

STRATEGIC HUMAN RESOURCE DEVELOPMENT IN INDUSTRIAL REVOLUTION 4.0

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ABSTRACT--The entry of the fourth industrial revolution era (Industry 4.0) is a necessity that can no longer be avoided. Companies, industries and profit-oriented organizations need to prepare strategic steps so that able to adapt to this digital industrial era. Companies, industries / organizations must change and commit to building a globally competitive manufacturing industry through acceleration Industry 4.0 implementation. This is important so that the company can continue to operate and be competitive. To be able to survive and have competitiveness the company needs to strengthen and change, funds one of the determining factors that must be prepared first is its HR factor, how to direct and change the program HR development to be in line with changes that occurred in the industrial revolution era 4.0. Industry 4.0 through connectivity and digitalization able to improve manufacturing chain efficiency and product quality. However in the other side of digitizing this industry will have a negative impact on energy absorption work and screw up conventional business. Companies must anticipate the negative impacts of Industry 4.0, by choosing the right HR development program.

Keyword -- Strategic HRD, Industrial Revolution 4.0

I. INTRODUCTION

Human Resources is a key factor for company in doing their business. And Along with the 4.0 industrial revolution and digital technology, business competition and development that originally relied on the use of natural resources will shift to the mastery of information technology and workforce competencies. This is where the importance of HR investment. Natural resources will be exploited and give birth to environmental problems. Not so with unlimited and constantly dynamic HR investment. The competitive and volatile environment within which many businesses operate is prompting senior management to take a greater concern in developing people. And It is urgently needed to identify the specific factors as follows:

- a) Difficulties in recruiting skilled managers;
- b) The need to develop a more flexible and adaptable skill base;
- c) The need to align the potential of employees with business objectives;
- d) A greater emphasis on performance evaluation and management;
- e) The need for human resource and succession planning.

These forces are promoting the emergence of strategic human resource development (HRD) in many organIntegration with Organisational Missions, Goals and it's aligned with changing times, changes in business and technology. By identifying the factors above, it is very necessary to immediately modify the HR development

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program in a broader context that is not only oriented to the internal needs of the company but more to the continuation of the business in the future. Human resources in this context are seen as a vital factor in business planning, training and development have to be aligned with changes and developments that occur both in the industrial focus (industrial revolution), technology and others, these are viewed as making an effective contribution to business goals[29].

The industrial revolution was first introduced by Prof. Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, in his book. The book explains that the era of the industrial revolution 4.0 will change almost most of human life. This revolution gave birth to super computers, vehicles without drivers, smart robots, the development of neurotechnology and other automated digital worlds. Now reality in the world can be connected to the virtual world by their development. Companies must have an integrated travel map so that the direction of business development is clearly visible

Business processes need to adjust the times and market needs effectively and efficiently in order to be able to provide significant added value for the company. In line with that Human resource development programs are also important to be adjusted to changes that occur from time to time, through the help of the internet. This is what causes changes in human life, especially in the business world. Technological advancements in it make the face of the world industry change drastically[33].

For many companies, the era of the industrial revolution 4.0 is an absolute and unavoidable phenomenon. Companies must have a strategy that is able to carry out transformation and innovation to deal with it. This is so that companies and businesses that have been built are not crushed by time and are hampered changes in orientation & industrial revolution and harmonized with technological developments. The issue of the industrial revolution 4.0 needs serious attention so we can prepare ourselves to answer the challenge. Competent resources are one of the main factors determining the success of the transformation of the 4.0 era, therefore improving the quality of human resources (HR) needs to be prioritized

II. LITERATURE REVIEW

Human Resource Development (HR) is one of the important factors that has received much attention especially by business organization activists. For companies, the development of quality human resources (HR) is carried out as an effort to spur productivity in winning global competition. Human Resource Development (HR) in a company is an important aspect in order to increase the capacity of workers. Thus each worker can have competitiveness and can compete in the global market arena, which of course is a big challenge and has become a necessity for any organization or company. Understanding HR Development according to Price [35]. HR Development is a strategic approach to investing in human resources. Human resource development provides a framework for self-development, training programs and career advancement that is tailored to the needs of skills in the organization in the future. according to Chris Rowley and Keith Jackson [35], Human resource development is a process undertaken to develop the knowledge, skills and abilities of workers, as well as the competencies developed through training and development, organizational learning, leadership management, and knowledge management for the benefit of performance improvement. Armstrong [35], Human resource development related to the availability of opportunities and development of learning, making training programs that include planning, organizing, and

evaluating these programs. describe their activities. However, this concern is based on certain misconceptions about the nature of strategic HRD. HRD is best seen as the strategic management of training, development and of management/professional education interventions, so as to achieve the objectives of the organisation while at the same time ensuring the full utilisation of the knowledge in detail and skills of individual employees. It is concerned with the management of employee learning for the long term keeping in mind the explicit corporate and business strategies. This article considers the characteristics of strategic HRD, the conditions necessary for its promotion, the advantages of such activities, their contribution to a wider HRM effort and finally it focuses on the HRD policy formulation and planning processes of a number of Irish organisations. Base on some literature, related characteristics that need to be focused in the process of developing human resources include the following

Human Resources Development Links Organisation Strategy and Structure [29].

Strategy	Structure	HRD Systems	Human Resource Development		Job-Related Training
			Management Development	Professional/ Personal Development	
Single product	Functional	HRD perceived in maintenance terms HRD specialist limited status/power lack of strategic orientation in activities Limited perspective of business needs	Focus on single function Largely unsystematic and lack of clarity with respect to needs Management development needs subjectively determined	Personal development not perceived as priority Personal development costs borne by individual Perceived by top managers as a luxury	Unsystematic, largely on-the-job Responsibility of supervisor, however unclear guidelines No evaluation of results Lack of clear standards
Single product (vertically integrated)	Functional	Functions of HRD more clearly defined Problem-centred orientation toward activities More conscious of business needs	Emphasis on job rotation Greater emphasis on performance and productivity (measures still subjective)	Organisation more aware of services of outside training and educational agencies Organisation may bear some of the costs of personal development	More systematic with greater involvement by supervisors Some attempt at cross training/ multiskilling Experienced worker standard established
Growth by acquisition	Strategic Business Unit (SBU)	Greater strategic focus Emphasis on measurement of results HRD specialist significant status/power Production of	Emphasis on developing management teams Greater awareness of cross functional expertise Production of	Considerable investment in executive development Managers encouraged to broaden knowledge/skill	Cross-functional training: systematic multiskilling Exact measurement of skill levels attained Recognition of motivational aspect On-the-job training

		HRD policies and plans Usually medium term focus in plans/policies	developmental sequences Greater use of structural MD approaches	s Existence of financial assistance systems Personal development seen as good in itself	activities may utilise advanced training technology
Concentric (related) diversify internally	Multidivisional matrix	Corporate perspective Explicit HRD mission, policies and plans Clear criteria for evaluating success Specific mechanisms for achieving strategy/HRD link	Formal systems of development A cross-functional/divisional or corporate focus Emphasis on conflict handling; political and interpersonal skills development	Considerable investment in postexperience education Perceived as an investment in employee Greater use of MBA, etc., to develop potential managers who may now have a technical background	Multiskilling Considerable specialist technical training Emphasis on productivity and return on investment Specific evaluation of learning
Conglomerate diversification (multiple products/multiple consumers)	Global organisation	Corporate HRD function Standardisation of policies and planning mechanisms Involved at strategy formulation and implementation stages Corporate and divisional HRD staff Strategy/structure/HRD integration	Functional/generalist orientation required of managers Systems for goal setting, usually multiple goals Interdepartmental/team relationships important	Focus on cross divisional, subsidiary, corporate executive development Considerable financial investment Professional development viewed as an upgrading and conversion mechanism	Systems for on-the-job training very advanced: CBT, IV tech. used Advanced systems of cross-training/multiskilling Technical training specialists Systematic evaluation of standards

III. HUMAN RESOURCES DEVELOPMENT IN INDUSTRIAL

Revolution 4.0

The industrial revolution 1.0 began in the middle of the 18th century when the use of steam technology for the mechanization of production. While the 2.0 industrial revolution began in the late 19th century, it was marked by its massive manufacturing of products powered by electricity and gasoline. Industry 3.0 began in the decades at the end of the 20th century, marked by the widespread use of computer-based information and technology. Now this is the era of the industrial revolution 4.0 where

industry is beginning to touch the virtual world, in the form of human, machine and data connectivity. This term is known as the internet of things[32].

Then how is the role and readiness of HR in Indonesia in facing the 4.0 industry that is in sight? Looking at developments in the past few years, HR in Indonesia has undergone many transformations. One of the most fundamental changes is the application of digital technology in HR. Starting from the employee data systemization, payroll, performance management, talent management, to the assessment center. Assessment center is a process of assessing one's competence, both within a company and those who have not entered into the company to identify competency gaps by using more than one tool / method / simulation. So far, traditional assessment center is seen as an activity that requires a lot of resources, starting from the media assessment (paper, stationery, & space), the number of assessors, as well as participant accommodation and

assessors. In addition, all processes are carried out manually. This resulted in the time needed to process the results were not short. The resulting assessment can vary if the assessment guidelines are made in less detail.

Along with the 4.0 industrial revolution and digital technology, business competition and development that originally relied on the use of natural resources will shift to the mastery of information technology and workforce competencies. This is where the importance of HR investment. Natural resources will be exploited and give birth to environmental problems. Not so with unlimited and constantly dynamic HR investment. For this reason, an intervention is needed in the development of human resources so that the skills and competencies of the employee workforce can compete.

IV. IN MANY CASES TOP MANAGEMENT IS NOT COMMITTED TO TRAINING AND DEVELOPMENT ACTIVITIES

The reality however, is that in many cases top management is not committed to training and development activities. A number of reasons can be cited for this lack of top management support:

(1) Previous and present generations of top managers were not always systematically trained or developed as managers. They tend to devalue training and development and, in fact, may perceive it as either irrelevant, or indeed as a threat to their position.

(2) Top managers are often too busy to consider the benefits of HRD or identify what resources and facilities are available.

(3) When organisational survival is the priority, the long-term fruits of investment in HRD are seen as something of a luxury.

(4) King [13] points out that, in many organisations, expenditure on training does not reflect investment in a financial sense but is instead perceived as a cost. This manifests itself in the lack of budgets, secrecy about the amount spent on HRD and the total reliance on external grant assistance. The Challenge to Complacency Report[14] supports this view on expenditure on HRD and concludes that the implicit link between training and profitability is often not recognised, or indeed understood.

(5) The training profession itself must also accept some of the responsibility for the lack of support from top management.

Training specialists have not invested sufficiently in the marketing and quality of their services. This hinders their ability to convince top managers of the need to invest in HRD and of its contribution to improved organisational performance.

(6) Brown et al.[1] illustrate from their research that when management training is considered it is concentrated towards the bottom end of the management hierarchy. Senior level managers were often not included in training strategies. Reasons cited for this lack of training included senior management reluctance, the difficulty of providing the right sort of developmental activities, and doubts about the costs and benefits of such training. Senior managers are often not very concerned about their own development which may inhibit their ability to act as role models in a management development context. However, despite this dismal picture, there is no doubt that increased investment in HRD requires the active participation of top management.

V. THE COMPETENCE OF THE LINE MANAGER IS VITAL TO A SUCCESSFUL IMPLEMENTATION OF STRATEGIC HRD

The relationship between line managers and the HRD function can somehow be a problematic one. Research and commentary by Ashton [26], Mumford [24] and Garavan [25] identify a number of issues which need to be considered by a strategically-oriented HRD function:

(1) A key issue identified by many commentators is that of ownership of HRD activities. Key questions cited include: Who are the key parties in the HRD system? Is there a need for an explicit learning contract? How are HRD activities to be shared? What is the policy/operations boundary?

(2) The competence of the line manager is vital to a successful implementation of strategic HRD and is cited by many commentators as a particularly difficult issue. Competency difficulties most often cited include: inability to appraise performance, lack of counselling skills, inability to identify skill gaps, poor listening skills, inability to empathise with subordinates. Allied to these competency deficiencies may be a motivational one. Many areas of HRD are long-term in focus thus leading to the perception on the part of line managers that little impact on current performance may accrue from their involvement in the development of subordinates. Many line managers are also slow to acknowledge their deficient learning skills.

(3) Another crucial issue is that of role definition. Ashton [26] argues persuasively that different HRD activities require different degrees of involvement from line managers. Performance appraisal for example requires high line manager involvement as does coaching, counselling, etc. Formal training programmes and self-development activities require considerably less involvement. This suggests that some form of role clarification is necessary as a basis for developing a strategically-oriented HRD function. One may conclude that strategically-oriented HRD functions must be precise/clear with line management about the support they desire and expect. They must have the ability to sell to line managers the need for their involvement and furthermore issues of ownership and control must be clarified.

VI. RESEARCH METHODOLOGY

This research is conceptual in nature, where the results of thought in this study are based on a literature review of previous scientific articles and journals that aim to improve a framework that can be used as a touchstone by academics and practitioners for a detailed human resource development strategy and aligned with developments industrial aspects towards the industrial transition to the Industrial revolution

4.0.

VII. CONCLUSION

In a company there are many processes that go through to finally produce a service or product. And in each of these processes there are their own rules and policies. Both are intended for goods and services in production as well as policies related to HR management, including the process of developing HR, management and position holders. Harmonization is needed in the making and application of these rules and policies

that are adapted to the industrial revolution 4.0 so as not to backfire for the company itself. Especially in the era of the industrial revolution in which various lines in the company also changed. Rules and policies in the supply of raw materials, human resource management, division of labor, business competition, and many more must be made clearly so as not to harm either party. Apart from within the company, the government also helps by harmonizing rules and policies to support industrial competitiveness and ensure good coordination with policy makers.

Harmonization in the process of developing human resources can be done by maximizing the development and existence of technology that occurred in the era of the industrial revolution, one of which is to use a model Virtual Assessment Center (VAC). The Virtual Assessment Center (VAC) is a method that turns simulations in an assessment center into a desktop simulations, where participants continue to run an assessment center using a computer or laptop. The simulations are packaged in such a way into desktop simulations by not removing the essence of the assessment center itself. One example is by replacing in-tray simulations (simulations in which participants respond to letters, notes and memos provided) into inbox simulations. Inbox simulation is a simulation where participants are asked to answer incoming emails through desktop simulations that look similar to Microsoft Outlook that are used daily for correspondence at work. This will certainly also reduce participants' complaints, where they will not spend time writing for hours and pages. They will be focused on the computer screen in front to do their tasks which are actually similar to everyday work situations .

HR development models in the era of the industrial revolution can be done by focusing on triple skilling. Skilling is done for the workforce who want to gain skills, up-skilling for workers who want to improve skills, and re-skilling for workers who want to gain new skills[30]. Through the shift from the traditional assessment center method to the Virtual Assessment Center, there are several benefits to the company in implementing it. Among these are the reduced resources and costs needed to carry out the assessment center. This change will certainly be felt by companies, especially those with branches outside the city. As a result, the costs of bringing participants to the central office can be drastically reduced. The time needed to complete the report is also getting shorter and the results obtained will also be more accurate. In addition, of course, this Virtual Assessment Center will increase employer branding for participants, both from within and from outside the company. Technological changes that are quite massive in this assessment center ultimately reduce one more reason for companies not to carry out assessment centers in the performance management cycle, or in making development plans for their employees: resources. The existence of the Virtual Assessment Center is expected to make the company more aware of the ease of carrying out an assessment center to measure the competence of its employees, so that the spirit of development will be increasingly felt and implemented well [32].

VIII. SUGGESTION

With the incessant change of life lines into all- digital, it is not impossible that robots will replace human work. However, robot dominance will not occur in all sectors. Robots are still not able to take over jobs related to human interaction and knowledge. Therefore companies need to prepare reliable human resources to continue to achieve success. Employees should be encouraged to continue learning and increase their knowledge

of technology. Because it is the workforce that is able to apply and control technology in the present that is able to keep moving forward.

Companies through Top Management and all Line Managers have to be committed to developing its human resources through

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