

Healthy Lean through HRD

Frances Jørgensen

Aarhus School of Business, University of Aarhus

The paper reports on findings from the initial, exploratory phase of a longitudinal research study aimed at developing a framework for implementing lean while ensuring employee well-being. Data from observations and in-depth dialogues with persons involved in lean implementation, along with relevant theory, are used to construct a tentative framework for implementing “healthy lean”. The role of HRD in facilitating implementation of healthy lean is central to the framework, which is presented and discussed.

Keywords: Lean Manufacturing, Employee well-being, Qualitative Research, Longitudinal Case Study

Increasing instability of the global market has created a need for organizations to improve their competitiveness. More and more, companies throughout the world are turning to optimization strategies such as lean manufacturing in order to meet this challenge. Lean manufacturing, a process management philosophy, has rapidly gained in popularity in recent years, not only in the manufacturing sector, but also within service and administration. By focusing on the elimination of all types of waste—from time, manpower, and materials, just-in-time production methods, and the continuous improvement of existing work practices, lean may offer opportunities for substantial performance improvement (Womack & Jones, 1996). According to Liker (2004), any manufacturing company intending to be competitive must have some type of lean program in place.

The implementation of lean manufacturing, however, may not be without risks, especially in terms of the employees' physical and psychological well-being (Harrison, 1994). Adoption of lean manufacturing principles represents a major organizational change initiative, which in and of itself may be highly disruptive to members of an organization. Furthermore, the methods by which lean manufacturing seeks to reduce waste may be especially stressful for employees. Empirical studies aimed at exploring the impact of lean manufacturing on employee well-being suggest that at least some companies may become so caught up with cutting costs that they ignore the need for the open communication and employee development and training that might otherwise counteract many of the risks involved with implementation of lean (Likert, 2004). Ultimately, prioritizing waste reduction over employee well-being may also have detrimental consequences on organizational performance, thus reducing or eliminating the potential long-term performance gains that precipitated the implementation of lean manufacturing in the first place.

What appears to be needed, then, is a way to implement lean manufacturing principles that provide opportunities for increased business performance without sacrificing employee well-being. In this paper, preliminary findings are presented from the initial exploratory phase of a larger longitudinal study aimed at identifying and testing ways of implementing lean while ensuring employee well-being. Although there were no a priori plans to investigate whether HRD practices in particular could be used to facilitate “healthy lean”, the first phase of the data collection clearly suggested potential in this area. Consequently, there was a recognized need to develop a framework for integrating HRD practices with lean implementation that would at least partly satisfy the objectives of the study—namely, to establish methods of implementing lean with an emphasis on employee well being. The purpose of this paper is to describe the empirical and theoretical basis for such a framework, and present the first efforts at the framework's design.

In the following sections, the concept of lean manufacturing is briefly described, with emphasis on the potentially negative consequences implementation of lean may have on employees. Thereafter, the research methods and empirical background for the study are presented. Data from observations, interviews, seminars and workshops involving representatives from several companies currently implementing lean are then reviewed and discussed. A developing model for integrating HRD practices with the implementation of lean is then presented and discussed in terms of how HRD could play a vital role in securing employing well-being and facilitating sustainability of lean.

Lean Manufacturing

The concept of lean manufacturing can be traced back to the 1950's when it was known as the “Toyota Method” and was associated exclusively with the shop floor employee performance and the application of tools and methods

Copyright © 2008 Frances Jørgensen

within the automobile industry. Since publication of *The Machine that Changed the World* (Womack *et al.*, 1990), lean has been rapidly gaining attention throughout the world: a major report detailing manufacturing practices in the US and UK estimated that approximately half of all US/UK manufacturing companies have implemented some form of lean in at least part of their organization, and that still more companies intend to implement lean at some point in the near future (EEF, 2001). The growing popularity of lean can undoubtedly be attributed to the promise of dramatic performance improvement. Lean companies are characterized by continuously increasing productivity, lead-time, utilization of physical environment, and quality while at the same time allowing for expanded product variety (Womack & Jones, 1996). Fullerton (2003) claims that companies may expect up to 100% improvement in labor productivity when implementing lean; when compared to mass production, lean has been credited with 50% savings in the time to develop new products and processes and to manufacture, as well as in use of resources (tools, facilities, space) (Monden, 1993; Ohno, 1988).

Moreover, Forza (1996) claims that when successful, lean manufacturing supports greater employee involvement and commitment, for example through continuous improvement activities aimed at improved quality and problem solving teams. The active involvement of employees along with ownership of improvement ideas should, according to Womack *et al.* (1990), contribute to establishment of a healthy work culture. Furthermore, they state that employee satisfaction and motivation should be enhanced through application of lean principals, as employees have the opportunity to continuously learn and use a variety of new skill sets. This perfect picture of a positive working environment providing the foundation for improved operational and organizational performance may however not be representative of all companies. Ballé (2005) proposes that lean implementations often fail because managers underestimate—or simply ignore—the behavioral aspects of lean. Womack and Jones (1996) acknowledge that there is an inherent risk in attempting to adopt lean without recognizing the scope of the changes necessary, for example the new ways of thinking needed in companies accustomed to mass production. They stress the importance of three attributes critical for successful lean manufacturing: a long term perspective that allows room for experimentation and even mistakes, the technical expertise to analyze and manage problems as they arise, and an unrelenting desire to succeed even in the most challenging of situations. In situations where these attributes do not exist, or when the behavioral aspects involved in the adoption of lean are not taken into consideration, lean may have a negative impact on the organization. Landsbergis *et al.* (1999) proposes that the greater standardization and increased intensity of work processes may have negative consequences for employees, especially at the shop floor level of the organization. In their study, they discovered increased stress levels, higher rates of absenteeism, increased safety incidents, lower employee satisfaction, and physical complaints due to, for example, strain from repetitive motions (e.g. carpal tunnel syndrome). For this reason, Parker (2003) suggests “caution for companies considering lean production initiatives, especially if they aspire to have a mentally healthy, self efficacious and committed workforce” (p. 631).

Research Question

The primary question underpinning the research presented in this paper is then how companies can implement lean in such a way that provides opportunities for improved business performance over time, while securing a healthy psychological environment for its employees. Stated more specifically, which particular practices and/or mechanisms may contribute to the implementation of “healthy lean”? It should be noted here that the question of *whether* lean produces stress has not been the focus of either the larger research project or this paper. Such investigations have been reported elsewhere (e.g. Conti *et al.*, 2006; Mehri, 2006; Likert, 2004; Landsbergis *et al.*, 1999). In the next section of the paper, the methods used to collect data from organizations currently implementing lean manufacturing are presented. These data include both the experiences and the suggestions of professionals currently implementing lean, and thus are used to not only investigate the consequences of lean on employees, but also to explore possibilities for reducing or reversing any negative impact. Some tentative conclusions derived from these data are discussed later in the paper.

Methods

This paper presents qualitative data collected during the first year of an on-going longitudinal study aimed at developing an implementation model for lean that emphasizes improved operational performance and the creation and/or maintenance of a positive psychological environment for employees. At this phase of the project, the focus is on gaining an overview of lean implementation in practice, how this implementation may potentially have

consequences for employee well-being, and the elements those practicing lean consider important to include in a framework for implementing lean emphasizing employee well-being. To that end, data were collected from observations and dialogues with persons involved in implementing lean. The collected data were then used to identify potentially relevant avenues of theoretical inquiry. In this way the research approach may be classified as following principles of Grounded Theory, which Willig (2001) describes as a qualitative method used to explore “contextualized social-psychological processes” (p. 69). No quantitative data were collected at the time this paper is written. In a later phase of the project, the framework developed on the basis of the data presented here will be tested in practice.

The study began in September 2006 and is scheduled to conclude in September 2009. The research team consists of 12 researchers from two universities, including the author, and one nationally funded organization responsible for conducting research on work environment issues. Data collection in this initial phase of the project has occurred in three steps: first, observations and unstructured interviews were conducted by the research team in four companies (3 from the manufacturing industry and 1 from a service/administrative agency) currently implementing lean. The purpose of this phase of the project was to orient the project group members on lean in practice. In each company, the researchers were given a guided tour of the facilities by a plant manager and/or manager responsible for the lean implementation process within the company. The researchers were free to ask operators/employees questions about their work, and to describe their experiences with lean manufacturing. In total, 24 employees were addressed with questions in the four companies. The management representatives were not present during these interviews, and the employees were promised anonymity. Because these same companies, along with 12-15 others, will be included in an intervention planned for later in the project period, the researchers refrained from asking any questions that might interfere with the planned intervention. Specifically, a survey instrument will later be used to assess employee psychological well-being prior to and again after introduction of a lean implementation model aimed eliminating negative psychological effects, so no questions were asked regarding the employees’ health and/or psychological state. In cases where employees freely offered such information, the data are included here, when relevant to the focus of this paper.

The objective of the second phase of data collection was to form an “Experience Panel” consisting of persons with hands-on experience with implementing lean. The Experience Panel was to be involved throughout the project to share their experiences with lean and to serve as sparring partners for developing ideas for experimentation later in the study. The Experience Panel was formed by inviting 23 persons from other (i.e. not those involved in the observations in phase 1) companies also implementing lean to attend a full day seminar aimed at sharing experiences with lean manufacturing. These companies were selected according to size (only companies with 50 or more employees), minimum of three years experience working with lean, and industry (equal number of representatives from companies characterized as manufacturing, service, and administrative). In addition, seven consultants with extensive experience facilitating lean also participated. By prior arrangement with the research team, representatives from two of the companies and one of the consultants prepared and delivered a short presentation summarizing both positive and negative experiences with lean. Although these brief presentations may have included performance figures to demonstrate the speaker’s point, no attempts were made to verify this information and therefore it is not included with the data presented here. Further, at this still explorative stage of the research, the focus was not (yet) on collection of quantitative data. Following the presentations, there was a general discussion amongst the participants that was facilitated informally by members of the research team. Before leaving, the participants were again asked to commit to the project, and to attend a second workshop, where a number of the challenges with lean implementation would be explored in more depth. Notes taken from this seminar were then used by the research group to plan the next phase of the study.

The purpose of the third phase of data collection was to exploit the Experience Panel’s practical knowledge with lean in the development of action plans for the subsequent phases of the project. This was accomplished by holding a two-day workshop approximately four months after the initial seminar and included twenty-eight of the same persons that attended the seminar (one consultant and one union representative were not able to attend). Once the presentation of the findings and the literature review were completed, the entire group (i.e. researchers and members of the Experience Panel) brainstormed on the following question: “*What are the major challenges associated with implementation of sustainable lean that ensures employee well-being?*” Responses were recorded on flip charts; once completed participants and researchers were divided into small work groups, each with the task of exploring the possible causes of one of the challenges identified in the brainstorming exercise. After three hours, the whole group reconvened and presented their completed tasks. Time was allowed following the presentations for comments from the remainder of the group and consensus was reached on the most viable suggested solutions.

Essentially, the process of reaching consensus entailed discussing the practical applicability of the proposed solutions and/or combining two or more suggestions into one larger idea. On the morning of the second day of the workshop, the members of the Experience Panel and the research group again divided into groups to create potential solutions to the challenges identified on the first day. Later in the afternoon, the entire group worked collaboratively to create a “model” for implementation of some of the suggested solutions.

In all instance of the data collection described here, at least three members of the research team were responsible for note-taking and efforts were made to record (in writing) as much of the content as possible. In the case of the seminar and workshop, research assistants (1 and 3 respectively) were also assigned the task of note-taking. Following each instance, the notes were typed up and sent via email to the other researchers for review. Notes taken at both the seminar and the workshop were also disseminated to the members of the Experience Panel, in the form of a meeting summary and researchers and participants alike were encouraged to bring any possible misunderstandings or misinterpretations up for discussion. Although it was common for some discussion to occur following delivery of the notes/meeting summaries, none of these indicated any error in the note taking. Instead, having read the notes either the researchers or the members of the Experience Panel was motivated to share an experience or a consideration. These comments were also collected and sent to all participants and researchers and thus are included, as deemed relevant, as part of the collected data presented in this paper. In the next section of the paper, summaries of the collected data are presented.

Summary of Findings

For the most part, the organizations represented in the Experience Panel considered their lean implementations generally successful in terms of performance improvements, but there was widespread concern and/or frustration that results were still less than anticipated. In particular, many of the participants at the seminar and workshop described situations in which performance gains were quite high in the early days of the implementation, but were followed by a substantial drop after 3-8 months. Often performance then leveled out to only slightly higher, if at all, than prior to the implementation of lean. The employees in all four companies visited perceived much higher performance improvements than did the seminar and workshop participants (i.e. Experience Panel), stating that especially productivity had increased substantially since adopting lean (note: no efforts were made to justify or verify these differing claims).

Explanations provided by the workshop participants for the drops in performance over time were relatively similar; with most stating that it was difficult to maintain the intensity of a new initiative for extended periods of time. Some of the members of the Experience Panel admitted that proportionally more time was used to prepare for the initial introduction of lean than in continuous building of skills that would be required to develop a solid basis for lean within their organizations. Further, many of the participants stated that while introducing lean tools and methods into their companies had not been especially problematic, they had never reached the point of establishing a lean culture or a state characterized by e.g. increasing lean capabilities, organizational learning and continuous improvement. The presence, or absence, of a lean culture was not mentioned by any of the employees in the four companies, although several remarked that they had become accustomed to lean as a normal part of their work routine.

Although the various organizations (i.e. companies and consultant agencies) represented in the Experience Panel to this point have experienced different degrees of success with lean implementing, none reported a total absence of issues they related to employee well-being, and in particular stress. Further, comments that were relevant to employees experiencing stress were made by 19 of the 24 employees informally interviewed in the four company visits, even though no they were not asked about employee well being or stress. Generally, the data suggest that employees often experience psychological stress; either expressed directly to members of the organization (e.g. HR personnel, line managers) or as the assumed cause for lower employee satisfaction ratings, internal conflicts, and increased absence reported as sick leave. None of the represented organizations had conducted formal studies aimed at determining whether stress, or other psychological aspects of employee well-being other than job satisfaction, had increased since lean had originally been implemented. Moreover, there were no formal efforts taken in any of the organizations to determine the specific causes of the stress and/or reduced employee well-being associated with lean.

The participants did however, offer a number of possible causes for reduced employee well-being (or more specifically, increased stress), based on their own experiences. Essentially, these causes could be loosely categorized into three broad groups, including causes related to implementation of a major change process (i.e. any large scale

organizational change effort), causes believed to be related directly to implementation of lean, but not with characteristics of lean itself, and causes believed to be related directly to aspects of lean—i.e. characteristics of lean and the methods, tools, and philosophy represented by the lean manufacturing concept. Examples of each of these potential stressors included, respectively: poor communication regarding the purpose/need for change; the speed and/or methods used to introduce lean within the company, for instance, through pilot groups in one division and/or a “blitz” type implementation occurring over a very short time period; and finally, the increased tempo of the work processes.

The first two types of causes (i.e. general change implementation and implementation of lean specifically) of employee stress were considered by the group to be related to leadership and/or management issues, and there was broad agreement that these were of a more serious nature than the third type, which involved characteristics of lean itself. These managerial issues were considered more serious because they tended to impact all employees, the effects endured over a long period of time, and they were perceived as difficult to avoid and/or resolve. This is to say that if implementation issues (general or lean specific) were the cause of reduced employee well-being, these issues would be expected to affect all employees negatively, at least to some degree, and it would be difficult to counter-act the negative impact with new initiatives because much of the damage would already be done. Further, there might be enduring negative consequences in addition to reduced employee well-being, for example, a loss of trust in management.

On the other hand, issues related to characteristics of lean (e.g. intensity of work) might only be problematic for a short time, until the employees became used to the new work processes, or until new skills are learned. Moreover, not all employees appeared to be affected negatively by characteristics of lean, with some perceiving the new challenges as very positive. This contention was supported by the observations and interviews with employees in the four companies visited as well, where stories were told about employees that had experienced frustration with new methods in the beginning, but over time were able to appreciate the underlying logic and the benefits of the new practices.

During the brainstorming and action planning activities in the final workshop, the Experience Panel agreed on a list of elements they considered vital for inclusion in the framework to be developed. None of the members claimed to have experience with including these elements in the lean process (i.e. they are all hypothetical, based on their own conjectures). These included:

- activities to facilitate organizational learning to support sustainability of lean over time (e.g. sharing of experiences, suggestions for improvement)
- leadership development and development with emphasis on human behavior
- an organizational change management approach recognizing potential for change resistance
- conflict and stress management education and tools
- mechanisms for aligning lean principles with existing or new HR practices (e.g. recruitment, orientation and training, compensation, work design, performance appraisal)

Theoretical Basis for the Framework

There was a clear indication from the Experience Panel that the desired framework should include a human resource perspective, although there was considerable debate as to how this could be accomplished. Consistent with the European trend towards increased decentralization of HRM practices (Larsen & Brewer, 2003), the line managers in these companies were responsible for most HR issues (e.g. recruitment and selection, scheduling of training, performance appraisals). However, the Experience Panel indicated that the line managers responsible for lean implementation either do not have the time, desire, or skills to deal with conflict and stress during the early stages when serious consequences could perhaps be avoided. Further, these managers may lack insight into the causes of stress—and into human behavior as a whole—which would allow them to avoid potentially stressful situations for the employees (e.g. videotaping of employees).

One option for these companies would be to re-centralize some of the HRM functions to support healthy lean. There is considerable support in the literature of HRM to support business performance as well. Specifically, when aligned with strategic goals, HR functions such as recruitment, training, performance appraisal, and compensation and rewards have been linked to increased employee participation and motivation (e.g. Gant *et al.*, 2002; Deci, *et al.*, 1999; Murphy & Cleveland, 1995). Bach (2000) proposed that HRM practices such as skills and team training, incentives, and performance appraisals may be of particular importance for companies adopting a lean strategy, as these mechanisms provide employees with the opportunities for conducting their work effectively with

new tools and methods while clarifying the objectives in terms of the individual employees' performance. Scarbrough and Swan (1999) emphasize the need for HR professionals to employ mechanisms that support what they refer to as exploratory learning to ensure opportunities for organizational learning. Recent studies (e.g. Macduffie, 1995) have also linked HR supported work organization (e.g. teamwork and flexible job descriptions) combined with appropriate training and compensation to high productivity levels in automobile plants following lean manufacturing principles.

There is—or perhaps should be—a concern here, however, in relation to transferring the responsibility of employee well-being to the HRM department. As HRM professionals appear to be funneling their attention on discovering ways of ensuring their roles as strategic partners, there is no guarantee that employee well-being would be prioritized. This concern has also been raised by Peccei in the article “Human Resource Management and the search for the happy workplace” (2004). On the basis of arguments offered by Hill (2002), issues related to employee well-being should instead be considered within the domain of HRD. Dilworth (2003) views the integration of learning practices with operational work processes, ensuring a healthy workplace for employees, leadership development with a focus on human behaviour, and strategic change management as core elements of a HRD model. It is however difficult to ascertain how prevalent an HRD perspective is used in companies implementing lean or if they even understand the importance of integrating HRD principles into the lean implementation. Maxwell and Watson (2004) suggest that unless line managers understand the importance of HRD to the business strategy, they are unlikely to integrate HRD into their activities; further, they must have the capability of actually integrating HRD into those activities (de Jong *et al.*, 1999), which did not appear to be the case in the companies represented by the Experience Panel. It is therefore considered vital that a HRD perspective be carefully integrated into a framework for healthy lean implementation.

A Tentative Framework for Healthy Lean Implementation

One of the major challenges in developing the intended framework was to ensure its practical applicability. In order to enhance applicability, the HRD activities should therefore be integrated into the lean implementation as much as possible, rather than be a supplemental or parallel initiative that might not be followed. Further, the framework should incorporate measurable outcomes to provide evidence of its utility. The framework is shown in Figure 1.

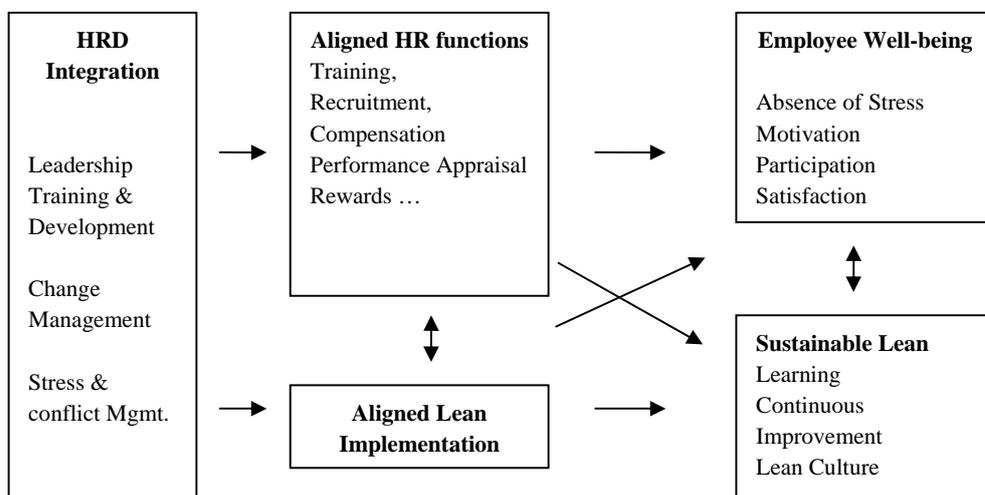


Figure 1: Framework for healthy lean

As shown, the framework incorporates the critical elements identified by the Experience Panel by integrating HRD with the lean implementation. More specifically, HRD integration is ensured through training and development in the areas of leadership, change management, and stress and conflict management and HR practices are aligned with lean principles. Although the specific ways in which alignment of HR practices with lean have not yet been detailed, they are likely to include, for example, the recruitment of new employees with experience with lean, developing orientation and training that focuses on establishing a lean culture characterized by organizational

learning behaviors, compensation and reward systems that reward that motivate participation in lean activities, etc. Integration of the HRD activities and HR practices with the lean implementation, according to the literature presented here and the conjectures of the Experience Panel, would then be expected to influence employee well-being by alleviating stress inducing situations and/or managing conflict and stress in a timely fashion and by improving motivation, participation, and satisfaction. The lean implementation would also be positively influenced by this integration and alignment with the HRD activities and HR practices, as they support establishment of an environment characterized by learning and continuous improvement, which would build the foundation for a healthy lean culture. The outcomes would consist of measures of both employee well-being and lean performance over time to evaluate sustainability.

Discussion and Conclusion

Preliminary findings from this study suggest that two major challenges may be faced regarding the implementation of lean, namely those relating to sustainability of lean over extended periods of time, and to potential negative consequences on employee well-being, and in particular, stress. While the participants in the study did not necessarily link these two issues, there are common components. For instance, training and capability development, the establishment of a lean culture characterized by learning and sharing of experiences, efforts towards increasing participation and motivation, and effective change management/leadership may be important for ensuring sustainability of lean and in preventing or minimizing stress as a consequence of the lean and/or change initiative. Emiliana (1998) proposes that a lean manufacturing philosophy provides opportunities to combine personal growth and learning goals with organizational objectives, but this is unlikely to be possible without facilitation and alignment of practices.

The framework presented in this paper seeks to illustrate ways in which the integration of HRD practices could potentially facilitate implementation of healthy lean. At this point, the framework is not assumed to be complete by any means, nor has it been tested in any way. Pilot studies will be conducted in the next phase of the project to evaluate the applicability and the utility of the model on several levels, as well as to identify concrete ways in which these mechanisms can be applied within an organizational context (e.g. how HR practices can be aligned with lean implementation guidelines and how to encourage managers to adopt a HRD approach to the lean implementation). The purpose of presenting the framework at this time is to (hopefully) generate meaningful discussion on the elements of the framework.

Implications and Directions for Future Research and Practice

The research presented in this paper is clearly at a very early stage of development, where input from the extant literature and persons experienced with lean implementation provide the foundation for the larger study to be completed. For instance, attention should be given to which HR functions can be targeted for integration with lean implementation, and how this integration can be accomplished given the existing systems and policies within an organization. Further, it will be important to examine which particular aspects of lean are enablers and disablers of employee well-being, and how HRD can capitalize or circumvent these, respectively. Because the planned research involves studies in various industries, it will also be important to consider the applicability of the framework in the various sectors. Undoubtedly as the research continues, the list of questions will also grow substantially.

Still, even at this stage, the paper contributes to both theory and practice. Specifically, literature concerning the potential role of HRD as an important enabler of healthy lean is essentially non-existent. Although some consideration has been given recently to how HRM, and more generally HR practices, could support lean, the focus of this work has directed primarily towards ensuring operational performance gains from lean. To date, the human side of lean has been sorely neglected in the literature. This point is emphasized by Hines *et al.* (2004), who caution that all organizational change, and perhaps lean in particular, requires an emotional acceptance in adoption to occur. The development of the framework presented here is consistent with the notion that HRD is an applied field with a tradition for basing solutions to organizational problems on practice rather than theory (Passmore, 1997) and as such, the framework provides opportunities for HRD professionals to demonstrate their value. Furthermore, as the framework was developed with emphasis on practical applicability and utility, it is rather straightforward and provides opportunities for measuring its impact.

References

- Bach, S. (2000). Health sector reform and Human Resource Management: Britain in comparative perspective. *International Journal of Human Resource Management*, 11(5), 925-942.
- Ballé, M. (2005). Lean attitude - Lean applications often fail to deliver the expected benefits but could the missing link for successful implementations be attitude? *Manufacturing Engineer*, 84(2), 14-19.
- Conti, R., Angelis, J., Cooper, C., Faragher, B., & Gill, C. (2006). The effect of lean production on worker job stress. *International Journal of Operations & Production Management*, 26(9), 1013-1038.
- de Jong, J. A., Leenders, F. J., & Thijssen, J. G. L. (1999). HRD tasks of first level managers. *Journal of Workplace Learning*, 11(5), 176-183.
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125(6), 627-668.
- Dilworth, L. (2003). Searching for the future of HRD. *Advances in Developing Human Resources*, 5(3), 10-13.
- EEF (2001). *Catching up with Uncle Sam: The EEF final report on US and UK manufacturing productivity*. <http://www.autoindustry.co.uk/docs/UncleSam.pdf>.
- Forza, C. (1996). Work organization in lean production and traditional plants. *International Journal of Operations & Production Management*, 16(2), 42-62.
- Fullerton, R., McWatters, C. & Fawson, C. (2003). An examination of the relationships between JIT and financial performance. *Journal of Operations Management*, 21(4), 383-404.
- Gant, J., Ichniowski, C., & Shaw, K. (2002). Social capital and organizational change in high-Involvement and traditional work organizations. *Journal of Economics & Management Strategy*, 11(2), 289-328.
- Harrison, B. (1994). *Lean and Mean: The Changing Landscape of Corporate Power in the Age of Flexibility*. The Guildford Press: New York.
- Hill, R. (2002). Researching HRD in small organizations. In J. McGoldrick, J. Stewart & S. Watson (Eds). *Understanding Human Resource Development: A Research-based Approach*. Routledge: London.
- Hines, P., Holwe, M. & Rich, N. (2004). Learning to evolve – A review of contemporary lean thinking. *International Journal of Operations & Production Mgmt*, 24(10), 994-1011.
- Landsbergis, P. Cahill, J. & Schnall, P. (1999). The impact of lean production and related new systems of work organization on worker health. *Journal of Occupational Health Psychology*, 4(2), 108-30.
- Larsen, H. H., & Brewster, C. (2003). Line management responsibility for HRM: What is happening in Europe? *Employee Relations*, 25(3), 228-244.
- Liker, J.K. (2004). *The Toyota Way - 14 Management Principles from the World's Greatest Manufacturer*. McGrawhill: New York.
- Macduffie, J. P. (1995). Human Resource bundles and manufacturing performance: Organizational logic and flexible production systems in the world auto industry. *Industrial & Labor Relations Review*, 48(2), 197-221.
- Maxwell, G., & Watson, S. (2004). Lining up responsibility for HRM and HRD: The case of Hilton International's UK Hotels. *British Journal of Occupational learning*, 2(1), 29-47.
- Mehri, D. (2006). The Dark side of lean: An insider's perspective on the realities of the Toyota production system. *Academy of Management Perspectives*, 20(2), 21-42.
- Monden, Y. (1993). *Toyota Production System: An integrated approach to Just-In-Time*, 2nd Edition, *Industrial Engineering and Management*. Norcross: Georgia, US.
- Murphy, K. R. & Cleveland, J. N. (1995). *Understanding Performance Appraisal*. Sage: Thousand Oaks, CA.
- Ohno, T. (1988). *The Toyota Production System: Beyond Large-scale Production*. Productivity Press: Oregon, US.
- Parker, S. K. (2003). Longitudinal effects of lean production on employee outcomes and the mediating role of work characteristics. *Journal of Applied Psychology*, 88(4), 620-634.
- Passmore, D.L. (1997). Ways of seeing: disciplinary bases of research in HRD. In Swanson, R.A. & Holton, E.F. (Eds.). *Human Resource Development Research Handbook: Linking Research and Practice*. Berrett-Koehler, San Francisco, CA.
- Peccei, R. (2004). Human resource management and the search for the happy workplace. *Inaugural Address, Erasmus Research Institute of Management*. Erasmus University, Rotterdam.
- Scarborough, H. & Swan, J. (1999). *Knowledge Management: a Literature Review*. London: CIPD
- Willig, C. (2001). *Introducing qualitative research in psychology: Adventures in theory and method*. Buckingham (UK): Open University Press.
- Womack, J.P. & Jones, D.T. (1996). *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*. Simon and Schuster: New York.
- Womack, J. P., Jones, D. T., & Roos, D. (1990). *The Machine that Changed the World*, Harper-Collins: New York.