SELF-ROSTERING FOR IMPROVING LABOR CONDITIONS

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Abstract

The shift work schemes are usually set regardless of technological innovations. Employees have no access to address their time flexibility for operational reasons, and employers find to plan flexible working regimes based on traditional rostering as time and financial consuming. Human resource management pays limited attention to self-rostering, even though employees appreciate balancing work-private/family life. The paper aims to call for a new approach to personnel planning and discuss implementing self-rostering using the Czech labor market as a case. The article discusses the benefits of self-rostering. Research methods combine in-depth analysis of bibliographic data in the Web of Science database, on-the-desk analysis of secondary sources, questionnaire research in the CR in 2019, and unstructured interviews with managers July-August 2020 for writing narrative cases. Based on the analysis of rostering in the Czech environment, findings highlight approaches to shift work, which results from the employees´ preferences of self-rostering. The added value is to encourage discussions about flexible employment practices and their implications for the quality of work-life of shift workers.

Key words: Flexibility, workforce, self-rostering, job satisfaction, work-family balance

JEL Code: J22, J53, J81

Introduction

The working regimes of employees in shift regimes traditionally set regardless of technological innovations. They work in manufacturing, transport, logistics, trade, healthcare, and social services and have no access to address their time flexibility for operational reasons. Employers find to plan their employees' working schemes based on traditional group rostering as time and financial consuming. Human resource management (HRM) pays limited attention to this practice, even though it increases productivity, flexibility and employees evaluate their time flexibility as the most critical factor in job satisfaction as a precondition for work-family balance.

This paper aims to call for a new approach to personnel/human resource planning and discuss perspectives of implementing self-rostering using the Czech labor market as a case. The paper discusses the benefits of self-rostering for employers and employees.

1   Research methods

The methodology insists on several ways that enable a triangular analysis. The research combines in-depth-analysis of bibliographic data in the Web of Science and Scopus database, focusing on the Web of Science database. Based on bibliometric analysis, it emerges trends in developed economies, mainly in Scandinavian countries, where employers innovate practices in rostering and workforce planning that monitor occupational health and analyze psychosomatic indicators of workers. Secondary sources provide an overview about self-rostering and serve as a basis for formulating research questions. Approaches to practices in shift work and rostering in Czech companies were identified by questionnaire research in 2019, and unstructured interviews with five managers in July and August in 2020. The additional information gave authors´ long-term experience about labor conditions and industrial relations in the CR. The interviews provided data for writing two narrative cases. Therefore, research collects and analyses data from an interpretative group of methods that reveal the potentials for self-rostering in Czech companies.

Research questions reflect the state-of-the-art in secondary sources, gaps in self-rostering in the Czech environment. The paper intends to find answers to the following:
– What rostering practices prevail in the Czech business?
– Which expectations of staff are in their attitude to rostering?
– Which benefits can bear self-rostering for the improvement of the quality of working life?

2 Literature overview

2.1 The bibliographic analysis

We retrieved 16 309 bibliographic records that matched the query in database search in the period 1990-2020: records from the Web of Science databases count for 7 896 and Scopus 8 413. The structure of bibliographic records shows Table 1. The enormous amount of literature of various sciences does not allow a complete analysis of all of them. In this paper, the analysis limits the most significant works, considering the citation index related to workforce planning, shift work, rostering, and self-rostering. The Web of Science database outlines the development of promising directions in several areas: health policy services, nursing, health care sciences

services, medicine general, public environmental and occupational health, and industrial relations.

Tab. 1: Bibliographic records by the query in the Web of Science and Scopus database 1990-2020[a]

Query	Web of Science	Scopus
„Workforce planning"	1 072	1 593
„Shift work"	6 237	5 978
Rostering	575	820
Self-rostering	12	22
Total	7 896	8 413

Source: Calculated by authors. Accessed 2020/09/25

Workforce planning belongs to the most studied topics in the analyzed period 1990-2020 in the USA (258 publications in the Web of Science), Australia (239), England (237), Canada (75), Scotland (48), but in the CR three ones. Articles dealt with the theme as mentioned above cover according to categories topics from health care and sciences services (239 publications, i.e., 23 %), business economics (183 publications), nursing (149), general internal medicine (142), public environmental and occupational health (96), operations research management science (85) and others.

In the case of shift work, the order of the number of publications characterizes the USA (2 078 papers), England (498), Australia (403), Germany (358), and Canada (338). The CR records twenty. Papers belong to topics from categories: public environmental and occupational health (1 640 publications), neurosciences and neurology (871), physiology (575), life sciences and biomedicine other topics (494), and psychology (395).

Papers about rostering mainly public in England (82), Australia (72), Germany (54), Belgium (47), the People Republic of China (45), and in the same period in the CR eight. They focus predominantly on operations research management science (220 publications), computer science (219), engineering (147), business economics (103), and transportation (33).

Self-rostering mostly becomes a subject of publications in Denmark (5), and only one paper exists the countries like Australia, Canada, England, Germany, and Sweden; however, in the CR, nothing. They belong to engineering, psychology, public environmental, occupational health (each research area per three papers), criminology penology, and nursing (two).

2.2 Theoretical ground of self-rostering

Personnel staffing and rostering associate with human resource management processes. Companies require employees to work in various shift regimes to satisfy clients with their services 24 hours a day, seven days a week. When planning shifts, they must respect the legislation, the results of collective bargaining, and, increasingly, employees' individual needs. The trend is to find sustainable human resource planning and create flexible shift work, e.g., transport, production, call centers, health care, and protection services. (Kletzander, Musliu, 2020) so that shifts be secured by staff while respecting individuals' needs and a set of constraints (Komarudin et al., 2020).

Adverse effects of shift work include a bulk of problems like insomnia and chronic sleepiness, loss of health and productivity, the tendency to compensate for sleepiness by alcohol and drugs (Rajaratnam, Arendt, 2001). Akerstedt et al. (2002) believe that stress and the social situation at work strongly determine disturbed sleep and impaired awakening and that the lack of ability to halt bothering about work during free time may be an essential link between stress and sleep. Findings achieved by Drake et al. (2004) regarding the prevalence and consequences of shift work argue that workers with shift work sleep disorder are at risk for significant behavioral and health-related morbidity associated with their sleep-wake symptomatology. The research focused on health care employees suggest that tight deadlines, performance pressure, weekend work, and lack of working time autonomy correlate to impaired well-being among them (Karhula et al., 2020).

Research and commercial projects have been dealing with computational methods applicable to personnel rostering and individualized scheduling since the 1950s. During the last 20 years, the interest covers other related areas as workforce planning and approximating staffing (Ernst et al., 2004). The idea lies in the innovative approach that requirements as some personnel needed per shift type for each day of the planning period can substitute time interval requirements that account for the personnel requirements per day in terms of the start and end times of personnel attendance (Burke et al., 2006). Hart, Bowman, and Mallet (2020) analyze the quantities of time individuals and households allocate to paid employment, household, family and caring responsibilities, sleep, and self-care and argue that when time and income capability was too low, workers' informal care duties, social connections, and health were compromised.

The three types of rostering approach can define, and each represents a more participative process in managing human resources. Self-rostering and departmental rostering are on the poles of the extreme, team-rostering lays in the middle. Self-rostering encourages staff empowerment, work motivation, and roster effectiveness (Silvestro, Silvestro, 2000).

Positive effects of self-rostering exist on both sides of labor relations. Research about benefits characterizes various aspects and concludes that:

– the periodic self-rostering is associated with satisfaction with work hours and acts as a moderator of personal fit to shift work exposure (Ingre et al., 2012),

– pure employee-determined flexibility leads to good compatibility of shiftwork with social life; however, it causes organizational consequences associated with a loss of work-related social structures and drawbacks concerning work-climate, leadership, as well as reciprocal trust and support (Buerger, Nachreiner, 2018),

– job demands are more realistic in personnel planning, and the workplace's social environment enhances, especially if its implementation means no drastic changes in the organization of the employees' work and private life. (Hansen et al., 2015),

– IT-based tools for planning rosters among shift workers improve the work-family balance (Albertsen et al., 2014).

3 Findings about self-rostering in the Czech Republic

3.1 Questionnaire research

The questionnaire survey took place from January to December 2019, and the total number of respondents was 1 049, of which 657 were men and 392 women, respondents from Prague counted 103, Bohemia 560, and Moravia 386. The largest share of respondents worked in production (31 %), followed by services and sales (18 %) and healthcare (10 %). Employees accounted for 49% in the eight-hour shift and 40 % in the 12-hour shift.

Tab. 2: Benefits from shift work

What are the benefits of shift work?	%	What other benefits or opportunities related to working hours does the employer offer?	%
Free even during a typical working week	58.3	Part-time work	20.8
Possibility to arrange things in the morning or afternoon according to the shift	52.0	Custom shift selection (self-planning)	14.7
Surcharges for some shifts (night shifts, weekends, holidays)	50.0	Possibility of changing shifts	52.1
Possibility of overtime work	22.4	Possibility to use a working hours account	17.1
Less commuting in 12-hour shifts	22.1	Choice of shift model or shift length	9.1
More than two days off in a row	31.2	Sick days	12.1
Other	3.4	Other	12.2
Count	1 049	Count	1 049

Source: Authors.

Tab. 3: Negative aspects of shift work

What bothers the most about shift model	%	Does the employer meet employees´ needs when planning shifts?	%
Work on weekends	26.9	Yes, whenever he/she needs to	29.8
Night shifts	26.0	Yes, sometimes, if it does not disrupt the operation	41.8
The pressure to work overtime	14.1	Only in exceptional cases	21.4
Inability to reconcile shifts with private life or physical condition	33.1	No never	7.1
Count	1 049	Count	1 049

Source: Authors.

Respondents report that shift work causes them a few psychosomatic problems, namely fatigue (66.6 %), mental irritation/depression (27.4 %), sleep disorders (43.6 %), anorexia/nausea/indigestion (11.1 %), headache (24.5 %), and other (9.8 %).

The survey shows that 94.7% of respondents said it would suit them to plan all or at least some shifts according to their needs.

3.2 Narrative cases

Narrative case 1. Top manager (46), production. Based on his experience in managing factories, he describes that the growing number of businesses deals with restrictions in their budgets, which causes them to use self-rostering as practice on how to plan the personnel capacity effectively. The Czech Republic faces several obstacles like an aging workforce, trouble with blue-collar staffing jobs, low unemployment, and a limited migration due to the COVID19. Therefore, the environment creates challenges for companies to manage resources effectively. Self-rostering means flexible working schemes as work-life/work-family balance becomes extremely important for recruiting and retaining employees. It can implement in any sector; however, the younger workforce is more open to using self-rostering. They are more willing to accept changes in rostering towards self-determined shift work as they feel comfortable to focus on balancing their activities.

Managing people taught any managers that self-rostering gradually emerges as a necessity. Due to the current situation in the economy and the pressure on business, employers must cope with trends in the labor market and offer individualized working schemes. Inspirations for me came from Scandinavian companies as they benefit from participative labor relations and developed occupational health care.

Narrative case 2. Senior manager (38), services. In the CR, employers rarely use self-rostering because people have little knowledge about this practice or worry as they must implement IT-based tools in planning time. Employees have little understanding of how self-rostering operates, so they are afraid that the system is fair. When choosing hours individually, some are smarter than others, and others see the system as unfair. Working hours mean a large part of life, and it is apparent resistance. Self-rostering must begin as a pilot project and mainly build trust in labor relations. Testing of the IT-based tools in rostering is mostly a matter of change management. Employees often assume that self-rostering aims to save costs; however, self-rostering brings benefits for employers and employees. It represents fairness in personnel planning and managing teams. Everyone gets the right to choose and adjust shift work to personal preferences; however, anybody must know the system and have specific digital skills.

When we began implementing self-rostering at our company, almost everyone said they wanted to decide their schedule. However, when they got the options, it suddenly emerged changes in their behavior. They became afraid because they lost a self-confidence about how to choose. It is a significant change in thinking of shift workforce. Based on discussions with experts in self-rostering, it can derive from the experience mentioned above with the Czech staff several recommendations. In the case of setting some limits when implementing a new

rostering, it can optimize staffing. However, when staffing is very tight than any room for choices diminishes - freedom is lost. So, rules for self-rostering must set slowly and with the involvement of all staff. After a successful pilot project, the IT-based self-rostering contributes to increasing productivity, reducing absenteeism and fewer changes between shifts, better utilization of working time, and lowering overwork. The employer attracts more younger workers, and employees are more satisfied with jobs and shift work to better balance their work and personal activities.

Conclusion

Existing problems related to the fast, turbulent development of markets and industries show the necessity of companies changing their approach to personnel planning to maintain their stability (Stepanek, Urban, Urban, 2013). Based on the emerging trends, the paper intends to find answers to three questions:

– What rostering practices prevail in the Czech business?

– Which expectations of staff are in their attitude to rostering?

– Which benefits can bear self-rostering for the improvement of the quality of working life?

The predominant practice in shift planning still builds on the traditional approach, and self-rostering is not a well-known practice. The pressure to optimize personnel planning and working schemes will lead to employee designed shift work. The benefits are proven from secondary sources, and the inspiration for Czech managers are positive business cases from the Scandinavian countries. They demonstrate the benefits and guide for implementing self-rostering with the help of IT-based tools. The self-rostering can encourage discussions about flexible employment practices and their consequences for improving the quality of life of shift workers.

Findings show the trends in employers' attitudes to the flexible labor force and the importance of considering the wide variety of flexible working regimes, which results from the fact that employees prefer self-rostering and becoming more sensitive to precarious employment. The paper provides data about shift work practices and opens a potential of self-rostering in managing personnel capacity in Czech organizations.

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