CHAPTER - 1

INTRODUCTION

I HUMAN RESOURCE MANAGEMENT

Human Resource Management is the heart of all organizations. It consists of all the actions that an organization takes to attract, develop and retain quality employees. Human resource management is a part of an organization that is concerned with the “people” dimension. In today’s business surroundings, manufacturing facilities depend on indirect labour for production (contract labour). Creating and developing well-organized, authentic and reliable agencies in the area that can provide required man power to the industry without much complexity is an undervalued affair which a HR person has to lead and manage.

Recruitment and Training are two of the major responsibilities of the human resource team. The HR managers come up with plans and strategies for hiring the right kind of people. They design a criteria which is best suited for a specific job description. Their other tasks related to recruitment include formulating the obligations of an employee and the scope of tasks assigned to him or her. They also provide training to the employees according to the requirements of the organization. Thus, the employees get an opportunity to sharpen their existing skills or develop specialized skills which in turn, will help them to take up some new roles.

Normally, working conditions in the manufacturing environment are not so comfortable in comparison to other industries. Making workforce habitual and tough to work in hard working conditions to produce is another challenge. Human Resource needs *special skills to handle* and manage. He has to be people centric and concerned about blue collar employee’s problems genuinely.
Training of unskilled workforce is an area which is gaining prime importance. Shortage of skilled manpower for specific manufacturing activities has led HR professionals of manufacturing sector to take a call in this direction and develop a model by which unskilled and raw workforce could be trained or imparted requisite skills to work on machines and produce the desired products.

Many manufacturers are saddled with old HR systems that cannot adapt to the current business needs. Upgrades and maintenance are expensive and distract from more strategic processes critical to growth, such as identifying and developing critical talent across borders.

Learning has become more important to organizations as the skill sets required for success change. An ongoing process, learning must be constantly monitored and evaluated. Learning needs must be systematically identified through a corporate needs analysis, and the programs must be assessed afterward to determine their effectiveness on a routine basis.

1.1. HUMAN RESOURCE DEVELOPMENT

Human Resource Development (HRD) is the structure for helping employees develop their personal and managerial skills, knowledge and aptitude. It also includes such opportunities as employee training, employee career development, performance management and development, instruction, mentoring, succession planning, key employee recognition, instruction support and organization development. It is also described as a set of planned and systematic activities designed by an organization to provide opportunities to its members to learn skills necessary for the present and future job requirements. The process of Human Resource Development involves the development of expertise in the employee through organizational development and training. The aim of Human Resource Development is to improve the performance of the employees.
The three main areas of human resource development are human resource management, excellent progress and career development. It helps to grasp the career development opportunities through development of human skills and knowledge. Career development consists of personal development efforts through a proper match between training and development opportunities with employee’s need. It develops necessary skills and abilities required to perform organizational activities. As a result of which, employees can contribute for better performance in an organization. This leads to greater organizational effectiveness.

Human Resource Development can be formal such as in classroom teaching, a college course, or an organizational planned change effort. Or, Human Resource Development can be informal as in employee coaching by a Manager. Strong organizations believe in Human Resource Development and cover all of these bases.

The field of Human Resource Development encompasses several aspects of enabling and empowering human resources in Organization. Previously Human Resource Development was denoted as managing people in organizations with emphasis on payroll, training and other functions that were intended to keep employees glad, the present line of management thought focuses on empowering and enabling them to become employees capable of pleasing their aspirations and actualizing their potential. This move in the way human resources are treated has come about due to the current idea that human resources are sources of spirited advantage and not merely employees fulfilling their job responsibilities.

Noe et al. (2008, 400) defines development as the acquisition of knowledge, skills and behaviours that improve an employee’s ability to meet changes in job requirements and in client and customer demands.
The field of Human Resource Development now has taken on a role that goes beyond employee satisfaction and instead, the focus now is on ensuring that employees are delighted with the working conditions and perform their jobs according to their latent potential which is brought to the face.

This has resulted in the Human Resource Development Manager and the employees of the same department becoming partners in the organization’s progress instead of just yet another line task. Further, the HR managers at present typically interact with the functional managers and the people managers to ensure high levels of job satisfaction and fulfillment.

1.2. BLENDED LEARNING

In today’s competitive business environment with slim profit margins, hungry competitors, and complex governmental policy, manufacturers cannot meet the expense of training and education. Organizations that continually educate their employees to grow, mature and stay competitive; those that don’t disappear. Blended Learning means that an organization can have a common on-line orientation program for any number of trainees at any occasion, allowing all trainees to have the same basic knowledge of concepts. Blended learning is not a novel idea.

It initiates from commercial training and development in the United State of America and is assumed to have made its first appearance in the late 1990s. Blended learning has become a slogan and has grown increasingly in demand and popularity in corporate as well as academic settings.

An instructor presents general instructions that every employee needs to know in a classroom to all workers. Then, the details associated to each specific job are presented via e-learning. This Blended learning approach maximizes both employee time and the trainer’s time. Organizations are developing a Blended learning approach to their training needs.
They understand that one type of training is not the answer to all the training needs they face. So they are taking advantage of instructor-led training and combining it with the best of e-learning. Trainers, managers and executive are now using e-learning as an influential new tool in their efforts to ensure safe, healthy work site for employees and safe products for consumers.

A blended learning solution typically includes any possible combination of a wide range of learning delivery media designed to solve specific business problems such as face to face classrooms, web base courseware, and live effective classrooms, job aids, Electronic Performance Support Systems, mentoring programs, communities of practice and portals.

It is a new term for the methods that good teachers have used for years. In the past, blended learning meant a combination of instructor-led classes and outside materials such as books and hands-on experience. Today's blended learning methods have replaced textbooks with content delivered in electronic format through an internet or intranet gateway. This online element of training is often referred to as e-learning, web-based training (WBT), or online training. The goal of blended learning is to provide the most efficient and effective learning experience by combining learning environments.

Organizations today are looking beyond the automation of traditional training models to new approaches to knowledge transfer and performance support that are better aligned with business goals and deliver measurable results.

Bonk and Graham (2006) opine that Blended learning, a mix of online and face-to-face learning, can combine the positive features of both classroom-based learning and e-learning environments. It is gradually more common and it is vital for corporate trainers to create strategic plans focusing on blended learning techniques to attain the benefit from teaching and learning. Professional trainers are familiar with the concept of blended learning approaches.
By combining various teaching methods, trainers take a benefit of the particular strengths of each model. The unique training needs of companies in the manufacturing sector demand a solid understanding of the advantages of blended learning.

Driscoll (2002) defines blended learning as a combination of instructional methods. This instructional method has been given many names: Blended Learning, mediated learning, hybrid instruction, web-assisted instruction or web-enhanced instruction.

He expands that blended learning involves interactive learning activities (discussion, simulation, role-playing, experimental, mentoring, interactivity, case studies, games, support). Recent literature shows that blended learning is the most suitable for and the most popular among companies that are trying to reduce performer time away from jobs. Manufacturing Industries are often innovative, but they are also under great economic pressure which is risk in ongoing learning activities, even though continuous training and learning is necessary to stay competitive. Because manufacturers need people with both hands-on ability and knowledge of metalworking theory, a training initiative will likely fail without a blended approach that tackles these components properly.

As learners are able to interpret a range of different realities, they are more likely to be able to deal with real life situations, with enhanced problem solving skills, effective knowledge that can be applied more effectively to new situations and challenges. When trainees do meet in the classroom with mentor, the face-to-face class can now spirit on higher-level skills since the basics are known by all trainees and were tested by the e-learning orientation module.

MacDonald (2006, p.3) cites Laurillard (2002) in suggesting that “a balance of media is essential to make learning and teaching efficient”. Organizations would not deliver their entire employee training program via e-learning, they would not deliver all training via an instructor.
No single delivery method is ideal for all types of training. The answer to developing an effective compliance training and education program is to create compliance education programs that combine e-learning and instructor-led training. Sophisticated compliance training officers are doing just that and calling it Blended Learning. With a Blended Learning approach, an organization utilizes e-learning and instructor-led preparation to address the varied learning needs of all its trainees on a 24/7 basis. In organization’s viewpoint, blended learning is about civilizing performance and achieving business objectives. In employee’s perspective, blending is about in receipt of work done, when and where a need emerges, more characteristically at a time and place of the employee’s choosing.

In Blended Learning, technology is very important. E-learning is a part of blended learning and in this learning approach learners and professors work together to improve the quality of learning and teaching. The main outlook of blended learning is to provide realistic practical opportunities for learners and teachers and to make learning valuable, sustainable and progressive.

1.2.1 BLENDED LEARNING DEFINITION

Bersin (2004) outlined the evolution of learning from the traditional classrooms of the 1950’s through to the current blended learning environment. The last stage is integrated blended learning, which includes web, video, audio, simulation and information and learning technology approaches. Blended learning in this sense is a recent online innovation resulting from the integration of technology in education.

Blended learning is a teaching approach that incorporates technologies with regular face-to-face teaching depending on the module requirements and the needs of the learners (Alonso, López, Manrique, & Vines, 2005; Osguthorpe & Graham, 2003).
**Garrison & Vaughan (2008)** define blended learning as “the thoughtful fusion of face-to-face and online learning experiences” (p. 5) emphasizing the need for reflection on traditional approaches and for redesigning learning and teaching in this new environment.

**Gisbert (2003)** stated that Blended learning is understood under technological environments in which image and sound transmissions play a definite role together with the definition of common spaces in the net which will account for effectiveness once group training has been put into practice.

**(Finn & Bucceri, 2004)** are of the opinion that Blended learning environment integrates the advantages of e-learning method with some advantageous aspects of traditional technique, such as face-to-face interaction. Blended learning brings traditional physical classes with elements of virtual education together.

**Littlejohn and Pegler (2006)** also recommend a different approach that they term ‘blended e-learning’. This is a useful approach because it changes the focus in learning design by shifting the emphasis from simply considering the face-to-face and online environments to that of considering the design issues of (1) introducing e-learning and (2) the process of blending [the online and face-to-face environments].

**Reay (2001)**, blended learning is not just the addition of online materials to a conventional training environment; blended learning must be relevant and requires a holistic strategy that utilizes the best characteristics of all learning interventions. The methods and techniques selected should be appropriate for the subject. Successful implementation and use of blended learning requires an understanding of the strengths of different media, how learners engage in this type of learning procedure, how they use information from each different medium, and how they can handle online and traditional (face-to-face) teaching methods in a combined form (**Morera-Gutierrez, 2006**).
Singh & Reed (2001) defined blended learning as a learning program where more than one delivery mode is being used with the objective of optimizing the learning outcome and cost of program delivery. Therefore, Singh (2003) proposed to refine this definition as “blended learning focuses on optimizing achievement of learning objectives by applying the “right” personal learning technologies to transfer the “right” skills to the “right” person at the “right” time.

Thorne (2003), blended learning is described by him as “a way of meeting the challenges of tailoring learning and development to the needs of individuals by integrating the innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning”.

Blended learning offers the convenience of the online environments without losing face-to-face meetings (Dziuban, Hartman, & Moskal, 2004). The word “blend” means allowing greater flexibility, responsibility and control to students for their learning activities (Garrison & Kanuka, 2004). However, blended learning may also refer to a combination of different modalities or delivery media (Harden & Hart, 2002).

Figure 1.1 Blended Learning Model

Source: Scenarios in Corporate Learning (Collis, 2003)

Valiathan (2002), the term blended learning is used to describe a solution that combines several different delivery techniques, such as teamwork software, Web-based courses and knowledge management practices.
Blended learning, in accordance to this author, is also used to describe learning that mixes various event-based tricks, including face-to-face classrooms, live e-learning, and self-paced learning.

1.2.2. THE POWER OF BLEND

The power of the blend is in sequencing the behavior, charming the learner in different ways, and then optimizing the collective learning effect. In a blended course, truly the whole is greater than the sum of the parts.

The design challenge is to create the most effective synergy of activities and learning style engagements. Blended Learning supports existing classrooms (instructor-led training — ILT) to make their management more efficient.

It does this through: automating enrollment and student tracking via learning management systems (LMS); online testing with automated scoring and reporting; and technology-based teaching tools brought into the classroom, including PowerPoint, Flash animation, collaborative games, and simulation exercises. Just mixing together a variety of different training methods won’t necessarily result in meeting the learning objectives unless the right mix of learning is identified and delivered in the right order at the right time. The mix may be quite simple, where the trainee follows a programme of training, in a specified order.

Blended learning combines diverse learning media and modes to provide solutions that exploit the efficiencies afforded by the use of new learning technologies, while never compromising on effectiveness. However, regardless of the quality of its design and development, the success of a blended solution can still be exposed by poor implementation. Blended learning is treated as an instructional strategy, which is developed in a networked environment.
Approaching the same concepts through different modalities may also strengthen learners’ understanding of the course material, and Spiro, Feltovich, Jacobson, and Coulson (1991) suggest that “revisiting the identical material, at different times, in rearranged contexts, for different purposes, and from different conceptual perspectives is essential for attaining the goals of advanced knowledge acquisition”

The effectiveness of learning in organizations is believed to be associated with the paradigm where work (such as business applications) and learning are inseparable, and where learning is embedded in business processes such as hiring, sales, or product development. Work becomes a source of learning content to be shared and more learning content becomes accessible on-demand and in the context of the user’s workplace need.

When the trainer uses the Internet-based learning environment for longer periods, the students might get lethargic and fed up. Trainers should find a balance in using each blended method to avoid student boredom. There is a need to be aware of students’ concentration duration while teaching and learning. By merging online and face-to-face formats, educators can achieve the inherent benefits of both types of instruction through a good balance of virtual access to knowledge and physical human interaction in blended learning (Osguthorpe and Graham, 2003).

1.2.3 IMPORTANCE OF BLENDED LEARNING

- Permitting each individual to learn at their own pace and only move onto the next part of the programme when they feel ready.
- Providing a mix of self managed study to encourage individual responsibility together with sufficient support and guidance when required.
- Opportunities to use technology to deliver training, where appropriate, to increase the overall learning experience.
• The ability to develop different elements of the training at different times, without delaying the overall programme delivery.

• The possibility to learn from assessment and evaluation throughout the overall development cycle in order to improve later elements.

• Time and energy saving: The time required by a learner to understand a concept through blended learning is fewer. Thus one can save in on time and energy.

• Systematic understanding of mechanism.

• Higher interest levels of those involved in blended learning.

• Global integration: A person can absorb learning sitting anywhere in the world.

• The returns on investment for any institute or a company are high as blended learning enhances the efficiency and capability of the individuals.

• Chances of disinterest are low when traditional classroom approach is integrated with computer-based trainings.

• Improved learning of the learner as well as the Instructor.

   It is more flexible because learners can fit it in around other (client) commitments. The additional benefits to the organisation are that topics are more in the forefront of learners' minds, Flexibility in delivery is a key ingredient to improving the manner in which training supports organizational goals and a productive employee place of work.

❖ **Blended Learning Challenges As Derived By Various Research Scholars:**

**Allan (2007, 8)** sees the flexibility as the main benefit of blended learning - flexibility of the trainee and the tutor in time and gap, flexibility in terms of organisation and delivery of the programme as well as flexibility in learning and teaching methods. Blended learning appears to offer the opportunity to combine the best of number of worlds.
Allan (2007, 93-95) points out that the planning and design of a 25 blended learning programme is much more demanding than that of a traditional face-to-face programme. Moreover, expectations of students, end-users or stakeholders may represent an issue if not fulfilled. Lastly she expresses concerns about the availability of the appropriate technologies, especially the sufficient bandwidth not to cause delays.

Armstrong (2009, 686) advises that a blended learning approach should be adopted in order to target the participants, their jobs, learning needs, previous experience, level of knowledge and skills and how agreeable they will be to being trained location and facilities are determined by the learning objectives and budget.

Krause (2008) Blended learning is realized in teaching and learning environments where there is an effective integration of different modes of delivery, models of teaching and styles of learning as a result of adopting a strategic and systematic approach to the use of technology combined with the best features of face to face interaction.

Singh (2003, 53) points out two main benefits of blended learning - it extends the reach of the delivery mediums and is a good tool to optimize development costs and time.
1.3. INDUSTRY PROFILE

The Indian Construction Equipment sector has an estimated market size of US$ 2.4 – 2.6 billion for the year 2007. The industry has been growing due to the large investments made by the Government and the private sector which specializes in infrastructure developments. The prospects of the construction equipment industry over the next few years looks attractive with a projected investment of US$ 320 billion in the infrastructure sector. The Indian market is catered by about 200 domestic manufacturers (small, medium & large). The earthmoving equipment market in India is estimated at about US$ 1.4 billion. The predominant sub-segment in this is Excavators, which account for just over half the market. Backhoe’s account for 26 percent and Loaders for another 5 percent share.

The prime driver for earthmoving equipment is mining activities and construction industry. Within these industries, the key demand drivers going forward are likely to be road construction, urban infrastructure, irrigation, real estate, construction and mining. Equipment in this category typically finds multipurpose application for various construction activities. Some of the construction equipment used are road rollers, concrete equipment, mixers, hot plant mixers, stone crushers, compactors, pavers, dumpers, tippers, trailers and others.

Heavy Industry in India comprises of the heavy engineering industry, machine tool industry, heavy electrical industry, Industrial machinery and auto-industry. These industries provide goods and services for almost all sectors of the economy including power, rail and road transport. Heavy Industry (HI) does not have a single fixed meaning as compared to light industry. It can mean production of products which are either heavy in weight or in the processes leading to their production. In general, it is a popular term used within the name of many Japanese and Korean firms, meaning 'construction' for big projects.
The success of the manufacturing sector in India depends on the performance of the machinery and equipment industry to a large extent. The impact of improvement in the machinery and equipment industry has far reaching downstream effects as well as that which leads to pervasive growth in the economy. Thus the performance of the so called industry will play a major role in increasing the share of the manufacturing sector in the GDP of India also.

1.3.1 Earth Moving & Construction Machinery

Demand for construction equipment is set to increase with growing thrust on infrastructure development. While this will directly benefit engineering and construction companies it will also help sustain the demand for the earth moving and construction machinery segment. With a wide production capacity base, India is perhaps the only developing country which is completely self-reliant in such highly sophisticated equipment. India has only a few, mainly medium and large companies in the organized sector that manufacture these products.

Construction equipment, mainly road construction equipment such as graders, loaders, excavators, vibratory compactors, hot mix plants etc. are being manufactured indigenously.

The technology required to manufacture such machines was not available earlier. It was, therefore, necessary to permit import of technology for development of the same from internationally reputed manufacturers like Komatsu, Caterpillar, Poclain, Dresser, Demag and Hitachi. Most of the technology leaders like Case, Caterpillar, Hitachi, Ingersoll-Rand, JCB, John Deere, Joy Mining Machinery, Komastu, Poclain, Terex and Volvo are either present in India as joint venture companies or have set up their own manufacturing facilities. Many of the companies in the mining and construction equipment segment are present in the industry through joint venture companies.
The industry has made large investments in recent years for setting up manufacturing bases despite small volumes and uneconomic scales of production compared to global standards. Some of the largest manufacturers in the industry are Bharat Earth Movers Limited (BEML), Komatsu, Hindustan Motors, Caterpillar, Escorts India, JCB India etc.

The machinery and equipment industry plays a very important role in the Indian engineering industry. It has been recognized as the main engine for economic growth of the country, and this can be seen from the emphasis laid in providing stimulus to the machinery and equipment industry in the five year plans prepared by the Planning Commission of India, Government of India (GOI).

India is emerging as a center for manufacturing in Asia. The machinery and equipment industry is one of the most important parts of the manufacturing sector. With India signing trade agreements with many countries around the world, it is expected that India will emerge as a gateway to the Asian market for many foreign manufacturing companies.

Technology is presently not seen as a differentiator, but with the end user industries becoming more organized and competitive, it would become increasingly important. The construction equipment industry in India is evolving from traditional, low end equipment to technologically advanced, high end ones. At the same time competition is intensifying with large Indian players such as BEML and L&T competing with multinationals such as IR and JCB. In this milieu, the demand for equipment is set to grow rapidly. These trends indicate that sustaining growth and competitiveness in the industry would require firms to develop the required critical capabilities. These are discussed in the next section.
1.3.2. COMPANY PROFILE

Caterpillar is the world’s leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives. Caterpillar Inc. USA is a global manufacturer of construction and mining equipment, with 110 plants, spread over 23 countries. With a turnover of US$ 22.76 billion, it is one of the largest companies in this sector. Caterpillar Inc. has a significant presence in India through three key ventures: Caterpillar India Private Limited (CIPL) is a wholly-owned subsidiary of Caterpillar Inc., produced after the acquisition of the earthmoving equipment division of Hindustan Motors by Caterpillar in February 2001, for a probable US$ 71 million.

The company manufactures construction and mining equipment at its facility in Thiruvalur, about 45 kilometers from Chennai, Tamil Nadu. Caterpillar also has a majority-owned subsidiary called Hindustan Power plus Limited (HPL) which manufactures diesel engines and generating sets in the 180 KVA to 2250 KVA range. HPL was incorporated in 1988 and has a manufacturing facility for internal fire diesel engines and generator sets at Punapalli village near Hosur in Tamil Nadu.

The company also sells spare parts for the engines. For more than 85 years, Caterpillar inc. has been making sustainable development possible and driving positive change on every continent. The company also is a leading services provider through Caterpillar Financial Services Corporation, Caterpillar Remanufacturing Services and Progress Rail Services Corporation. Caterpillar is a worldwide leader, a universal enabler of sustainable growth. It operates hundreds of offices and services around the world and has more than 125,000 employees. They serve customers in more than 180 countries.
Since July 2011, Caterpillar has added more than 100 products to its mining portfolio. Divided into two areas, surface and underground, the Caterpillar exhibit featured more than two dozen products and technologies, including an off-highway mining truck, hydraulic shovel, next-generation and a variety of underground mining machines such as continuous miners, a long wall shearer and plow, as well as other support equipment. In 2012, Caterpillar Forest Products enhanced product quality, introduced new equipment and work tools and expanded our presence in international markets.” For more than 85 years, Caterpillar Inc. has been making sustainable growth possible and driving positive change on every continent.

With 2011 sales and revenues of US$60.138 billion, Caterpillar is the world's foremost manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives. The company is also a leading services supplier through Caterpillar Financial Services, Caterpillar Remanufacturing Services and Progress Rail Services. The strategy of Caterpillar is to provide work environments, products, services and solutions that make efficient use of the world’s natural resources and reduce unnecessary impacts on communities, the environment and the economy.

Caterpillar applies innovation and technology to improve the sustainability performance of its products, services, solutions and operations. Company believe that the sustainable progress is made possible, by developing better systems that maximize life cycle benefits, while also minimizing the economic, social and environmental costs of ownership, as reflected in their sustainability principles.

The Caterpillar Production System provides the recipe for efficiency and excellence in their facilities. They actively encourage employees to conserve resources and be more efficient. They are actively embedding sustainability throughout their Caterpillar brand portfolio, their new product development process and their technologies.
Their business leaders continue to drive growth in sales of products, services and solutions that help customers meet their sustainability challenges. Caterpillar utilizes 6 Sigma methodologies to focus our work and drive measurable benefits.

Caterpillar India is made up of over 3,000 employees and is rapidly rising each day. In India, Caterpillar has many offices and manufacturing locations, including:

- Bengaluru (Bangalore)
- Chennai
- Delhi/New Delhi
- Hosur
- Mumbai
- Puducherry (Pondicherry)
- Thiruvallur

Caterpillar is rapidly growing in India with numerous of opportunities available for those wanting a challenging but rewarding career. Caterpillar’s leadership stems from its strong career development programs, flourishing worldwide audience and unmatched technological expertise.

Caterpillar India manufactures a wide range of products for use in India and around the world. These include engines and power generation, quarry and building trucks, mining trucks, backhoe loaders, wheel loaders and a wide variety of allied components. Caterpillar India also offers a wide variety of service support groups that benefit Caterpillar in India, Asia Pacific and around the world. In order to compete with the competitors, Caterpillar India Limited, decided to improve the job performance of the employees through blended learning techniques. The researcher of this study will examine the result of the blended learning technique through Kirck Patrick’s learning model evaluation.
1.3.3. NEED FOR LEARNING AT INDUSTRY

“Learning by doing is more powerful than memorizing”. Learning can be defined as the acquisition of knowledge or skill (Oxford English Dictionary, 1991). Learning is not a simple act. For any type of learning to be efficient, whether it is classroom based or computer based, it has to be built on sound academic principles. What has changed considerably in more recent times is the evolution of ICT and how technology can be configured to incorporate the “tell”, “show” and “involve” that are prerequisites of effective learning (Sit, 2001).

Learning is defined as follows: “The actor experience of one that learns; knowledge or skill acquired by instruction or study; the modification of a behavioral tendency by experience” (“Learn”, 2009).

Thus, the definition for blended learning becomes an integrated approach combining instruction of different varieties into an integrated whole delivered through various media to produce a harmonious effect achieving the desired outcomes for both the learner and organization. The goal of blended learning is to combine all these approaches successfully so that formal learning activities are integrated with actual on-the-job activities to accomplish a specific learning goal.

Another advantage of blended approaches is increased flexibility for learners enabling them to complete self-paced units at their convenience. Designers of the learning experience also find increased flexibility in implementing blended models because they are able to fit the skills being taught to the audience learning them. Learning is not so much a matter of understanding and applying, but rather degrees of insight, belonging and participating.
The new delivery methods, which include video, web-based, computer-based, and interactive distance learning technologies, allows a substantial reduction in the number of training facilities while increasing the availability and effectiveness of the training provided.

Margaryan et al. (2004) in a case study describing a blended learning approach adopted by a large organization, cites Merrill’s (2003) key principles of instructional design:

- Learning is promoted when learners are occupied in solving real-world problems.
- Learning is promoted when accessible knowledge is activated as a foundation for new knowledge.
- Learning is promoted when new knowledge is established to the learner.
- Learning is promoted when new knowledge is useful by the learner.
- Learning is promoted when new knowledge is incorporated into the learner’s world.

Learning requirements and preferences of each learner tend to be different. Organizations have to use a blend of learning approaches in their strategies to get the right content in the right format to the right people at the right time. Gephart et al state, “Learning organizations ensure that individual and team learning contribute to systems-level organizational learning and that organizational learning leads to productive action.”

Armstrong (2009, 664-665) opines “Learning is a continuous process in which a person acquires and develops new knowledge, skills, capability, behaviours and attitudes”.

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A learning organization has the following features: continuous learning at the systems level; knowledge generation and sharing to allow people to access and use it quickly; critical, systemic thinking; a culture of learning where learning and creativity are rewarded through performance systems from the top; a spirit of flexibility and experimentation; and a focus on people that values the well-being, development, and learning of every individual. Learning style may also be defined as personal qualities that influence a student’s ability to acquire information, to interact with peers and the teachers, and otherwise contribute in learning experiences (Grasha, 1996, p.41).

Learning objectives are derived from needs assessment and cover all the different areas of learning which the course has to offer. Learning are specific, measurable, achievable, realistic and take into consideration the context of the learners as well as the time available.

Taylor (2003) suggests four basic rules for learning objectives. They are:

- Be written in terms of the learners. This means that they should express what the learner will be able to do after the course or learning experiences.
- Identify the desired behaviour by name and specify behaviour which can be observed. It must be possible to assess the activity in some way.
- State the conditions or restrictions under which the desired behaviour will occur.
- Include a criterion or performance standard which the learner must achieve to be considered acceptable.
Measuring The Benefits Of Blended Learning Through Kirkpatrick’s Learning Model

Most organizations use Kirkpatrick’s model to measure success in terms of user experience and immediate retention of knowledge or skills. However, few organizations assess impact in the short and medium term on the business. Whatever the strategy for evaluation, the impact of their training will be strongly influenced by learning design, but only an evaluation effort over an extended period will reveal the full effectiveness of the design.

The blended learning effectiveness was identified through Kirkpatrick’s Learning evolutions. Among four levels in this thesis, researcher was advised to concentrate on level 2 and level three, i.e. Learning and Behaviour. In general the four level evolutions measure the following:

The four learning levels of Kirkpatrick's evaluation model essentially measure

- **Reaction of the employees** - What they thought and felt about the training / learning.
- **Learning** - The resulting increase in knowledge or capability.
- **Behaviour** - Extent of behaviour and capability change and application.
- **Results** - The effects on the business or environment resulting from the trainee's performance.

1. **Reaction** - This level measures how trainees (the people being trained), reacted to the training. Obviously, if trainer want them to feel that the training was a valuable experience, and he/she want them to feel good about the instructor, the topic, the material, its appearance, and the venue. It's important to measure reaction; because it helps the trainer to understand how well the training was received by the audience. It also helps the trainer to improve the training for future trainees, including identifying important areas or topics that are missing from the training.
2. **Learning** - when measuring learning, there are three areas to be measured - skills, knowledge and attitude. In this part of the evaluation process it is desired to quantify what skills and up to what extent have been acquired or improved, how much knowledge was successfully transferred and how did the attitude of the learners change considering the trained subject matter.

3. **Behaviour** - when evaluating the behaviour the focus lies on the extent up to which the behaviour has changed after the trained person comes back to her/his work settings. It measures how much are the new skills, knowledge or attitudes implemented into the real work. Kirkpatrick (cited in Armstrong 2009, 695) stresses that time is needed for the change in behaviour and suggests that the evaluation process should ideally happen before and after the training.

4. This approach blends traditional classroom-based learning with online collaborative knowledge events. At times, the nature of the content, as well as the desired outcome (developing attitudes and behavior) necessitates the inclusion of collaborative learning that’s facilitated through face-to-face sessions or technology-enabled collaborative events. Developers are supposed to use this approach to teach content that requires learners to try out new behaviors in a risk-free environment. Measuring at this level is difficult, and thus requires important decisions in terms of when to evaluate, how often to evaluate.

5. **Results** – When evaluating the result, the effect on the business or environment resulting from the improved performance of the trainee - it is the acid test. Measures would typically be business or organizational key performance indicators, such as: volume, values, percentage, timescales, return on investment, and other quantifiable aspects of organizational performance. At this level, trainer analyzes the final results of their training. This includes outcomes that organizations have determined to be good for business, good for the employees, or good for the bottom line.
From a business and organizational viewpoint, this is the overall reason for a training program, yet level four results are not naturally addressed. Determining results in financial terms is not always something training professionals are comfortable attempting; therefore it is not done to the degree that training expenditures warrant. Among all the levels, measuring the final results of the training is likely to be most costly and time intense. The biggest challenges are identifying which outcomes, profit, or final outcome are most closely linked to the training and coming up with an effective way to measure these outcomes over the long term.

**Figure 1.2. Kirck Patrick’s Learning Model**

![Kirck Patrick’s Learning Model](image)


### 1.3.4. BLENDED LEARNING AT CATERPILLAR

Blended learning is becoming more and more popular in major corporations world-wide due to synergy between the conventional F2F and online pedagogies. As learners are varied in terms of learning styles as well as learning ability, blended learning can come to rescue by making it possible for individualized learning and self regulated learning to happen. In Caterpillar India Limited, the Instructor practices blended learning techniques to his employees, especially those in Welding, Assembling and Machinist divisions.
They begin the class with well-structured introductory lesson in the classroom, and then proceed with follow-up materials online. Blended learning at Caterpillar follows the combination of Instructor-led learning, Web-based learning and Simulation learning.

Supporting and valuing a culture of learning in the workplace is important because ongoing learning is needed to survive in a time of increasing competition. The workplace is the key site for the development of generic skills such as communication, problem-solving, teamwork, information technology and customer service skills.

These skills are critical in today's workplace, particularly those concerned with employability, and the culture of the workplace needs to assist individuals to effectively develop or use these skills. The overall benefits of each learning model at Caterpillar are as follows.

**Figure 1.3 Blended Learning Combination at Caterpillar India Limited**

![Blended Learning Combination Diagram](image)

*Source: Blended Learning Conception - “Adapted from Heinze and Procter (2004)”*
1.3.4.1 INSTRUCTOR-LED LEARNING

Instructor-led training is any kind of training that occurs in a training room, typically in an office, classroom, or conference room. This form of training can have one or more instructors; and they teach skills or material to another person or group through lectures, presentations, demonstrations, and discussions.

In the highly competitive corporate surroundings today, people are opting for more and more of skill specific and industry recognized trainings that can either establish their careers or increase their finances. In position to keep their employees’ knowledge efficient with the latest industry trends and technologies, many associations are investing in skill-enhancement training.

A major chunk of this training is in the form of instructor training i.e. face to face sessions with instructors. Despite the growing popularity of e-learning, instructor-led training continues to be the most widely deployed form of training. Instructor-led training is measured to be effective, as it facilitates real-time interaction, in-depth information sharing, and direct response to learner’s questions.

It requires a knowledgeable Instructor to explain the concepts, usually with the aid of course material that usually comprises of a presentation and a student guide. The Instructor would also demonstrate successful techniques for using products in a lab environment. While it becoming more and more expensive and time consuming, the plan of increasing the number of instructor-led compliance training does have a remarkable of benefits. These include the face-to-face exchange of information, ideas and concepts between the trainer and students and among the students themselves. It also allows students to be taught by credible company and industry experts. Instructor-led training allows individual questions to be answered and encourages spontaneous discussions about rules and regulations.
One of the main goals of training is, to effectively and quickly solve those problems or, better yet, prevent the problems in the first place. One of the best methods of teaching problem-solving is to discuss the problem and its different variables in a group situation such as a classroom. Personal interaction (one-to-one or group) promotes high level relationship building. Ability for the learner is to raise the issue and question immediately something not understood and also be questioned on understanding. Soft skills can be learnt and practiced, and participants can receive feedback from the course tutor on their performance and improvement.

Caterpillar employees prefer the combination of Instructor-led learning and Simulation learning more because, in face-to-face interactions with the instructor and real-time discussions are powerful ways of learn. Having an expert to answer questions instantly and validate learners’ understanding of the subject are key aspects of classroom learning. It allows individual attention from the instructor; an individualized approach cannot be duplicated in online training. It provides the opportunity for learners to make mistakes in a controlled environment.

Group interactions enhance learning, with employees learning from one another as well as from the instructor. There is also a kind of learning that results through synergy, which is not possible through e-learning. The combination of lecture, demonstration, practice and interactivity makes instructor-led learning modality and it is one of the healthiest options for the Industry.

When employees attend an instructor-led training session in a classroom, they are better able to focus on what it being taught. Compared to participation in an e-learning session, synchronous or asynchronous, from their workplaces, they have fewer distractions.

In this learning, the trainer may notice whether one or more participants have specific problems, either in understanding some topic or in applying the learning to their particular situation.
A good instructor will watch for signs of these problems and will offer to help those participants during breaks or after class. All learning organizations will follow the same principle, because the employees listening skill is very essential for the growth of the business.

The factors affecting people's learning include, their resources, their image of learning, the rewards associated with any learning activity, the availability of information about learning opportunities, the availability of appropriate learning environments and the climate in which learning takes place.

The person who provides the coaching should have a good understanding of the context in which the learning is to be applied and the relation of trust should be established in order, for the employees to freely share the difficulties and sometimes frustrations met. Supervisors and team leaders can also act as coaches if they already master the desired knowledge, skills and attitudes but when they do, they should be careful not to confuse judging and coaching.

1.3.4.2. E - LEARNING:[Web-Based Learning /On-Line Learning]

E- Learning is the presentation of training materials and content via the Internet or through an intranet with a focus on changing behavior and not merely delivering information. It has been defined as “any focused, considered application of web technologies to the task of educating a fellow human being”. This type of learning starts with well-designed instruction delivered through web-browser technology right to an employee’s desktop computer.

The web technology allows for interactivity, embedded learner assessments and immediate learner reaction. Instruction on the web can be updated in one location (the server) and then be instantly seen by all learners. E-learning is a powerful tool in any completion training program. E-learning is essentially the network-enabled transfer of skills and knowledge (Anon, 2006). The internet is the largest and most powerful computer network in the world.
E-learning is one of the most enriching, high-quality multimedia-enriched personalized and interactive platform that enable the students to learn in the most pragmatic and persuasive techniques. It is extremely flexible and suitable, in regards to its operations from anywhere at any time. As computers dominate our lives and enter into all domains of work, it could be argued that most training has, or certainly could have, an e-learning element.

“Web-based knowledge or online learning can be defined as ‘hypermedia based instructional program, which utilizes the quality and resources of the World Wide Web to create a meaningful learning environment where learning is fostered and supported’” (Khan, 1997, p. 6). Online learning is an excellent medium for learning theory as well. First, it guarantees that the information provided to students is consistent. This allows employers to more accurately measure the performance of their labour force. They know precisely what each worker is being taught, and therefore can set consistent expectations for that worker. Another advantage of online training is accessibility.

Online learning programs can be used by any number of students at once. The content is available both inside and outside of the classroom, and can be covered at a pace the student dictates. In the classroom, broader topics can be addressed by an instructor with the full knowledge that after the class, a student will be able to view the specific aspects of the topic that apply to his or her particular job. Moreover, employees can review online content to refresh their knowledge of a topic. Through the use of a Learning Management System (LMS), companies can track how well employees are doing when compared to industry standards E-learning is the presentation of training materials and content via the Internet or through an intranet with a focus on changing behavior and not merely delivering information.
The web technology allows for interactivity, embedded learner assessments and immediate learner feedback. Instruction on the web can be updated in one location (the server) and then be instantly seen by all learners. E-learning is a influential tool in any compliance training program.

Palloff and Pratt (1999) suggest that in a web-based technology curriculum, instructors must be prepared to give up control of what is being learned and how it is learned. This requires a transition from a passive style to an active learning model giving learners the opportunity to make meaning out of a body of knowledge by working with others. Time and distance can encourage the development of new learning strategies, offer new learning approaches, and enable learners to become more independent than they might otherwise be in a traditional classroom.

According to Bharadwaj and Karkera (2001), much of job training occurs when the new employee shadows or observes his superiors and peers. That is, success in training should be tied to results that enrich the organization's value to customers and enrich employees' value.

Bharadwaj and Karkera further suggest that training will enhance employee commitment and contribution to the organization. Throughout the e-learning literature, case studies and examples can be found of how blended learning is implemented in organizational settings.

For instance, Great Britain’s Home Office combines e-learning with instructor-led seminars and live coaching in the training of civil servants (“Training News,” 2004), and United Way has implemented blended learning by incorporating into its training program a variety of different delivery strategies, including e-learning (“The New Look of E-learning,” 2004). In fact, survey results by Balance Learning Limited suggest that as many as 77% of all U.S. companies currently rely on blended learning to meet their training objectives (Sparrow, 2004).
1.3.4.3. SIMULATION LEARNING

Simulation is the imitation of some real thing available, state of affairs, or process. The act of simulating something generally entails representing certain key characteristics or behaviours of a selected physical or theoretical system. Simulation can be used to show the eventual real effects of alternative conditions and path of action. Simulation is also used when the real system cannot be occupied, because it may not be accessible, or it may be dangerous or unacceptable to engage, or it is being intended but not yet built, or it may simply not exist.

Blending e-learning and classroom training is more controversial than it sounds. Key-note speakers and analysts Marc Rosenberg (Diamond Cluster International) and Bryan Chapman (brandon-hall.com) had some very different thoughts on this matter. “Blended Simulations” makes perfect common sense. The Manufacturing Simulation is an experience featuring a highly engaging board simulation of a manufacturing company operating in a competitive environment. Participants work together as teams to design, sell, produce and distribute products and follow-on services for their simulated company.

They experience realistic situations and make decisions that directly impact company performance. They receive feedback at the end of each simulation round. Their success is based on how well they meet Growth, Earnings per Share, Customer Satisfaction, and Employee Satisfaction objectives. The simulation is blended with other curriculum components of training courses and supports small group learning. A majority of trainees reported simulation trainings as useful learning tools with numerous advantages that support a participatory, blended learning curriculum, and raise awareness of potential work site risks and hazards. Trainers reported that the simulation had superior training impact. Evaluation results pointed out that it successfully supports small group learning activities.
As Learning Circuits pointed out earlier “The idea behind blended learning is that instructional designers review a learning program, and determine the best medium to deliver those modules to the learner.” Typically this involves mixing various forms of classroom and internet-based training. The current business environment is more complex than ever. The people in organisations, however, remain the same: they are not properly equipped to handle such complex and ill-structured problems. Simulation is an effective technique of business education (Chapman & Sorge, 1999; Wolfe & Luethge, 2003).

It can provide rewarding experiences and intelligence, planned decision making and promote the integration of theory and practice (Wolfe & Luethge, 2003) and assist students in integrating the various functional business specializations (Stephen, Parente & Brown, 2002). Participants will learn, practice and apply the values, behaviors and skills essential to manage or connect with an industry for success. These simulations are ideal for managers and employees or sales organizations and account teams with major clients in the industry.

❖ Role Of Simulation In Learning Phase

In today’s environment, a learning simulation can occur in a classroom or online with just about any line of professionals. We know that simulations in highly technical or dangerous situations are necessities, still learner consider the use of simulations in various aspects of business learning.

Prevailing executive can be trained in the classroom and even on the job, but their aptitude to executive complex strategies is a power that isn’t often tested. If the execution is not quite right, learners can go back and try again, which is most often impossible in the real world.

Another reason to use simulations in organization is to aid people learn about new processes and new strategies, as well as to help them understand what their goals and objectives towards their job.
If organization is changing direction, as many have during tentative economic conditions, a simulation can help personnel move through the change virtually – and in far less time than in real life. In terms of strategy, consider an organization that has acquired or been acquired. Learners can examine their decision making skills, operational knowledge, and even leadership qualities during a well-planned simulation.

The reason to use simulations in organization is to promote team-building, especially with new teams. As group members begin to deal with a real-life situation exact away, they are able to learn about their team members’ strengths and opportunities and work together for a common goal. The beauty of simulation software is that the company can be sure that their idea of acceptable work behavior is what their employees are learning. Considering that being comfortable with diversity is one very important soft-skill in the business world, simulation software removes the classroom bias of a trainer appearing to impose their cultural mannerisms on others.

Simulation software is the most effective way for businesses to make the most productive, positive, and satisfied workers they can. It is the best way to ensure success on all level. Participants will learn, practice and apply the principles, behaviors and skills necessary to manage or connect with an industry for success. This is generally recreated in an environment that is safe for the learner. McGaghie describes simulation as ‘a person, device or set of conditions that tries to present problems genuinely. The learner is required to respond to the problems as he or she would under natural circumstances’. When used appropriately, simulation can enhance learning in all domains. The apprenticeship model of ‘learning on the job’ is no longer fit for purpose with the need to provide more intensive, focused training that simulation can provide enabling practitioners to be better prepared for the realities of their practice.
Simulation can also be used effectively at all levels of the organization from the individual practitioner, whether novice or expert, to entire teams or even at the broadest institutional level. All aspects of healthcare—environmental, organizational and individual—can be safely explored, including the impact of change on the delivery of services.

Simulations can be produced in all fields through computer games, role-plays, or structure models, to name only a few. But a true simulation has a specific goal in mind—“to mimic, or simulate a real system so that people can explore it, perform experiments on it, and understand it before implementing it in the real world. Simulations can offer efficient and effective learning in the classrooms while providing naturalistic environments, which maximize the opportunities of creating real communication in classrooms.

New technologies are transforming the business simulation industry. The technologies come from research in computational fields of science and simulations with new capabilities and qualities. McKone and Bozewicz (2003) conclude that simulation is 'an effective way to engage students in significant learning outcomes by overcoming the limitations inherent in courses that consist primarily of lectures and cases. The focus of using a simulation in online learning is to continue the knowledge process and to continue application of that knowledge. Alternatively, user can use the online simulation as the learning experience itself.
1.4. NEED OF THE STUDY

The need of the study spells out the reasons as to why the researcher has taken the particular study. The need can be in terms of the issue being faced, changing dynamics, or the interest of the researcher to explore a particular phenomenon.

The need of the present study arises due to the following factors:

- Blended learning is becoming important and more popular learning in organization as well as academic settings thereby making it more effective.
- Evaluating learning is significant, without which no change in behavior will occur and therefore Kirck Patric’s learning model, especially level 2 and level 3 has been taken for the study to identify the effectiveness of blended learning at Caterpillar India Limited.
- The measurement of job performance and training results [changed behaviour] are not evaluated frequently, thereby the researcher has decided to proceed the research with level 2 and level 3 of Kirck Patricks learning model by applying statistical tool of (SEM) Structural Equation Model.
- Most of the researchers have done their research in blended learning area, but only with reference to academic area rather than Industrial area. Thereby there is a need to do the research in industrial area.

1.5 OBJECTIVES OF THE STUDY

Objectives are the end results which the researcher tries to achieve. It should be measurable i.e. one should be able to see whether the objectives are being achieved in a given time frame if it is specific. It should be achieved in a given time frame and those should be specific.

The research objectives define as to what is expected from the study and the researcher has to relate the objectives to the research problem. Once defined, they help the researcher in focusing the study and will guide as to what is to be done and what is not required to be done.
The objective of this study is to identify the effectiveness of blended learning at Manufacturing Unit, w.r.to [Caterpillar India Limited] through the second level learning and third level learning of the **IV Level** Learning Evaluation Model of Kirk Patrick’s, and to determine the predictive validity of different types of learning outcomes to Job performance through multidimensional categorization of Blended Learning Program.

**THE RESEARCH OBJECTIVES OF THIS STUDY ARE:**

- To assess the application of Blended Learning Techniques using **Kirk Patrick’s** learning model at Industries.
- To measure the effective transfer of learning from the knowledge centre to work place.
- To measure the Increased Job Performance of an employee in Caterpillar through Blended Learning.
- To highlight the benefits of Blended Learning Techniques to the Industries and Academic fraternity.
- To review the increased co-ordination of employees at various levels within the organization.
- To offer some suggestions to employer for implementing improved Blended Learning techniques for better performance of employees at Caterpillar and to the Industries as a whole if required.

**1.6. SCOPE OF THE STUDY**

- The study can be extended to other service sectors.
- The study can also be extended for learning and training at higher educational institutions.
1.7. LIMITATIONS OF THE STUDY

Each study will have certain limitations which serve as limiting factors to the results obtained. The limitation could arise from any factor such as shortage of time, non-availability of data, statistical tools to name a few. The limitation set out the boundary of any research and spells out as to what is not covered in the study. This study is also no exception and has certain limitation.

❖ The Limitations of the Present Study are as Follows

➢ Time Duration of the study is restricted from January 2012 to June 2012 only.

➢ The study is limited to Manufacturing Sector of Caterpillar India Limited unit with reference to Thiruvallur District only.

➢ The study is limited to Kirck Patrick’s Learning Model with Level Two and Three only.

➢ Respondent’s lack of time to give information and casual attitudes is a drawback for the study.

➢ With the data collected, only a few statistical tools could be used and therefore one of the limitations for the study.

➢ Researcher could collect only 240 as her sample size and therefore conclusion has been drawn with the available data.

➢ The data has been collected only from Welders, Assemblers and Machinist units at Caterpillar India Limited. This is a major drawback and cannot be applicable to all Manufacturing Unit.