Impact of High-Performance Work Systems on Organization Performance - A Study on Semiconductor Sectors in India

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Abstract:

High-performance work systems (HPWS) and their contribution to organizational performance are currently generating more interest. The extent to which HPWS improves employee profiles and levels of engagement, however, is not widely understood. This study uses a sample of 383 employees in the Indian semiconductor industry to evaluate the links between HPWS through employee profiles on the impact of organizational performance. We create four study goals to comprehend the influence of HPWS on organizational performance as well as the mediating role of HPWS in the relationship between organizational performance, drawing on the job demands-resources model and strategic/high performance human resource management theory. As per the linear regression model, all research objectives are supported, implying that HPWS can be used as a work resource to improve organizational performance and, as a result, employee engagement. The paper's main point is that HPWS may be considered as a collection of abilities and qualities that can be cultivated via successful usage of HPWS, which helps both individuals and organizations.

Keywords: High-Performance Work Systems; Organization Performance; Semiconductor Sectors; HRM Practices

1. Introduction

Employees are now generally acknowledged to be a crucial component of an organization's resources, potentially boosting the organization's long-term competitive advantage. The links between High-Performance Work Systems (HPWS) and organizational performance have become a critical agenda item in the fields of HRM, industrial relations, and industrial and organizational psychology as a result of the need for organizations to develop a performance-enhancing system capable of facilitating the best management and development of their employees and increasing their competitiveness (1). Research on the relationship between performance and HPWS has primarily concentrated on the impacts of specific HRM practices

and the complementarity of HPWS practices on organizational performance. The relative associations are supported by a respectable amount of empirical evidence from both research areas. However, few researchers have examined the extent to which HPWS practices have been applied (1,2). Additionally, the majority of study has been done in western nations, particularly the USA. This study aims to test empirically the relationship between organizational performance and (1) the use of HPWS practices, (2) the effective use of HPWS practices, and (3) complementarities among HPWS practices in the context of a newly industrialized economy in India, with a focus on its semiconductor design sector, in order to fill in these gaps and expand the lines of research. The four primary industries that make up the semiconductor sector are design, fabrication, packaging, and testing. The design industry concentrates on the creation of alliances with silicon wafer producers, product development, and marketing. It is knowledge-intensive and requires little capital (Icsuperman report 2021). For two key reasons, the study was carried out in semiconductor design firms. First, by concentrating on a particular sector, it is able to manage variations in labour pools, business models, and factors that affect organizational performance between industries (4). Second, the semiconductor industry in India is one of the most successful and rapidly expanding in the world. It will be sent to the second-biggest semiconductor design industry and the largest semiconductor contract manufacturer in the world. This begs the question of whether the HRM techniques used in the sector have aided in this success. Therefore, the present study objectives are as follows:

- To develop a comparative profile of global bench marking HPWS standards from fortune 500 companies.

- To evaluate the employee perceptions towards High Performance Work Systems based on their demographic profile.

- To examine whether High Performance Work Systems can show influence on Organisational Performance.

- To present suitable recommendations to enhance HPWS operational in the selected organizations.

2. Literature review

2.1 High-Performance Work Systems on Organization Performance

Since the notion of human resource management (HRM) was introduced in the 1980s, it has been defined in a variety of ways, and various models have been developed. Many HRM models were created to connect a company's organizational strategy to key personnel functions such as

hiring, assessment, reward, and employee development. HRM is commonly regarded as a means of increasing an organization's competitiveness (5). Recent discussions about the relationship between HRM and organizational performance have cantered on a specific set of practices known as high performance work systems (HPWS). The term 'HPWS' has been used as a synonym for high-involvement or high-commitment management, and it is viewed as an alternative to hierarchical, mass-production types of work organization (6). To achieve high performance through people, HPWS employs a fundamentally different managerial style than the typical hierarchical or bureaucratic one (7). It incorporates methods like employment flexibility, teamwork, and employee participation, all of which are seen as the polar opposite of Taylorism's scientific management.

Researchers from a wide range of disciplines have looked into the relationships between HPWS and organizational performance using various conceptual frameworks. Examples of conceptual approaches include resource dependency theory, human capital theory, strategic management, expectancy theory, behavioral science, organizational theory, the resource-based theory of the company, and others (8). These ideas generally stress the importance of HRM practices in affecting employee and firm-level performance through their effect on workers' abilities, motivation, and flexibility (9). A number of authors (4,5,10) have put forth a variety of explanations as to why effective HPWS are linked to higher organizational performance than that attained under a control system. For instance, HPWS improve workers' skills and competence by offering training and job-rotation practices; additionally, knowledgeable and skilled workers are motivated and empowered by the decentralization of managerial decision-making, the establishment of formal participation mechanisms, and the provision of

The study of the effects of individual/specific HRM practices, such as training, on performance has evolved into two distinct strands of research on the firm-level impact of HRM practices. One of these strands examines the effects of complementary HRM practices on organizational outcomes, and the other suggests that these complementarities, or synergies, can have a significant positive impact on organizational performance. As a result, the presentation of hypotheses and the analysis of prior research are split into two sections. The relationship between individual HPWS activity and organizational performance is covered in the first section. The combined impact of HPWS techniques on organizational performance is covered in the second section. From the existing literature and empirical research, five key dimensions that broadly represent the domain of HPWS practices have been selected (11) to examine their relationship with organizational performance: hiring and selection, training and employee

development, reward and incentive compensation, job security, and work structure. Therefore, this study will examine the employee profiles to understand the impact of HPWS on organizational performance in the semiconductor sector in India.

2.2 The relationship among employees' demographics in the High-Performance Work Systems

According to (12), "life satisfaction" and "affect balance" can be combined to establish subjective well-being (SWB), which is the subjective concept of quality of life. Life satisfaction is a gauge of how people view their overall quality of life, and affect balance looks at how frequently people experience both happy and negative emotions. Positive psychology emphasizes the importance of SWB, which claims that "happy people do better at work" and "participate more in community groups" (12). However, studies on the factors affecting SWB typically concentrate on income, personality, culture, religious belief, intelligence, marital status, and other demographic qualities. Despite the fact that people spend the majority of their waking hours at work and that it is one of life's most essential domains, few researchers have looked at how HPWS practices affect employees' SWB.

The scant study on the impact of HPWS on employee wellbeing has yielded contradictory results. According to several academics, HPWS generally has detrimental effects. For instance, (13) contend that because employees must put in more overtime, HPWS has a negative impact on work-life balance. (14) analyses the situation of British aerospace employees and finds rising employee workloads and stress. (15) highlights how HPWS can result in greater workloads, job instability, a decrease in impact on the job, and a decrease in the quality of one's working environment. There may be disagreements on whether the HPWS techniques used by these firms qualify as an HPWS because there is no agreement on what an HPWS is. Although there is a chance that HPWS will raise work expectations, a (13) study found that this is not always a sign of mental strain. When employees with high job demands have more freedom to make decisions, they will do an "active job," which increases job satisfaction (2).

The majority of HPWS research, however, claim that HPWS has a favourable effect on employees (11). According to these researches, HPWS provides benefits to employees in the form of enhanced communication, better pay, more meaningful work, higher skills, more secure positions, and family-friendly policies. HPWS will thereby produce highly competent, engaged, and empowered individuals who feel appreciated and experience

increased job satisfaction (9). According to these experts, a company's widespread HPWS adoption indicates a management change to the "commitment model," which aims to install desired employee attitudes and behaviours through organizational care, training, employee involvement, and forging lasting psychological ties. Therefore, it is unlikely that HPWS will result in any worsening of working conditions or increased levels of stress in the workplace.

3. Methodology of the study

The analysis's main objective is to determine how high-performance work systems affect organizational performance utilizing employee data with the intention of enhancing sensitivity and examining its usefulness. The method employs a linear regression (LR) model that seeks to minimize the square of the discrepancy between the evaluated and independently measured rotation rates. To do this, the contributions brought on by the nonlinear laser dynamics must be subtracted (16). The Earth rotation rate, the major characteristics of the Sagnac frequency, the experimental setup, and the elements of the analysis are outlined in the sections that follow.

4. Analysis

The semiconductor industry serves as the empirical context. The sampling frame included workers from 16 semiconductor companies located in six Indian cities. We employed a random sample technique to choose the firms, and the researchers administered the sampling with help from the personnel of the respective firms. The endorsement was gained from the businesses that gave us information on and access to these businesses, as suggested by (17).

A Hindi translation of an English-designed questionnaire was made. To ensure uniformity, the Hindi translation was reverse-translated and put through a pilot test. The survey was anonymous and self-administered between June 2021 and December 2021. In each firm, a locked collection box was set up for respondents to submit completed questionnaires.

To lessen any common technique bias, some procedural remedies recommended by (6) were used (CMB). First off, the survey's total anonymity and confidentiality were made apparent in the introduction letter and the instructions for the questionnaire. Second, the questionnaire's design made use of proximal separation. Demographic and other irrelevant

characteristics were used to isolate the theoretically associated variables, such as HPWS and SWB. This close proximity lessens method-induced variance and correlation (2,7). Third, in order to lessen CMB, multiple scale types and scale points (such as five- and seven-point scales) were blended. In addition to these formal corrections, post-hoc statistical tests, such Harman's single factor analysis, were carried out to find CMB.

With 383 complete questionnaires received, the response percentage was 61.17%. In order to evaluate for non-response bias, the extrapolation technique recommended by (13). Demographic factors and important theoretical concepts were compared between the early and late respondents. Since there was no discernible difference between the two groups, it was possible to conclude that the data were free of non-response bias. Table 1 presents a list of representative descriptions. It was discovered that the sample largely reflected the typical demographics of the Chinese health sector employment, which included a predominance of female, young to middle-aged, and increasingly educated workers.

4.1 Demographic profile of respondents

The Frequencies and percentages of the distributions were calculated for Gender, marital status, age, educational qualification, designation, monthly Income, and Years of experience in the organization. The most frequently observed category of Gender was Male ($n = 231$, 60.31%). The most frequently observed category of marital status was Married ($n = 277$, 72.32%). The most frequently observed category of age was 31 Year to 40 Years ($n = 146$, 38.12%). The most frequently observed category of educational qualification was Post Graduation ($n = 193$, 50.39%). The most frequently observed category of designation was non-Executives ($n = 249$, 65.01%). The most frequently observed category of monthly Income was Rs. 50001 to Rs. 100000 ($n = 152$, 39.69%). The most frequently observed category of Years of experience in the organization was 8 Years to 12 Years ($n = 123$, 32.11%). Frequencies and percentages are presented in Table 1.

Table 1

Demographic profile of respondents

Variable	Frequency	Percentage
Gender		
Male	231	60.31
Female	152	39.69

Total	383	100.00
Marital status		
Married	277	72.32
Unmarried	106	27.68
Total	383	100.00
Age		
Below 30 Years	87	22.72
31 Year to 40 Years	146	38.12
41 Years to 50 Years	111	28.98
51 Years and Above	39	10.18
Total	383	100.00
Educational qualification		
Graduation	141	36.81
Post-Graduation	193	50.39
Others	49	12.79
Total	383	100.00
Designation		
Non - Executives	249	65.01
Executives	90	23.50
Managers	44	11.49
Total	383	100.00
Monthly Income		
Below Rs. 30000	67	17.49
Rs.30001 to Rs. 50000	66	17.23
Rs. 50001 to Rs. 100000	152	39.69
Rs.100001 and above	98	25.59
Total	383	100.00
Years of experience in the organization		
3 Years	76	19.84
4 Years to 7 Years	109	28.46
8 Years to 12 Years	123	32.11
13 Years and Above	75	19.58
Total	383	100.00

4.2 Linear Regression Analysis of impact of high-performance work systems on organizational performance

To determine if high performance work systems significantly predicted organizational performance, a linear regression analysis was carried out. It turns out that high performance work systems may account for around 91.29 percent of the variation in organizational

performance, as shown by the results of a linear regression model: $F(1,381) = 3,995.78$ (p .001), R2 =.91. The presence of high-performance work systems was a significant predictor of an organization's success (B = 0.28, t(381) = 63.21, p .001). This means that the value of organizational performance may be increased by an average of 0.28 units for every one-unit improvement in high-performance work systems. The regression model outcomes are presented in Table 2.

Table 2

Results for Linear Regression with high performance work systems predicting organizational performance

Variable	*B*	*SE*	95.00% CI	β	*t*	*p*
(Intercept)	0.14	0.47	[-0.78, 1.06]	0.00	0.30	.766
high performance work systems	0.28	0.005	[0.28, 0.29]	0.96	63.21	< .001

Note. Results: $F(1,381) = 3,995.78$, $p < .001$, $R^2 = .91$

Unstandardized Regression Equation:

organizational performance = 0.14 + 0.28*high performance work systems

4.3 Variations in high-performance work systems among the Male and Female categories of Gender

A *t*-test was conducted to examine whether the mean of high-performance work systems was significantly different between the Male and Female categories of Gender. Levene's test was conducted to assess whether the variance of high-performance work systems was equal between the categories of Gender. The result of Levene's test for high performance work systems was not significant based on an alpha value of .05, $F(1, 381) = 2.63$, $p = .106$. This result suggests it is possible that the variance of high-performance work systems is equal for each category of Gender, indicating the assumption of homogeneity of variance was met. The result of the *t*-test was not significant based on an alpha value of .05, $t(381) = 1.26$, $p = .208$, indicating the null hypothesis cannot be rejected. This finding suggests the mean of high-performance work systems was not significantly different between the Male and Female categories of Gender. The results are presented in Table 3.

Table 3

High performance work systems by Gender

Variable	Male			Female			t	p	d
	M	*SD*	*n*	*M*	*SD*	*n*			
high performance work systems	101.80	26.88	231	98.18	28.47	152	1.26	.208	0.13

Note. N = 383. Degrees of Freedom for the *t*-statistic = 381. *d* represents Cohen's *d*.

4.4 Variations in high-performance work systems among the Married and Unmarried categories of marital status.

A *t*-test was conducted to examine whether the high-performance work systems were significantly different between the Married and Unmarried categories of marital status. Levene's test was conducted to assess whether the variance of high-performance work systems was equal between the categories of marital status. The result of Levene's test for high performance work systems was not significant based on an alpha value of .05, $F(1, 381) = 3.68$, $p = .056$. This result suggests it is possible that the variance of high-performance work systems is equal for each category of marital status, indicating the assumption of homogeneity of variance was met. The result of the two-tailed independent samples *t*-test was significant based on an alpha value of .05, $t(381) = -2.26$, $p = .024$, indicating the null hypothesis can be rejected. This finding suggests the high-performance work systems were significantly different between the Married and Unmarried categories of marital status. The results are presented in Table 4.

Table 4

High performance work systems by marital status

Variable	Married			Unmarried			t	p	d
	M	*SD*	*n*	*M*	*SD*	*n*			
high performance work systems	98.40	28.16	277	105.48	25.28	106	-2.26	.024	0.26

Note. N = 383. Degrees of Freedom for the *t*-statistic = 381. *d* represents Cohen's *d*.

4.5 Differences in high performance work systems by age, educational qualification, designation, monthly Income, and Years of experience in the organization

An analysis of variance (ANOVA) was conducted to determine whether there were significant differences in high performance work systems by age, educational qualification,

designation, monthly Income, and Years of experience in the organization. The ANOVA was examined based on an alpha value of .05. The results of the ANOVA were significant, $F(13, 369) = 4.72$, $p < .001$, indicating there were significant differences in high performance work systems among the levels of age, educational qualification, designation, monthly Income, and Years of experience in the organization (Table 5). The main effect, age was significant, $F(3, 369) = 4.66$, $p = .003$, $\eta_p^2 = 0.04$, indicating there were significant differences in high performance work systems by age levels. The main effect, educational qualification was significant, $F(2, 369) = 3.18$, $p = .043$, $\eta_p^2 = 0.02$, indicating there were significant differences in high performance work systems by educational qualification levels. The main effect, designation was not significant, $F(2, 369) = 1.57$, $p = .209$, indicating there were no significant differences of high performance work systems by designation levels. The main effect, monthly Income was significant, $F(3, 369) = 7.42$, $p < .001$, $\eta_p^2 = 0.06$, indicating there were significant differences in high performance work systems by monthly Income levels. The main effect, Years of experience in the organization was significant, $F(3, 369) = 5.29$, $p = .001$, $\eta_p^2 = 0.04$, indicating there were significant differences in high performance work systems by Years of experience in the organization levels. The means and standard deviations are presented in Table 6.

Table 5

High performance work systems by age, educational qualification, designation, monthly Income, and Years of experience in the organization

Term	SS	df	F	p	η_p^2
age	9,409.07	3	4.66	.003	0.04
educational qualification	4,286.15	2	3.18	.043	0.02
designation	2,117.20	2	1.57	.209	0.01
monthly Income	14,997.49	3	7.42	< .001	0.06
Years of experience in the organization	10,694.25	3	5.29	.001	0.04
Residuals	248,460.16	369			

Post-hoc

A *t*-test was calculated between each group combination to further examine the differences among the variables based on an alpha of .05. The Tukey HSD p-value adjustment was used to correct for the effect of multiple comparisons on the family-wise error rate. For

the main effect of age, the mean of high-performance work systems for Below 30 Years ($M = 108.31$, $SD = 25.86$) was significantly larger than for 41 Years to 50 Years ($M = 91.77$, $SD = 29.94$), $p < .001$. For the main effect of age, the mean of high-performance work systems for 31 Year to 40 Years ($M = 102.81$, $SD = 24.39$) was significantly larger than for 41 Years to 50 Years ($M = 91.77$, $SD = 29.94$), $p = .004$. For the main effect of monthly Income, the high-performance work systems for Below Rs. 30000 ($M = 99.09$, $SD = 31.56$) was significantly smaller than for Rs.100001 and Above ($M = 106.16$, $SD = 24.98$), $p = .030$. For the main effect of monthly Income, the high-performance work systems for Rs. 50001 to Rs. 100000 ($M = 97.84$, $SD = 27.31$) was significantly smaller than for Rs.100001 and Above ($M = 106.16$, $SD = 24.98$), $p = .010$. For the main effect of Years of experience in the organization, the mean of high performance work systems for 3 Years ($M = 111.33$, $SD = 21.75$) was significantly larger than for 13 Years and Above ($M = 95.40$, $SD = 31.10$), $p = .013$. No other significant effects were found.

5. Conclusion and implications

Considering the increased interest in the role of high-performance work systems (HPWS) in enhancing organisation's performance and the associated research, the present study was carried out to understand how much HPWS improves employee profiles and levels of engagement. In this study, 383 employees from the Indian semiconductor sector were used as a sample to look into the links between HPWS and employee profiles in terms of how they affect organisational performance. Findings of the study are indicative that profile of employees chosen for the study represents a diversity of age groups, educational levels, income levels, and experience. Using the job demands and resources model and the strategic and high-performance human resource management theory, four research objectives were examined to figure out how HPWS affects organisational performance and how HPWS acts as a bridge between organisational performance and HPWS. An important conclusion that can be drawn from the present study is that High Performance Workforce Skills (HPWS), a group of skills and traits can be developed through effective use of HPWS, which is good for both individuals and

businesses. According to the linear regression model employed in the study, all of the research objectives have been met, which suggests that HPWS can be used in the workplace as a tool to improve organisational performance, as well as employee engagement. The study implications point to extensive encouragement to use HPWS in organizations that cherish good organizational performance. Besides it is to be understood that the study implications suggest use of HPWS for employee engagement. In the context of the HPWS, it can be further implied that the organization's human resources need to be trained to work in the teams with the HPWS orientation.

6. Limitations of the study

The present study is carried out with the limited time and resource availability. The study has limitations in terms of the applicability across industries as the study is only conducted among the employees of semiconductor industries. Also, the study has considered the available literature within which the theoretical model has been developed for understanding HPWS, which may act as a limitation.

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