Blended learning program effectiveness - A Study of High Potential Employees in the Manufacturing Industry- A Systematic Review

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ARTICLE INFORMATION

ABSTRACT

Background: With the volatile corporate landscape, an immediate ad-justment in the strategies for blended learning programs is crucial. The management holds significant expectations from the human resources and training departments, urging them to devise inventive, time-efficient, travel-friendly, and cost-effective approaches.

Purpose: The Purpose of the study is to determine the blended learning program effectiveness among high potential employees in manufacturing industry. This subject was prevalent in industries such as manufacturing industries. It has a profound impact on the long-term sustainability of organizations, particularly in engaging, nurturing, and retaining high-potential employees within the manufacturing industries.

Methods: This research approach offers a thorough understanding of the connections between blended learning program effectiveness, high-potential employees, and manufacturing industries by combining a literature review of 18 research papers, case studies, and surveys.

Findings: High potential employees, training professionals, as well as other employees have shown a favourable attitude toward the integration of blended learning program effectiveness methods in manufacturing industries-learning environments. Many firms put a high value on BL because employees are encouraged to learn on the job by participating in work-based activities that include high potential employees as learning partners & make use of business resources they have developed.

Conclusions: This research methodology aims to provide a comprehen-sive comprehension of the interrelationships among blended learning programs, their efficacy, manufacturing organizations, and high-potential employees. This will be achieved through the integration of literature reviews, case studies, surveys, interviews, and meticulous data analysis.

1. Introduction

As technology advances and increasingly influences our everyday lives, we must stay abreast of and educate ourselves on the latest innovations. Remember that "evolving" means progressing to the next level without erasing the previous one, i.e., using the best of both worlds by combining benefits from the past with those from the present. Face-to-face training and eLearning are combined in a blended learning program to satisfy the ever-changing demands of today's high-potential employees. Using online and offline resources, blended learning programs allow high-potential employees to study outside the classroom. High-potential employees who like conventional learning and those who learn best via semi-autonomous, computer-based instruction can benefit from this approach.

On the other hand, online learning allows high-potential employees of manufacturing industries to study at their speed and in various ways, including via interactive media such as movies and quizzes that can be accessed through a learning management system from their home page (LMS). Blended learning programs have exploded in popularity in the past several years, with learning experts praising its benefits. In a blended learning program, conventional classroom teaching methods are combined with newer, more cutting-edge technologies to enhance learning in real-time and context and with more engagement. A blended learning program gives high-potential employees additional learning and engagement opportunities, making them more likely to be considered high-potential employees (HPEs). Blended learning program allows high-potential employees to learn in various ways, depending

on their learning styles. Only face-to-face learning has the potential to develop a reliance on instructors. It is empowering and encouraging for high-potential employees to have the ability to study both individually and in a face-to-face setting.

Additionally, it enables trainers to handle training sessions more effectively, which is very useful when working with big groups of people. High-potential employees of manufacturing industries have more opportunities to study on their own, at their speed, and on their own time than other employees. In addition, training instructors are no longer required to cover everything during face-to-face sessions with participants. They can break the course to maximize efficiency and choose whatever they want to focus on during training sessions. Additionally, if all high-potential employees are performing at a different level, employing an e-learning platform allows each person to be assessed and get the focus they need to learn and improve. In general, blended learning program helps close the gap between what is taught and what is learned in the classroom. Large-scale changes in organizational contexts need the constant learning of employees in every manufacturing industry. Individual and organizational growth is crucial to creativity and learning (Collis and colleagues, 2005), while others say it is a source of competitive advantage (Collis and colleagues, 2005). (Bonk *et al.*, 2007). Technological advancement has provided new economic growth opportunities. Because of this development, non-traditional learning options began to be used widely among high-potential employees in academic and professional contexts, marking the transition from the Industrial to the Information Age. BL, also known as "hybrid learning," has been used effectively in higher education and business in numerous cases (Bonk *et al.*, 2006). Poor facilities and successful implementation in manufacturing industries are just a few of the obstacles that BL encounters in high-potential employees' work contexts and manufacturing industries because of the numerous unknowns surrounding it (Chang *et al.*, 2014). According to (Graham, 2006), the effectiveness of BL program may be offered at four levels: institutional, activity, course, and program. Organizations make decisions on how to adopt BL at the institutional level.

On the other hand, activity-level blends include instructors and stakeholders, and BL happens as part of the training process. The trainer in the manufacturing industry should prepare ahead for course-level mixes. Combining programs assumes that high-potential individuals participate in Internet and face-to-face interpersonal training programs (Graham, 2006; Graham, 2009).

1.1. Rationale of the Study

Considering the unpredictable times, turbulent corporate environment, pandemic, and other factors, a shift in

blended learning program approaches is urgently required today. Management highly expects the human resources and training departments to develop innovative, time-saving, travel-saving, and cost-effective learning and development approaches. 'Learning on the Move solutions' learning paradigm is in high demand since it is quick and efficient. Such creative learning technologies significantly influence the organization's long-term sustainability when they are used to engage, develop, and retain high-potential employees in manufacturing industries.

1.1.1. Blended learning

It is a model that provides a solution to all needs and is gaining popularity because of its simplicity. Much research was conducted to determine its effectiveness during the height of blended learning prominence. Learning efficacy was examined in the following four studies: (Akyüz & Samsa, 2009), (Hughes, 2007), (Melton *et al.*, 2009), and (Woltering *et al.*, 2009). Akyüz and Samsa (2009) examined accomplishment, contentedness, demeanor, and critical reasoning and offered additional involvement, interaction, impact, and retention. Hughes (2007) conducted a study to examine the effectiveness of blended learning programs based on support and retention, and the results were published.

Organizations have invested in HIPOs to develop their skill sets and better prepare high-potential employees for future manufacturing industries. Organizations focus highly on technological engagement in learning and development to save money, travel time, and other resources. The participation of HIPOs in the blended program is significant for the organization's ability to strengthen their technical skills, effectiveness for future growth, and other aspects of establishing and preparing a leadership pipeline, among other things.

This examines the existing and future state of blended learning programs for high-potential personnel in manufacturing companies. In order to assess significant market developments in blended learning (BL) programs and development prospects in learning settings in manufacturing industries, this study reviews theoretical and conceptual frameworks and analyses primary research data from prior studies. The analysis of numerous studies for this research enables the development of a specific viewpoint and body of evidence on the topic under consideration. As a result, this research article aims to explore potential future possibilities for BL programs in manufacturing industry contexts based on the outcomes of previous studies in this area.

1.1.2. Optimization of learning solutions with these seven tips

1. Use a similar structure and vocabulary throughout the talent lifecycle - through selection to onboard,

succession planning and leadership development may help organizations become more productive.

2. Research and grasp the requirements of the organization thoroughly in order to describe the aim of the employee's ongoing development.

3. Contextualize strategy to ensure it is appropriate for the existing work environment, culture, and climate.

4. Identify the abilities and quantifiable behaviors crucial to achieving on-the-job success and put them into action.

5. Assess learners' learning styles using good, scientifically established instruments to detect untapped potential and knowledge gaps.

6. Incorporate real-world situations, applicable applications, and a call to action into the presentation.

7. Create a learning environment that blends the advantages of technology-based approaches with interactive, assisted sessions and tailored reinforcement to provide a comprehensive learning experience.

1.1.3. Benefits offered by Blended learning program effectiveness

Incorporating the right balance of learning activities into a lesson plan has apparent advantages; the specifics of that mix will rely on what is being learned, but it may include a combination of observation, analysis, practice, and accessing learning content through reading, listening, or watching. Including technologies and online learning in the activities may also be beneficial. The following are seven advantages of implementing a blended learning program in the organization.

1. Multi-mode and media learning: While processing diagrams on paper or in PowerPoint might be confusing, an animated, narrated process is more straightforward to understand and follow since it can be rewritten. The ability to videotape internal experts expressing their well-considered views on a subject is now readily available to learners in ways that would not be conceivable without video and the technology to transmit it properly. Even if you cannot bring in your organization's finest authority on a given issue, make an introductory speech at the beginning of every classroom training program, record that person, and use that video at the beginning of a blend instead.

2. Practice in a safe environment: Researchers have shown that giving practice opportunities, case studies, and simulations is critical in helping employees learn in manufacturing. Workshops in the blended learning program environment may better concentrate on practice by shifting active learning to eLearning courses. Using case studies and practice situations online can

also enhance the learning experience. In a simulation focusing on soft skills or decision-making, users may practice skills in a manner that's not practicable or economical in a classroom setting. Sara de Freitas did an intriguing research in which she found that digital simulations may be much more successful than conventional learning methods in certain situations.

3. More practical use of time: Ambitious and senior managers increasingly desire to learn quickly and frequently use technology-supported learning outside regular working hours. As a result, educational materials must be considered while being developed.

4. Scaffolding and learner journey: To help learners participate in new concepts, blended learning can present information and practice opportunities sequentially. This helps learners understand new concepts, understand their relevance, and identify skills gaps. Then, they can concentrate on learning new ideas and mastering new skills, and finally, they can embed these into working practices in the manufacturing industries.

5. Increased reach and take-up: Making it more straightforward for individuals to incorporate learning into their work should result in greater reach and take-up. Also significant from a strictly practical standpoint, based on virtual classroom, technology allows individuals to meet at the same time for a session without necessarily having to be in the exact location. Furthermore, digital online forums facilitate conversation between persons who live in various time zones and would otherwise find it challenging to maintain a regular online debate or discourse.

6. Improved transfer of learning: For many years, the inability of face-to-face workshop learning to transfer to the work has been acknowledged as a problem. Broad and Neustrom's book Transfer of Training, published around 25 years ago, summarized several research findings on the efficacy of training transfer and made essential suggestions that are still relevant today. Recently, Ph.D. research on transitioning from school to a face-to-face executive education program organized by a top business school showed similar problems with participants' inability to get classroom insights back to their working practice.

1.2. Objectives & Research Questions

According to this research, the effectiveness of blended learning program is beneficial in terms of high potential employees' happiness, knowledge creation, performance, and intrinsic motivation in this approach. It will also look at how these factors are connected to high potential employees'

characteristics and the design aspects of blended learning program. The following questions guide the study:

RQ 1 Why is Blended learning Program needed?

RQ 2 What are the benefits of Blended Learning Program?

RQ 3 How is the Blended Learning Program effective and valuable for high-potential employees of manufacturing industries?

RQ 4 How do manufacturing high-potential personnel see BL practice?

Another goal of this research is to determine how different learning settings impact HIPOs' learning ability by looking at demographics, instructional design, and learners' motivation. Because of this, a portion of each prelude may now be used to forecast apprenticeships in a mixed-learning environment. Four types of designs were considered:

- Characteristic of a teacher
- Practice events
- Aid in education
- Weight of research.

Prior studies have indicated that the unique character of these features has an influence on high potential employees' learning and application of knowledge, which is why they were, included in this study as well (Ford, 1992; Wlodkowski, 1985). High potential employees' real learning, educators' assessed learning, & high potential employees' educational application were all included as dependent variables in our research.

1.3. Significance of the Study

A Blended Learning program may be prepared for, practiced, and supported by businesses and high-potential employees and education institutions. This article is intended for professionals working in online learning in general and business learning. Therefore, it does a more in-depth investigation of the effectiveness of BL programs in manufacturing industries. While a few research papers have tried to determine the structure of Blended learning program, few have aimed to characterize the current and the future aspects of BL programs in the manufacturing industries.

Finally, the study outcomes will present an overview of the effectiveness of Blended Learning program in the manufacturing industries, which will serve as an important information for future research in both high-potential employees' education and manufacturing industries' training fields. Furthermore, the results may serve as a guide for policymakers in the future. Analysis of original research data from past studies and a review of theories and ideas are used to evaluate significant trends in business learning (BL) and upcoming innovations in the learning settings of manufacturing industry. The analysis of numerous studies for this research enables the development of a specific viewpoint and body of evidence on the topic under consideration.

1.4. Characteristics of the Studies

Out of the eighteen research studies assessed, ten surveys, five subjective studies, two case studies, and one randomized control trial were selected for inclusion. These papers were selected as an overview of BL in corporate contexts in high-potential employees' education and training. The ten surveys were included in this study. All used interviews and questionnaires as a major method of gathering primary data. Between 2005 and 2014, these investigations were published in peer-reviewed journals. All the research is scientific publications that have been peer-reviewed. The sample sizes for the investigations varied from 16 to 674 persons, with a total sample size of 3,250 participants. Various countries around the world participated in these studies, including China, Korea, Taiwan, the United States, and the United Kingdom (Kim *et al.*, 2007; Kim *et al.*, 2009); the United States (Bonk & Kim, 2006a; Kim *et al.*, 2005; Lee & Bonk, 2014; Kim & Bonk, 2006); Australia (Peters, 2007); Taiwan (Teng *et al.*, 2009); Belgium and Holland (Peters, 2007); Taiwan (Schildermans & Schreurs, 2010). The number of participants in each of the five qualitative studies ranged from 16 to 39, totaling 106. Graham (2006), Gunawardena *et al.* (2010), and Van Dam (2012) performed studies in the United States and Canada, respectively (Macdonald & Chiu, 2011). (Collis *et al.*, 2005) and (Collis *et al.*, 2005) conducted two case studies in the Netherlands and the United States (Collis *et al.*, 2005). Ruey's (2010). The studies included a total of 130 and 21 people, respectively, as part of their sample sizes. This study was done in Taiwan and included 65 individuals in a randomized control experiment (Chang and colleagues, 2014).

In the studies under consideration, researchers looked at how BL is already functioning and how it could develop in the learning environments of manufacturing industries. With the specific criteria in place, it was possible to identify papers mainly concerned with BL in the learning environment of manufacturing industries. The researchers' own created interviews and questionnaires and various approaches provide the most essential contribution to the research.

2. Methodology

Following PRISMA statements, the method stated in this systematic review has indeed been put into practice. (Mohr *et al.*, 2009).

2.1. Search Strategy

In this study, four strategies were employed to find relevant literature and gather data on the problem under investigation:

2.1.1. Conventional subject searching

For this investigation, we did a thorough search of English-language peer-reviewed publications. We also checked the references of relevant main and review literature. Many databases and academic publications were used to compile the data, such as EBSCOhost, LexisNexis and Google Scholar as well as ProQuest and EBSCOhost, Emerald, Business Source Complete, PsycINFO, and ERIC. Mixed learning, high potential employees' education, manufacturing industries earnings and emerging developments in blended learning program effectiveness were some of the keywords utilized in the study. The literature covered the years 1990 through June of this year. Peer-reviewed publications were sought for, but abstracts were also examined for any relevant references to the issue. An examination of the bibliography of important research turned up additional sources of information.

2.1.2. Reference list checking

Identification of relevant and worthwhile research was accomplished via the use of reference list checking.

2.1.3. Contact with experts

Collaboration with specialists was a key research strategy employed in this study to search for relevant material, and it was one of the most important. To identify the most important research articles, BL specialists with a strong knowledge base and competence in high potential employees' learning were enlisted to help. Among other things, these experts assisted in the identification and evaluation of important and interesting research.

Citation Searching (CS)Various databases, particularly Google Scholar and Get Cited, were used to conduct the reference search.

2.1.4. Inclusion and exclusion criteria

An evaluation of the extra data and abstracts of the publications was conducted to identify which studies were to be included and which were to be eliminated from consideration for inclusion in the review. The following requirements were utilized to make this determination.

The primary studies (PS) selection procedure is divided into four stages: identification, multiple screening, admissibility, and inclusion (Mohr D *et al.*, 2009). The first stage involves identifying all potentially relevant studies, totaling 549 articles. 144 duplicate studies and research reduced this number. This included studies that were duplicated in different databases as well as research that was duplicated in peer-reviewed articles and conference proceedings. The second stage does a preliminary evaluation by screening titles, keywords, and abstracts. Currently, 301 records have been excluded because they do not fit the inclusion requirements, and 86 articles were non-English, particularly regarding research scope and optimization topics. Both records marked as included and those marked as unclear were forwarded for further review.

3. Data Extraction

To begin, we used the terms "effectiveness of the blended learning program," "learners' satisfaction with blended learning program," and " learning strategies of manufacturing industries " to conduct a literature search. We gathered information on participants based on their characteristics, the sample size, and how they were recruited. We also looked at the year, the study was published and the country of origin in the present. The teacher does not need to give the students an analogy of a physical concept (Dev, 2016) to clarify concepts related to 2D or 3D pictures in the classroom. Now, technology has made it possible (Bamrara, 2018; Chindhe&Kiwne, 2017; Chiozzi *et al.*, 2002; Chowdhry & Osowska, 2017) to provide representations of the physical concepts in their proper form (Kumar *et al.*, 2017). Also, the pace of many academic institutions is slower than expected by industry or industrial technology (Phillips & Hwang, 2016). There needs to be more demand and expectations for technology between the industry and academic institutions (Rajor& Bhalla, 2016). On the other hand, this reflects the weakly designed curriculum of the academic institution (s), too (Grewal *et al.*, 2017).
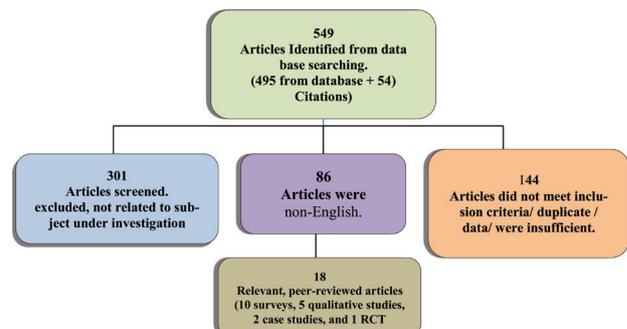

Figure 1: Flow diagram regarding data extraction.

One randomized control trial and two case reports were chosen from among the 18 papers that were reviewed. Because of the research methodologies used, these studies

were not chosen at random. Instead, they supplied the most confirmed and relevant source data.

There were 495 abstracts retrieved in the literature search, and the citations revealed 54 research (549 papers). The abstract review rejected 301 abstracts, 86 publications being non-English, and 144 papers did not meet the inclusion requirements for the study's focus. The inclusion criteria resulted in selecting 18 appropriate peer-reviewed publications, which were then assessed for their acceptability.

4. Discussion, Result & Conclusion

4.1. General Interpretation

In BL, a combo of online and face-to-face education is used to provide a variety of planned and unstructured learning modules, organized and unstructured experiential learning, and natural accomplishment disparities among learners and trainers. Also, they were influenced by several criteria to choose blended learning program over alternative learning choices, including pedagogic richness, social contact, cost efficiency, availability of information, ease of revision, and personal agency (Graham, 2006). The existing body of research supports implementing BL methods in educational institutions and businesses. All the research acknowledged the apparent benefits of blended learning program as a vehicle for organizational training; nevertheless, most studies also identified impediments and problems to effectively adopting blended learning program in working environments.

A lack of understanding in the efficacy of "blended learning program" significantly impacts participants' opinions of BL's effectiveness and success (Teng *et al.*, 2009). Yes, even if their company uses this method. According to Rossett and colleagues (2003), the development of BL systems is beset by six primary challenges: "Stability of content, duration of program implementation and development, the importance of human connection in the learning process, budget, educational resources, and the individual or group character of active learning are all factors to consider. Even though many ideas and concepts of BL are available in theory, their actual use by HRD professionals has not been thoroughly evaluated and confirmed by HRD practitioners (Kim *et al.*, 2008).

It is projected that BL will increase significantly in manufacturing industries' learning contexts despite the problems and limitations that have been observed by both researchers and study participants (Bonk & Kim, 2006a; Kim *et al.*, 2008; Teng *et al.*, 2009; Schildermans & Schreurs, 2010). Research shows that companies are now using BL to train their employees, and this trend is expected to rise dramatically in the future. The BL approach is expected to become a popular and prominent delivery mode in the future because it enhances the quality of teaching and learning experience, contributes to improved knowledge transfer, encourages cooperation and communication, results in reduced costs, and provides new strategic directions for the organization. Furthermore, BL will be made available via technologies enabling learners to participate in performance assistance or just-in-time training sessions.

Employees' professional learning strategies (additional skills, information, learning, and relearning) will be the focus of most learning and training companies in the 21st century, according to Berge (2007). (Foley,2007). A growing number of professions, as well as the public and private sectors, are turning to blended learning to improve instruction quality. Businesses in the public and private sectors and higher education institutions are increasingly embracing blended learning program technologies and methodology in their training programs, particularly in multi-site and global organizations (Gunawardena *et al.*, 2010). Students, professors, instructors, lecturers/administrators, training developers, and high-potential workers who worked in teaching positions were surveyed (Kim & Bonk, 2006). They expect significant changes in learning and teaching approaches because of their results with a particular emphasis on the widespread usage of BL as a primary learning strategy in manufacturing industries' learning contexts. Furthermore, it is projected that BL will increase significantly and become even more important than online learning.

High-potential employees, training professionals, and employees have shown a favorable attitude toward integrating blended learning program effectiveness methods in manufacturing industries and learning environments; according to (Bonk & Kim, 2006) the results are consistent. According to the poll, more than half of those who participated said their company plans to increase its BL use in the next decade. They found that businesses commonly use e-learning because of the opportunity for BL to thrive in the future. Organizations routinely employ BL despite the problems they face owing to a need for more awareness about this learning technique (Kim *et al.*, 2008). There's no denying that HR professionals need education and direction on what BL means and how to put it into practice in their manufacturing industries. Since most respondents in the eighteen articles under examination acknowledged the value of genuine learning techniques, high-potential employees believe technology would be used to deliver just-in-time and authentic learning for employees.

A new study shows that BL has a significant beneficial impact when it comes to high-potential employees' success and job performance. However, Chang *et al.* (2014) found that BL significantly impacted high-potential employees'

self-assessment scores rather than their achievement test results. BL, a new method for working environments is a success, which practically any organization's management would agree on (Collis *et al.*, 2005). By enhancing collaboration and altering work habits, this learning may be used to discover and address present challenges of companies, making corporate processes more effective. BL is expected to help manufacturing industries grow by serving as an expertise-building block that enables theory to be used immediately in the manufacturing industries.

Many firms put a high value on BL because employees are encouraged to learn on the job by participating in work-based activities, including high-potential employees as learning partners and using business resources they have developed. For example, according to Dzakiria *et al.* (2012), the rise in popularity of BL approaches may be traced back to technological innovation, which has created new opportunities for teaching and learning and the integration of various technologies with pedagogical (high potential employees' education) or pedagogical (academic education).

BL was shown to be superior to other teaching and learning approaches in well-regarded research (Graham, 2006). BL is a pedagogical option that may motivate global projects to promote lifetime learning. When considering the future of BL, it is critical to continue identifying successful BL models at the program, course, activity, and institutional levels that may be employed in the manufacturing industries. To upgrade their skills, look for a job, or continue education as part of their lifelong learning, BL may assist high-potential employees in completing programs or training while still working. Participants said they anticipate financial resources to be allocated to adopting BL in their manufacturing industries during the next several years. However, they acknowledge that several challenges must be solved if BL is to be provided successfully in their manufacturing industries. Even though high-potential employees are pretty optimistic about the rising use of BL in their manufacturing industries, the most severe problem is that they need to comprehend what it means (Bonk & Kim, 2006b). Due to the lack of commitment and support from management, there are significant roadblocks regarding practical introduction and implementation of BL. (Bonk *et al.* 2006) Assumption 2: Despite the widespread use of course management systems and the inclination to prioritize online learning enrollments; these systems are utilized chiefly for administrative purposes rather than to provide rich, interactive learning experiences. As a result, BL techniques may be considerably hindered in their development and deployment.

BL has been used in certain organizations but is expected to become more widespread shortly. Manufacturing industries and learning environments currently use BL as a common form of delivering content, which suggests that the trend is here to stay. We must study how BL technology and teaching methods are applied to the industrial industry. Most often these days, virtual learning environments (BL) are used to enhance or replace in-person learning experiences, such as fostering learning communities, facilitating the usage of guest experts, and giving access to follow-up tools and additional materials (Van Dam, 2012). Macdonald & Chiu, 2011) and (Peters, 2007) found that cell phones will favor the ease, cost, social interaction, and flexibility of participating in Internet-based e-learning programs. A case study (Ruey, 2010) found that cell phones positively impacted high-potential workers' learning by improving their feeling of responsibility and their capacity to interact successfully. Additionally, BL aids with their education. Internet and Big Data are used in the manufacturing industry to promote learning, cooperation, and creativity among employees (Lee & Bonk, 2014; Schildermans & Schreurs, 2010).

4.2. Practical Implications

Because of this research, recommendations for HRD experts on adopting BL in their manufacturing industries should be developed. This research should assist practitioners in better understanding how to create, provide, and analyze BL techniques used in the learning contexts of manufacturing industries, based on the primary data from the most relevant studies. There are several concerns and obstacles that HRD professionals experience when trying to apply BL in the learning contexts of manufacturing industries, according to the results of this systematic study on the present status of BL.

Researchers may also use the findings of this study to assist managers and HRD professionals in dealing with the challenges they confront. This research is relevant because of its conclusions on the prevalence of BL in the manufacturing industries. The conclusions of this study on implementation of BL, its primary obstacles and problems recommend that researchers investigate those areas further. The complexity and unknowns surrounding BL, training, and HCM, as well as the rising relevance of BL research in the manufacturing industries, necessitate that human resource professionals stay on top of the latest developments.

4.3. Recommendation for Future Research

There are several beginning points for anybody interested in BL research in this study's results. These difficulties should be investigated further to see whether any improvements have occurred and what procedures or approaches are being established to address current problems effectively since the research revealed numerous current obstacles in BL. The study of career development

for HRD, HRT, and training professionals may also concentrate on developing a paradigm for the effective and efficient use of new technologies, notably in BL.

Therefore, future research should concentrate on generating "best practice" scenarios and organizational theories to provide practitioners with the requisite methodological expertise and understanding to win cooperation from management and encourage BL. The execution of BL has been hampered by lack of enthusiasm for and dedication to the strategy. The types of activities and types of BL that might contribute to the practical application of learnings in manufacturing industries may be investigated in future research.

4.4. Limitations of the Study

A As a result, a significant gap remains in our knowledge of how BL is used in high-potential employees' education now and in the future. The study's primary purpose was to collect as many assessments, qualitative studies, randomized control trials, and case studies as feasible. The problem is that these kinds of studies are typically restricted or unavailable. It is also conceivable that participants' replies reflect distorted beliefs and perspectives. The research also has limitations due to the expiration dates of publications. Published studies in the previous 5–10 years would've been appropriate because the present research focuses on future developments in BL program. As many evaluations, qualitative studies, RCTs, and case studies as possible were collected as part of the study's primary goal. In most cases, research of this nature is limited or unavailable. Another possibility is that the responses of those who took part reflect skewed viewpoints and assumptions:

- New, upgraded, or developed training program or systems are expensive.
- Lack of organizational BL training cultures in the manufacturing industries or employee opposition to latest trends in training or management.
- Issues with technology and/or a lack of technical assistance (Guiney, 2015).

The current and future states of BL programs in the learning environment of manufacturing industries were addressed in this systematic study. Due to its advantages, this method of learning has grown in favor in recent years, both in educational and professional contexts. In the manufacturing industries, the impact and orientation of blended learning program are well-established, and it is growing because of its advantages over traditional learning. It is quite probable that this will have a significant impact on employment results.

This research suggests that future studies should focus on overcoming challenges, barriers, and technologies rather than just effectiveness since all studies have shown that it works regardless of company size and sample differences.

Moreover, independent studies on the effect and influence of blended learning program on businesses from other perspectives, such as knowledge and skills, may be required. Therefore, no firm conclusions can be drawn from the current findings about the technology and issues associated with the effectiveness of blended learning program for high-potential employees in manufacturing industries.

Donald L. Kirkpatrick was the first to publish a training efficiency assessment in the United States Training & Development Journal in 1959, and he referenced his work in support of his claim. The four steps or characteristics of this vital teaching approach are response, learning level, behavior, and result/outcome. Contentment with learning or learning activities, appraisal of education's impact on improved skills, knowledge, and attitudes, and observable performance changes following training are all terms included in this definition. Business outcomes are also included.

Finally, it is critical to see whether the training has achieved its stated purpose, such as raising productivity or selling more products while cutting expenses. Organizations use a variety of training strategies in a virtual reality environment. These techniques include e-learning and self-education as well as tools. Their key advantages are that they are simple to use, readily available, and have flexible timetables. *Self-learning* is a popular strategy that has become essential to the educational process. By correctly applying and understanding fundamental principles, it is possible to determine whether more staff training is required and, if so, whether it will be effective.

In their investigation, they found four organizational approaches to training methodology usage and two ways of evaluating the training process. To generate and expand intellectual capital in the long term, organizations must focus on training to impart fundamental and advanced talents, particularly to HIPOs, the next generation of leaders.

Achievement in research projects is measured and evaluated by identifying the desired learning goal or achieving the target abilities. Studies have shown, for example, that a lack of support and participation at the executive level, individual employee's attitudes and acceptance, defects in training practice, and work-related challenges all influence the effectiveness of training. Conversely, the researchers found a strong correlation between effectiveness of training and the support from management.

These evaluations will be based on a mathematical model that utilizes learning software and statistical templates, and the outcomes will significantly affect education courses and assessments. The most essential elements of the assessment are the learning system, technique, and instrument, as well as the connections among emotions, dedication, learning, and knowledge. In this form of training, there are several objectives to

be met. Practical training takes a lot of time and requires much money to complete all objectives. Maximizing the fulfillment of employees' requirements results in more efficient working processes and increases employee loyalty. The goal of corporate education is to make sure that employees can convey their demands to their high-potential employees.

Upgrading their skills, looking for a job, or continuing their education is an integral part of their continuous learning; BL may assist high-potential employees in undertaking programs or courses while they are still working. Participants said they anticipate financial resources to be allocated to adopting BL in their manufacturing industries during the next several years. However, they acknowledge that several challenges must be solved for BL to be successfully implemented in their manufacturing industries.

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I confirm sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation. This manuscript has not been previously published and is being submitted exclusively to this journal for consideration.

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Conflict of Interest

I declare that there is no conflict of interest regarding the publication of this paper.

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