This unexpected result led us to adopt an abductive approach (Dubois and Gadde 2002), which involved searching for appropriate concepts to describe surprising facts (Nubiola 2005), aligning with the exploratory purposes of our paper. Thus, we studied the concepts surrounding temporality at work and grouped them under the different dimensions of time perception. The abductive method serves as a critical tool in social science research, facilitating scholars in the exploration and explanation of complex social realities through a systematic yet flexible approach. This method is characterised by its emphasis on generating plausible explanations for unexpected observations, positioning it as a valuable alternative to traditional deductive and inductive reasoning. Its significance is particularly pronounced in qualitative research, where it assists researchers in navigating the complexities and uncertainties inherent in social enquiry. In the context of grounded theory research, the abductive method is instrumental in developing theories that emerge from empirical data rather than merely testing pre-existing hypotheses (Thompson 2022). When researchers encounter surprising and unexpected data, they are prompted to employ abductive analysis to construct more appropriate theories and enhance understanding based on contextual empirical material (Alvesson and Kärreman 2007; Timmermans and Tavory 2012). Moreover, abductive research is characterised as recursive and iterative, as it involves the generation of theory while simultaneously allowing for theoretical development in areas where phenomena are sufficiently explained by existing literature (Timmermans and Tavory 2012). This recursive nature underscores the dynamic interplay between theory and data, ultimately contributing to a more nuanced understanding of social phenomena.

4 | Results

4.1 | Digitalization and Time

The theoretical purpose of our article is to illustrate the paradoxical impact of digitalisation on managerial roles, focusing on how it both compresses and expands the temporal dimensions of work and, consequently, how the autonomy it generates can both enhance and diminish managers' satisfaction and well-being. This is done by exploring the transformative effects of digital technologies in managerial contexts. In particular, we examine the dichotomy of time saved through technology, emphasising its potential to lead to either productive outcomes or a sense of emptiness. The analytical concept of time contraction and expansion is studied in reference to the concept of temporal paradox of technology, which indicates the simultaneous compression and expansion of time due to digitalisation and autonomy paradox. In connection with this, our analysis introduces the analytical concept of void, of emptiness, or the negative outcome where unleveraged saved time results in feelings of unproductiveness, disorientation, and professional stagnation. In an earlier work, Orlikowski and Yates (2002) had suggested 'that through their everyday action, actors produce and reproduce a variety of temporal structures which in turn shape the temporal rhythm and form of their ongoing practices.' Findings from the literature highlight the paradox where technology both enhances productivity but also increases pressure and potential for 'techno-stress.' Managers' roles are evolving towards more strategic functions, often leading to challenges in decision-making and maintaining work-life balance. Our hypothesis revolves around the transformative effects of digitalisation and delves into how it simultaneously compresses and expands the temporal dimensions of managerial roles. As illustrated in Figure 1, the dichotomy of time contraction and time expansion or freedom gives rise to a transformative crossroad where the time saved by technology metamorphoses into two distinct outcomes: productive and creative time or a void of emptiness. When saved time is used judiciously, managers are empowered in strategic thinking and innovative planning, promoting a valuable work environment. Time becomes productive and creative, generating skills of adaptability necessary for the current fast-paced digital landscape ('a daily comfort and well-being because of learning more, assimilating more and more things, and staying active' [logistics middle manager, 47]). In our model, technologies lead to time saved and this time saved becomes extra time to be used. When time liberated by technology is not leveraged efficiently, however, the potential risk that arises is the void of emptiness, where managers feel unproductive and disoriented in both their tasks and role ("there's nothing worse than coming to work, feeling no longer feeling useful" [logistics middle manager, 47]). As discussed by Køster (2020), 'the habitual practices that daily help in returning [us] to a sense of self-familiarity consist of a coherent system of actions, a referential web.' Once the system of habituated practices is disrupted, for instance by technologies, we experience 'a profound emptying of significance' (Køster 2020). According to Blagoev et al. (2024), tensions between regularity and disruption are essential for understanding various phenomena in human resources management, organisational behaviour, strategy, and entrepreneurship. In our model, technologies lead to time saved and this time saved becomes emptiness. Below, we explain how a reduction and an increase in time available are reflected in the daily working life of managers.

The reduction in time available due to digitalization has created significant challenges for managers. Despite the efficiency gains promised by digital tools, managers end up working

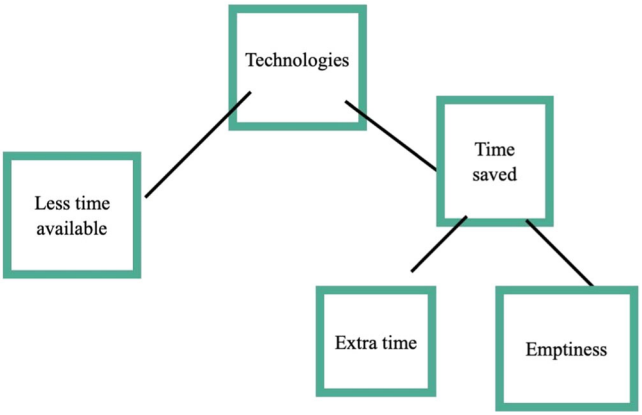

FIGURE 1 | Technologies and time in the case of managers. [Color figure can be viewed at wileyonlinelibrary.com]

longer hours and constantly managing a flood of tasks and communications. This dual pressure creates a paradox where managers feel they never have enough time to complete their responsibilities, yet remain perpetually occupied. As explained by a bank and insurance manager, 'the workload has increased as "you have to spend more hours on your work to get the same result" due to technology-related issues or coordination problems across teams.' As a result of tasks becoming more complex, managers are compelled to develop new skills and teach their teams how to use new technologies, a responsibility for which they were not originally prepared. Thus, reduction in time available forces managers into skills development and role evolution ("I feel a bit like an orchestra conductor or a schoolmaster," project manager, roofs, and frames company). This situation is exacerbated by the constant availability expected from managers, who must quickly address issues to maintain control. It also happens when a colleague or customer contacts a manager outside working hours with a problem to solve or a simple question. Consequently, managers find themselves spending a larger portion of their time managing people and resolving problems, leading to an increased workload and faster work pace. The time saved through automation is often reallocated to other tasks, adding to the pressure. Moreover, hyperconnectivity blurs the boundaries between work and personal time, resulting in overwork, stress, and challenges in maintaining a good quality of life. On the one hand, digital tools accelerate productivity, resulting in managers having to do more in less time, or less in more time. On the other hand, digital tools contribute to work being time-dependent, with tasks being timed or tasks becoming space-less through never ending availability, threatening managers' quality of life.

The increase in time available due to digitalisation has caused parallel effects in the evolution of the managerial role. Digitalisation has significantly increased the time available for middle managers, making their tasks faster and more predictable. Digital tools help them save time, even if they are already efficient. Technologies such as tracking systems allow for better monitoring of sales and task management, enhancing predictability and autonomy. As a result, managers can now handle larger volumes of work more effectively and independently. This increased efficiency provides extra time for creative and cognitive tasks, enabling managers to focus on richer content and the development of digital skills. The paradoxical result of digitalisation, however, is that the increase in autonomy and time available can lead to feelings of emptiness and boredom, particularly when digital tools replace traditional managerial tasks. This shift can disrupt organisational structures, diminishing the sense of hierarchy and the clarity of roles within teams. Managers may feel isolated and disoriented regarding their role and professional relevance. These aspects are discussed in the sub-sections below.

4.2 | Reduction in Time Available

4.2.1 | Skills Development and Role Evolution

As regards the reduction in time available, managers explain that tasks have progressively become 'a little more complex, because there are a lot more stages in the process' and 'a lot more knowledge at the IT level' is required from operators [logistics middle manager, 47]. In parallel, corporate skills development in connection to digitalization is lacking and, rather than training, it is experience and common sense that guide employees in what they do, as 'there are [often] no official trainings' for the tools introduced [logistics middle manager, 47]. This is challenging given the main responsibility for a successful technological transition is posed on upskilling (Schlogl, Weiss, and Prainsack 2021). As explained by a project manager, once a digital tool is introduced, the training consists in saying 'voila, the tool brings you this, this and this'. In other cases, they receive 'a half-hour training, with a power point' [retail manager, 41]. As a consequence, managers have to teach their teams on how to use technologies, 'which was not planned at the start' [logistics middle manager, 47]. On a positive note, if there are 'things [employees] feel are not right,' managers are usually 'very open to communication' [bank supervisor, 61]. On a negative note, however, this can overwhelm managers, making them feel 'a bit like an orchestra conductor' or a 'schoolmaster' [construction R&D manager, 47] especially when they have not been trained for this role ("it becomes annoying" as "[they] spend a lot of time training a person" [construction R&D manager, 40). A research and development manager explains that, with the introduction of digital tools, 'the perception is that you are almost constantly available' and that, in the case of issues, managers 'have to be the first to answer,' 'otherwise, they lose control in the decision' [construction R&D manager, 47]. In other words, managers now have to devote a larger portion of their time managing people.

4.2.2 | Productivity

While working hours and contractual arrangements have not changed in theory ("career advancement is very, very complex" [responsible for operations]), in practice middle and R&D managers claim they work more. Workload and work pace have registered an increase too, also following an increase in the efficiency of collaboration technologies and the hybridization of tasks. 'Even if the tools have facilitated the tasks, there are always other tasks, so the time saved is used for other things' [site manager, 32]. Overall, it seems that, following digitalization, there are a lot more charges for managers as 'it shoots from everywhere' and they often 'can't have peace of mind' [mechanics middle manager, 38]. When explaining how the recruitment process at his company works, a middle manager claims that, because of a lack of time at their disposal, they sometimes judge candidates within 10 min. According to a research and development manager, automation simply 'frees up time' but it does so 'for other tasks' [site manager, 32]. An example of this is reflected in the introduction of new rules, which each time require additional administrative work, or the time wasted in resolving technical issues ("the buffer picking which is not configured correctly," "the screens which are not there" [site manager, 32]).

4.2.3 | Hyper-Connectivity

The level of hyper-connectivity also needs to be accounted for. From the interviews, it emerges that, also due to the wide range

of collaboration technologies, disconnecting from work becomes more difficult, with 'a lot of people still messaging at 10–11 pm, which means they are still working' [responsible for operations]. A research and development manager complains about the increase in the number of meetings and emails, which leads to carrying a heavy mental load, as well as having 'no time to process or no time to carry out [the] analyses [demanded]' [financial R&D product manager, 47]. In this regard, changes reflect in the company's employment relations: in-team meetings have become more frequent ("everyone is worth their problem or their request or even their questions" [electronics middle manager, 37]), also thanks to hybrid possibilities (with Teams and zoom "it's convenient, you can use it, but you don't have to, and it's easy to plan" [supervisor of bank insurance, 30]). The extension of the work space, however, can be damaging in that it removes the concept of time boundaries. A middle manager explains that 'remote working has completely changed the working rhythm': while you save 3 h on the road per day, these 3 h are now used to work instead [electronics middle manager, 37]. In other words, digitalization of work, for some, has meant that working hours are even longer than usual. In conclusion, technologies did not only bring new dynamics to the workplace, but they also exacerbated existing ones.

4.2.4 | Monitoring

This also connects with the issue of tracking technologies and monitoring. In addition to the general initial resistance on behalf of the older working population (there are people around the ages of 50, 55, 59 who "don't want to change for the few years [they] have left to work" [site middle manager]), perceptions on new digital tools had managers acknowledging the *Big Brother* feeling caused by time-controlled work. Pressure to work on time is particularly counterproductive for research and development managers, when they are monitored all the time and have to report their activities every time they do something. In the R&D field, a 47-year-old manager claims 'you have to give yourself time to think, to imagine new things, you have to spend time surfing, reading articles that may be of no use.' In other words, the concept of time wasted in a category of managers that need to get the necessary time to explore and consult research might be not applicable.

4.2.5 | Quality of Working Life

In general, changes in working conditions due to digitalization were mainly reflected in an increase in stress and psychological burden, accompanied by episodes of over-connection, constant monitoring, as well as issues of work-life balance (impossible to "have peace of mind" [mechanics middle manager, 38]). Physically, digitalization has also caused ergonomic problems for managers due to the consequent decrease in mobility, as 'there are days, [managers] are there static behind [their] screen' and time simply stands still [mechanics middle manager, 38]. Over-connectivity ("disconnecting from work becomes more difficult" [manager of operations, 61]), overwork, and a lack of balance between working and private life (the atmosphere at work is "cumbersome" as they "are not necessarily given the necessary resources to achieve something" [logistics middle-manager, 47]) lead to unsatisfying quality of working life for some managers as digital tools decrease time available and produce 'time famine' (Perlow 1999).

4.3 | Increase in Time Available

4.3.1 | Predictability

When looking at the increase in time available due to digitalization, our analysis shows that digital tools have become 'a significant time saver' for the majority of middle managers. Some managers' tasks have remained the same but they are 'significantly faster' [retail and wholesaling manager, 41]. A manager explains that, even if they were 'already very good' in time management, they realised they could save additional time 'if [they] did that [thing], if [they] did that [other thing]' [R&D manager, 55]. One example is constituted by tracking technologies, which have also made tasks more predictable (it is now easier to "see how much [they] sell per week, what is [their] average, what did [they] do last week," [branch manager, 59]). Work content changed following digitalization, making tasks more diverse, faster (it is possible "to manage large volumes faster and better"), and work more autonomous ("all the information that was done a month ago comes out and everyone follows again the small range that [they] had done a month ago" [project manager]).

4.3.2 | Creativity and Cognitive Skills

Most interestingly, the use of technologies, especially collaboration and automation tools, allows managers to use the extra time for creativity and cognitive tasks. As a result, they can invest 'more time working with information' [responsible for operations, 30]. When there is time left, they can 'put ideas in place' and 'see how [they] can push [into new directions].' Managers can now focus to a larger extent on the content ("an even richer content than [they] had before" [responsible for operations]) rather than the organisational aspect of the task, as well as use the time to learn and teach digital skills. This is particularly true for companies where the possibility of digital dive is large. In some companies, the staff is granted the possibility to partake in 'eternal apprenticeships' to learn new skills. Thanks to the extra time generated, digitalization has become 'a daily comfort and well-being because of learning more, assimilating more and more things, and staying active' [logistics middle manager, 47], while collaboration technologies have made work 'much clearer.'

The possibility to learn about new technologies is particularly welcomed because 'there's nothing worse than coming to work, feeling, no longer feeling useful' [logistics middle manager, 47]. Digitalization has provided managers with an opportunity to learn digital and technical skills to co-work with machines and software. In companies where repetitive tasks have been replaced by automation technologies and the focus has shifted to the content, R&D managers also experienced an increase in creativity ("I appreciate that not all days are the same"). While before, 'the harder you worked physically, the better, now you

just have to work smarter' [logistics middle manager, 47]. As a result, for some managers, quality of working life has significantly increased as it has allowed for flexibility, informality, and a channel to creativity and knowledge thanks to new skills learned.

4.3.3 | Autonomy

For managers the increase in power consequent to digitalization is perceived as both power to teach and assist and power to learn and dedicate time to meaningful tasks. This perception is also strengthened by the increase in flexibility observed following digitalization. Less constraints in terms of workplace and working hours result in a flexibility that grants 'a lot more freedom in how [managers] do things and when they do them' [supervisor of bank insurance advisors, 30]. This is particularly true for work experienced during pandemic times. A research and development manager explains that, now, he can have 'a nice coffee' in his 'beautiful garden' and '[doesn't] have to rush' [supervisor of bank insurance advisors, 30]. Of course, this depends on the individual experience too, as some managers think that 'managing [their] work and time [...] can cause additional stress' [research and development manager, 47].

4.3.4 | Emptiness

It is important to highlight that extra time can also impact managers negatively when it generates emptiness. This occurs when tasks originally meant for the role of the manager are replaced by a digital tool or machine. It can include organisational, communication, and computational tasks. As a result, managers can experience growing feelings of boredom, as well as a crisis in their role and responsibilities. On the one hand, digitalization can make tasks more repetitive. On this subject, a manager claims she 'sometimes [hopes] to have problems, because there are times when it's too quiet, in fact the day is very long' [mechanics middle manager, 38]. Another manager explains that, with digitalization, they 'no longer work on breaks in the afternoon because there is no point in making people stay until 10 p.m. when the work will be absorbed by 4 p.m' [responsible for operations, 30]. On the other hand, while digitalization forced managers to acquire a new coaching role in terms of reskilling their staff, digitalization also disrupted the original organisational structures. This means that, as digital tools allow people 'to work alone,' online meetings and organisational software lead to 'very few contacts' across teams, and employees 'do not know which person necessarily takes care of what' [mechanics middle manager, 38], managers perceive that 'hierarchy is gone, as you will be gathering people from different departments into teams and having them work on topics' [responsible for operations, 30] and, with that, also their leading role and their power. In this regard, a research and development manager explains that, during virtual meetings, everyone turns off their camera 'because otherwise it glitches more quickly' and, as a result, they feel alone: they end up talking to themselves and wondering whether they 'still interest people', if they are still relevant [R&D project manager, 47].

5 | Conclusions

Digitalisation does not exclusively affect the way in which we work, but also the way in which we think about work. In this article, we focused on middle managers from Belgium. By analysing in-depth interviews carried out at companies specialised in different sectors, we investigated how the introduction of collaboration, automation, tracking, and interactive technologies affected work content, employment conditions, quality of working life, work organisation, perceptions about digitalization, and employment relations. Overall, we observed a higher degree of fragmentation and complexity of tasks. Tasks have progressively become more diverse, faster, and digital. Despite automation has made work more autonomous for some, workload has increased in general due to the progressive acceleration in output. Digitalisation has forced managers to become more flexible, dynamic, and independent in their decision-making process. It also seems to have influenced employment relations to some extent: in-team meetings have become more frequent and informal, also thanks to hybrid possibilities and employees are able to share their perspectives more easily, due to the increase in collaboration technologies. In parallel, the original hierarchical structure of companies is progressively disappearing, leaving space to self-organised teams.

Our research contributes to the literature by illustrating how digitalization and digital tools change the perception of time on behalf of managers, in line with the idea that tensions are created between regular and disrupted use of time. In a world and labour market where time has become more voluptuous, understanding time perception is focal as time affects the way in which managers make decisions in the company, set goals, allocate resources, communicate, and set priorities as well as goals for their employees. While several papers have discussed the concept of time as an entity affecting the workplace in general, the qualitative evidence provided in our article allows for a deeper understanding of the question by illustrating the individual perspective of an essential segment of the working population. By investigating the intertwinements between the introduction and use of digital tools and the implications they have on a series of managerial tasks, we shed light on the dualities brought by time to the role and professional identity of managers. In other words, our article enriches the literature from a sociological perspective associated with work and technology and the paradox of having simultaneously too little and too much time.

Particularly, we contribute to the autonomy (and time) paradox introduced by Orlikowski and Yates (2002) and Mazmanian, Orlikowski and Yates (2013) according to which technology both expands and compresses time available. On this subject, we reflect on the freedom and time constraints offered by technology and on the temporal reflexivity that makes organisational actors create and readjust their temporal structures. By providing qualitative empirical evidence on Belgian managers, we explore how digital tools can paradoxically both diminish and expand available time through enhanced productivity and creativity or, alternatively, contribute to a sense of emptiness. In this regard, we also contribute to the literature by introducing the concept of emptiness in the working lives of managers. According to Bendassolli (2017), 'if work could never be felt

(even though provisionally) as empty at all, we would certainly not be bombarded with a plethora of information concerning how to transform work into something more pleasant or meaningful in the current organisational contexts'. If managers experience emptiness, as a consequence they experience a professional identity crisis. The autonomy paradox of digital tools is reflected in the paradox of time at work and subsequently in the paradox of the managerial role. Managers are being encouraged to step back from their roles as field experts and to evolve into coaches, mentors, and teachers, prompting a comprehensive re-evaluation and transformation of their functions (Gjerde and Alvesson 2020; Leavy 2023). These transformations may sometimes lead to a pathological phenomenon called 'escalating indecision' in which managers are engaged 'in a set of practices and constraints that promote a particular project while at the same time preventing its implementation or stabilisation' (Denis et al. 2010).

Our analysis presents several limitations: the sample is exclusively Belgian, focused on the category of middle and R&D managers, and the analysis is based on qualitative assessment. Future research should identify patterns for similar industrial regions of Europe, highlight differences across categories of managers, as well as provide quantitative evidence with respect to the time variable. Having said that, our analysis compensates for the lack of evidence in the literature regarding the impact of digitalization on personal perception of managers, rather than the more objective outcomes of productivity or workload. This is justified by the positive and negative implications that affected or unaffected managers can have on their work, their staff, as well as their own wellbeing. The focus on time is justified by the increasing expectations of instantaneity and availability proposed by the current labour markets, which demand over-connectivity, together with the contrasting emergence of feelings of emptiness when digital tools take over our work.

While companies and managers enjoy the opportunities brought by both digitalization and COVID-19, the risks associated with the new forms of working that derived from it have not been addressed yet at the national or regional level. Policy makers should urgently address issues of over-connectivity, increase in workload, as well as identity crisis in terms of roles and responsibilities that have been transformed because of digitalization. This can be done by issuing laws that regulate digitalization at work or by collaborating with occupational psychologists in companies and providing companies with the necessary guidance. As argued by Focacci and Perez (2022), technological revolutions per se are not sufficient to guarantee a parallel socioeconomic progress. To obtain this, governments need to create the adequate institutional framework required for the absorption of the new technical possibilities via education, welfare, and training programs.

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