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Organizational Culture and its Motivational Potential in Manufacturing Industry: Subculture Perspective

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Abstract

The manufacturing industry is still a significant economic sector and organizations try to make it attractive enough for their workforce, e.g. by motivating organizational culture. The aim of the paper is to present the results of a survey of organizational culture and its motivational potential in manufacturing organizations supporting sustainable manufacturing. Empirical exploration is based on Cartwright's Nine Factors Methodology. The findings show that, generally, the subculture of the production workers has lower motivational potential than the subculture of non-production workers. At the same time production workers' motivational potential decreases even more with the increasing length of service in the organization.

Keywords: manufacturing industry; motivational potential; non-production workers; organizational culture; production workers; subcultures; sustainable manufacturing.

1. Introduction and theoretical background

The differences among social groups in terms of their behaviours and habits as well as underlying values have been recognised over time. Many times, the bigger groups are recognised as consisting of smaller ones with whom they exercise common values, but some are distinctive. For instance, in the past, they were hedonists when

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compared with stoics even thought they were perceived as in-group members of Greek philosophers, or Catholics and Protestants considered to be Christians. On the one hand, all those in-group members represent common values, beliefs or norms. On the other hand, in specific characteristics, typical of subcultures (members of smaller groups), they differ from each other.

Similar analogy can be applied in many examples from various ways of life where individuals are members of various cultures and subcultures at the same time. One of the contexts with numerous subcultures is typical of the members' interactions in working settings. Almost any organisation is far from being homogeneous, but consists of specific groups of employees [1]. An individual (employee) as part of the organisation's culture is simultaneously part of a subculture, even of several subcultures. The subcultures stem from social, organisational, and individual characteristics of the employees [2]. Black [3] argues that, in such a case, they may embody occupational subcultures (e. g., traders, accountants, lawyers) and departmental subcultures (professionals located at different offices or with different product responsibilities). Schein [4] introduces the categorisation with regard to the executed assignments, similar experiences or the location within the organisational hierarchy.

In the past, in theory and practice, subcultures were analysed by many researchers (e.g., Fine et al. [5]; Van Maanen et al. [6]; Sackmann [7]). Hofstede [8] represents another example presenting three subcultures identified in a Danish insurance company: a professional subculture, an administrative subculture, and a customer interface subculture. In his more recent book Daft [9] instantiates an organisation with its subculture of production unit and subculture of research and development unit. It can be generalised that organisations of similar type include similar subcultures of comparable types. In health-care organisations they can include the subculture of doctors and the one of nurses; educational organisations cover the subculture of teachers and the subculture of non-teachers. A manufacturing organisation can serve as another example with its subculture of production workers and the one of non-production workers (i.e. wage and salary workers, respectively).

Trice and Beyer [10] claim that subcultures exert the same elements that cultures do: distinctive patterns of shared ideologies and distinct sets of cultural forms. Thus, they embody the systems of artefacts, values, and assumptions of a particular group of people [11]. Hella et al. [12] emphasise the importance of subcultures in organisational transformation, where the significance is attached to the overall (umbrella) culture, but the role of subcultures is often overlooked. Ogbonna et al. [13] give an example of the subcultures' influence on the organisational change process namely stemming from the tension existing among the identified subcultures.

This proves that subcultures are value systems as well, and thus they have their impact on the materialisation of the management's decisions. Barker et al. [14] introduce their example related to the implementation of the elements of corporate social responsibility (CSR) and argue that *"subcultures play a significant role in determining the level of internalisation of dominant CSR values, beliefs, and principles, and as such have the potential to influence the level of commitment to CSR within an organisation"*.

Thus, subcultures not only represent the value and normative systems of their in-group members, but they exercise similar influence such as the one of the umbrella culture upon the organisation's performance, which refers not only to the functioning of the organisation as a whole, but also to the behaviour of its in-group members. Consequences of individual subcultures' presence are more or less specific of the social group in question. Workers in manufacturing represent an identifiable example of the groups.

The number of people employed there underscores the importance of manufacturing market segment in question; in the countries of the European Union they account for one fifth of the employed [15]. And the power they govern finds its expression, for instance, in strikes – a common phenomenon in the manufacturing sector for a long period. Brenner et al. [16] give many examples from history, e.g. the year 1959 when all production workers in the steel industry of the USA were on strike. In recent history, it was the protest of German industrial workers affecting companies including Volkswagen, truck maker MAN and automotive supplier ZF Friedrichshafen [17].

The innovations that are strongly needed to make manufacturing sector sustainable are based not only on new and advanced technologies, but also on the people involved. Nowadays, in times of decreasing unemployment across Europe [18] and the related lack of candidates for particular positions, organisations try not only to attract fitting candidates, but also to retain them and mainly to motivate them [19] to be innovative (practice proves a necessity to reveal and understand what influences employees' motivation) [20]. One of the possibilities is to shape such an organisational culture that increases employees' motivation and thus the innovative thinking of employees

(innovations play a key role in moving manufacturing industries towards being sustainable) [21] and the overall efficiency of the organisation [22].

It was Jeff Cartwright [23] who based his measurement of organisational culture on its influence upon the employees' motivation, i.e., the degree to which it motivates or demotivates in-group members. The extent to which the subculture influences its members can thus vary.

Even though scholars deal with the position of production workers from various perspectives, only a few focus on the subculture from the perspective of its motivational potential. To motivate production workers, some researchers present recommendations applicable under various organisational conditions. Vagn et al. [24] instantiate the possibility to involve production workers in innovations of the products they produce. Talapatra et al. [25] recommend to support and reward the work of production workers by their managers and to provide personal development through various programmes. This leads to the question if organisations providing various benefits focused specifically on production workers really make organisational culture motivating.

Some scholars try to identify the factors or characteristics of the workers having an impact on work-related motivation, job satisfaction, job involvement, and organizational commitment, e.g., length of organisational membership and age [26]. However, Kanfer et al. [27] claim that *,,age-related changes may enhance, decrease, or have little effect on work motivation, depending on work circumstances".*

Our objective has been to identify the impact the characteristics (namely, lenght of tenure and age) of the respondents have on the worker subcultures' motivational potential. Thus, the research has focused on analysis and comparison of motivational potential of two manufacturing organisations, on identification of differences between their subcultures (the subcultures of production and non-production workers) and interpretation of the findings to be utilised in managerial practice.

2. Methodology

The identification of an organisational culture's impact on employee motivation is based on the *Nine Factors Methodology* developed by Jeff Cartwright [23]. It comprises the following nine motivating factors (MF) through which a motivational potential of an organisational culture can be determined:

- MF1: **Identification** (identification with the organisation and its goal)
- MF2: **Equity** (balance between expectations and reality)
- MF3: **Equality** (respect of individuality of all members)
- MF4: **Consensus** (mutual understanding)
- MF5: **Instrumentality** (expectations that certain behaviour will lead to certain outcomes)
- MF6: **Rationality** (systemic approach to solving problems)
- MF7: **Development** (growth of members)
- MF8: **Group dynamics** (synergic effect of cooperation)
- MF9: **Internalisation** (identification with norms and ideas)

Individual motivating factors represent the tendency towards one of two extremes, i.e. positive as well as negative ones. To depict the tendency the method of motivometer is used. Motivometer consists of ten boxes, five of which form the negative preferences while five of them the positive ones. Zero in the middle portrays zero motivational effect. Based on the statements the respondent marks five boxes of his/her preference depicting his/her consent with the particular statement or what reaction the statement provokes in him/her. The condition that the respondent cannot decide for 50:50 division of boxes in both the directions (negative as well as positive) prevents from the respondent's tendency to introduce mean values without thinking much about the statement. In this fashion the respondent reacts to 36 statements, i.e., four statements referring to each motivating factor. The original pools of model statements [28] were adjusted to fit the nature of the surveyed organisations. Based on the responses we have determined the tendency of each motivating factor. Based on the responses to all 36 statements, the complete profile of the organisational culture emerges from the perspective of its motivational potential expressed in the interval <-2.5;2.5> with the extremes representing absolute demotivational potential and absolute motivational potential of the organisational culture in question.

2.1. Sample

The survey was carried out in two manufacturing organisations (*A* and *B organisations*) with total of 259 respondents in the year 2017. Based on the nature of their work they were divided into two groups: production workers and non-production workers. These groups are considered subcultures.

The workers with company e-mail accounts received the link at which the questionnaire could be filled in. Those without the accounts who during working hours have not any access to the computer, filled in a printed version of the questionnaire. This group consisted primarily of production worker working in shifts. Such an approach made the collection and processing of data more difficult because the respondents had to be address directly while working. The general questions included demographic data (age, job title, length of tenure) and the following 36 statements referring to the organisational culture. Every organisational culture and subculture is specific and therefore we analysed the data for each organisation separately and the resulting tendencies were supported by the results in both the organisations.

Motivational potential of the umbrella organisational culture was identified followed by the determining the motivational potentials of the surveyed subcultures. Consequently, specific characteristics of the respondents were taken into account and based on the results, the subcultures were analysed.

3. Analysis and discussion

As comes from *Table 1*, the overall motivational potential of *A organisation's* culture with the score of 0.16 (interval of -2.5 to 2.5) is positive, i.e. its organisational culture is motivating. Out of nine, three motivating factors account for negative scores. The analysis of the motivational potential of production workers' subculture results in the negative score (-0.09), i.e., the subculture is demotivating with five motivating factors displaying negative scores. On the other hand, motivational potential of non-production workers' subculture is positive (0.29) with two factors exercising negative scores.

This means that there is a significant difference between the surveyed subcultures in *A organisation*. The motivational potential of production workers' subculture is lower by 0.38 than the one of non-production workers'. This refers to all surveyed motivating factors as well.

Table 1. Motivational potential of *A organisations's* culture

Motivating Factor / Cultural Profile	MF 1	MF 2	MF 3	MF 4	MF 5	MF 6	MF 7	MF 8	MF 9	Total
Total (the whole organisation)	-0,04	-0,40	0,28	0,09	0,52	0,29	0,40	-0,30	0,63	**0,16**
Production Workers	-0,19	-0,64	0,00	-0,24	0,33	-0,11	0,06	-0,50	0,46	**-0,09**
Non-Production Workers	0,03	-0,28	0,41	0,25	0,61	0,49	0,56	-0,21	0,71	**0,29**

Table 2 shows the overall motivational potential of *B organisation's* culture. With the score of 0.33 it is positive, i.e. its organisational culture is motivating. Only two motivating factors exercise negative scores. Similar to the comparison of *A organisation's* subcultures, *B organisation's* subcultures demonstrate similarities as well as some differences. Production workers' subculture accounts for negative score (-0.04) with four motivating factors exhibiting negative scores. On the contrary, motivational potential of non-production workers' subculture is positive (0.50) with all motivating factors manifesting positive scores. This means that the difference between the subcultures is even more evident than in *A organisation*, reaching 0.54 score. This refers to all surveyed motivating factors as well.

Table 2 Motivational potential of *B organisation's* culture

Motivating Factor / Cultural Profile	MF 1	MF 2	MF 3	MF 4	MF 5	MF 6	MF 7	MF 8	MF 9	Total
Total (the whole organisation)	0,14	-0,21	0,43	0,04	0,68	0,32	0,66	-0,08	0,97	**0,33**
Production Workers	-0,38	-0,67	0,08	-0,33	0,38	0,05	0,20	-0,31	0,59	**-0,04**
Non-Production Workers	0,39	0,01	0,59	0,22	0,83	0,45	0,87	0,02	1,15	**0,50**

The results show that the subcultures of production workers in both the surveyed organisations demonstrate similar lower motivational potentials than the subcultures of non-production workers. This refers to all motivating factors as well.

To interpret the results correctly, it is important to analyse results from the perspective of the respondents' characteristics in terms of the length of tenure and age.

The overall motivational potential of the production workers' subculture in *A organisation* decreases with the increasing length of their tenure (*Fig. 1 (a)*). Motivational potential of newcomers (working for the organisation <1 year) accounts for the score of 0.81, the score decreases at 0.10 in the group of workers working short-tenure (1 – 9 years) there and at -0.32 in the group of those working long-tenure (⩾10 years). It must be added that the recruits need some time to get oriented in the new culture, to understand and interpret it adequately. To get the clear picture of the culture's impact properly, it is better to focus on the employees working for the organisation longer (1 – 9 and 10+ years). The results for those two groups demonstrate the decrease of motivational potential in relation to the length of tenure for the employer by 0.42 score while the fall of the potential refers to 8 out of 9 motivating factors. No change occurs in the motivating factor *internalization* (MF 9) and only slight worsening is manifested in the motivating factor *instrumentality* (MF 5).

Similarly, there is the decrease in motivational potential of production workers' subculture in *B organisation* in relation to increasing length of tenure *(Fig. 1 (b))*. Motivational potential of the group of new recruits (<1 year) demonstrates the score of 0.57, but decreases at 0.18 in the group of short-tenure (1 – 9 years) and continues falling at -0.16 in the group of long-tenure (⩾10 years). Analysing the results for the groups of workers with short- and long-tenure, the decreasing motivational potential accounts for 0.34 score between the group of those being with *B organisation* short-term (1 – 9 years) and those being with it long-term (⩾10 years). 8 out 9 factors exercise worsening. The only motivating factor that demonstrates bettering is factor *instrumentality* (MF 5).

As comes from the analysis of the non-production workers' subculture, in *A organisation* an opposite tendency occurs in the motivational potential with it increasing along the increasing length of tenure *(Fig 2 (a))*. The motivational potential of new recruits (working for the organisation less than a year) accounts for the value of -0.27, increases at 0.29 for the workers in short-tenure (1 – 9 years) and grows at 0.39 for the workers in long-tenure (10 years+). If only the groups of workers of short- and long-tenure are taken into account, the increase in motivational potential accounts for 0.1 score, i.e. the insignificant growth in 5 motivational factors is identified.

In *B organization (Figure 2 (b))*, the motivational potential of the non-production workers's subculture accounts for the value 0.85 (new recruits working for the organisation less than a year), decreases at 0.47 for the workers in short-tenure (1 -9 years) and slightly grows at 0.49 for the workers in long-tenure (10 years+). If only the groups of workers of short- and long-tenure are taken into account, the increase in motivational accounts for 0.02, i.e. the insignificant growth by in 5 motivational factors is identified as well as in the *A organisation*.

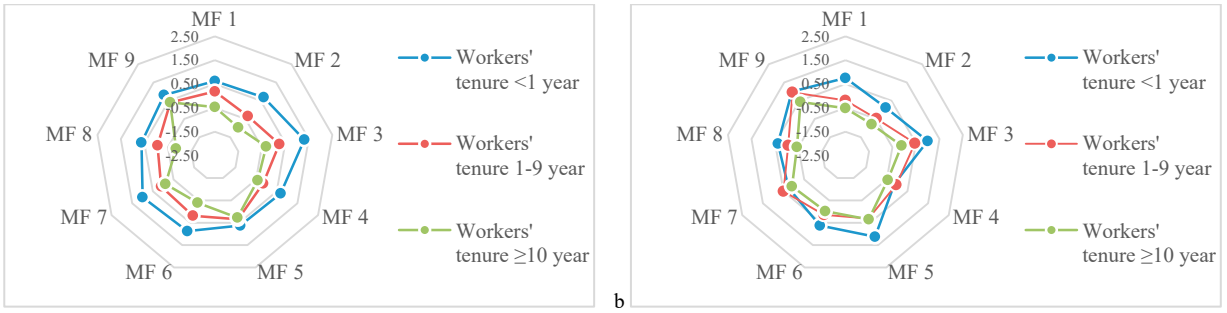

Fig. 1. (a) Motivational potential of production workers' subculture in *A organisation* related to the length of tenure; (b) Motivational potential of production workers' subculture in *B organisation* by the length of tenure

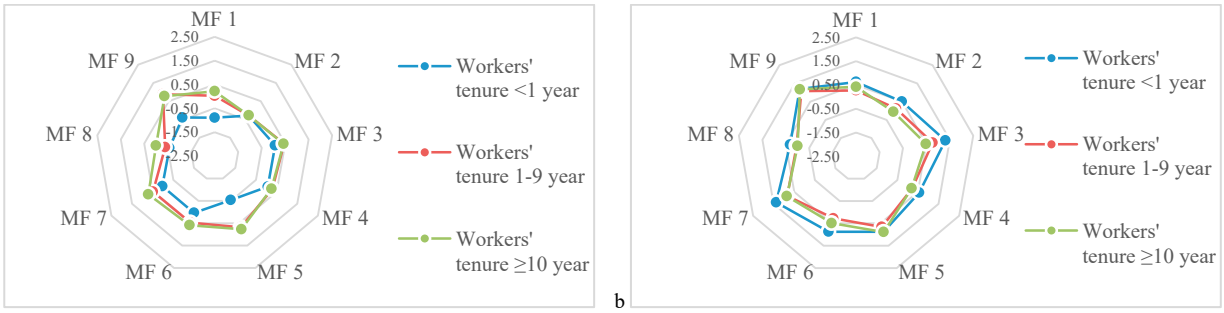

Fig. 2 (a). Motivational potential of non-production workers' subculture in *A organisation* by the length of tenure; (b) Motivational potential of non-production workers' subculture in *B organisation* by the length of tenure

When comparing the groups of workers employed at the organisations over 10 years, the production workers' subculture in *A organisation* accounts for lower motivational potential by 0.71 and that in *B organisation* for lower one by 0.65 than the non-production workers' subculture working for the identical organisation within the same span of time (Table 3).

Table 3 Motivational potential of workers working for organisations over 10 years

Motivating Factor/Cultural Profile	MF 1	MF 2	MF 3	MF 4	MF 5	MF 6	MF 7	MF 8	MF 9	Total
Production workers – *A organisation*	-0,47	-0,97	-0,32	-0,42	0,27	-0,39	-0,11	-0,85	0,41	**-0,32**
Non-production workers – *A organisation*	0,22	-0,28	0,43	0,25	0,77	0,59	0,72	0,00	0,78	**0,39**
Production workers – *B organisation*	-0,51	-0,79	-0,11	-0,45	0,35	-0,01	0,09	-0,43	0,43	**-0,16**
Non-production workers – *B organisation*	0,42	-0,06	0,48	0,20	0,89	0,49	0,86	0,00	1,17	**0,49**

As comes from the above mentioned findings, the production worker subculture's motivational potential in both the organisations decreases along the length of tenure in the organisations (except MF5 *instrumentality*). Simultaneously, the subculture of the production workers with the tenure exceeding 10 years exercises the motivational potential considerably lower when compared with the non-production workers' subculture. There are no significant differences between short-term and long-term employed groups in the non-production workers' subculture.

Similar approach is applied in the analysis of the subcultures from the perspective of the respondents' age. The overall motivational potential of production workers' subculture in *A organisation* decreases with the growing age *(Fig. 3 (a))*. The group of youngest workers (18-29) exercises the motivational potential of 0.56, while it decreases at -0.09 for the middle-age worker group (30 – 45) and reaches -0.37 for the group of older workers (46+).

Motivational potential of production workers' subculture in *B organisation* stays the same for the categories of the youngest workers (18-29) and middle-aged workers (30-45) reaching 0.04. It decreases (however slightly) for the category of the oldest workers (46+) at -0.12 *(Figure 3 (b))*.

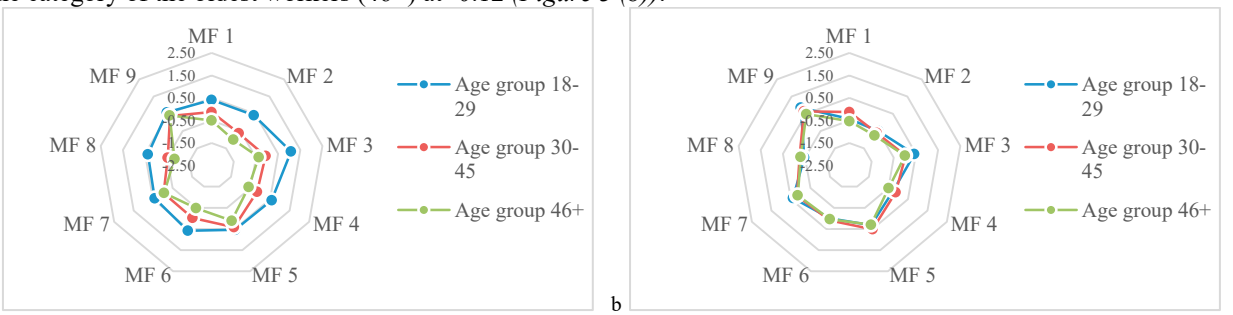

Fig. 3 (a) Motivational potential of production workers' subculture in *A organisation* by age; (b) Motivational potential of production workers' subculture in *B organisation* by age

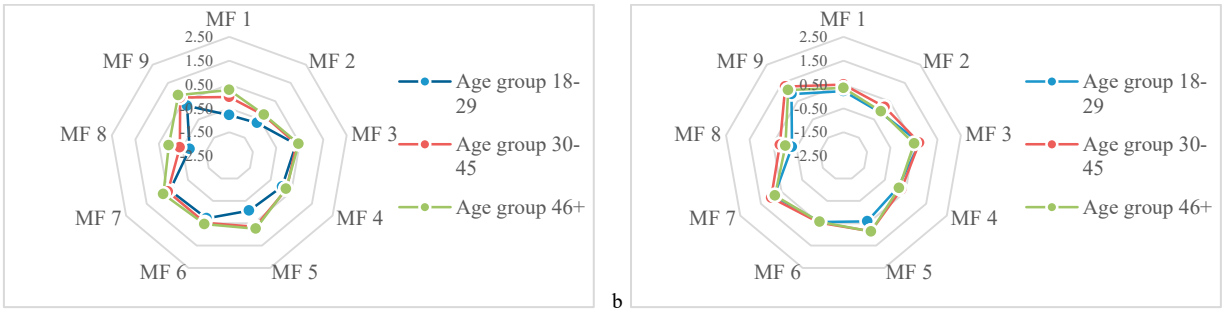

Fig. 4 (a) Motivational potential of non-production workers' subculture in *A organisation* by age; (b) Motivational potential of non-production workers' subculture in *B organisation* by age

The overall motivational potential of non-production workers' subculture in *A organisation* increases along the age *(Figure 4 (a))*. The category of the youngest workers (18-29) exercises the motivational potential of -0.11 while it grows at 0.25 for the middle-age category (30-45) and at 0.40 for the category of the oldest workers (46+).

The overall motivational potential of non-production workers' subculture in *B organization (Fig. 4 (b))* in comparison of the category of the youngest workers (18-29) at 0.37 grows to 0.62 for the middle-age category of workers (30-45) and falls at 0.47 for the category of the oldest workers (46+).

The data in *Figure 3(b)* and *Figure 4 (a)(b)* show that the relation between a subculture's motivational potential and the age of the workers' category cannot be unambiguously determined either for production or non-production workers.

4. Conclusion

New technologies form the basis for innovations across all fields of business, including the manufacturing sector. However, manufacturing companies without employees that are able to think innovatively, but are also able to adopt new technologies, processes and systems in their daily work probably would not achieve sustainability in their activities. Motivational organizational culture is one of the ways how to reach sustainable manufacturing through the organisation's employees. If the organisations are considered heterogeneous arenas, identifying their subcultures and their roles in motivational potential becomes crucial. The paper presents different approaches to innovations and sustainability in manufacturing industry and enlarges the common understanding of this research area.

The most important finding of the research is the fact that **the production workers' subculture exercises lower motivational potential than the non-production workers' one** regardless their overall organisational culture. Simultaneously, the findings show that **the motivational potential of the subculture of production workers decreases along the length of tenure in the organization. The subculture of production workers employed in the organisation longer than 10 years is outstandingly less motivating than the subculture of non-production workers employed in the organisation for the same span of time**. Helliwell et al. [29] provide similar results, even though they focus on happiness that can be a factor of the economic prosperity [30]. They argue that "*labour intensive work is systematically correlated with less happiness at work and this is the case across a number of labour-intensive industries such as construction, mining, manufacturing, transport, farming, fishing and forestry*."

It must be stressed that the surveyed organisations provide various benefits focused specifically on production workers, e.g., the ones directly linked to demanding physical work, such as regeneration programmes. As comes from the findings, in spite of the surveyed organisations' activities leading to the increase in workers' motivation, **all motivating factors for production workers exercise worse results in comparison with non-production workers in the same organisation, and eight motivating factors out of nine related to the length of tenure are worse as well**. When compared with the non-production workers' subculture, these motivating factors do not constitute specific areas that could be addressed in the endeavour to increase motivational potential (as presented by some authors), but they distinguish production workers' subculture as a whole from the others (of course, in the perspective of its comparison with non-production workers' one).

Our findings lead to several questions linked to the deliberate effort to influence production workers' subcultures that should be addressed in the future, one of them being the central one: **is it possible to influence substantially production workers' subculture and – in the context of the findings – to increase motivational potential of the subculture in question to reach the one of non-production workers or does its motivational potential stem from its specificity?** The specific characteristics here can include physically demanding work, worse working conditions in comparison with non-production workers or their lower education. The question was presented to the management of the surveyed organisations. Their experience shows that the new recruits among production workers are more than satisfied with working conditions and benefits; they assume that being exposed to the influence of the subculture's members start changing their attitudes and they become unsatisfied. The disappointment refers to wage, relationships at workplace or opportunities for career paths. However, this must be proved by the future research.

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