Human Capital Development Practices: A Strategy for Enhancing Workforce Capability

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Abstract

Purpose: This study investigates the role of human capital development (HCD) practices as a corporate strategy in enhancing workforce capability in Information Technology (IT) firms within the five main IT hubs in India, namely; Bengaluru, Hyderabad, Chennai, Mumbai, and Delhi.

Theoretical Framework: The study espouses the model of workforce capability by Tamkin Penny (2005) and an adapted version of the HCD Practices model by R. Indradevi (2011). The workforce capability model represents two key dimensions to the expression and enhancement of human capability at the workplace, notably: the development of capability at one end and its deployment at the other end. The second dimension looks at the roles of individuals at one end and organizations at the other end, and how the concept of capability depends on an appropriate partnership. Indradevi, on the other hand, identified recruitment, training, counseling and mentoring, empowerment, and performance appraisal as the perceived human capital development practices for the Indian software industry.

Design/Methodology/Approach: Responses from 527 employees from Hardware, ITES/BPO (IT-Enabled Services/Business Process Outsourcing), and Software industries in India was analyzed using Stepwise regression analysis.

Findings: The results of the study showed that HCD practices, namely training, performance appraisal, self-organized learning, talent management, employee engagement, and workplace health management, have a general significant positive impact on workforce capability in India's IT industry.

Research Practical and Social Implications: The study confirms that HCD practices are a beneficial strategy for enhancing workforce capability in organizations. The principal policy insinuation of the survey is the need for state officials and other government agencies in developing economies to support the use of HCD practices in all sectors of the economy.

Originality/Value: Other studies on HCD practices purport general outcomes, this study goes on to indicate specifically that HCD practices promote mainly the ability component (skills development opportunities) and the application component (readily available technological aides) of workforce capability.

Keywords

Information Technology (IT), IT industry, Human capital, Human Capital Development (HCD) practices, and Workforce capability.

1. Introduction

Capability refers to the ability to do work expected of employees as per desirable standards (Lindbom et al., 2015; Kusumasari et. al., 2010). According to Tamkin (2005), an employee's capability may be appraised by allusion to their competence, skill, talent, health, or any other mental or physical attribute related to the specific task or job. The perception of capability as viewed by Sen (1993) is found in the debates of welfare economics as applied in the standpoint of economic development. Sen's approach to capability looks at the expansion of freedom and well-being of individuals within any given workforce as an avenue for economic development. Human capital development has been largely discussed from the perspective of developed countries (Sakka & Ghadi, 2023). However, the foundation of one's human capital is widely accepted as being based on skills and knowledge acquired by individual learning activities. (Asante Darkwah et al., 2023; Boohene et al., 2017a; Baah-Boateng, 2013) explain that the accumulation of human capital through learning activities influences many sectors such as firm's productivity, incomes, and to a large extent the national economy. (Boohene et al., 2017; and Todaro et al., 2012) see the term human

capital as a key element in improving a firm's assets which obviously includes employees in order to increase productivity alongside development, capability, and growth prospects for organizations. Thus, human capital development practices in the form of talent management, performance management, education, personnel training, skill enhancement, and career development are crucial for the development and growth of employees (Ashmond et al., 2022; Channar et al., 2015; and Yaya 2016). In line with this, the Organization for Economic Co-operation and Development (2018) has defined human capital as the knowledge, skills, competencies, and attributes embodied in individuals that facilitate the creation of personal, social, and economic well-being.

There are several human capital development practices that are employed in most corporations. For instance, Indradevi (2011) identified the following human capital development practices, namely recruitment, training, counseling and mentoring, empowerment, and performance appraisal as the perceived practices that impact employee capabilities with particular focus on India's Software industry. This study goes further to look at the impact of these practices on the Hardware, IT-Enabled-Business Processing Outsourcing (ITES-BPO) sector, and the Software sector in India. The IT Industry in India uses computers and other supporting equipment to share knowledge and information (Das et al., 2017; Dery et al., 2016). The industry has in time past been limited to only computers, nevertheless with the rapid advancement in various information Technology delivery systems such as Radio, TV, Telephone, Newspapers, Internet, Fax, and obviously Computers and computer Networks etc., (Khattak et al., 2012). The IT industry goes further now to encompass aspects such as machine learning, smarter devices, virtual reality and augmented reality, robotic process automation, and quantum computing among others (Ibeh et al., 2024). According to Oyekunle et al., (2024), there is the need to balance technological advancements with the protection of human dignity and fairness, exploring how IT's transformative potential can be harmonized with the core tenets of human rights. This has called for many developing economies to harness on the benefits of IT to invest in their human capital potential through training and continuous learning (Boohene et al. 2024; Boohene et al., 2023; Amita et al., 2023). The IT industry in India mainly comprises of ITES-BPO, Software, and Hardware segment. Software and services segment includes IT services and products, Engineering services, ITES-BPO, Research & Development, and Software products (Ministry of Electronics and Information Technology, 2016). India is the world's largest sourcing destination for the information technology (IT) industry and it accounts for approximately (67 percent) of the US$ 124-130 billion market (Darsana, 2019; National Association of Software and Service Companies, 2016).

The IT industry has led the economic revolution of India and appears to be going forward to alter the perception of India on the global outlook. The sector has increased its contribution world, economies (Shevchenko et al., 2023) and particularly with regards to India's GDP from 1.2 percent in 1998 to 7.7 percent in 2017. As of 2020, India's IT workforce accounted for 4.36 million employees (Jayswal, 2020). This calls for efforts to ensure that it remains productive.

The workforce capability model according to Tamkin (2005) represents two key dimensions to the expression and enhancement of human capability at the workplace. The first dimension includes the development of capability at one end and its deployment at the other. The second dimension looks at the roles of individuals at one end and organizations at the other end, and how the concept of capability depends on an appropriate partnership. That is, organizations generally desire a proactive working force to succeed but more often than not fail to equip their employees with the requisite knowledge, skills, ability and training to function. For example, although NASSCOM (2019) reveals that the adoption of digital technologies has seen significant growth in India with robotics and machines getting augmented with sensors and artificial intelligence solutions, yet the industry is also faced with challenges such as lack of talent, remote working, poor quality, high attrition, employee effectiveness, competition, dynamism, confidentiality, regulatory and time zone issues, cloud migration, cybersecurity threats, over-concentration of IT hubs at expense of other cities, etc (Javkhedkar et al., 2021; Ramasamy, 2020). In light of this, the present day's human resource personnel are performing various functions than before to rein in these lapses. To overcome these challenges, the industry must endeavor to go the extra mile through innumerable new business strategies. It is in this regard, that this study seeks to investigate the role of HCD Practices namely; employee engagement (EE), talent management (TM), performance appraisal (PA), self-organized learning (SL), training (T), and workplace health management (WHM) as a business strategy in enhancing workforce capability (WC) in the Indian IT industry.

2. Material and Methods

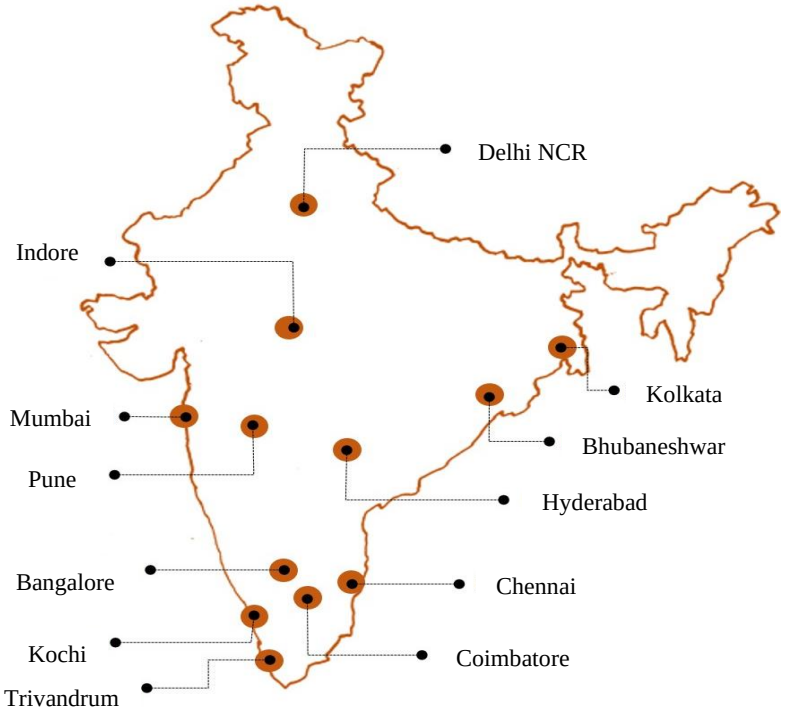
The study focuses on the five main IT hubs in India, namely Bengaluru, Hyderabad, Chennai, Mumbai, and Delhi. The IT sector in India has about six (6) categories, namely; Hardware, IT Services, Engineering/Electronics and R&D Services, Software Products, ITES/BPO, and E-commerce (Ministry of Electronics and Information Technology, 2016). This study however focuses on; the Hardware Sector, ITES/BPO (IT-Enabled Services/Business Process Outsourcing) and Software Industry. A sample size of five hundred and twenty-

seven (527) employees from the thirty-four selected firms in India's IT hub namely; Bengaluru, Hyderabad, Chennai, Mumbai and Delhi were relied on for quantitative analysis. Out of the five hundred and twenty-seven (527) respondents, one hundred and sixty-nine (169) were from Bengaluru. The residual three hundred and fifty-eight (358) employee respondents were from the remaining four cities.

2.1 Sample Size Development

The number of strata is two (2), namely**, N1 and N2**

N1-Stratum 1: Selection was done based on the concentration of IT Companies in order of ranking; the cities selected are Bangalore, Hyderabad, Chennai, Mumbai, and Delhi.



Source:- MaxHeap Technologies, 2017

Figure 1:- Indian Cities with Major IT Hubs

N2-Stratum 2: Selection was done using disproportionate allocation sampling based on concentration of companies in the selected IT hubs and total number of employees per each company as seen in Table 1

Table 1:- Strata Composition

IT hub	Number of IT Companies	Number of Respondents
Hyderabad	8	122
Chennai	6	90
Bengaluru	12	169
Delhi	4	69
Mumbai	4	76

Source:- Prepared by the authors (2023)

Table 1 reveals that the majority of respondents are from Bengaluru (about 40 percent of the Indian IT companies) located in that region (NASSCOM, 2016). This is followed by Hyderabad which has a relatively higher concentration of IT companies compared to Chennai, Mumbai, and Delhi.

Table 2:- Cross Tabulation

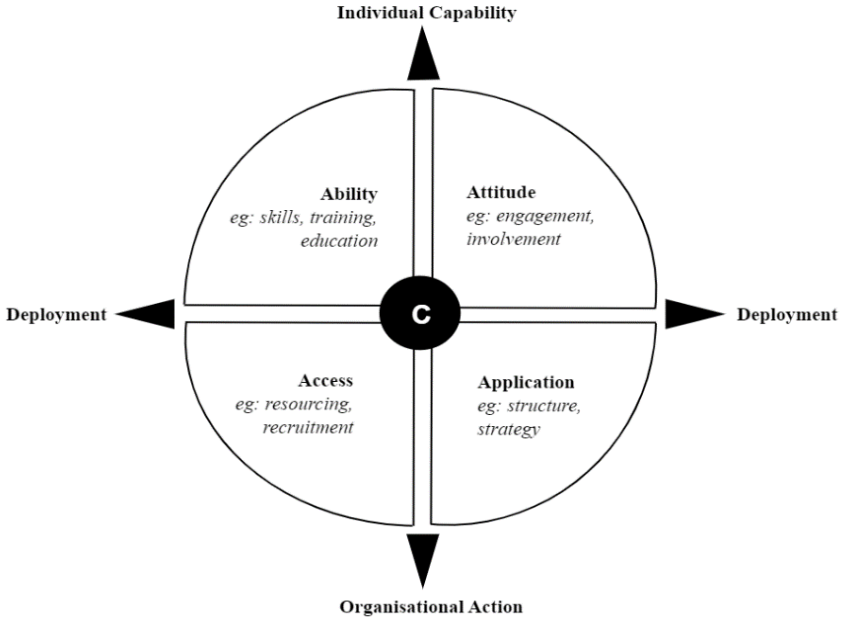
Count		IT Components			
		Software	Hardware	ITES-BPO	Total
Gender	Male	104	119	73	296
	Female	93	43	95	231
	Total	197	162	168	527

Source:- Prepared by the authors (2023)

Table 2 shows a cross tabulation of the demographic profile on the gender of the respondents and the IT component employed in presently. From the table, it is observed that there are relatively more females in the ITES-BPO sector, precisely (95), representing (56.5 percent) of the overall number of respondents (168) compared to the other sectors. This could be as a result of the burgeoning of several ancillary services in that sector. On the other hand, there are more men compared to women in the Hardware sector. The situation can be due to the robust nature of work related to the Hardware sector.

2.2 Tamkin's '4A' Model of Workforce Capability

Tamkin's workforce capability model constitutes four elements, namely Ability, Application, Attitude, and Access. The resulting four quadrants of activity form the model as illustrated in her '4A' model of workforce capability. The Tamkin's quadrants are;



Source:- Tamkin (2005)

Figure 2:- Tamkin's Workforce Capability

Based on Tamkin's '4A' Model of Workforce Capability and review of literature on HCD practices, the following hypothesis is tested to develop conceptual framework for the study.

H1: HCD Practices significantly impact workforce capability (Ability, Application, Attitude & Access)

There is a significant relationship between the HCD Practices and workforce capability.

X^2 (4, N=527) = 446.165, p= 0.00; $p < 0.05$ and X^2 is highly positive. The Phi and Cramer's V indicate a considerable effect size of (0.897) which is significant at a (0.000) confidence level. This indicates that HCD practices enhance workforce capability. Therefore, H1 is accepted.

H2: HCD Practices enhance employee ABILITY (Skills development opportunities)

There is a significant relationship between the HCD Practices and worker ability.

X^2 (4, N=527) =463. 165, p= 0.00; $p < 0.05$ and X^2 is highly positive. The Phi and Cramer's V indicate a considerable effect size of (0.937) which is significant at a (0.000) confidence level. This indicates that HCD practices enhance employee ability. Therefore, H2 is accepted.

H3: HCD Practices enhance employee APPLICATION (Readily available technological aides)

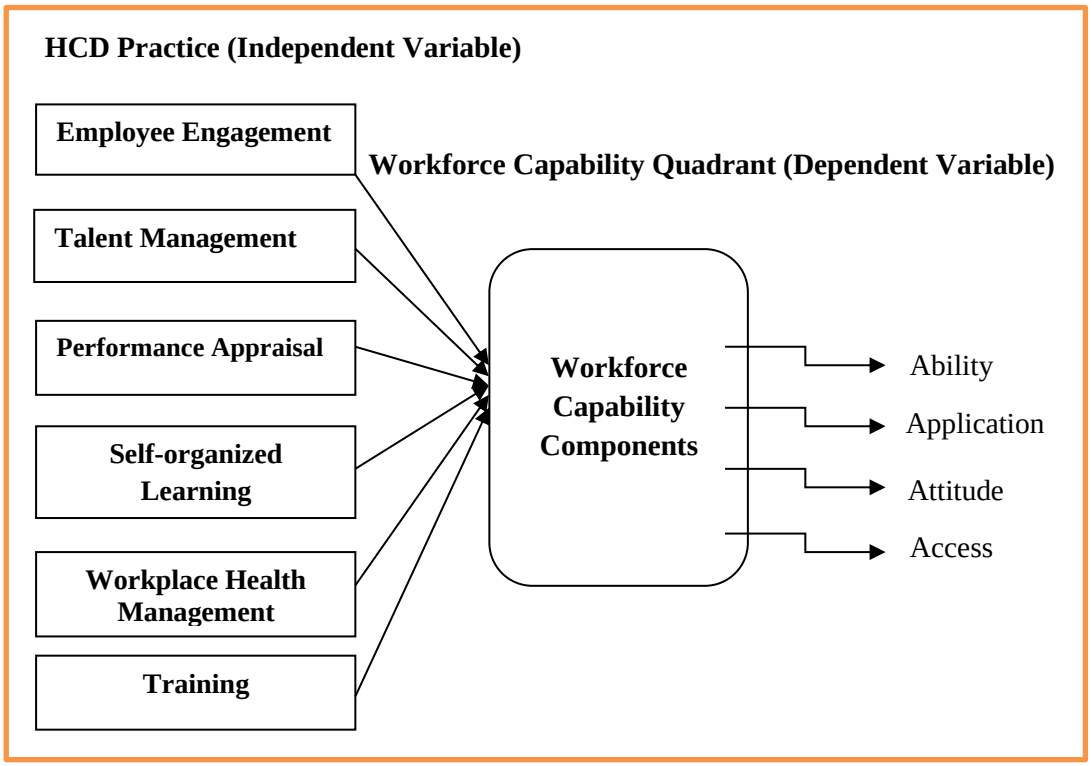
There is a significant relationship between the HCD Practices and worker application. X^2 (4, N=527) =415. 314, p=0.00; $p < 0.05$ and X^2 is highly positive. The Phi and Cramer's V indicates a considerable effect size of (0.888) which is significant at a (0.000) confidence level. This indicates that HCD practices enhance employee application. Therefore, H3 is accepted.

H4: HCD Practices enhance employee ATTITUDE (Job description and its related authority)

There is a significant relationship between the HCD Practices and worker attitude. This is seen from the Chi-Square test statistic, X^2 (4, N=527) = 374.562, p=0.00; $p < 0.05$ and X^2 is highly positive. The Phi and Cramer's V indicates a considerable effect size of (0.843) which is significant at a (0.000) confidence level. This indicates that HCD practices enhances employee attitude. Therefore, H4 is accepted.

H5: HCD Practices enhance employee ACCESS (Recruiting qualified personnel)

There is a significant relationship between the HCD Practices and worker access. This is seen from the Chi-Square test statistic, X^2 (4, N=527) = 388. 954, p= 0.00; $p < 0.05$ and X^2 is highly positive. The Phi and Cramer's V indicates a considerable effect size of 0.859 which is significant at a (0.000) confidence level. This indicates that HCD Practices enhance employee access. Therefore, H5 is accepted.



Source:- Prepared by the authors (2023)

Figure 3:- Conceptual Model for HCD Practices on Workforce Capability

Figure 3 presents the independent variable for the study as the human capital development practices with six varied components as well as the workforce capability which has four sub-components as its dependent variables.

The main hypothesis and other sub-hypotheses for the study are summarized below as;

Main Hypothesis

- H1: HCD Practices significantly impact workforce capability.

Sub Hypotheses

- H2: HCD Practices enhance employee ability.
- H3: HCD Practices enhance employee attitude.
- H4: HCD Practices enhance employee application.
- H5: HCD Practices enhance employee access.

3. Results

Table 3:- Stepwise Regression for Skills Development Opportunities (ABILITY)

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.897[a]	.804	.803	.15101
2	.921[b]	.848	.848	.13301
3	.929[c]	.863	.862	.12651
4	.931[d]	.867	.866	.12487
5	.932[e]	.869	.868	.12384

Source:- Prepared by authors

a. Predictors: (Constant), Training
b. Predictors: (Constant), Training, PA
c. Predictors: (Constant), Training, PA, SL
d. Predictors: (Constant), Training, PA, SL, TM
e. Predictors: (Constant), Training, PA, SL, TM, EE

The predictor ability as explained by the R Square is (0.869) for the ability component of workforce capability. Five out of the six factors namely training, performance appraisal, self-organized learning, talent management, and employee engagement recorded relatively high predictor ability for the dependent variable. The remaining factor which is Workplace health management had a relatively less predicator ability and thus was omitted in the stepwise regression model summary.

Table 4:- Stepwise Regression for Readily available Technological aides (APPLICATION)

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.797[a]	.635	.634	.23750
2	.836[b]	.698	.697	.21613
3	.847[c]	.718	.716	.20912
4	.850[d]	.723	.721	.20759

Source:- Prepared by authors

a. Predictors: (Constant), Training
b. Predictors: (Constant), Training, SL
c. Predictors: (Constant), Training, SL, PA
d. Predictors: (Constant), Training, SL, PA, WHM
e. Dependent Variable: Readily available Technological aides (APPLICATION)
The predictor ability as explained by the R Square is (0.723) for the application component of workforce capability. Four out of the six factors namely training, self-organized learning, performance appraisal and workplace health management recorded relatively high predictor ability for the dependent variable. The remaining factors, namely; talent management, and employee engagement had a relatively less predictor ability and thus were omitted in the stepwise regression model summary.

Table 5:- Stepwise Regression for Job Description and its Related Authority (ATTITUDE)

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.838[a]	.703	.702	.26094
2	.852[b]	.726	.725	.25064
3	.854[c]	.730	.728	.24933
4	.856[d]	.732	.730	.24849

Source:- Prepared by authors

a. Predictors: (Constant), Training
b. Predictors: (Constant), Training, SL
c. Predictors: (Constant), Training, SL, WHM
d. Predictors: (Constant), Training, SL, WHM, PA
e. Dependent Variable: Job description and its related authority (ATTITUDE)
The predictor ability as explained by the R Square is (0.732) for the attitude component of workforce capability. Four out of the six factors namely training, self-organized learning, workplace health management and performance appraisal recorded relatively high predictor ability for the dependent variable. The remaining factors, namely; talent management, and employee engagement had a relatively less predictor ability and thus were omitted in the stepwise regression model summary.

Table 6:- Model Summary for Recruiting Qualified Personnel (ACCESS)

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.715[a]	.703	.702	.35804
2	.801[b]	.726	.725	.30729
3	.803[c]	.730	.728	.30596

Source:- Prepared by authors

a. Predictors: (Constant), Training

b. Predictors: (Constant), Training, SL

c. Predictors: (Constant), Training, SL, PL

d. Dependent Variable: Recruiting qualified personnel (ACCESS)

The predictor ability as explained by the R Square is (0.730) for the access component of workforce capability. Three out of the six factors namely training, self-organized learning, and performance appraisal recorded relatively high predictor ability for the dependent variable. The remaining factors, namely; talent management, employee engagement, and workplace health management had a relatively lower predictor ability and thus were omitted in the stepwise regression model summary.

4. Discussion

Thus, from the stepwise regression analysis as seen in Table 3-6, the ability of HCD practices to significantly impact each of the workforce capability elements is not the same. As a result, there is a significant difference in how employees perceive human capital development practices for improving workforce capability. As per the results, we find that the ability component of workforce capability has the potential to be more influenced by HCD practices. Tamkin (2005) views this ability component of workforce capability as the quality of people that an organization has at its disposal and the ongoing development activity of those individuals that maintains and further develops their capability. Further, in Table 3, we acknowledge that among the HCD practices under study, workplace health management has a relatively less effect on the ability component of workforce capability. On the other hand, training is the most influential, followed by performance appraisal and self-organized learning. This suggests that training the workforce improves worker abilities on a job that can bring productivity to the Indian IT industry.

Again, the application component of workforce capability is best explained as the opportunities, such as technology, made available to individuals to aid in their work. These opportunities have the potential to be influenced by HCD practices.

For instance, according to (Boohene et al. 2017c; Adayana, 2009), it is common for organizations to rely on technological components, namely, a learning management system (LMS), social networking (SN), web collaboration (WC), mobile communication (MC), management information systems (MIS), back-office integration (BOM), etc., either single-handedly or in different combinations to support a wide variety of HCD practices. Thus, the application component of capability recognizes and suggests that people need an appropriate working technological environment to flourish, which is provided through job design, organizational structure, information sharing, and business strategy. Conspicuously, as seen in Table 4, we find that, yet again, training remains the variable with the greatest predictor ability, followed by self-organized learning. Talent management and employee engagement had relatively lower predictor coefficient values for the application component of workforce capability. Yet with this established, training as a major contributing factor to workforce capability will be more useful when trainees are able to practice the theoretical aspects learned in training programs in their actual work environments (Bates & Davis 2010).

On the issue of attitude, which entails motivation, engagement, and morale of the workforce and the meaning they find in work, their beliefs about the workplace, and their readiness to put in extra effort, we realize that talent management and employee engagement had a relatively lower predictive ability and thus were omitted in the stepwise regression model summary. This suggests that the two variables among the six HCD practices were significant but not highly significant when compared to training, self-organized learning, workplace health management, and performance appraisal. Then again, we also find that training is the most significant determiner of the attitude component of capability.

Lastly, with regards to access, which refers to the effective resourcing of roles in the organization in terms of initial recruitment, ongoing job moves, and succession activity, the least predictor was workplace health management, whereas the most significant variable affected is training. Consequently, the center of attention here for training purposes is a premeditated organizational activity including policy and practice, as put by (Tamkin, 2005).

5. Conclusion

The present global financial crisis and the escalating interdependence of nations globally have resulted in heightened attention toward the HCD Practices paradigm and its enduring viability. Nations, whether they have advanced or emerging economies, give high importance to improving human capital as a crucial element for promoting economic advancement. This is accomplished by

dedicating the necessary amount of time and effort. Therefore, promoting the development of human resources becomes a vital option to successfully integrate into the global arena, particularly within the five primary IT centers in India. The aim of this research is to analyze the elements that contribute to the value of carefully planned and developed human resources in the global economy of the 21st century.

The study showed that HCD practices, namely training, performance appraisal, self-organized learning, talent management, employee engagement, and workplace health management, have a general impact on workforce capability in India's software, hardware, and ITES/BPO industries. Again, for the ability and application components of workforce capability, the HCD practices correlated significantly. Thus, the findings of this study are in line with previous studies conducted earlier (Channar et al., 2015; Sherine F.E., 2015; Khan et al., 2014; Josan, 2013; Indradevi, 2011) on the grounds that HCD practices have a considerable impact on the capability of the labor force and organizational performance as evidenced in the stepwise regression output. Thus, this study confirms that HCD practices can be used as a favorable strategy for enhancing workforce capability in India's IT industry as they positively affect the ability, attitude, application, and access components of workforce capability.

Accordingly, the following proposals are posited at the micro- and macro-levels within the framework of the study's limitations and conclusions. Firstly, at the micro level, employers and human resource practitioners can reinforce the conduct of periodic training for their employees. Also, the study proposes a planned company policy that seeks to address the development of its workers, especially at the entry stage when one is joining a firm as a new recruit. Periodic needs assessments should be conducted to ascertain the skill needs of employees. Employers should also pay keen attention to the benefits of their employees' performance appraisals. This will go a long way toward reducing the high attrition rate prevailing in the IT industry, as indicated by this study. Again, directors should endeavor to provide inexpensive periodic career planning and training opportunities for their staff, as effective employees will result in the individual and group effectiveness necessary for growth in the IT industry. Secondly, at the macro level, the principal policy insinuation of the survey is the need for state officials and other government agencies to support the use of HCD practices in all sectors of the economy. The government should ensure that organizations follow labor policies that promote employee human capital development. This is because the development of any workforce's capability indirectly creates the reliable human capital required for the development of growing economies. Additionally, policies such as tuition fee cuts, grants, or waivers for females can

be instituted by the local government to encourage more women to take up educational opportunities in IT. This will go a long way toward augmenting the somewhat lower employment of women in the hardware sector, as the study revealed a relatively lower number of females in that sector compared to the ITES-BPO and the software sectors of India's IT industry. Finally, the government in India should prepare for a possible next stage of revolution, which is the revolution of human capital development, despite the rising phase of automation as employees will constantly need to develop skills that will make them competent to be in charge of the era of machines and technology.

Declaration of Conflicting Interest

There is no conflict of interest.

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