Working
Paper

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The study of participatory management practices (PMP) within the lean manufacturing

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Abstract

Despite the increased adoption of automated and other technologies, participatory management practices (PMP) are becoming more critical in today's workplaces. However, past social theories are inadequate in contributing to this discussion, as they fail to recognize that technology and automation can coexist with PMP processes within firms. This working paper aims to revise PMP approaches and worker experiences with PMP within the Lean manufacturing system of production. A new revision of PMP and workers' experiences may shed light on new conceptual frameworks regarding dignity at work.

Keywords: dignity at work; lean manufacturing; participatory management practices (PMP); teams; technology; types of participation

Introduction

Lean manufacturing came into existence when Taiichi Ohno, the developer of the Toyota production system, eliminated the need for die-change specialists and refined the technique by producing small batches of products, which reduced the carrying cost of large inventories and led to cost reductions (Dennis, 2016; Womack et al., 1990). Ohno focused on quality and eliminated defective parts. In order for the system to work, he needed skilled and motivated workers to anticipate problems and take the initiative to find solutions. To get rid of waste, he assumed that assembly workers could perform many functions as specialists and add value to car production because of the right conditions on the line. He created groups with team leaders instead of traditional foremen or supervisors of mass production lines. Team leaders coordinated the teams and engaged in all assembly line tasks. The leaders would also fill in for any absent worker. When the team was running smoothly, team members were allowed time to suggest ideas to improve the production process. As teams became more experienced, errors decreased, and the line practically never stopped due to the decline in defective products. Lastly, parts are only produced when they are demanded to further reduce the inventory. Participatory and employee involvement in the production process was critical to the success of the system.

The efficiency of lean production systems rests on technological change and Participatory Management Practices (PMP), which are designed to promote collaborative engagement and workforce morale. However, managers' decision-making relating to labor (i.e., determining the quantity and quality of work, the number of jobs to perform the work, the types of jobs required, and creating the physical, environmental, and social means for the workplace actors) uses as little space as possible to promote better face-to-face communication among workers, autonomy, or flexibility in workers decision making. The complexity of the organization of work has led to the rise of participatory practices, which are likely to increase in informal and formal ways (Camacho, 2017). The process has been widely used in most industries. If a company wants to maximize the benefits from its production system, it must adopt a high-tech process of automation. Therefore, the lean organization must focus on tasks and responsibilities that are to be transferred to workers that add value to the production line. The dynamic of the work team lies at the heart of a lean production system.

Lean manufacturing assumes that technological change allows total control of the system with a minimum level of human conflict. However, the adoption of PMP can be a complicated process that goes through workers' experience of (in)dignity at work. This working paper summarizes theoretical approaches around PMP as practices that mediate workers' experience in a lean manufacturing system.

This working paper is divided into three sections. The first section discusses the organizational structure from a team's perspective within a traditional hierarchical order. The second section reflects on the conceptual framework that approaches how PMP is actually observed from technology as well as from team interaction. The third section explores theories that relate workers' experience to dignity at work from PMP.

Teams within an organizational structure

The operational methods for lean production are collectively known as "lean thinking" (Stone, 2012). It is strategically implemented through the execution of "lean principles" to assess an organization's "leanness" or its state of transformation. In terms of technology, lean production systems are characterized by detailed procedures that focus on the selection and location of machines to define technology in the system. The Machine that Changed the World, written by Womack, Jones, and Roos in 1990, is a primary reference that promoted the Japanese automobile industry's production method. Since Womack et al. (1990), the concepts of waste and value have been at the core of lean thinking. The notion of waste relates to "any human activity that absorbs resources but creates no value". On the other hand, "a capability provided to a customer at the right time at an appropriate price, as defined in each case by the customer" is the value (Womack et al., 1990).

After four decades of promoting the "ideology of lean," several aspects of the manufacturing process are intertwined in the idea of "doing more with less" (Stone, 2012). Traditional characteristics of a lean production organization include, but are not limited to, six sigma, localization of people to enable face-to-face conversations, cost/waste reduction, quality in each step of the production process, respect for humanity, and flexible production with quantity controls. Lean production characteristics were developed from best practices relating to Just in Time (JIT), Total Quality Management (TQM), standardization, functional layouts, inventory reduction, and continuous flow strategies. Lean production sets specific arrangements

and implementation processes to reduce waste and remove inefficient activities that reduce the production process's ability to increase profits. All of these approaches are connected with the adoption of technology. Therefore, reaching the maximum performance of a lean system implies a philosophy in which technology is used to save resources in the production process, and the workplace must be organized through PMP. Lean practices can be configured in several forms and ways to achieve the desired goals. For instance, Brown and O'Rourke (2007) describe how teams are organized to increase "the role of workers, who are 'empowered' to make critical decisions —including stopping production— to adjust malfunctioning machines, removed damaged parts and materials, and modify product flows and sequences based on actual production experience" (p. 250).

According to Womack et al. (1990), lean principles are applicable to any industry and should be adopted universally. Industries with a "homogeneous production input," such as the automobile, chemical, and aircraft industries, can adapt and transfer lean manufacturing principles with essential variations to match different institutional and cultural settings. Alder (1993, as cited in Van Bijsterveld & Huijgen, 1995, p. 38) states that "the harmony and consistency of manufacturing techniques and personnel practices are the backbone of the Lean production organization." However, different types of industries have encountered various obstacles in transferring lean principles, such as technological challenges and the organization of the workplace.

Van de Ven (1981) suggests that organizational complexity stems from the classification of functions (i.e., technical, management, institutional), tasks and activities, goals, and objectives of a firm, along with

hierarchical decision-making structures that gain legitimization through strategies, environments, and job designs. Figure 1 illustrates the different levels that can exist within an organization.

Scholars have examined complex organizations at various levels, including the overall organization, workgroups or units, individual jobs, and relationships among jobs and units within the organization and with other organizations (Van de Ven & Joyce, 1981). This type of analysis of complex organizations emphasizes the importance of job design, assuming that workers who possess the necessary skills and are provided with appropriate participatory structures may stimulate greater creativity, imagination, and knowledge of the production processes (Appelbaum & Batt, 1994).

The unit of analysis for research on PMP has been defined by the way departments work or specific projects are developed through the lens of teams. Teams are the primary form through which participatory practices take place and have long been defined by boundedness, which refers to a clear distinction between members and non-members (Mortensen & Haas, 2018). The literature describes teams based on their structure, functions, outcomes, and processes, and there are narrow or wide definitions of PMP (Cornwall, 2008; Huq, 2010). A team's performance depends on its information processing and decision-making behavior, which can be enhanced by appropriate participatory structures when responding to crisis situations (Uitdewilligen & Waller, 2018).

The structure of an organization can be determined by studying how the units of a department work and the jobs that exist within each unit. Within this structure, the activities of teams reveal the types of participatory

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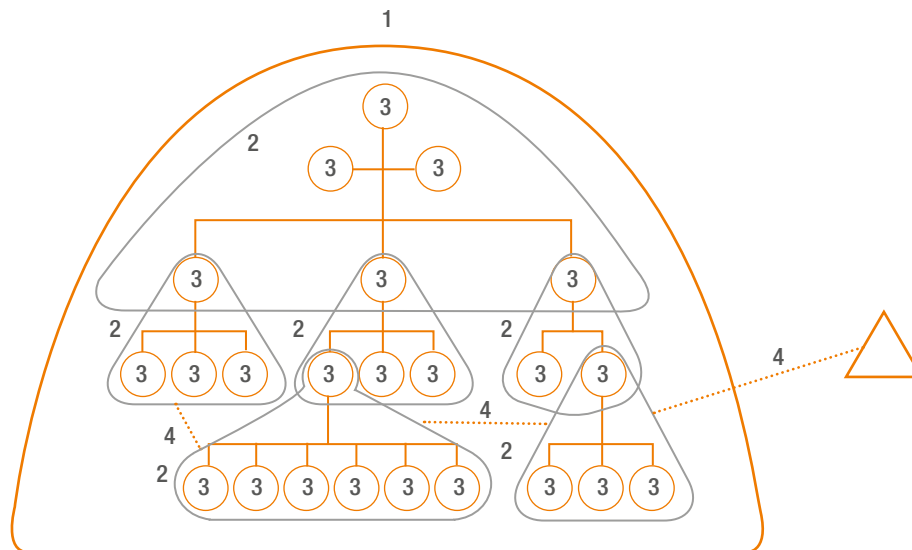
Key to numbers: 1 = Overall organization focus of analysis
2 = Organizational unit focus of analysis
3 = Individual job or position focus of analysis
4 = Relations within and between units focus of analysis

Figure 1. Levels of analyses involved in conducting an in-depth organization assessment. Source: Van de Ven (1981, p. 254, Figure 6-3).

mechanisms that exist. Specifically, the authority, power, individual attitudes, and lateral relations among coworkers shape worker experiences within teams or groups (Hodson, 1997). The increasing fluidity, overlapping, and dispersed nature of teams in new workplaces present an opportunity to study teams as dynamic hubs of participants rather than as a set of individuals who work independently to achieve a common goal, bound by the concept of membership (Mortensen & Haas, 2018).

Although organizational designs vary, it is assumed that the system can be controlled by designing each function in such a way that the organizational structure may be standardized, allowing a coordinated process. One important assumption made in these organizational models is the absence of conflict, where individual jobs are designed independently from organizational hierarchies (or levels of analysis), and they perform as expected without conflict, known as Taylorism.

Participatory management practices (PMP) and types of participation

Womack et al. (1990) defined PMP as the collaboration among workers to solve production-related problems, with the aim of enhancing productivity and minimizing waste. However, there is no widely accepted definition of PMP. The ongoing debate has led to the development of diverse typologies of participation frameworks that define the concept of participation differently, such as by the person receiving the product of the participatory interaction, those who adopt or shape the participatory practices, or the interest

of people who use a participatory mechanism (Cornwall, 2008).

PMP can be viewed intuitively as guidelines for participation managers in the workplace, encompassing a wide range of practices and strategies that range from "employee ownership" to "a suggestion box on the factory floor" (Lee, 2015, p. 275). Studies on participatory practices have highlighted that depending on the "actor" in a participatory process, the perception of what "participation" means may differ, as well as the impact the participation process may have whether participation is observed as a means or end (Cornwall, 2008, p. 274). Moreover, the terms "participation," "involvement," and "empowerment" are increasingly used interchangeably in participatory studies, leading to a lack of clarity in the concept of participation, which refers to the way the participatory process leads to different outcomes. For instance, a participatory practice that allows someone to be heard (voice) does not necessarily imply that the person's voice can influence a decision (involvement) or that they have the power to make decisions effectively (empowerment).

Potterfield (1999) suggests that organizational studies of empowerment acknowledge two approaches: psychological and relational perspectives. Psychological perspectives posit that empowerment refers to a subjective state of mind in which an employee perceives that they are effectively exercising control over meaningful work. In contrast, relational perspectives focus primarily on the organizational structures and behaviors that they believe are characteristics of an empowered workplace. Since participatory management practices come from managers and not workers, it is essential to analyze these practices carefully to understand and

differentiate their ideology from their extended role in workplace organizations. The broader classification of types of participation is based on the way decisions are made by actors:

• Direct participation: Participation is individual.

• Indirect participation: Participation is collective.

Understanding lean systems requires an analysis of organizational structure and teams. Using a version of Van de Ven's (1981) approach to observing organizational structure and studying teams, Figure 2 focuses on an individual organization and indicates that individual jobs or positions are differentiated by an individual's discriminatory decision-making power within their department/unit.

Interactions within and between organizational units can impact an individual's and unit's dynamics beyond the expected outcomes of job design. For example, a job designed for an individual outside of organizational unit B (i.e., individual 1b in another organization colored green) may have a higher discriminatory decision-making ability than an individual in the same unit (i.e., individual 1c inside organizational unit B, shown in green). Additionally, individual jobs that have a similar level of authority (i.e., individuals 2a and 2b – colored yellow – or 3a, 3b, and 3c – colored in purple) belonging to separate organizational units (i.e.,
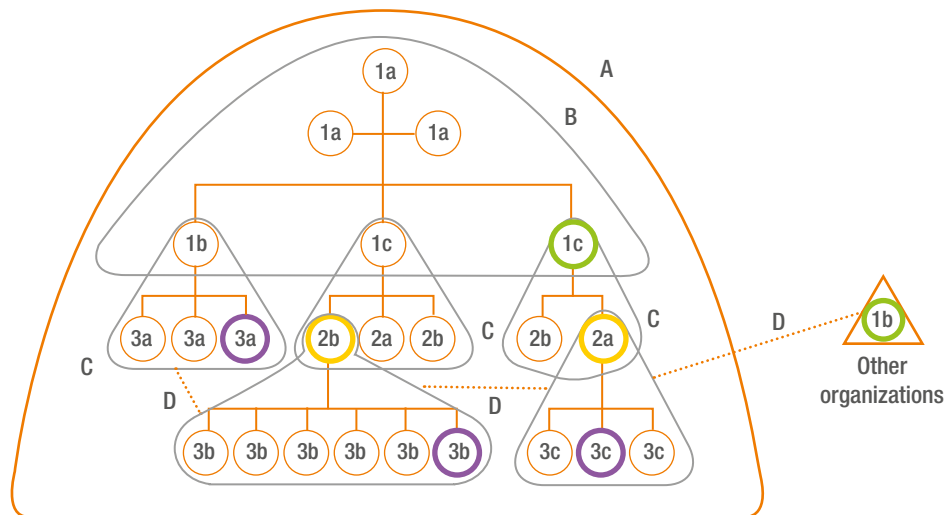
A	= Overall organization focus of analysis
B, C, D	= Organizational unit focus of analysis
1a, 1b, 1c	= Individual job or position focus of analysis with the highest discriminatory decision making power within and between the overall organization and reprectives units
2a, 2b, 2c	= Individual job or position focus of analysis with the lower discriminatory decision making power within and between the overall organization and reprectives units
3a, 3b, 3c	= Individual job or position focus of analysis with the lowest discriminatory decision making power within and between the overall organization and reprectives units

Figure 2. organizational level of analysis influence to teams conformation.
Source: Adapted from Van de Ven (1981, p. 254).

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C and D) may differ in their discretionary decision-making power, with one unit being more strategically relevant than the other. These examples highlight how relationships within and between units can increase an individual's participation in goal-oriented teams beyond the mission of a single organizational unit. However, discretionary decision-making by individuals within a team can increase the possibility of conflict between these individuals and other organizational units if the team's goals intertwine with those of other organizational units. Further, individual attributes, such as attitudes, leadership, personal and career goals, and culture, may also affect group dynamics. As lean manufacturing production systems have grown, managerial practices have adopted a variety of ways to implement effective PMP to increase productivity and address workplace conflict.

The adoption of PMP can be a complicated process, even without the addition of technology applications into the workplace mix. Bresnahan and Yin (2017) argue that the increasing infusion of information and communication technologies (ICTs) in workplaces has increased the demand for people with "Organizational Participation Skills (OPS)" who can co-invent new workplace processes while new technologies replace and complement existing workplace technology.

The following list summarizes and defines Cornwall's (2008) and Huq's (2010) different types of participation from formal and informal PMP:

- **Empowerment participation:** Enables people to work out what to do.

- **Involvement participation:** Enables people to implement what to do.

- **Power sharing participation:** Enables people to make decisions relating to high-level or strategic decisions.

- **Decision making participation:** Enables people to make decisions about what to do.

- **Devolution of responsibility:** Transfers duties to another individual/collective (i.e., to devolve power to the powerless).

- **Leadership style:** Leader's method of providing direction.

- **Manipulative participation:** Represents people without power.

- **Passive participation (inform):** People participate by being told what has been decided or has already happened.

- **Participation by consultation:** People participate by being consulted or asked questions and there is no sharing of decision making.

- **Participation for material incentives:** People participate by expecting something in return (i.e., material resources).

- **Functional participation:** People participate to achieve already decided project goals and may share in decision-making (planning vs. production/R&D).

- **Interactive participation:** People participate assuming it is their right to engage in decision-making.

- **Self-mobilization participation:** People participate to interact with external actors and retain control of resources and make system changes.

- **Nominal participation:** People participate to show that they are doing something.

- **Instrumental participation:** People participate to draw contributions to cost-efficiency.

- **Representative participation:** People are given a voice through a representative in the development of a project/plan.

The relationship between technology and PMP

This section presents the existing theories and research on the relationship between technology and PMP. Organizational researchers like Weber and Durkheim give less weight to technology in managerial decision-making (Hodson, 2001; Grint, 2005). Weber recognized that technology and managerial practices are intertwined, but he concluded that administrative control is attached to managerial practices, resulting in bureaucratic forms of organization and administration. Durkheim viewed workplaces through the dynamics of power relations, where capitalism's expansionary dynamics create conflicts between workers and owners. Lesser power in this relationship leads to the exploitation of workers. Durkheim concludes that workplace dynamics lead to the control of the production system by those in charge (Hodson, 2001; Grint, 2005). Organizational research has considered technology to be an essential factor shaping the organization of workplaces, but there is no consensus on how this happens (Form et al., 1988).

Early sociology theories of organizations did not allow for the possibility that automation and technological change could coexist with PMP. Marxist-based work organization theories contend that technology or electronic forms of production are designed to gain control of the organization of work from workers (Agassi, 1986; Braverman, 1998). Neo-Marxist perspective explains that managers choose specific technologies to gain control over the organization of work (Agassi, 1986). In contrast, Taylorist and Neo-Taylorism theories acknowledge PMP as limited and restricted to utilitarian purposes, with minimal attachment to technological changes. Worker participation in the labor process is outside of organizational decision-making processes that are exclusively the domain of owners and managers, and technological change is an end in itself defined by the capitalist system. Therefore, managerial strategies are a means to enhance worker productivity, align personal goals with cooperative ones, and keep worker morale and satisfaction as high as possible. These theories hold that the promotion of regulations or deregulations is a significant thrust in the governance of organizations that focuses on improving workplace productivity.

Most managerial decisions relating to the adoption of technology are not primarily driven by controlling the workplace (Walker, 2015; Dennis, 2016), but the decisions they make can control the organization of the workplace (Noble, 1986; Braverman, 1998). Braverman (1998) explains that technology and PMP have a contradictory nature that stems from the integration of physical (technological) and human components within a formal organizational structure characterized by hierarchical and centralized power and command. These hierarchical organizations tend to be strictly regulated by norms that emphasize the subordinate nature of its components. This perspective assumes that because the increasing use of new technologies is widespread and has exponentially grown in workplaces, PMP have emerged as a strategy to counteract the inability of technology to control behavior in workplaces (Burris, 1998). Put differently, it is suggested that PMP is a new way to suppress a union's strength or weaken a worker's right of association through which managers and stakeholders may display their superior power over workers (Bluestone & Bluestone, 1992; McCaffrey, Faerman, & Hart, 1995).

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The focus on the adoption of technologies and automation in workplaces is often mirrored by the adoption of more sophisticated systems of management control, rather than a focus on better conditions for workers or the use of PMP (Burris, 1993). Research on the organization of workplaces must continue to unveil the significance of technology regarding workplace organization in the context of social processes.

Lean production systems are characterized by their reliance on technological processes and flat organizational structures. In terms of technology, the implementation of lean systems is primarily observed through their procedures and the selection and location of technology in the production process (Womack et al., 1990). Detailed procedures provide guidance on the production process to ensure efficient use of technology. Machinery and equipment location are directly related to the most efficient use of space and a means to reduce inventory waste. Additionally, technology location enables faster problem-solving by placing workers in close proximity to one another, enhancing communication and enabling quick response troubleshooting of machinery and equipment by teams. Finally, technology selection gives administrators control over the appropriate state and use of technology in the production process, as well as the ability to determine the necessary organizational structure and related decision-making processes.

Thomas (1994) and Zuboff (1988) support principles such as flexibility, horizontality, and worker autonomy, which characterize organizational structures based on the interests of workers and managers in innovation and continuous improvement. The industrial revolution led to a strict division of mechanical work based on functional specialization, allowing for the emergence of economies of scale. However, this strict division of labor led to ambiguous organizational structures due to the absence of horizontal and vertical links within the organization. Furthermore, the rigidity and centralization of managerial practices made these types of organizations incapable of quickly responding to changes in their operating environment.

The symbiotic relationship between technology and participatory practices based on improvements in productivity and quality processes appears to have an empirical foundation (Levine, 1990). However, research is lacking on what motivates workers to engage or disengage in this participatory management scheme, as well as which resistance behaviors are related to technology use.

Final annotation: PMP and workers experience toward dignity at work

This section explains the existing theories and research on workers' experience with PMPs focusing on dignity at work. Studies on the organization of workplaces have put a particular focus on the relationship between technological advancement and the "nature of work." In the workplace, changes in a worker's appreciation of what their work represents to them, or in the values of what work is or means to them, put labor relations at the center of any organization (Grint, 2005). From manufacturing to the service sector, globalization and technological innovations have changed and shaped the nature of work. These changes can impact labor relations with regards to turnover and retention of staff, absenteeism, good or bad behavior, job satisfaction, vandalism, attitudes of management, and worker dignity. Since

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there is ambiguous evidence relating to (in) dignity at work and studies tend to consider human dignity at work as anecdotal (Hodson, 2001; Burris, 1998), there has been limited research on the dignity of workers relating to technological change and PMP.

Studies on dignity at work that consider technological advancement and automation have been advanced in two areas. The first views technological advancement and automation as being consistent with more sophisticated and intensified systems of managerial control, and thus, an imminent degradation of work (i.e., Marxism). The second argues that changes in the nature of work are obvious consequences of adjustments to systems of production (i.e., Taylorism). Taylorist and Neo-Taylorism theories assume that the study of human dignity is not suitable for organizational studies because the concept cannot be measured "objectively," and cannot provide useful insights into the forces that shape the organization of the workplace (Mitchell, 2010). Consequently, workplace organizations based on "scientific management" neglect the degradation at work entirely.

There are two main stories behind the influence of PMP on the dignity of workers. The first argues that PMPs do not change the status quo because technological change is an end in itself of the capitalist system, and any managerial strategy purposely seeks to gain control of the production process. The second argues that the spread of participatory practices in lean production systems has provided workers with agency and dignity (Aggasi, 1986; Hodson, 2001; Bolton, 2007a).

Workers who want to exercise their agency must surpass the manipulative structure of PMPs. For Braverman (1998) and Noble (1986), the dominant organizational structure was bureaucratic. According to Noble (1986), the organizational strategy of industry was dependent on macro-level contexts with regards to the selection of technologies. Put simply, the political, economic, and institutional environments all shape decision-making. Noble found that bureaucratic organizations at the national level reinforced the tendencies of inequality and deskilling. From Braverman's (1998) perspective, management practices generate mechanized and depersonalized organizations, in which everything revolves around the machinery and benefits of capital, degrading work and indignity. Hence, the importance given to the creation of policies and management practices that develop less aggressive and more democratic technological systems.

In this context, Braverman (1998) argues that under the capitalist system, management practices have direct control over all processes of labor and production, which can alienate labor. The concept of "alienating" must be understood as transferring ownership to another. In this sense, work is transferred to the control of others and becomes the property of others. Even if managers involve workers in the decision-making process of PMP, there is a high probability that they will not take into account the actual work people engage in and how workers feel rewarded by the company/process. Therefore, involving workers in corporate goals or increasing regulatory practices might decrease dignity at work. Hodson (2001) adds that employee involvement outside of the decision-making process of organizations limits and restrains a worker's path to experiencing work with dignity.

Bolton (2007b) states that the literature on the sociology of work acknowledges that not all PMP, such as involving workers in

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corporate goals or creating flatter organizational hierarchies, necessarily contribute to increased dignity at work. The main reason PMP fail to increase workers' experience of dignity at work is that, overall, they miss the point that dignity at work relates to how workers experience their work and workplace environment. Managers seek to involve workers in the development of a company's strategy and empower them to achieve corporate aims. In this sense, managers attempt to create positive atmospheres, compassionate cultures, and better work conditions for their employees.

Burris (1998) and Hodson (1996) conclude that there is ambiguity in the significance of PMP toward workers' experience of dignity because of technological change. Indeed, automation is considered to be consistent with more sophisticated and intensified systems of management control, rather than with participatory practices. The impact of technological change on participatory management practices varies with different degrees of workers' autonomy and hierarchies, but there is a trend that highlights that both autonomy and flat hierarchies sometimes relate to increasing participatory practices.

Grint (2005) notes that self-organized teams bring self-fulfillment and dignity to workers even when there is a general perception that these approaches are less cost-efficient. He concludes that these participatory practices allow better social relationships and promote manager and worker behavioral changes that enhance the dignity of workers. Grint (2005) and Thomas (1994) point out that the workplace environment must be contextualized and develop its dynamics in response to different industry production processes, power relations, and structures of internal policies and organizational culture. A lack

of workplace contextualization can erode a worker's experience of dignity, even if efforts have been made to implement participatory practices. Cooperative theorists argue that if real ownership is awarded to workers through ESOPs (employee stock ownership plans) and democratic participatory practices (such as self-organized teams) are used, the end result will benefit workers' experience and workplaces (Rothschild-Whitt, 1979).

Workers' experience with new technology and participatory managerial practices can change their actual work, behaviors, and attitudes. Therefore, workers are the ones who can determine precisely what changes in their daily activities impact their dignity at work. In this regard, Hodson (2001) points out that focusing on how workers experience or respond to their struggle for dignity is a useful way to understand how workers' mechanisms can alleviate indignities in workplaces.

Hodson (2001) concludes that regardless of the form of participatory management practices or employee involvement, there is a consensus regarding its positive impacts, i.e., productivity enhancement and more meaningful, creative, and positive work-life experiences for workers. To discover the nuances of participatory practices in workers' experience of dignity, studies must focus on identifying ways to "to certify one form of participation over another in terms of its consequences for working with dignity" (Hodson, 2001, p. 196).

Braverman (1998) explains that all of Taylor's scientific management strategies to gain control over the production process range from attitudes of coercion and punishment to measurement of time and movements through direct supervision. These conditions promote workers' dissatisfaction, a feeling of "meaninglessness," and states of "powerlessness." Workers'

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experience of assault of dignity at work and dissatisfaction increase when Taylor's scientific management (1) breaks the relationship between the labor process and workers' skills, (2) separates the meaning workers attribute to their work, and (3) increases the monopoly over knowledge to control each step of the labor process and the way the labor process is executed.

Boheram et al. (2008) note that there is a great diversity of ranks within management that range from first-line supervisors to senior managers, and a manager's main concern is to increase their control over the labor process. Furthermore, managers are not a coherent body with similar interests or ways of controlling workplaces. Thomas (1994) asserts that this complexity enriches the collaborative network that may affect a worker's experience of dignity at work.

Hodson (1996) studied different organizations of production systems and modes of control to identify opportunities for workers to work with greater or lesser dignity and self-realization. He found that modes of control implemented on craft production are positive and meaningful for workers' experience of dignity and self-realization. He also found that control strategies such as direct supervision, bureaucratic organizations, and assembly-lines tend to assault workers' experience of dignity and self-realization. Additionally, he found that workers' experience of dignity and self-realization under participatory practices related to these strategies are less than those experienced from craft production systems. Thus, increases in participatory practices and reductions in automation present new opportunities for dignity and worth. He lists a range of conditions through which workers experience positive and meaningful self-

realization under participatory practices. Some of the more prominent conditions are as follows (Hodson, 1996):

- New bargains are established between workers and managers about how much emphasis workers are expected to have in relation to their enjoyment of work, what expectations workers should have about the fairness of rewards, and what power they should have relative to management.

- The main aspects of coworker relations are solidarity, peer training, and social friendship. Solidarity can mitigate feelings of alienation that arise from performing meaningless work; peer training with significant worker autonomy and a significant base of worker power bring more than satisfactory dignity experience, and the prevalence of social friendships indicates a positive work experience.

- Insider knowledge can make work more meaningful.

- Workers' pride increases while managerial abuses increase over coworkers – i.e., workers who do not face abuse can feel dignified as having done a good job, while at the same time witnessing abuse of a coworker.

- Solidarity is supportive to workers, but peer training and social friendship can have a negative impact on the dignity of coworkers.

- Certainly, the lean production system strategy that focuses on technological change as well as PMP is an open debate full of difficulties to rise consensus. All different types of participation from formal and informal PMP and its organizational hierarchy bring implications to worker experience, which have not been explicitly studied concerning dignity at work.

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