

Context

The Employee Perspective in Lean Environment

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Abstract

Lean approach focuses on elimination of wastes by continuously identifying slacks and removing them. From Human Resource Management perspective, unutilized work time and excess workers are considered as slacks. Increasing worker utilization and downsizing usually lead to reduced manufacturing costs. Lack of job security coupled with the need to accomplish more with less people constitutes a source of employee stress in lean enterprises. Increasing worker utilization is a short term solution to improve productivity but at the cost of welfare of the workers. This will eventually negatively affect the capability of an organization to innovate, which is harmful for the organization in the long run. An attempt has been made in this paper to develop an effective solution to this problem by suggesting a framework to identify the deficiencies existing in the current system so as to improve upon the same and move towards an improved state in the future.

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Introduction

Lean approach is emerging to be essential in most industrial enterprises. Initially it started in the automotive sector in the Toyota Production System (TPS), Japan, both as a concept and as a practice. Thereafter, application of lean methodology has made a significant impact into many other manufacturing industries apart from the automotive industry. Use of lean methodology in the manufacturing area is now well established. However, extensive literature survey reveals that coverage of welfare of workers coupled with that of the enterprise is quite rare. This work aims at achieving a proper balance between the two within the perspective of the lean environment.

Lean manufacturing concepts and its allied HR practices are briefly reviewed in the next section since these concepts have been considered in this research work. It is followed by the objective and a vivid description of the methodology adopted. Development of a framework to maximize the organization and employee welfare has been detailed out in the subsequent section.

Review of Literature

Many organizations are using the concept of “Lean Manufacturing” for their survival in the global competition. Lean manufacturing has its origin in the Toyota Production System (TPS), Japan (Arnheiter and Maleyeff 2005; Watson 2006) and focuses on elimination of waste as its principal objective (Pettersen 2009). The Toyota Production System was developed under the leadership of Taiichi Ohno (1912-1990) out of necessity to increase organizational efficiency

through improved quality, cost and responsiveness (Watson 2006). The term “lean manufacturing” was first popularised in the book, *The Machine that Changed the World* (Womack et al. 1990), which made the western manufacturing companies take interest in the concept of lean manufacturing (Greene 2002; Hines et al. 2004). In this book, lean manufacturing was defined as “the systematic removal of waste by all members of the organization from all areas of the value stream” where value stream is the set of all activities that contribute to the transformation of a product from raw material to finished product (Worley and Doolen 2006). The ultimate objective of lean manufacturing is to become highly responsive to customer demand while producing quality products in the most efficient and economical manner by reducing or eliminating all kinds of wastes (Bhasin 2006).

Whilst lean is concerned with reducing waste at all levels, it is also about changing corporate culture; in this case there is a need to:

- 1) make decisions at the lowest level assessed by the number of organization levels;
- 2) forward a definite clarity of vision; an indication of what the organization believes it will look like once the transformation is complete;
- 3) ensure that there is a strategy of change whereby the organization communicates how the goals will be achieved;
- 4) assign responsibilities within the pilot programme initially and ultimately within the whole organization whereby it is also evident who is championing the programme;
- 5) develop supplier relationships based on mutual trust and commitment; this could be assessed by the number of years a relationship has existed with a supplier; and percentage of procurement purchased under long-term supplier agreements;

- 6) nurture a learning environment for which indices such as, training hours/employee, can provide an approximate barometer;
- 7) systematically and continuously focus on the customer; one could receive a signal of this via the percentage of projects in which the customer was involved;
- 8) promote lean leadership at all levels observed by the number of lean metrics at all levels;
- 9) maintain the challenge of existing processes through, e.g. number of repeat problems and customer assistance to suppliers;
- 10) make a conscientious effort to maximise stability in a changing environment whereby an attempt is made to reduce schedule changes; program restructures; and procurement quantity changes;
- 11) assess the fraction of an organization's employees operating under lean conditions;
- 12) observe the proportion of an organization's departments pursuing lean;
- 13) have a long-term commitment.

A few researches have been done on the employee perspective in lean environment. Rohleder (2009) focuses on the value of human machines in lean enterprises. According to him, human machinery is the most flexible and capable technology, but every human machine has distinct limitations, and it is the company's duty to understand this unique capabilities and limitations. He noted that managers must make an environment that sustains the human machines in top value-creating condition. Attempts have also been made on the integration and evolution of operation and human resource management practices associated with the lean production concept (de Menezes et al. 2010). Lean should involve workers in process improvement through regular team discussion, engaging them in the business (Roberts 2008). Encouraging employees to take a lead role in continuous

improvement is an important factor to be considered by manufacturers in measuring the progress of lean manufacturing (Minter 2010).

However, not much work has been done on the integration of organization and employee welfare in lean environment. This research explores the possibility of mapping the current state onto a matrix of these two welfare issues and thereby improving upon the deficiencies to achieve an improved state.

Objective

The objective of this paper is to focus on the issues of human resource management in lean environment. The intention is development of an innovative framework to have a proper balance between the welfare of the organization and that of the employees. Complementing the welfare of the organization with the interests of the people will enhance the capacity of the lean principles as a decision making tool to improve the productivity of the enterprise.

Methodology

This paper is an exploratory one that explores experts' opinion to investigate the parameters associated with the welfare of the organization and that of the employees. For this purpose the Delphi approach was employed as the methodology to identify the said parameters.

The Delphi technique is a systematic process, which attempts to obtain group consensus resulting in much more open and in-depth research, since each member of the group contributes new aspects of the problems to be researched during the post-research phase (MacCarthy and Atthirawong 2003). This method is carried out by the successive submission of questionnaires, referred to as rounds. Between each round a summary of the results from previous round is communicated to the panel members, and each panel member is given at least one opportunity to re-evaluate his or her original answer

based upon the examination of the group response (Linstone and Turoff 1975). Rounds continue until stable responses between rounds are achieved. The approach is often used as a qualitative forecasting technique but is also used to investigate and understand the factors that influence or may influence decision making on a specific issue, topic or problem area (Saaty 1994). The main criterion for using the Delphi technique is the indispensability of judgmental information, which may arise in cases where no historical data exist or when such data are inappropriate (Linstone and Turoff 1975). The Delphi technique was employed to determine the respective parameters necessary for the two dimensions – welfare of the organization and welfare of the employees within the perspective of the lean environment. The process started with open-ended questionnaire that was given to a panel of selected experts to solicit specific information about a subject or content area. In subsequent rounds of the procedure, participants rated the relative importance of individual items and also made necessary changes to the phrasing or substance of the items. The first round of the procedure in the Delphi method allowed the individual experts relatively free scope to identify and elaborate on those issues they saw as important. These individual parameters were then consolidated into a single set. After each of these rounds, responses were analyzed and summarized, which were then presented to the panelists for further consideration. Hence, from the second round onwards, panelists were given the opportunity to alter prior estimates on the basis of the provided feedback. This procedure continued until consensus in the panelist responses was achieved. The survey was sent out to participants as a word attachment via electronic mail. Respondents were asked to return the survey by e-mail. The process yielded consensus after three rounds.

Results

According to the panel of experts, the following parameters were considered as vital for the welfare of the organization and that of the employees:

Organization welfare parameters

- Output maximization
- Waste minimization
- Vision
- Structured system, process and policies
- Skilled workforce
- Leadership style

Employee welfare parameters

- Employment stability
- Job satisfaction
- Growth & career development
- Empowerment
- Work-life balance
- Workplace environment

The above parameters are discussed below for their relevance in the study:

➤ **Output maximization**

Maximization of output by proper capacity planning is a very important component of the management process of any manufacturing firm. Capacity is the limiting capability of a productive unit to produce within a stated time period. Capacity planning is derived from the marketing plan and its primary objective is to satisfy customer demand. Some of the factors that determine the capacity of a manufacturing unit are availability of equipment and workers, bottleneck operations and working hours. A proper combination and management of these factors help to maximize the output of any production flow-line.

➤ **Waste minimization**

Reduction or elimination of wastes is the ultimate objective of lean manufacturing. Any operation which does not add value to the product is to be considered as waste. In other words,

any operation which results in a physical transformation of the product is not to be considered as waste. Waste and value should be viewed from the customer's viewpoint and this augments the process of identification and subsequent reduction of waste. If an activity adds any such attribute to the product, which the customer wants and is ready to pay for the same, then such an activity is not a waste. In the manufacturing context various operations are categorized into non-value adding (NVA), necessary but non-value adding (NNVA) and value-adding (VA) (Hines and Rich 1997). NVA operations are pure waste and should be eliminated completely. NNVA activities should be reduced to the maximum extent possible by making certain changes in the process. The seven commonly accepted wastes in lean environment are overproduction, waiting of materials and/or workers, transport, inappropriate processing, unnecessary inventory, unnecessary motion and defects. Reduction or elimination of wastes helps to increase the productivity of the firm by maintaining the same output level.

➤ Vision

Vision is the desired or intended future state of an enterprise in terms of its fundamental objective and /or strategic direction. Vision is a long-term view; the vision statement being a short, succinct and inspiring description of what the organization intends to become and to achieve at some point in the future, often stated in competitive terms. Vision refers to the category of intentions that are broad, all-inclusive and forward-thinking. It is the image that a business must have of its goals before it sets out to reach them. Vision describes the aspirations for the future. The vision statement should be crafted not only for being published in the annual report or displayed in strategic locations but for strategising the organization's system for fulfilment of the corporate objectives so as to make the vision a reality.

➤ Structured system, process and policies

An organization with a structured system, process and policy ensures that it is fair and open in its day to day operation which plays a vital role in attracting and retaining the best people in the organization. This also helps in creating the right organizational climate where employees contribute their maximum to the achievement of the organizational objectives. Effective management of human resources through structured system, process and policy promotes team spirit, provides opportunities for growth to the deserving and encourages employees to work with diligence and commitment.

➤ Skilled workforce

Demand in today's market is of skilled and multi-skilled workers. Technological changes have necessitated the use of sophisticated machines which requires trained and skilled employees for operation and maintenance. The competitive edge that an organization has over its competitors is its manpower – more skilled it is, higher is its competitive edge. An improvement in efficiency and quality of work can come only when workers develop organizational commitment. Unfortunately, according to the mid-term appraisal of the Xth Plan, “Our education system is not generating a sufficient supply of trained people, especially those trained in skills that are in demand.” In a major initiative for meeting market needs, the government is working on upgrading 500 ITIs out of the existing 1896 government run ITIs through Private-Public Partnership (PPP). The upgraded ITIs are to function as the Centres of Excellence for producing multi-skilled workforce of international standard.

➤ Leadership style

Leadership is defined as a matter of aligning people towards common goals and empowering them to take actions needed to reach them. The various leadership styles that are in vogue are autocratic, democratic or participative, persuasive, laissez-faire and paternalistic. The type of leadership style the organization is following will determine the extent of its

welfare. The followers of an autocratic ruler who orders, remains aloof from his team are generally uninformed, insecure and afraid of the leader. A democratic leader encourages decision-making and is effective where the followers are talented and qualified. Persuasive leaders persuade the followers that their decisions are the best and a laissez-faire leader avoids power; it is a free for all and effective only where team work and interpersonal relationship is very strong. Paternalistic leader makes decisions but consults others, he acts as a father figure. Effective leadership is more likely to occur when the leader's influence flows out of rationality, expertise, moralistic appeal, and/or referent power.

➤ Employment stability

Stability of employment is an issue which is at the core of the basic needs of an employee as it deals with the assurance an employee has about the continuity of gainful employment for his or her work life. Lack of job security leads to a lot of anxiety among the employees as they are always faced with the prospect of losing their means of livelihood. This is one of the reasons why despite disparity in salary, employees prefer to work in a public sector rather than continue with a private one. Job security usually arises from the terms of contract of employment, collective bargaining agreement, or labour legislation that prevents arbitrary termination, layoffs, and lockouts. More the employment stability, lower is the anxiety level of the workers.

➤ Job satisfaction

Job satisfaction has been defined as a pleasurable emotional state resulting from the appraisal of one's job (Locke 1976); an affective reaction to one's job (Cranny et al. 1992); and an attitude towards one's job (Brief 1998). It is dependent on its relationship with other key factors, such as general well-being, stress at work, control at work, homework interface, and working conditions. Frederick Herzberg's famous Two

Factor theory is based on satisfaction and dissatisfaction at work. Aspects of the job like achievement in work, recognition, promotion opportunities that make employees want to perform, and provide them with satisfaction are the motivators whereas aspects of the working environment such as pay, company policies, supervisory practices, and other working conditions are the hygiene factors and generally factors responsible for dissatisfaction. An employee is more likely to become dissatisfied, aggravated, and unhappy with his work which leads to a low level of job satisfaction if he is unable to manage communication – either does not receive enough input on the job or is unsuccessful in processing these inputs. Job Satisfaction can be an important indicator of how employees feel about their jobs and a predictor of work behaviours such as organizational citizenship (Organ and Ryan 1995), absenteeism (Wegge et al. 2007) and turnover (Saari and Judge 2004). Further, job satisfaction can partially mediate the relationship of personality variables and deviant work behaviors (Mount et al. 2006). It is found in many research that Job Satisfaction can lead to intention to stay / quit in an organization.

➤ Growth & career development

Every individual employee seeks growth in his career in the organization, which is generally done through a robust career planning system. Career management has individual and organizational perspectives (Badawy 2007). Research has shown that organizations need to design their career mobility systems or performance incentive systems in accordance with employees' career orientations (Kim, 2005). Ahmed and Kaushik (2011) are of the view that organizations should segregate employees according to their potential and performance and provide interventions accordingly, instead of devoting equal time and energy to all employees irrespective of their potential and performance. Career-development initiatives with supportive work environment can create

positive effect on employees. The opportunity to gain new skills is a strong motivational factor, ensures job satisfaction and enables employees to manage stress more effectively. This can translate into positive gains for the organization by enhancing organizational effectiveness and improving work quality, as well as by helping the organization attract and retain top-quality employees. Therefore it can be summarized that growth takes care of employee well-being, organizational performance, reduced stress, satisfaction, increased productivity, self-esteem and reduced turnover. Career development and employee well-being promote the effectiveness of the employing organization.

➤ Empowerment

Empowerment is not giving people power, people already have plenty of power, in the wealth of their knowledge and motivation, to do their jobs magnificently. We define empowerment as letting this power out (Blanchard et al. 1996). It encourages people to gain the skills and knowledge that will allow them to overcome obstacles in life or work environment and ultimately, help them develop within themselves or in the society. In other words, it is the process which enables individuals/groups to fully access personal/collective power, authority and influence, and to employ that strength when engaging with other people, institutions or society.

Empowerment includes the following, or similar capabilities:

- The ability to make decisions about personal/collective circumstances
- The ability to access information and resources for decision-making
- Ability to consider a range of options from which to choose (not just yes/no, either/or.)
- Ability to exercise assertiveness in collective decision making

- Having positive-thinking about the ability to make change
- Ability to learn and access skills for improving personal/collective circumstance
- Ability to inform others' perceptions through exchange, education and engagement
- Involving in the growth process and changes that is never ending and self-initiated
- Increasing one's positive self-image and overcoming stigma
- Increasing one's ability in discreet thinking to sort out right and wrong.

Empowerment to employees in the work place provides them with opportunities to make their own decisions with regards to their tasks. Employees can be empowered through sharing information with everyone, creating autonomy through proper feedback and replacing the old hierarchy with self-managed teams which will have more responsibility and thereby create better communication and productivity (Blanchard, et al. 1996).

Employee empowerment changes the managers' mind-set with empowered employees, running the business unit day to day, the managers have more time to engage in broad-based thinking, visioning, and nurturing. This results in a well-managed enterprise with strong growth potential.

➤ Work-life balance

Work-life balance is the proper prioritising between "work" (career and ambition) on one hand and "life" (pleasure, leisure, family and spiritual development) on the other. The concept originated from the Job Characteristics Model (Hackman and Oldham 1976) that said certain intrinsic and extrinsic factors affected perceptions of job satisfaction within individuals. The extrinsic factors referred to the social and cultural norms the individual holding the job operated by. Hence, work-life balance is considered one of the inputs of

this extrinsic factor. Work-life balance does not mean an equal balance in units of time between work and life.

The need for the concept arose over the past few years as there has been a substantial increase in work due to an intense, competitive work environment and globalisation, characterised by tremendous mobility and working couple. Personal ambition and increasing pressure of family obligations are leading to burnout and increased stress level.

Companies have begun to realize how important the work-life balance is to the productivity and creativity of their employees. Research (Kenexa 2007) shows that those employees who were more favorable towards their organization's efforts to support work-life balance also indicated a much lower intent to leave the organization, greater pride in their organization, a willingness to recommend it as a place to work and higher overall job satisfaction.

Employers can offer a range of different programs and initiatives, such as flexible working arrangements in the form of part time, casual and telecommuting work. However, an empirical research has shown that flexitime and telework do not reduce work life conflict as much as compressed work week does (Julien, et al. 2011). More proactive employers can provide compulsory leave, strict maximum hours and foster an environment that encourages employees not to continue working after hours.

➤ Workplace environment

A workplace environment can be identified as the place that one works including co-workers, air quality, ergonomic seating, etc. A positive work environment is critical to improve productivity as it creates a desire to be at the workplace and work. On the other hand, a hostile work environment exists when an employee experiences workplace harassment and fears going to work because of the offensive, intimidating, or oppressive atmosphere generated by the

harasser. Therefore workplace environment monitoring creates a set of indicators that measure variables such as social support, workload, job control, morale, self-efficacy, supervisor behaviour, job engagement, and psychological well being. Interpersonal relationship plays a vital role in creating or marring workplace environment. Stronger the tie, better is the love for the organization which lowers attrition rate of the organization.

Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well being and overall system performance (The International Ergonomics Association 2011). Proper ergonomic design is necessary to prevent repetitive strain injuries, which can develop over time and can lead to long-term disability. It is relevant in the design of such things as safe furniture and easy-to-use interfaces to machines.

Ergonomics is classified into:

- Physical ergonomics: is concerned with human anatomical, and some of the anthropometric, physiological and biomechanical characteristics as they relate to physical activity.
- Cognitive ergonomics: is concerned with mental processes, such as perception, memory, reasoning, and motor response, as they affect interactions among humans and other elements of a system. Mental workload, decision-making, skilled performance, human reliability, work stress and training fall under this category.
- Organizational ergonomics: is concerned with the optimization of socio technical systems, including their organizational structures, policies, and processes. Communication, work design, design of working times, teamwork, participatory design,

community ergonomics, cooperative work, new work programs, virtual organizations, telework, and quality management are examples of organizational ergonomics.

When ergonomics is taken care of, it ensures a safe, health and hazard-free work environment for its employees.

An assumption has been taken under Employee welfare – the basic needs of the employees are taken care of, i.e., their pay structure is at par with the best in the industry.

Data Analysis

Based on the parameters discussed above, the “Ahmed-Basu 4D Welfare Matrix for Lean Organizations” was developed as illustrated in Figure 1. The matrix depicts two dimensions of welfare, **organization welfare** (accommodating organization’s needs/interests and giving them priority) on x-axis and **employee welfare** (accommodating employees’ needs/interests and giving them priority) on y-axis, with each dimension ranging from low (1) to high (7), thus creating 49 different cells in which the organization’s present condition may fall. The cell in which any particular organization will be placed, i.e., the current status of the organization with respect to the Matrix is determined as follows:

- Step 1.* Likert scale (1 to 7) is followed for each of the parameters mentioned above.
- Step 2.* Performance of the organization under study is to be gauged for each parameter on the Likert scale. This is done by administering a well-framed structured questionnaire to receive six scores for the organization welfare parameters and six scores for the employee welfare parameters, each score ranging from 1 to 7 as per Likert scale.
- Step 3.* The overall organization welfare score for the enterprise under consideration is estimated by taking the mean of the six scores received for the

organization welfare parameters, assuming equal weights for all the parameters. In case of a fraction, the welfare score is rounded off to the next higher integer.

Step 4. The overall employee welfare score is estimated as in step 3 above, but taking into consideration the six scores received for the employee welfare parameters.

Step 5. Based on the scores thus received, the organization will be placed in the concerned cell of the Matrix.

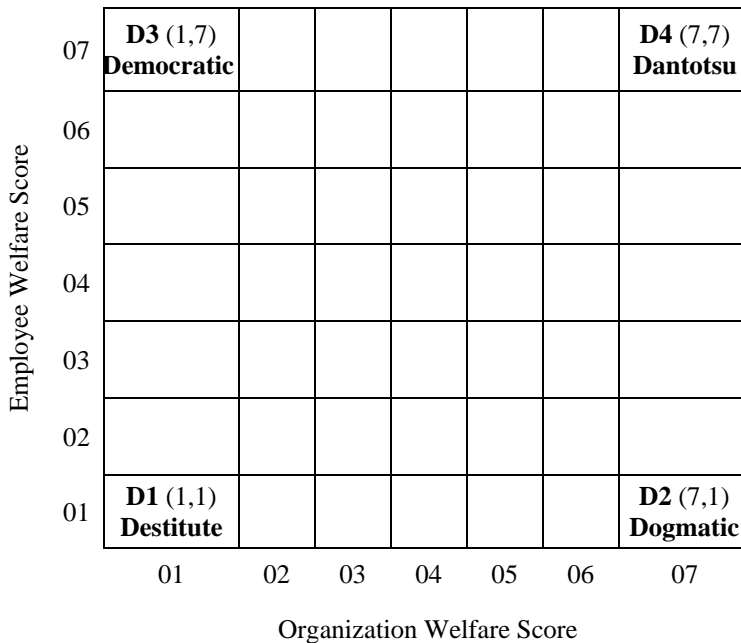


Figure 1: Ahmed-Basu 4D Welfare Matrix for Lean Organizations

Illustrative Example: Suppose an organization obtains the following scores for its organization welfare parameters: 3, 2, 4, 3, 1 and 3. Hence, its organization welfare score will be

$16/6 = 3$, rounding off to the next higher integer. Similarly, if the organization receives the scores for its employee welfare parameters as 4, 6, 4, 3, 6 and 5, its employee welfare score will be $28/6 = 5$. Hence, the organization will be placed in the cell (3, 5). The mean will always be between 1 and 7 – hence, each dimension is considered to range from 1 to 7, as stated earlier.

The four different welfare states as depicted in Figure 1 are as follows:

Welfare State D1: Destitute (1, 1)

This state indicates the lowest fulfilment of both dimensions of welfare. There is low concern for employee satisfaction as well as for the organization's achievement. Consequently, disharmony and disorganization prevail within such organization. The entire system becomes ineffective and there is considerable loss of productivity and increase of wastes in the system. This impoverished situation should be evaded since there is low concern for both employees and the organization. Inept management is indicated because this situation is beneficial neither to the organization nor to the employees in the short or long run perspectives. If responsibility is required, then it is avoided; if people need to be motivated, nothing much happens beyond the minimum of instructing. This state is detrimental for the organization and one should attempt to improve upon the situation else survival will be difficult for the organization.

Welfare State D2: Dogmatic (7, 1)

Here, there is much more concern about fulfilment of organization's objectives than concern for people, as the organization scores high on "Organization Welfare" and low on "Employee Welfare". Stress is given on the leanness of the enterprise without taking care of the employees' needs. It is believed that efficiency can result only through proper organization of work systems and through retrenchment of

people wherever possible. Such a state will definitely increase the output of organization in the short run but due to the strict policies and procedures, high employee turnover is inevitable and employee dissatisfaction will ultimately hinder the growth in the long run. Innovative suggestions are absent because of tight work schedules and multiple responsibilities lead to stress that suppresses employees' creative thinking. Creativity is only placed high within the hierarchy and lower down people do not need to be creative and indeed to say anything different is insubordination. With a high concern for organization welfare, and a low concern for employees' welfare, this state not only finds employee needs unimportant but also puts pressure on employees through rules and punishments / penalties to achieve the company goals. Whilst high output is achievable in the short term, much will be lost through employee dissatisfaction. This state is suitable only for achieving short-term economic tasks only. In other cases, such condition may be found to be inappropriate.

Welfare State D3: Democratic (1, 7)

This state is characterized by low stress on organization welfare and more stress on employee welfare. One finds high people orientation where thoughtful attention is given to the needs of people thus providing them with a friendly and comfortable environment. It is expected that such a treatment with employees will lead to self-motivation and will find people working hard on their own. However, a low focus on the fulfilment of organization's objectives hampers productivity and often leads to lower levels of output. This situation scores high on "Employee Welfare" and low on "Organization Welfare" i.e., there exists a high concern for people and a low concern for organization's outputs. The resulting atmosphere is usually friendly, but not necessarily very productive. Every employee is cheerful and enjoys each other's company and this relaxed approach leads to inefficiency of the system.

Welfare State D4: Dantotsu (7, 7)

Characterized by high organization and employee focus, this state is considered to be the most effective state of an enterprise. High concern is paid to both people and organization. Scoring high on both the “Organization Welfare” and the “Employee Welfare” indicates focus on lean principles along with empowerment, commitment, trust and respect for the employees, thus creating a conducive atmosphere that will automatically result in high productivity and high employee satisfaction. Under such circumstances, required productivity will be easily delivered from committed staff. This is undoubtedly the highest achievable and ideal state of an enterprise – a true reflection of Dantotsu – the Japanese word meaning Best of the Best.

How to achieve this state: Interdependence of productivity and employee welfare is to be focussed. Stress is to be given on achieving leanness within a firm but not at the cost of the interest of the employees. The philosophy to “respect the workers” is to be adhered to, since they are the knowledge resources in the system. They should be involved as much as possible in the decision-making process and the employees should feel themselves to be a constructive part of the company. Information is made to flow up and down the system and everyone should feel valued. In this way, a sense of importance and satisfaction is to be provided to motivate employees’ creativities. Innovation-driving activities are not to be viewed as wasteful activities and this will lead to the cultivation of an innovation-encouraging culture in a lean company. Again, the said value or culture must be highly purposive and directed into the objectives of the organization. Setting aside some creative time will not only help to reduce job anxiety and get employees re-energized, but will also provide opportunities for the employees to interact and stimulate out-of-the-box thinking. This may not produce

dramatic results in the short-term but in the long-term perspective, this will definitely prepare a lean company to stand out in fierce competition. A spirit of co-operation is to be developed to achieve the overall objectives. In case of conflict, a positive resolution of difference through genuine effort should be focussed on.

Conclusion

The “Ahmed-Basu 4D Welfare Matrix for Lean Organizations” may be used to help managers analyze the status of their employee vs. organization welfare in a lean environment through a proper survey within their own organization. This may be done by administering a questionnaire based on the organization and employee welfare parameters. It is expected that the matrix so developed will provide managers a general idea on how they stand with respect to their concern for the employees and the organization’s objectives. Thereafter, whole-hearted attempt should be made to reach the ideal state of (7, 7) by continuous improvement of its deficiencies as evident from the position in the matrix. Leanness may thus be achieved without sacrificing the welfare of the employees.

The unique contribution of the matrix developed in this research is that it may be used widely in any industry. Once the present state of the organization is identified on the basis of the respective welfare parameters, requisite course of action can be charted out that would create an improved state within the context of lean environment. In this context, the corporate strategists and the investors could suitably juggle and optimize resources in a manner that shall create an improved state which is a precursor towards additional revenue, profitability and customer satisfaction. This would lead to creation of a distinct competitive advantage over the competitors.

Limitations of the Research:

The survey, if not administered properly, may provide erroneous results because of possibilities of response and sampling errors creeping into the process. The respondents may not be completely aware of the organization's policies nor they may be expressing what they know because of organizational hierarchy or social desirability biasness. If the questionnaire is not framed properly, perceptual errors may also tend to alter the actual results.

Future Research

The overall organization welfare score and employee welfare score for the enterprise under consideration has been estimated by considering equal weightages for all the parameters in the respective scores. There remains a scope for devising proper weightages for these parameters depending on the nature of the enterprise. Effect of external environmental factors on the parameters may also be studied in details for further future work.

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