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Conceptual Paper

Personnel consequences of robotization and pressure on efficiency (Challenges of Minimization of process variability)

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ABSTRACT

Purpose: The purpose of the study is the critical reflection of managerial pressure on the minimization of process variability by management methods based on measurability and performance of companies with the help of technological functions.

Methodology: The study analytically describes management efforts to minimize the process variability and capitalize on technological innovations to increase flexibility and efficiency of work processes. Then the study analyses the logistical and personal consequences of process minimization in the context of general managerial principles. The Research questions are: 1. What are the implications of the current efforts of management to minimize its processes? 2. What are the personnel implications of minimizing processes?

Results: Identification of technological optimism applied to production management and logistics, and limits and weaknesses of minimization of process variability by mechanical and technological management approaches in order to increase efficiency, regardless of the potential of staff. The consequences and specific challenges of study are particularly important for strategy and management.

Research limitations: As it is a conceptual study, it is natural that it works with a certain perspective of the authors, who are motivated by practical experience in companies and the need to talk about the mentioned phenomena in management education. This means that the study only touches on some areas and leaves others out. The study also does not claim to be a comprehensive exhaustion of all related topics, it is a stimulus in what it condescendingly names. The biggest proctor for further work lies in the rapidly evolving digitalization and application of AI in organizations and companies. Further potential lies in deeper analysis of human thought processes and decision making in critical situations. This field (e.g., neuroscience) is also developing its research rapidly.

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European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

Practical implications: Conceptual study deals with a critical discussion over the current trends of management, which believes in improving the performance of companies through minimization of process variability. However, mechanistic approaches or technological innovations have a significant limit, that manifest themselves in negative impact on workers exposed to increased digital control.

Originality: The reduction of motivation, creativity, autonomy, active participation in corporate processes, disruption of corporate culture etc., are only some of them. The resulting consequences reveal the reason for team member burnout, as well as the decrease of creativity, inspiration, and long-term stability of the staff.

Keywords: *Process variability, Robotization, Effectivity, Human factor, Management.*

1. Introduction

Current management practices seem to be driven by two remarkable trends. On the one hand, companies leverage the employees' ability to work under pressure during extended periods (Zhang & Luo, 2020). On the other hand, companies promote outcomes by minimizing the processes' variability, such as reducing productivity costs or logistics operations (Amedzro St-Hilaire, 2020). Both of these trends rely on the mechanization and automation of all the processes that generate value of manufacturing or customer services (Zhang & Styblinski, 1995; Greisler & Stupak, 2007), and serious consequences for company staff.

The mechanization and automation of these processes, in turn, demand the use of new communication and information technologies (e.g., manufacturing robots, high-definition cameras that detect defecting products in assembly lines, or personalized marketing). With all these trends in various working environments, both employees and managers are going through significant changes.

In detail, the research questions are as follows:

RQ1- What are the implications of the current efforts of management to minimize its processes?

RQ2- What are the personnel implications of minimizing processes?

This study aims to provide the critical reflection of process optimization and process variability with the personnel consequences. The next Section 2 contains the literature revue, Section 3 presents the methodology: the process optimization and process variability. Section 4 comments the human aspects in process optimization projects.

Section 4 presents the study's findings, and Section 5 summarize the discussion and Section 6 is the conclusions, limitations with some suggestions for future research.

2. Literature Review

First of all, we must mention the expert discussion on the gradual onset of the so-called "Industry 4.0/5.0". It becomes widely-accepted the continuous process of monitoring, supervising, and evaluating the collective performance of different departments, units, and working groups (Shao et al., 2020). Thus, the maximization of corporate effectiveness is omnipresent nowadays, and its ultimate result is to facilitate even more the management of entire productive chains running at growing larger scales (Niharika & Sree, 2019).

Arguably, one of the most evident characteristics of current working environments is, the use of computer and telecommunication networks that facilitate employees interaction and stimulate new forms of working practices, such as teleworking (López-Igual & Rodríguez-Modroño, 2020). Both positive and negative aspects of these working practices are noteworthy. On the one hand, teleworking allows employees to save time and money for commuting between home and office, and prevent the spread of the covid-19. On the other hand, managers face new challenges, such as absenteeism and how to measure it or the so-called “Zoom fatigue” (Nadler, 2020) or the lack of harmony between family and work (Álvarez-Pérez, Carballo-Panela & Rivero-Torres, 2020, Phillips, 2020). These dynamics, in turn, increase the chances of experiencing psychological stress, anxiety, or other mental health problems (Harrison and Lucassen, 2019; Ling & Björling, 2020), and they might impair motivation and innovative thinking in working environments (Sokolov, Sergeicheva & Sokolova, 2020). This has social and mental consequences of employees we have to discuss (Hidalgo et al., 2021; Dietvorst et al., 2015).

Peter Drucker was probably one of the first management theoreticians who provided similar warnings regarding a constant reduction of process variability (Drucker, 2015). Many management scholars describe the limits of mechanical approaches following the effectivity, complexity, and speed of processes by minimizing their variability. These limits represent the managerial challenges with social impact (Hoon, Sang & Lee, 2007) that contemporary managers have to deal with. These considerations, in turn, relate to the

human meaning of labor in the robotization era with significant personal consequences (Smids, Nyholm & Berkers, 2020; Lebow & Spitzer, 2002; Bonekamp & Sure, 2015).

3. Methodology

According to the research questions we start to analyze the process optimization, its variability, and possible stabilization of real logistic processes.

3.1. Process optimization

In the realm of quality processes, operations' outcomes take place under predetermined, if possible, standardized conditions. Most often, it is about adherence to different times, methods, procedures, requirements, or manufacturing tolerances with minimum inventory and minimum Work-In-Process (WIP). The resulting constant effort of these operations is the optimization of outcome processes. The development of an optimal process can be done through different criteria, and for the sake of illustration, we focus on the requirements for minimum process variability – e.g., minimal variability of Process Availability, Process Performance, Process Quality, Process Lead Time, Process Cycle Time, Process Changeover Time, Process Operation Time, Process Pre and Post-Operation Time, Process First Piece Time etc. The main reason we strive for minimum process variability is that quality is inversely proportional to variability (Montgomery 2013). The optimization of processes acquires a special meaning in individual companies competing in the so-called Global Value Strings (GVCs). If GVCs are to work optimally, their sub-parts (i.e., unique processes) must also function optimally and this requires a certain flexibility or variability.

3.1.1. Process variability

We can begin by emphasizing that every real process has its variability. This variability can have many causes, and we can view it from different angles. As per Montgomery (2009), process variability can be divided into:

- *inherent* (also *natural* or *custom*) *variability* and
- *assignable* (even *identifiable* or *specific*) *variability*.

Optimal processes are those with an expected minimal variability. Although minimizing inherent variability is not so difficult, it can be expensive in situations where new equipment has to be used along with the incorporation of efficient measurement and logistics systems that rely on advanced information and communication (ICT) systems with big data processing techniques. Situations of this sort are quite frequent in industrial sectors such as manufacturing (Luo, Liang, Zhang & Wang, 2001) or services (Huang & Rust, 2018), and require highly motivated employees (Chungade & Kharat, 2017). Minimizing assignable variability tends to both challenging and very expensive solutions – e.g., more significant quantity and better quality of spare parts, more efficient total productive maintenance (TPM), qualified people etc. It is evident that in real processes, it is quite challenging to formulate generally valid recommendations or procedures to minimize process variability. Let's show the influence of variability and its impact on the process transparency and predictability utilizing the following simple experiment.

Imagine five processes Pi, i = 1,2,3,4,5 which are in series. Then assume interim stocks STj placed before the processes Pi. The arrangement of individual processes and interim stocks we can see in Figure 1d and Figure 2d. The situation of Figure 1 corresponds to a regular supply of the P1 process through ST1 interim stock which is designed for the maximum power of the P1 process. The situation in Figure 2 is like the situation in Figure 1, but all processes and supply systems work synchronously with zero variability.

Let us suppose the situation, when performance pi, i = 1,2,3,4,5 of the relevant Pi processes, can be any (i.e., random) integer value in the range of benefits 1 to 6 (including 1 and 6). This means that it applies:

$$N = \{1,2,3,4,5,6\}, \quad pi \in N, \quad i = 1,2,3,4,5, \quad j = 1,2,3,4,5, \tag{1}$$

where:

N - the set of natural numbers

pi - process Pi power

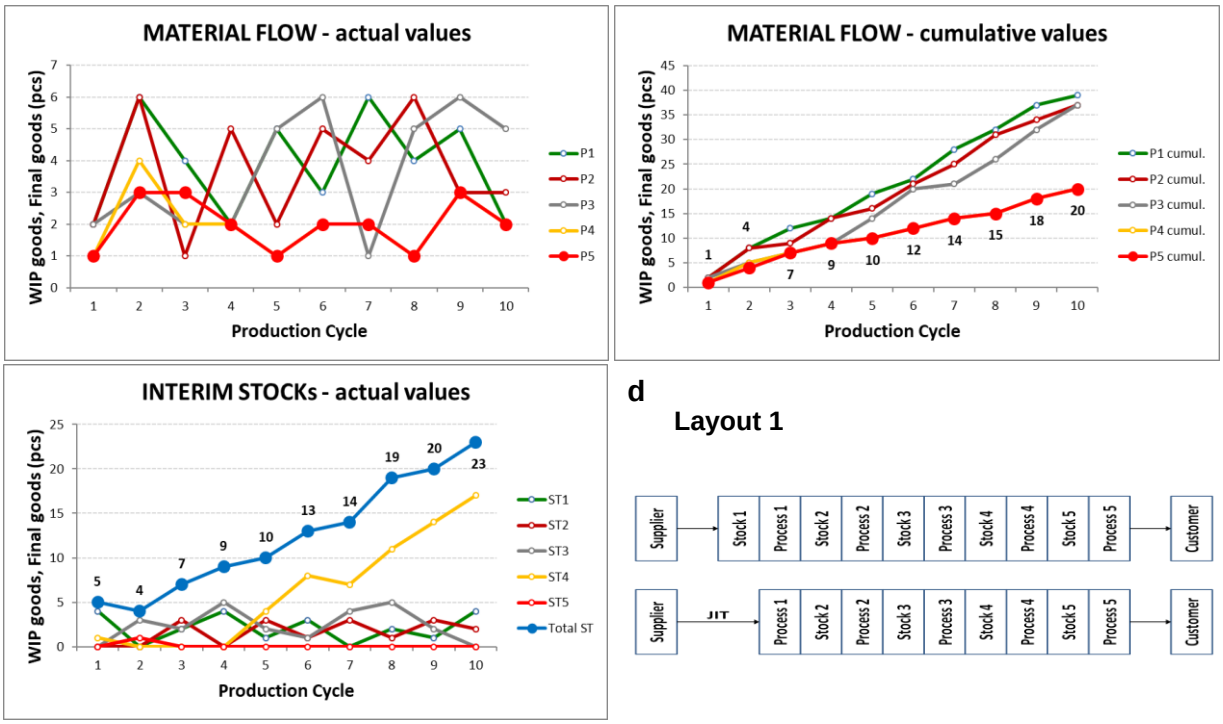
i - process index

j - interim stock index

Figure 1: Performance pi of the processes Pi

i = 1,2,3,4,5, a) Actual values; b) Cumulative values; c) Status of the interim stocks *STj,*

j = 1,2,3,4,5, actual values; d) Layout of the production line.



Source: Own Elaboration.

This situation corresponds to the results of a simple simulation experiment in Figure 1 (1).

Unlike the situations in Figure 1, let's assume now the performance of respective processes Pi, i = 1,2,3,4,5, can be the only one integer value. – for example, number 3. It means that applies:

$$N = \{3\}, \quad pi \in N, \quad i = 1,2,3,4,5, \quad j = 1,2,3,4,5,$$

(2)

This situation corresponds to the results of the simulation experiment in Figure 2 (2).

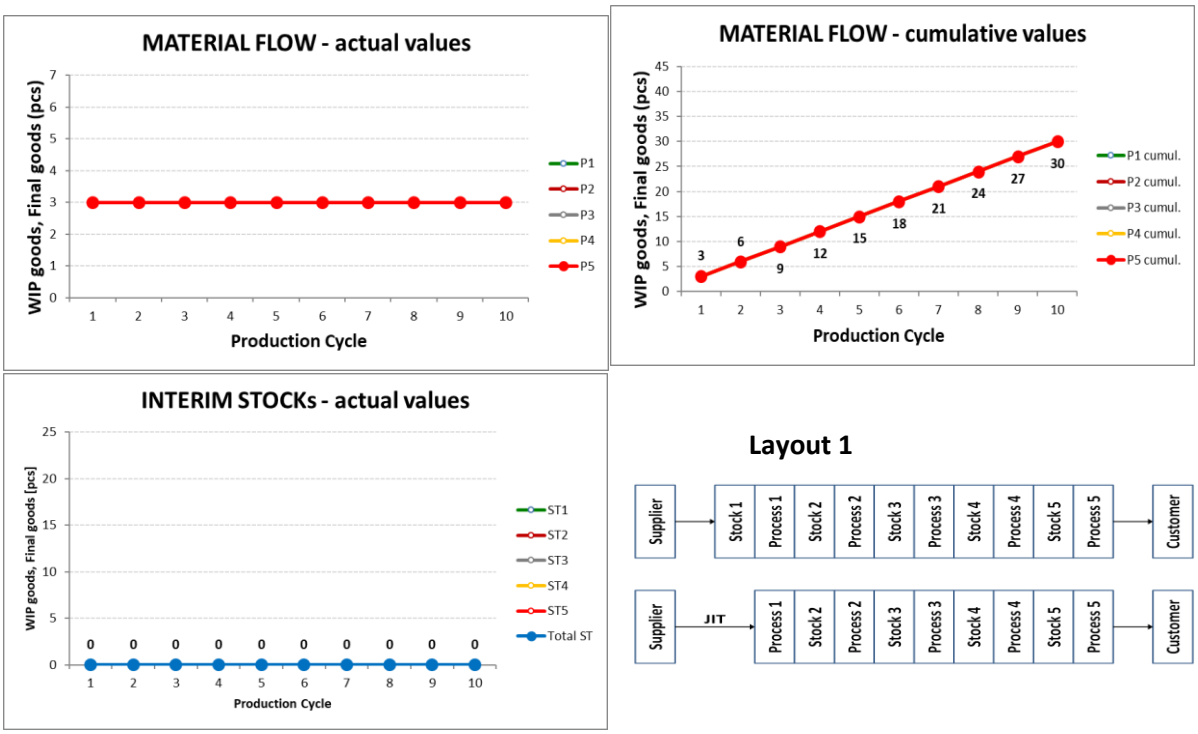
Comparing the results in Figure 1 and Figure 2, we can make one exciting conclusion. It is far more advantageous for a company to have its processes working synchronously with minimum variability than having means working with high but also unstable (i.e., with high variability) power. Even we can say that stable, and synchronously working processes with reduced (e.g., average) performance can achieve much better results than

not synchronously working high-performance processes where we have to face the unstable power. Besides, stable, synchronously working operations have another advantage. For instance, we can optimize the workload of the people, number and control of the equipment, minimize stock etc. It means we can save much money because of not investing in redundant people, equipment, performance, and inventory (pls. compare Figure 1b, 1c, and Figure 2b, 2c). So, unstable processes are much more expensive than stable operations.

Figure 2: Performance pi of the processes Pi

i = 1,2,3,4,5, a) Actual values; b) Cumulative values; c) Status of the interim stocks *STj,*

j = 1,2,3,4,5, actual values; d) Layout of the production line.



Source: Own Elaboration.

The advantage of stable processes is, therefore, evident. It is easy to demonstrate that all activities within these processes must also be permanent if the operations are to be stable. In general, it is not too difficult to ensure stability in fully automated production processes. However, outside the fully automated processes (mainly production processes) where people work, process stability is a huge challenge. No one can perform a steady performance over the long term. People are not machines. Of course, a completely different situation will be in processes where we demand the creativity and flexibility of

people. However, even here, we can see an effort to measure various activities, minimize time, and evaluate deviations from pre-set standards today.

In what follows, we will not consider processes that require creativity and flexibility, as they increase the complexity of the process. We will focus only on processes that require consistent long-term performance and standard quality. These processes primarily include production and logistics processes.

3.2 Stabilization of real logistic processes

In real practice, we almost always encounter all sorts of combinations and the involvement of processes that affect each other. This problem in logistics is particularly acute, where frequent and complex crossings and branching of processes with long running time occur. In the vast majority of cases, these processes have a random character with all the consequences that result from it (e.g., Dumas, La Rosa, Mendling & Reijers 2013; Jeston & Nelis 2014; Mulholland 2016). It means that in practice, we must always assume the presence of both inherent and assignable variability. Even if we manage to eradicate gross errors from processes (a hypothesis that seldom applies), we will always have to face more significant or less inherent process variability. We do not get rid of this intrinsic variability of processes in standard operational practice. It is a natural part of all operations. The only solution how to reduce inherent variability is, by changing the nature of processes in Just in Cace (JIC) systems to processes in Just in Time (JIT) systems using consistent automation, which will allow optimal cooperation of processes (e.g., automotive industry). In JIT systems, inherent variability is ordinarily negligible.

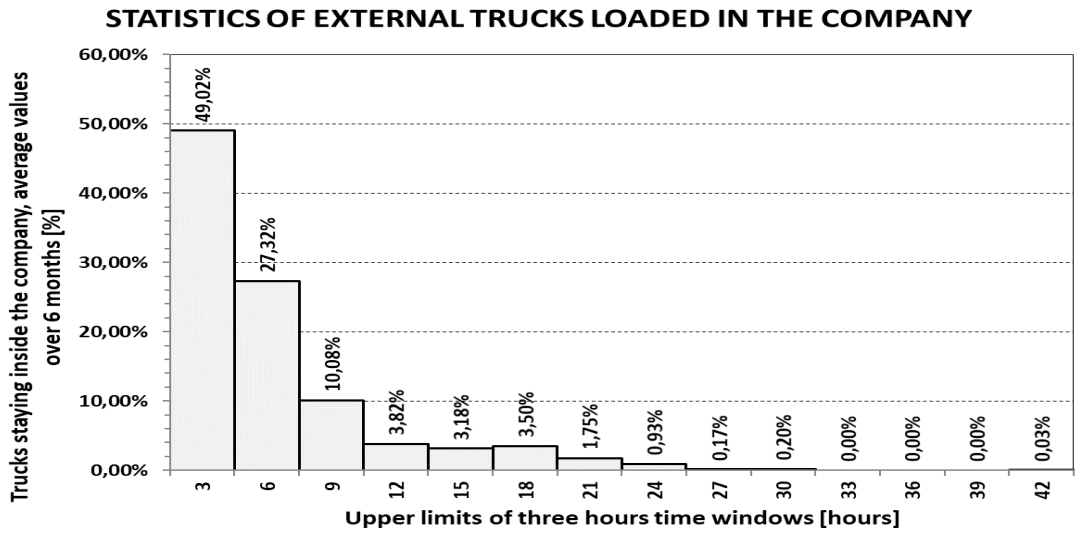
As a practical example of processes with a significant share of inherent and assignable variability, let us report truck transport. Trucks are currently one of the leading carriers of the material. The problem with truck transport is the fact that a human factor plays a significant role. We mean the truck drivers, dispatchers, operators, and others in various warehouses etc. However, the current traffic situation, including the impact of the weather, also plays an equally important role. Also, the lack of parking spaces around warehouses can play an important role.

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

For this reason, there is very often a random attachment of trucks at the required times and thus traffic jams around the warehouses. For illustration, we present in Figure 3 to Figure 5 the results of long-term measurements we made in the optimization of logistics processes of one large, massive engineering company between 2016 and 2018. The measurements were done within the framework of applied research.

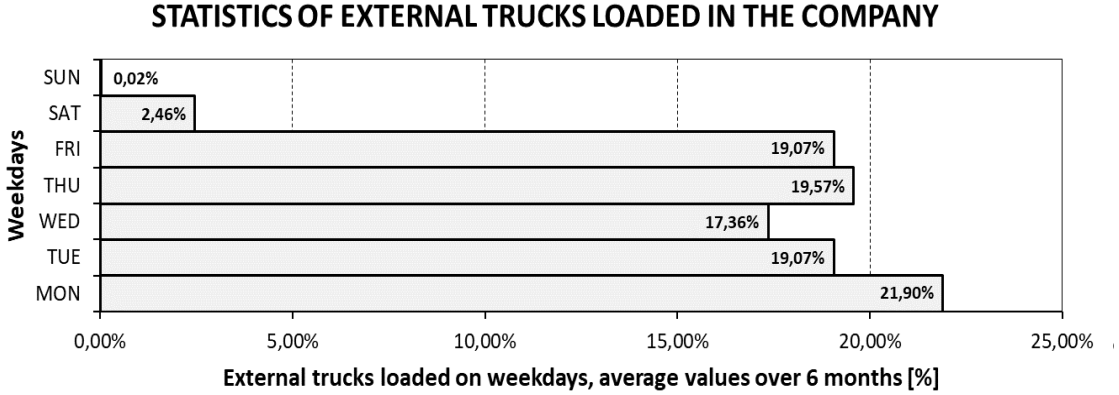
Figure 3 presents the time that external trucks spend in the company when loading various goods. Figure 4 and Figure 5, in turn, offer the day time and weekdays preferred by customers for loading the trucks. Figure 4 shows that customers prefer the loading on Mondays; the least used working days are Wednesdays. This phenomenon is because the trucks arrive only after the previous unloading of the material in other companies. Usually, this unloading takes place around 6:00 a.m.

***Figure 3:** Time of external trucks staying inside the company, average values over six months*.



Source: Own Elaboration.

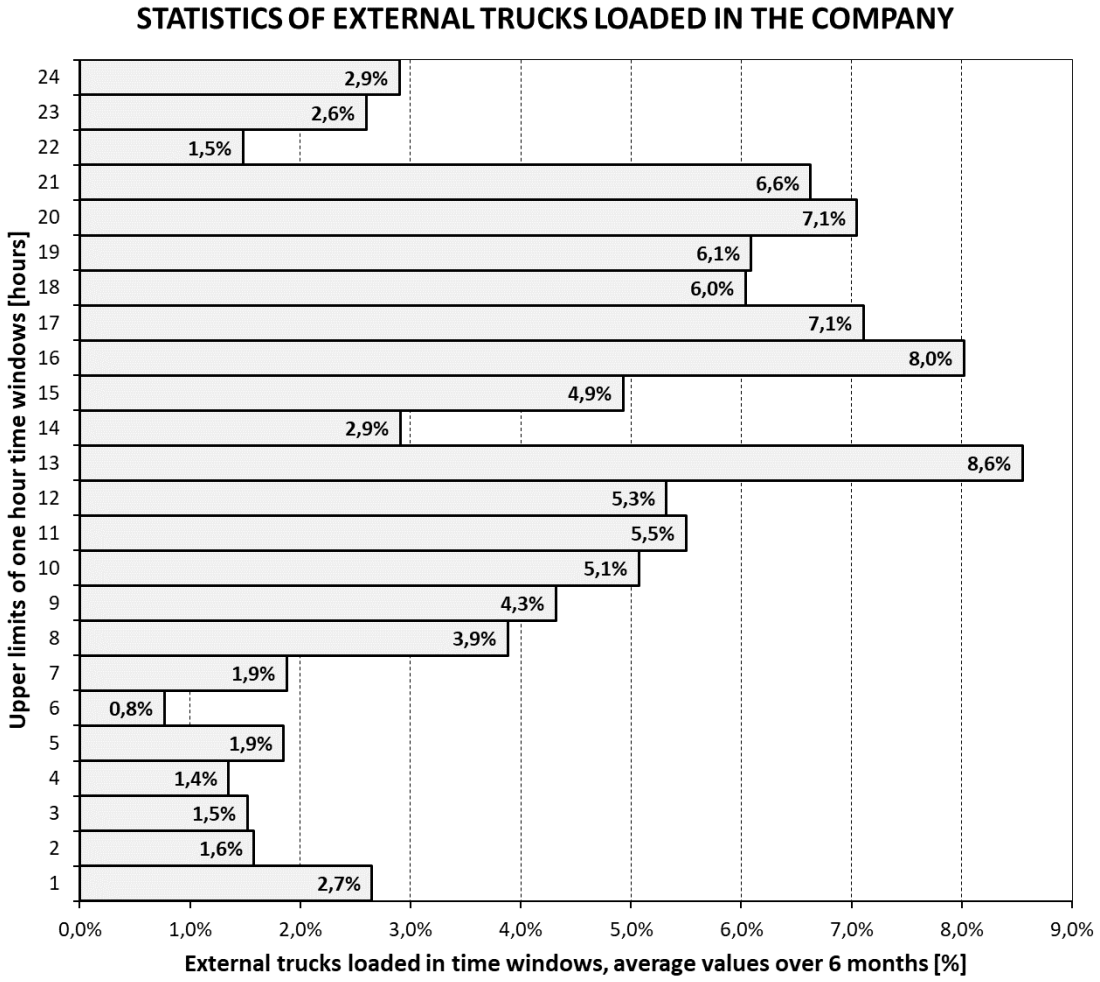
***Figure 4:** External trucks loaded in the company in respective weekdays, average values over 6 months*.



Source: Own Elaboration.

Figure 5 shows then frequent fluctuations over a 24hour cycle. The morning shift begins at 06:00, the afternoon shift at14:00, and the night shift at 22:00. Figure 5 proves that starts and ends of the shifts have a significant impact on the goods expedition. And it is a purely human problem. The same goes for keeping time windows (allocated to trucks in advance) by truck drivers. Just only for better illustration: 49 % of trucks arrived on time, 19 % of trucks arrived too late, and 2 % of trucks arrived too early during our measurement.

Figure 5: External trucks loaded in the company in respective time windows, average values over 6 months.



Source: Own Elaboration

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

The facts in Figures 3 to 5 illustratively show that we have to face combinations of different types of variability in practical life. As mentioned above, inherent variability can be reduced by advanced technologies. It is not cheap or straightforward, but it is technically solvable. But as much more complicated problems we can see a reduction in the variability of human work. And this is the main challenge for contemporary management from our perspective. How to organize and how to motivate work teams to accept the pace of advanced technologies, continuous performance, and quality monitoring and still be motivated to minimize the variability of human work.

4. Results

The results of the study is contained in two main parts: firstly in the design of Process Optization projects, secondly in the outline of the implications of process minimization for staff.

4.1. Process optimization

Process optimization is one of the most critical success factors today (Popovič et al., 2015; Benotmane, Belalem & Nek, 2017) It takes place at the process levels and is mostly implemented in the form of projects. We use this optimization. Based on experience, we can state the following lesson.

The sponsor usually defines the project:

- sets project scope,
- sets expected project costs,
- sets project timescales,
- defines expected project quality and project benefits,
- delegates its representatives to provide the team with the necessary information.

In the projects, we implement standards IPMA® ICB (IPMA 2015) and PMI® PMBoK (PMI 2017) an agile way. We also respect the philosophy of "14 principles of Toyota Way control" (Liker 2004). This philosophy has been proven many times and is reliable enough. Our practical experience with the implementation of the 14 Management Principles is approximate as follows:

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

Principle #1: *"Base your management decisions on a long-term philosophy, even at the expense of short-term financial goals."* Fulfilling the principle of #1 is in company seemingly simple. Just understand the company's long-term strategy. However, in practical optimization of processes, there is not always a sufficiently right long-term strategy of the company. In our experience, project objectives are defined very well. However, whether the project objectives are in line with the long-term vision of the company, we are no longer able to assess them. Here much depends on the motivation of managers who cooperate with the project team.

Principle #2: *"Create a continuous process flow to bring problems to the surface."* We implement the principle #2 in the following steps:

1) We organize workshops with all the people who work in the process. We discuss the meaning and benefits of the project, what the optimization process will be, what the target state of the operations will be. We try to motivate people in a way that they are involved in optimizing processes.

2) We map current processes and, if necessary, define and control the processes completely new. We emphasize the definition of process stakeholders (ISO 9001 2015), the needs and expectations of process customers, process inputs and outputs, activities, and roles in processes, etc.

3) We define and implement process performance measurement systems. Process performance measurement here presents activities that provide accurate, fast – within the possibilities – of available process progress information. The customer of these processes must be exclusively the owners of the methods and their superior management.

4) When designing and implementing process measurement systems, we focus not only on the result but also on how we reach the final solution.

5) When processes and systems for measuring their performance are defined appropriately, we create a continuous flow. It will then reveal the shortcomings of the design and implementation of measurement systems

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

Principle #3: *"Use "pull" systems to avoid overproduction."* It is always very convenient to meet this requirement, but it is not still easy to achieve it. Many companies work with the JUST-in-Case (JIC) strategy and push systems, so the pull system does not apply to the necessary extent.

Principle #4: *"Level out the workload (work like the tortoise, not the hare)."* Principle #4 is essential for the day-to-day work of the project sponsor's work teams. However, the project team must perform the project assignment. It means that in addition to the project scope, the project team must meet defined project timescales and costs. The pace of the project is, therefore, necessary to the project specification.

Principle #5: "*Build a culture of stopping to fix problems, to get quality right the first time."* In technological processes that can be stopped, principle #5 can be applied with the advantage. However, in methods that work with the constant or continuous material flow or with large big material batches, it is not always possible to stop material flow. Stopping could mean significant material and financial losses.

Principle #6: *"Standardized tasks and processes are the foundation for continuous improvement and employee empowerment."* We try to respect the principal recommendation #6 when optimizing processes. The project team introduces regular updates of process standards, binding rules, requirements, measurement of people's behavior, a measure of product quality, etc. We believe that standards are vital to the success of process optimization. Compliance with standards significantly reduces process variability and improves quality. Quality is inversely proportional to variability (Montgomery, 2013).

Principle #7: "*Use visual controls, so no problems are hidden."* When optimizing processes, the project team consistently introduces visual inspection of processes, workplaces, and input and output products. Where possible, we prefer a simple and inexpensive direct visual inspection by one person to an indirect visual inspection performed by unnecessarily complicated and expensive systems. Of course, it always depends on the technology and the required quality.

Principle #8: "*Use only reliable, thoroughly tested technology that serves your people and process."* During the process optimization, we expect the minimization of process variability. Then it is necessary to insist on the use of reliable technologies. Very often, however, we encounter the situation that the management has only a minimal budget. The

consequence is that management saves too much money on the quantity and quality of spare parts, does not adequately dimension components of production systems, does not invest enough in production digitization etc. These facts then negatively affect the variability of processes.

Principle #9: *"Grow leaders who thoroughly understand the work, live the philosophy, and teach it to others."* It is clear that the right optimization of the processes on which people work lies in the hands of good strategists and leaders. Optimization cannot be left to technology design alone, today we would probably say that we cannot rely on Artificial Intelligence alone in this area.

Principle #10: *"Develop exceptional people and teams who follow your company's philosophy."* It is very convenient for process optimization when the project team members are also the owners of the processes. These owners usually understand all the activities and relationships between them very well. Besides, they are typically experienced sufficiently and identified with the company's strategy. In projects, we, therefore, try to meet the requirements of principle #9 and principle #10 as much as possible.

Principle #11: *"Respect your extended network of partners and suppliers by challenging them and helping them improve."* When optimizing processes, it is very convenient to communicate with people who work around the procedures that we optimize. On the one hand, it is advisable for people in the surrounding processes to know about the optimization carried out. On the other hand, it is possible to find out from the discussions around the processes facts that can be very useful for optimizing processes. As with principle #9 and principle #10, we try to respect the recommendations of principle #11 as much as possible.

Principle #12: *"Go and see for yourself to thoroughly understand the situation."* Process optimization can't be done in meeting rooms. Therefore, Principle #12 requirement requires the personal participation of the project team in a "real environment" process. If the process is to be truly optimized, it is necessary to monitor its progress with your own eyes – directly. When tracking the process, team members map material and information flows from start to finish. When monitoring, team members focus on identifying possible sources of variability.

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

Principle #13: *"Make decisions slowly by consensus, thoroughly considering all options; implement decisions rapidly."* For the planning and implementation of project works, we apply well-known PDCA/PDSA (Plan-Do-Check-Act/Plan-Do-Study-Act) (e.g., ISO 9001 2015) or The DMAIC (Define-Measure-Analyze-Improve-Control) (e.g., Liker 2004, Pyzdek 2003) method. The choice between PDCA/PDSA or DMAIC depends on the company's corporate culture. Then – entirely in compliance with Principle #13 – we very thoroughly consider all possibilities and implement all improvements with no waste of time.

Principle #14: „*Become a learning organization through relentless reflection and continuous improvement.".* If the requirements of principle #1 to principle #13 are fully respected, principle #14 is met automatically.

Although the selection of different procedures, methods, and methodologies that we use in process optimization is significant, the most important thing is to get people who work in processes to optimize processes. Today, as more and more work in processes is automated using robots or advanced ICT systems, many people feel threatened or at least as non-essential components of more or less automated means (Sauppé, 2015; Mrugalska & Wyrwicka, 2017; Jablonski, 2019). And here is a crucial role of management, which must create a social environment in the process that is not hostile to employes and which benefits from people's creativity. In the next chapter, we will try to explain the reasons and suggest a solution to this problem.

4.2. Human aspects in process optimization projects

The challenge of minimization of process variability is from the very beginning of the philosophy of management a strategic dilemma. In the beginning, neoliberal economists persuaded the primary interests of shareholders. For management, this assignment became a kind of dogma for decades, during which he focused on increasing the efficiency and profit of companies (Friedman, 1953; Jones, 2012). Therefore, the well-known Kaizen (Imai, 1986) principles or Principles of Toyota Way were also applied. However, experience has shown that management must naturally address the consequences of the recognized limits of the original shareholder's theory (American model) and start thinking about the *„co-determination*“ of stakeholders (European model). The difference is in following the primarily financial model or multi-purposive

model (Koslowski, 2009). Every management strategy and project management always have its economic and parallel social – personnel consequences. Finally, we still need to respond to the long-term consequences of our decision-making concerning future generations, which must be involved in strategic business negotiations (Kamijo et al., 2018). So the problem is not as simple as that we can reduce it to just one question – how to solve the minimization of the process of variability so that we do not have to deal with issues other than technical issues.

In the past, management was supported not only by neoliberal economists but also by managers who were technically and mathematically oriented on financial results. Some companies look for solutions in increasing automation, robotics, and artificial intelligence (AI) in their processes. Many IT experts believe that AI will soon exceed human performance. (Grace et al., 2017). The application of machine control or Artificial Intelligence is, in many areas, certainly a solution that finds successful practical effects. We understand that companies wish to reduce the process variability because technologically conceived projects can consider the human factor as a factor causing the undesirable variability, uncertainty, and potential personal risks.

Companies have always been dependent on employees with all the complexity of Human Resources. Many managers tend to reduce all costs and also the HR department and wages using scales of sheer efficiency, with which arithmetically can be successful. Some use professional methods like Lean, Six Sigma, or Value Engineering Technics (Pries & Quigley, 2013). Cost reductions, reduction of process variability, and increasing process efficiency we can do differently. We can reduce costs according to mathematical methods, or look for new opportunities and creativity in working teams. To do this, however, we need motivated partners and employees. Let us remember that generally, in project processes, we cannot wholly exclude employees and, thus, the typical variability of human factors. Authors offer two possible ways of a solution:

A group of researchers focuses on the logistics processes of international companies with the help of modern technologies. However, their interest cannot focus only on effective quantitative methods. It also considers the qualitative methods that take into account strategic values that can be in direct tension with an emphasis on minimization of process variability, automation, and robotics (Galindo, 2016; Grabowska et. al., 2019; Bauernhansl, Hompel & Vogel-Henser, 2014). The discussion among scholars opens up new horizons for global development towards sustainability and managerial ability to

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

properly apply and use digitalization for process optimization, but not ignoring human factors in companies (Mrugalska & Wyrwicka, 2017; Jablonski, 2019). Even the philosophy and possible applications of artificial intelligence have not only positive but also negative human and social or ethical consequences (Kučera, 2023). From the last analysis, we can see today a complex framework of personnel and moral consequences focusing on the human-machine interaction in the working environment. The main difference between humans and machine are that "humans are judged by their intentions, while machines are judged by their outcomes"(Hidalgo et al., 2021, p. 139).

5. Discussion

The theoretical debate is reflected in the literature above. Practical debate is reflected in the application of managerial strategery.

If the central management thesis was the minimization of process variability, let us summarize the results of a discussions about the meaning of human factor in a company for the management of processes. This can be considered as the antithesis for being able to find out later the synthesis. Our goal was to solve the challenge of project variability, increase the process potential of effectivity, but at the same time not to lose the personnel consequences. It means we still cannot lose the possibility of human motivation, creativity, and team spirit. What are the main discussions points?

Enlargement of management philosophy and strategy: Considerations of the looming challenges and risks for companies and society shows that narrowly conceived technological management methods cannot manage the current changes. The complexity, dynamics, and diversity of social (natural) and economic reforms are not able to handle any technological or information program itself. To cope with the variedness of the industry are able only a very open, educated, and experienced manager and staff. We must not forget that even the most effective technology, robotics or artificial intelligence is a creation of man and has the intention to serve man and society as a whole in the sustainable frame. We can create a new company situation and process conditions when the management would believe that the employees are not only immoral and lazy. When the management would assume that all the people are only cheating, they respond with restrictions and higher control. When the management would believe that the people are also good, it creates the precondition for limitation of restrictions and control

mechanisms. The positive approach of managers to the staff opens a new space for new energy, mutual trust, and motivation. Some scholars use summarizing terms like "entrepreneurial mindset" or "spirit of capitalism," which should be implemented in the real management process using the active human intellectual, social, emotional, and spiritual intelligence (Kučera, 2015; Martinez, 2019).

Examples of benefit based on supporting communication: The summarized theoretical concepts of positive relationships and appropriate constructive communication to employees we also prove in practice (Zobrist, 2007). The extensive management study and research in 12 selected companies from Frederic Laloux documents our philosophy: He recommends vigorously to leave the management model, which is similar to a machine and mechanical organizations and start to build the plural organization (similar to a living organism like family). The research was documented with twelve selected companies like AES (energy sector, 40 000 employees), BSO/Origin (IT global company with 10 000 employees, and next ten companies from Food industry (Morning Star), hydraulic production (Sun Hydraulics, media (Sounds True), textile industry (Patagonia), metallurgic production (FAVI), health care (Basuurtzorg and RHD) or school (EZBZ). Laloux discovered in selected companies that the self-management application yielded incredible results (Laloux, 2014). Bauurtzorg also analyzed Ernst Young's study (2009) and confirmed that patients required 40 % less intensive care compared to similar organizations. (Laloux, p. 77). It was only because the staff treated patients acted personally and helpfully. Same results apply to production and service companies.

Explanation of higher values and meaning: The next group of authors is critical concerning the mechanical application of technologies into human activity with the next arguments. Experts realize that even the technical conveniences can always be misused. These issues discuss professional literature and international conferences (Häggström, 2015; Manyika et al. 2013). Some of the scholars describe specific limits and cynical example of misuse of managerial responsibility during the application of technological tools in corporate and social processes (Mero, 1990). Although we work with scientific progress, the task of management is to pursue not only economic goals by the reduction of process variability, but to preserve human dignity in companies and society (Tegmark, 2017). A typical document is written by Charles Handy with the theme of Humanity at a Crossroads (Handy, 2018), asking whether the current definite emphasis on robotics threatens Humanity itself. It asks whether „can the new technologies enliven and enrich

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

our Humanity, in health, education, and a better living? "His next question is: „How will we define good work, a good organization, and a good life? Who will lead the way to a new understanding of what it means to be a manager in this new world? "Will it be technological stabilization of any process variability or mature management strategy, psychology, and ethical responsibility? The described question has to become part of the current managerial decisions. We see the solution in the right motivation of all team members or proper communication, explanation of management philosophy and strategy. Besides, it is necessary for the correct interpretation of management thinking in a concrete situation. The logic of management and leadership relies on the understanding of all workers and the following cooperation on company goals.

Benefits of using soft skills: The last very critical group of researchers communicate the dangers for management following only the technological and algorithmic application to human organizations and management of company processes. The efficiency of technology in companies we must measure because of the complex implications for society (Kizza, 2013; Anderson & Anderson, 2011). Knowing the complex meaning of management strategy, including the process stabilization and reduction of process variability, the company will achieve win-win results.

Research of the Wall Street Journal (Davidson, 2016) published a study about the role of soft skills in the environment of technical skills accents. Of nearly 900 executives showed that 92 percent consider soft skills to be as important as or more important than technical expertise. Many CEOs note that businesses are looking for just such members to their teams who control the ability to cope in unpredictable ways. To do this, skills like confidence, resilience, and critical thinking, which will help workers succeed in the face of unexpected workplace demands, also have an ethical dimension (Goings, 2017a). The risks of the game are that authoritative companies will lose direct access to consumers. Customers will drop the line between their thinking and decision-making and will be under the strong influence of technological tools like the internet. It can, on the one hand, make free the traditional form of companies, but above all, a fundamental transformation of the structure of human activities. The weakened or lost internal satisfaction from creative and natural work, communication, negotiation, social contact, and depending on information technology can be transformed into the common motivation, understanding of process needs, and active cooperation for solving process problems. Thus, the ultimate effect for companies may be beneficial in the long term.

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

Confirmation of benefits based on a human approach in the technological age in the Global

Drucker Forum: Wise managers probably realize that the prosperity of companies mainly drives human potential, diversity of staff, and soft skills. Similarly, the importance of non-technical skills and the importance of women in the company discussed participants of the World Economic Forum (Goings, 2015).

Georgetown University also supports the same opinion exploring the importance of positive confidence cycles on companies. The hard value of soft skills clearly illustrates that social and emotional skills – and in particular, confidence – is a reliable driver of business and professional success (Goings, 2017b). What is quite essential is the fact that "confidence can be systematically cultivated" only among workers: "…workers who are more confident also report increased productivity and an improved ability to overcome Challenges (over 86-89% of nearly 900 executives participating on the survey) ".

There are many contributions, specially from the Global Peter Drucker Forum (2017), which regularly meet to discuss the current management challenges, as opposed to technological optimism. On the contrary, it is currently technologically returning to the classical personnel values in companies. The human factor is essential for management and leadership. See the four designed steps of soft skills (Alvarez, 2017):

- Leadership authenticity (behaviors speech and words symbols)
- Building trust (experiences generating new beliefs)
- Behavior transformation (confidence risk-taking)
- New ideas and innovation.

If we are talking about the role of management and it links with the task of leadership in companies, then it is based on loyalty, trust, and freedom of thought, which is not under the pressure of technological measurement of efficiency. The participants of Global Peter Drucker Forum (2017) confirm the outlined direction of the managerial call, as evidenced by other titles of contributions based on the Drucker principle that „computer makes no decisions “:

- *Management Needs to Return to Reason (David Hurst)*

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

- *Machines can't follow us there; they may process information, but they don't make meaning* (Prabhu Guptara)
- *Shaping the Future of the Human Dimension* (Piero Formica)
- *Management – the human dimension* (Stefan Stern)
- *Why Machines Make Human Skills More Important, Not Less* (Mark Esposito)
- *Fixing Today's Economy Is About Humans, Not Technology* (Nicolas Colin).

The participants of the World Forums discuss similar questions, and as a result, they confirm our thinking and recommendation on how to solve the described dilemma.

Confirmation of benefits based on the human approach in the technological age in the World Economic Forum in Davos: The World Forum in Davos opened up in later years debate on the needs of new leadership during the 4th industrial revolution concerning stakeholders. New technologies open up new managerial dilemmas: instead of emphasizing the development of the technological functions themselves, minimization of process variety a lack of natural human thinking of employees, their invention, inspiration, innovation and the search for new visions and managerial solutions in complex corporate situations of today's global company. Besides, these rare competencies do not offer us the technology itself (Howell & Buckup, 2016). These challenges place entirely new demands on the personalities of managers and the concept of leadership, which are essential to the modern idea of managerial education because they relate to all areas of human activity and their involved responsibility for consequences (Sustainabledevelopment, 2015). The Global Agenda of UN touches on yet another area that is beyond Industry 4.0 – and its big ethical questions that discussed the World Economic Forum (Solomon, 2016). But this would merit a separate study: *„Facts alone are insufficient "*, the technology needs special regulations and monitoring of their adherence.

The application of quantum knowledge in management will have to deal with the global complexity, context and implications of its activities over time, right up to the implications for the future in all areas. In this sense, management faces a lot of challenging scientific work and the application of new knowledge to corporate practice.

European Journal of Applied Business Management, 10(2), 2024, pp. 67-92 ISSN 2183-5594

6. Conclusion

Let us summarize our dilemma between the managerial pressure on the measurability and performance of companies, and personnel consequences caused through minimizing process variability via modern technological instruments:

Authors are management teachers and have more than 15 years of experience in process management and managerial application of optimization of processes concerning human factors in companies. Authors take note of the unilateral emphasis of corporate management on speed, quantity, and efficiency. In the first chapters, we described some methods and procedures for the stabilization and optimization of process variability. Real examples demonstrated the management challenges from the logistics area. Presented cases opened the limits of narrow mathematical managerial approaches, especially discovering the actual situation and ling human factors in the society.

The analytical study of authors with the own managerial experience considers the challenge as a big dilemma. On the one side, we understand the efforts of many managers to reduce the process variability. Still, on the other hand, we have to argue that today is no longer enough to pay attention only to the effectivity, products, or services themselves. A unique bridge in this perspective offered the philosophy of "14 principles of Toyota Way, which formed the fundamental basis for the next personal application in process management.

The next chapter discussed the critical reflection of the consequences of variability reduction in processes on workers. The personal and frame of management are in logistics often considered as loss of the time and compromise of the company management in intense competition. The observed consequence of a narrow strategy based on net efficiency is that corporate governance is generally trying to consistently control, measure, and manage workers' activities according to the numbers and statistics. Technological development and the strategy of Industry 4.0 serve for the improvement of process transparency and open up entirely new possibilities in monitoring and evaluating people's performance.

The current points discussed in critical debates relating to the various impacts of the single concept of management on efficiency with the help of technology. The main points we can summarize like following:

- In addition to the carefully conceived technological function, we need a sophisticated understanding of human intelligences in a company: psychic, emotional, intelligent, and spiritual.
- Complex understanding of human society with all differences and multidisciplinary context for management.
- Technology application for human efficiency control means a significant separation, fragmentation, and reduction of complex scientific disciplines and complexity management to mechanic functionality. This philosophy is to reverse.
- Functionality, economic profit covers not the meaning, sense, goals of social work.
- Current technological enthusiasm useable for process effectivity is not able to answer the concept of all social and environmental responsibility.
- Short term goals cannot replace long-term consequences

We conclude that the introduced research field is current for many companies and managers leading logistic processes. Nevertheless, it belongs to the managerial skills to be aware, especially in the energetic technological environment that all company processes perform people Even the technical methods for potential variability reduction invent and manage people. Managers who show process improvement must get professional education and have such practical experiences that they can cooperate with team members and appropriately use their potential for solving process variability. The discussed topic should be part of business schools and executive education.

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