

High Performance Work Systems (HPWS)

Constructed & Standardized by

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Your Company's Name : _____
 Your Name : _____ Designation : _____ Age : ____ (Yrs.)
 Department : _____ Division : _____
 Highest Qualification : _____ Total Experience : _____ (Yrs.) Date : _____

INSTRUCTIONS

Most of the questions in this scale required to select one of the options as given below. You are requested to choose the one option that best matches how you feel about that question or statement: For example, if you are requested to attempt the following statement, "Our Company provides training which is linked to business strategy," and you feel that you agree, then you would select (4) the number under "Agree".

- 1 – Strongly Disagree
- 2 – Disagree
- 3 – Neutral (Neither agrees nor disagrees)
- 4 – Agree
- 5 – Strongly Agree

The responses and information you provide will be kept strictly confidential.

Scoring Table

Raw Score Total	Z-Score	Grade	Level of HPWS

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Email : vivekaprc@rediffmail.com, www.aprc.co.

Sr. No.	Statements	Response
1.	We use state of the art selection tools (skill test, aptitude test, mental/cognitive ability test etc.) for strategic job families.	
2.	Our company's recruiting efforts are particularly strong for strategic job families.	
3.	We recruit star performers from within our company for strategic jobs.	
4.	Our company has processes to identify and place high performers in strategic jobs.	
5.	Our company provides extensive training (breadth/width of training) to employees to develop firm specific skills and knowledge.	
6.	Our company provides extensive training (breadth/width of training) to employees to develop general skills and knowledge.	
7.	Our company regularly offers comprehensive training programs that are linked to strategic initiatives.	
8.	We emphasize that managers (supervisors) review employee performance in light of the core vision, mission, values and strategies of our company for employees at all levels.	
9.	Our performance management system is based on goal setting where individual goals are linked to organizational goals.	
10.	Managers provide developmental feedback to employees during performance appraisal.	
11.	We encourage subordinates to mention their problems (e.g. lack of training) during performance appraisal.	
12.	We have more than one sources of getting performance feedback (from seniors, peers, subordinates and customers) for self development.	
13.	The compensation structure of our company is amongst the best in the industry.	
14.	Our company offers a competitive benefits package to us.	
15.	Our pay package is higher than our competitors.	

Sr. No.	Statements	Response
16.	In our company, the pay is linked to individual performance.	
17.	In our company employee pay represents the level of skill and knowledge they possess.	
18.	Our compensation package includes an extensive benefits package.	
19.	I have opportunities to take up other assignments at regular intervals to get exposure to new jobs.	
20.	I have opportunities to enhance my multiple skills through job rotation.	
21.	My seniors and I have prepared and implemented systematic job rotation plan for me in order to place me in the right job.	
22.	My company allows me to carry out a range of challenging and meaningful tasks in addition to my stated job responsibilities.	
23.	In our company, people who are engaged in innovation activities have a broad knowledge beyond their own domain which is developed through training and development.	
24.	People in our company, those who are engaged in innovation activities are well respected inside the organization.	
25.	In our company, people who are engaged in innovation activities have a strong internal network.	
26.	In our company, people of diverse backgrounds are involved in innovation activities.	
27.	Our company is faster than our competitors in generating promising innovative ideas that bring to us sustainable competitive advantage.	
28.	In our company majority of innovations lead to development of new technologies.	
29.	In our company most of the innovations are differentiated and patented.	
30.	My work place is designed in such a way that I am inspired to carryout innovation for products, processes and services.	

Sr. No.	Statements	Response
31.	My Job/work (task and activities) are designed in such a way that I am inspired to innovate products and processes.	
32.	I am encouraged to use my creativity and I have freedom to innovate product and processes.	
33.	I am provided adequate tools and other resources to innovate products and processes.	
34.	I am provided enough opportunity for training & learning to develop required knowledge and skills to innovate products and processes.	
35.	I am empowered to take decisions related to change in products and processes.	
36.	My seniors develop positive perspective in me about creativity and innovation.	
37.	I am allowed to do experimentation and take risk to innovate products and processes.	
38.	I am involved in decision making process for developing new products and improve processes.	
39.	I am allowed to acquire and share required knowledge to innovate products and processes.	
40.	My ambition for innovation is supported by my seniors.	
41.	I have enough autonomy to take risks and my job is secured against risk taking behavior.	
42.	I am encouraged to take initiatives to do innovation in products and processes.	
43.	I am treated an equal and respected irrespective of hierarchy when it comes to innovation activities carried out by me.	
44.	I am trusted and allowed to collaborate with others for innovation activities for products and processes.	
		Thanks

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INSTRUCTIONS

इस स्केल में आपको कई विकल्पों में से एक का चयन करने हेतु प्रस्तुत किए गए हैं। आपसे अनुरोध है कि आप उस प्रश्न या कथन के बारे में अपनी राय एक विकल्प को चुनकर दें। उदाहरण के लिए, जैसे आपसे इस कथन का प्रयास करने का अनुरोध किया जाता है : "हमारी कंपनी प्रशिक्षण प्रदान करती है जो व्यापार रणनीति से जुड़ा हुआ है," और आपको लगता है कि आप 'सहमत' हैं, तो आप इस तरह "सहमत" के लिए संख्या (4) का चयन करेंगे।

- 1 – पूर्णतः असहमत
- 2 – असहमत
- 3 – तटस्थ (न तो इस बात से सहमत है और न ही असहमत)
- 4 – सहमत
- 5 – पूर्णतः सहमत

आपके द्वारा दी गयी सूचना पूर्णरूपेण गोपनीय है।

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1.	हम रणनीतिक कार्यों के लिए अत्याधुनिक चयन उपकरण (कौशल परीक्षण, योग्यता परीक्षण, मानसिक (संज्ञानात्मक क्षमता परीक्षण आदि) का उपयोग करते हैं।	
2.	हमारी कंपनी की भर्ती के प्रयास रणनीतिक नौकरियों के लिए विशेष रूप से कठोर हैं।	
3.	हम रणनीतिक नौकरियों के लिए हमारी कंपनी के भीतर से स्टार परफोर्मर की भर्ती करते हैं।	
4.	हमारी कंपनी की रणनीतिक नौकरियों में उच्च प्रदर्शन करने वालों को पहचानने और जगह देने की प्रक्रिया है।	
5.	हमारी कंपनी कर्मचारियों को विशिष्ट कौशल और ज्ञान विकसित करने के लिए व्यापक प्रशिक्षण प्रदान करती है।	
6.	हमारी कंपनी कर्मचारियों को सामान्य कौशल और ज्ञान विकसित करने के लिए व्यापक प्रशिक्षण (प्रशिक्षण की चौड़ाई) प्रदान करती है।	
7.	हमारी कंपनी नियमित रूप से व्यापक प्रशिक्षण कार्यक्रम प्रदान करती है जो रणनीतिक अवसरों से जुड़ी हुई हैं।	
8.	हम इस बात पर जोर देते हैं कि प्रबंधक (पर्यवेक्षक) सभी स्तरों पर कर्मचारियों के लिए हमारी कंपनी के मूल परिकल्पनाओं, मिशन, मूल्यों और रणनीतियों के दायरे में कर्मचारी के प्रदर्शन की समीक्षा करते हैं।	
9.	हमारी प्रदर्शन प्रबंधन प्रणाली लक्ष्य निर्धारण पर आधारित होती है जहाँ व्यक्तिगत लक्ष्य संगठनात्मक लक्ष्यों से जुड़े होते हैं।	
10.	प्रबंधक प्रदर्शन मूल्यांकन के दौरान कर्मचारियों को विकासात्मक प्रतिक्रिया प्रदान करते हैं।	
11.	हम अधीनस्थों को प्रदर्शन मूल्यांकन के दौरान उनकी समस्याओं (उदाहरण : प्रशिक्षण की कमी) का उल्लेख करने के लिए प्रोत्साहित करते हैं।	
12.	हमारे पास स्वयं के विकास के लिए प्रदर्शन फीड बैक (वरिष्ठों, साथियों, अधीनस्थों और ग्राहकों से) प्राप्त करने के एक से अधिक श्रोत हैं।	
13.	हमारी कंपनी की परितोषिक संरचना उद्योग में सर्वश्रेष्ठ है।	
14.	हमारी कंपनी हमें एक प्रतिस्पर्धी भत्ता पैकेज प्रदान करती है।	
15.	हमारे प्रतियोगियों की तुलना में हमारा वेतन पैकेज अधिक है।	

क्र. सं.	कथन	प्रतिक्रिया
16.	हमारी कंपनी में, वेतन व्यक्तिगत प्रदर्शन से जुड़ा हुआ है।	
17.	हमारी कंपनी के कर्मचारी वेतन में उनके पास मौजूद कौशल और ज्ञान के स्तर का प्रतिनिधित्व करते हैं।	
18.	हमारे मुआवजे के पैकेज में एक व्यापक भत्ता पैकेज शामिल है।	
19.	मेरे पास नए कार्यों के लिए एक्सपोजर प्राप्त करने नियमित अंतराल पर अन्य नियत-कार्य लेने का अवसर है।	
20.	मेरे पास नौकरी के रोटेशन के माध्यम से अपने कई कौशल बढ़ाने का अवसर है।	
21.	मेरे वरिष्ठों और मेरे द्वारा व्यवस्थित नौकरी रोटेशन योजना तैयार और कार्यान्वित की है।	
22.	मेरी कंपनी मुझे अपनी जॉब की जिम्मेदारियों के अलावा चुनौतीपूर्ण और सार्थक कार्यों की एक शृंखला को पूरा करने की अनुमति देती है।	
23.	हमारी कंपनी में, जो लोग नई खोज गतिविधियों में संलग्न हैं, उनके पास अपने स्वयं के अधिकार क्षेत्र से परे एक व्यापक ज्ञान है जिसे प्रशिक्षण और विकास के माध्यम से विकसित किया गया है।	
24.	हमारी कंपनी के लोग, जो नई खोज गतिविधियों में संलग्न हैं, संगठन के अंदर वे अच्छी तरह से सम्मानित हैं।	
25.	हमारी कंपनी में, जो लोग नई खोज गतिविधियों में संलग्न हैं, उनके पास एक मजबूत आंतरिक नेटवर्क है।	
26.	हमारी कंपनी में, विविध पृष्ठभूमि के लोग नई खोज गतिविधियों में शामिल हैं।	
27.	होनहार नवीन विचारों को उत्पन्न करने में हमारी कंपनी हमारे प्रतिद्वंद्वियों की तुलना में तेज है जो हमें स्थायी प्रतिस्पर्धात्मक लाभ प्रदान करते हैं।	
28.	हमारी कंपनी की अधिकांश नई खोजों से नई तकनीकों का विकास होता है।	
29.	हमारी कंपनी में अधिकांश नई खोज अलग और पेटेंट हैं।	
30.	मेरा कार्य स्थल इस तरह से डिजाइन किया गया है कि मैं उत्पादों, प्रक्रियाओं और सेवाओं के लिए नवरीति करने के लिए प्रेरित हूँ।	

क्र. सं.	कथन	प्रतिक्रिया
31.	मेरा जॉब/कार्य (कार्य विधियाँ) इस तरह से डिजाइन किए गए हैं कि मैं उत्पादों और प्रक्रियाओं में नया करने के लिए प्रेरित हूँ।	
32.	मुझे अपनी रचनात्मकता का उपयोग करने के लिए प्रोत्साहित किया जाता है और मुझे उत्पाद और प्रक्रियाओं में नया करने की स्वतंत्रता है।	
33.	मुझे उत्पादों और प्रक्रियाओं में नया करने के लिए पर्याप्त साधन और अन्य संसाधन प्रदान किए जाते हैं।	
34.	मुझे उत्पादों और प्रक्रियाओं में नया करने के लिए आवश्यक ज्ञान और कौशल विकसित करने के लिए प्रशिक्षण और सीखने के लिए पर्याप्त अवसर प्रदान किए जाते हैं।	
35.	मुझे उत्पादों और प्रक्रियाओं में बदलाव से संबंधित निर्णय लेने का अधिकार है।	
36.	मेरे सीनियर्स रचनात्मकता और नई खोज के बारे में मुझमें सकारात्मक दृष्टिकोण विकसित करते हैं।	
37.	मुझे प्रयोग करने एवं उत्पादों और प्रक्रियाओं में नया करने के लिए जोखिम लेने की अनुमति है।	
38.	मैं नए उत्पादों को विकसित करने और प्रक्रियाओं में सुधार के लिए निर्णय लेने की कार्यविधि में शामिल हूँ।	
39.	मुझे उत्पादों और प्रक्रियाओं में नया करने के लिए आवश्यक ज्ञान प्राप्त करने और साझा करने की अनुमति है।	
40.	नई खोज के लिए मेरी महत्वाकांक्षा मेरे वरिष्ठों द्वारा समर्थित है।	
41.	मेरे पास जोखिम लेने के लिए पर्याप्त स्वायत्तता है और मेरी नौकरी जोखिम लेने वाले व्यवहार के खिलाफ सुरक्षित है।	
42.	मुझे उत्पादों और प्रक्रियाओं में नई खोज करने के लिए पहल करने के लिए प्रोत्साहित किया जाता है।	
43.	जब मेरे द्वारा की गई नई गतिविधियों की बात आती है, तो मुझे पदानुक्रम के निरपेक्ष और सम्मानित माना जाता है।	
44.	मुझ पर उत्पादों और प्रक्रियाओं के लिए नई गतिविधियों के लिए दूसरों के साथ सहयोग करने में भरोसा किया जाता है।	

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Abstract

Title of the Instrument	: HPWS
Purpose	: To measure level of HPWS.
Authors & Affiliation	: Mehta, N., Khan, S.M. & Pestonjee, D.M. Department of Psychology, A.M.U. Aligarh – 202002.
Languages	: English & Hindi
Main features	: Total 44 items on a 5-point Likert scale with value anchored (1=Strongly disagree and 5=Strongly Agree).
Reliability – Internal Consistency	: Cronbach’s alpha = .94
– Composite Reliability	: 0.66 to 0.86
Validity – Factorial	: 53.93%
– Construct	: 5.12 to 12.01% of dimensions
– Convergent	: Acceptable range
Dimensions	: Innovation Practices, Compensation, Recruitment Process, Training, Autonomy, Multi-tasking, Performance Appraisal and Diversity Management.
Time	: 20 minutes.
Norms	: Available in the manual which may be obtained from the publisher.
Uses	: Measurement of HPWS. It may be used for research and intervention based on general population.

(3)
MANUAL
For
High Performance Work Systems (HPWS)

Introduction

Organizations are always looking for a way to gain competitive advantage in their markets and a High Performance Work Systems (HPWS) is one of the ways to achieve this advantage. If an organization can design, implement and change their architecture quickly to react to internal and external environments, they will create a successful business environment, which is difficult to copy. In addition, an HPWS can provide an organization a way to create “higher productivity, lower costs, and better responsiveness to customers, greater flexibility and higher profitability” (Bohlander & Snell, 2004).

In the field of strategic human resource management (SHRM), researchers have examined the potential benefits of using High-Performance Work Systems (HPWS) as a means to maximize firms’ competitive advantage (A. Huselid M. (1995); A.Huselid, Brian, & Mark (1998); Bae & Lawler (2000)). One of the fundamental principles of strategic human resource management (HRM) research is that the impact of human resources (HR) practices on individual and organizations is best understood by examining the bundle, configuration, or system of HR practices in place. The rationale for this perspective is fairly straightforward. Considering that HR practices are rarely, if ever, used in isolation, failure to consider all of the HR practices that are in use neglects potential important explanatory value of unmeasured HR practices.

High Performance Work Systems (HPWS) is a combination of various HR systems, policies and practices. Hsu, Chu-Chun (2005, 2005) said that managers in worse performing firms should take the opportunity to examine their job infrastructure design and introduce HPWS practices as a turn-around strategic action in enhancing performances.

Lepak, Liao, Chung, & Harden (2006) stated that a distinguishing feature of strategic human resource management research is an emphasis on human resource system, rather than individual HR practices as a driver of individual and organizational performance. One of the fundamental principles of strategic human resource management research is that the impact of human resources on individuals as well as organizations is best understood by examining the bundle, configuration or system of HR practices in place.

The relationship between HPWS and firm performance is another controversial issue. Two primary perspectives describe this relationship. The universal or “best practices” perspective advocates a direct relationship between HPWS and firm performance (Youndt, A, Snell, A, W, & Lepak, 1996). All firms who adopt these bundles of HR practices will perform better than those who do not. The contingency perspective asserts that the relationship between HPWS and firm performance is influenced by other contingency variables (Youndt et al, 1996). From Youndt’s point of view, these two perspectives appear not to be competing but to be complementary. Many scholars in the HRM area have tested the HPWS-firm performance relationship to try to clarify the debate, but still have

not arrived at a consensus (Arthur, 1994; Huselid, 1995; Ichniowski, Shaw, & Prensushi, 1997; Jackson and Schuler, 1995; MacDuffie, 1995; Milgrom and Roberts, 1995; Pfeffer, 1994; Datta et al., 2005).

Beltrán-Martín, Roca-Puig, Escrig-Tena, & Bou-Llusarsaid that much of the human resource management literature has demonstrated the impact of high performance work systems (HPWS) on organizational performance. A new generation of studies is emerging in this literature that recommends the inclusion of mediating variables between HPWS and organizational performance. The increasing rate of dynamism in competitive environments suggests that measures of employee adaptability should be included as a mechanism that may explain the relevance of HPWS to firm competitiveness. On a sample of 226 Spanish firms, the study's results confirm that HPWS influences performance through its impact on the firm's human resource (HR) flexibility.

Heffernan & Dundon (2012) explored the relationship between organizational-level High Performance Work Systems (HPWS) and individual employee-level behaviors. Data was collected from 188 employees in three companies in the Republic of Ireland (RoI). The findings show that employees in organizations with a high investment in HPWS report lower job satisfaction, affective commitment and higher perceptions of job pressure than those in organizations with a medium or low investment in HPWS. Using cross-level analyses, perceptions of relational distributive and relational procedural justice were found to mediate the relationship between HPWS and employee outcomes of job satisfaction and affective commitment. Interactional justice and relational procedural justice partially mediated the relationship between organizational-level HPWS and employee work pressure. By using justice theory, the research contributes to the body of knowledge concerning the causal processes between HR practice and performance outcomes.

Harley, Allen, & Sargent (2007) found that in spite of the growing body of research on high performance work systems (HPWS), there is little evidence on their application in the service sector. It is commonly argued, however, that occupational segmentation in services is a barrier to HPWS. Analysis of data from aged-care workers indicates that: HPWS have positive outcomes for workers; highly skilled nurses are no more likely than lowly skilled personal care workers to be subject to HPWS; and in some cases, HPWS are associated with more positive outcomes for low-skilled than high-skilled workers. These findings suggest that HPWS may well be widely applicable in service settings.

John E. Delery (1998) noted that "The basic assumption is that the effectiveness of any practice depends on the other practices in place. If all the practices fit in to coherent system, the effect of that system on performance should be greater than the sum of individual effects from each practice alone". There exists multiple conceptualization of following strategic HR systems amongst many other;

- High performance work system (HPWS)
- Human capital enhancing HR systems
- Commitment HR system
- High involvement HR system

After all, designing work so employees achieve a sense of task identity and task significant and are provided with skills variety, autonomy and feedback stimulate motivation and by extension, job satisfaction (Hodgetts and Hegar, 2005).

Development of the Scale

Mehta, Pestonjee & Khan (2015, 2017, 2018) developed Strategic Talent Management Practices (STMp) scale, Job Design Scale and Innovation Scale. To integrate these domains the motivation was to develop High Performance Work System scale. The High Performance Work System is an organizational architecture that brings together work, people, technology and information in a manner that optimizes the congruence of fit among them in order to produce high performance in terms of the effective response to customer requirements and other environmental demands and opportunities (Nadler, DAgerstein, M.S, Shaw, & R.B.C, 1992).

First Draft of the Scale& Item Analysis

In the first phase, a pool of 86 items keeping in consideration the operational definition of proposed construct was prepared with Likert type, 5-point scale, viz. **Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree**. This scale was administered on a representative sample of 300 male employees working in industrial/organizational sector in India who were above 25 years in age.

After scoring the scale, the sheets were arranged in the order of highest scoring to lowest scoring. From this order, two groups, one of 27% from highest scoring and other of 27% from the lowest scoring were selected. In these two groups inter-correlation matrix was examined in order to overcome existence of multicollinearity and singularity in the scale. In addition to inter-correlation matrix, 'Determinant' of the R-matrix was estimated and it was greater than 0.00001, which is pre-requisite. Sampling adequacy through Kaiser-Meyer-Olkin (KMO) test was also carried out and found to be greater than 0.50. On this basis 42 items having multicollinearity and singularity were rejected and the final draft of the scale had 44 items distributed across eight dimensions emerged through Exploratory Factor analysis.

Instructions for Administration

Instructions for administration have been printed on the cover of the scale. The scale can be administered on an individual or on a group (preferably not more than 30 at a time) on adult male population.

Standardization of the Scale

The **HPWS** has been standardized on 725 participants selected from fourteen industries/organization situated in Gujarat and Madhya Pradesh states of India. Their age varied from 25 to 62 with mean age 35.40 years. Working experience varied from 1 to 31 years with mean 9.60 years. In qualification they were ITI, Diploma in Engineering, Graduate and Postgraduates in Engineering. The demographic characteristic of the employees participated in the standardization of scale are shown in Table-1.

Table-1 : Demographic characteristics of Participants.

Demographic Characteristics	Sub-Characteristics	No. of Subjects	Percent
Age (Years)	Below 35	502	69.2
	35 & above	223	30.8
Working Experience (Years)	Below 10	454	62.6
	10 & above	271	37.4
Qualification	Technical	564	77.8
	Non Technical	161	22.0

The distribution of items in respective dimensions is given in Table 2.

Table-2 : High Performance Work Systems dimensions and No. of items.

No.	Dimensions	Items	Total No. of items
X1	Innovation Practices	S36, S38, S41, S43, S37, S42, S35, S39, S40, S34, S44	11
X2	Compensation	S15, S14, S16, S18, S17	5
X3	Recruitment Process	S3, S1, S4, S5, S2	5
X4	Training	S6, S7, S8, S33	4
X5	Autonomy	S28, S29, S30, S32	4
X6	Multi-tasking	S20, S19, S21, S22, S23	5
X7	Performance Appraisal	S11, S12, S10, S9, S13	5
X8	Diversity Management	S26, S27, S25, S31, S24	5
Total Items			44

Operational Definitions

High Performance Work System (HPWS)

A high performance work system (HPWS) is a set of independent but interrelated human resources (HR) practices, such as selection, training, performance evaluation, compensation etc., designed to improve employee efficiency.

Innovation Practices

Innovation is an idea which is replicable at an economical cost and must satisfy a specific need. Innovation involves deliberate application of information, imagination and initiative in deriving greater

or different values from resources, and includes all processes by which new ideas are generated and converted into useful products.

Compensation

A strategic plan for employee compensation determines how much a company wants to pay employees and what type of employees it wants to attract. The compensation plan entails a variety of aspects including pay scales, reward programs, benefits packages and company perks.

Recruitment Process

It is the search, selection and recruitment of those talent/people whose competencies have the biggest impact on enhancing critical internal processes of organizations.

Training

It is the process of imparting knowledge & skills and reforming attitude/behaviour of employees to improve efficiency, effectiveness and innovativeness.

Autonomy

A degree or level of freedom and discretion allowed to an employee over his or her job. As a general rule, jobs with high degree of autonomy endanger a sense of responsibility and greater job satisfaction in the employees.

Multi-tasking

It is an apparent human ability to perform more than one task, or activity, at the same time. If one becomes proficient at two tasks it is possible to rapidly shift attention between the tasks and perform the tasks well/proficiently.

Performance Appraisal

Performance appraisal is a strategic and integrated approach to delivering sustained success to organizations by assessing the performance of the employees through consistent feedback, training, coaching and mentoring.

Diversity Management

Diversity management is a process intended to create and maintain a positive work environment where the similarities and differences of individuals are valued, so that all can reach their potential and maximize their contributions to an organization's strategic goals and objectives.

It is a paper pencil type scale which can also be converted in to computerized format to enable online testing, scoring and evaluation.

Scoring System

Table-3 : Scoring System

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

The test sheets were scored as per scoring system given in table 3. The responses of the corresponding items were added to generate HPWS dimension scores and summing-up all 44 items to generate overall HPWS score. Thus, the minimum possible score will be 44 and the maximum 220. Higher the score indicates high level of agreement with the HPWS facet and lower the score indicates low degree of disagreement.

Reliability

The considerations of reliability and validity typically are viewed as essential elements for determining the quality of any standardized test. However, professional and practitioner associations frequently have placed these concerns within broader contexts when developing standards and making overall judgments about the quality of any standardized test as a whole within a given context. For establishing the internal consistency reliability: Cronbach's alpha is estimated and is shown in Table 4a & 4b.

Table-4a : Descriptive Statistics of items, scale and Alpha

Item No.	Descriptive Statistics for Items				Descriptive Statistics for Scale			
	Range	Mean	SD	Var	Scale Mean if item deleted	Scale Variance if Item Deleted	*Item total correlation	Alpha if item deleted
S1	4	3.66	.685	0.469	146.19	409.703	.400	.936
S2	4	3.29	.902	0.814	146.56	404.830	.431	.936
S3	4	3.49	.834	0.696	146.36	403.706	.504	.936
S4	4	3.41	.847	0.717	146.44	405.382	.445	.936
S5	4	3.45	.832	0.692	146.40	402.720	.535	.935
S6	4	3.54	1.059	1.121	146.31	398.149	.521	.936
S7	4	3.56	1.020	1.040	146.29	398.425	.536	.935
S8	4	3.43	.966	0.933	146.41	399.724	.534	.935
S9	4	3.49	.887	0.787	146.36	401.849	.524	.936
S10	4	3.71	.918	0.843	146.14	402.377	.490	.936
S11	4	3.55	.932	0.869	146.30	401.609	.503	.936

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S12	4	3.60	.924	0.854	146.25	404.947	.416	.936
S13	4	3.33	.995	0.990	146.52	400.198	.505	.936
S14	4	3.17	1.028	1.057	146.68	401.569	.453	.936
S15	4	3.11	.932	0.869	146.73	402.041	.491	.936
S16	4	2.77	.930	0.865	147.08	403.586	.450	.936
S17	4	3.17	1.003	1.006	146.68	400.095	.503	.936
S18	4	2.99	.900	0.810	146.86	404.273	.448	.936
S19	4	3.41	.909	0.826	146.44	404.799	.428	.936
S20	4	3.34	1.005	1.010	146.51	403.397	.418	.936
S21	4	3.02	.987	0.974	146.83	402.911	.439	.936
S22	4	3.62	.858	0.736	146.23	403.345	.499	.936
S23	4	3.78	.742	0.551	146.06	407.242	.450	.936
S24	4	3.43	.884	0.781	146.42	403.976	.465	.936
S25	4	3.63	.768	0.590	146.22	405.909	.477	.936
S26	4	3.42	.868	0.753	146.43	403.638	.484	.936
S27	4	3.57	.819	0.671	146.28	406.801	.418	.936
S28	4	3.29	.927	0.859	146.56	402.219	.490	.936
S29	4	3.39	.891	0.794	146.46	399.436	.591	.935
S30	4	3.53	.906	0.821	146.32	400.097	.561	.935
S31	4	3.35	.804	0.646	146.50	404.480	.499	.936
S32	4	3.26	.894	0.799	146.59	400.306	.564	.935
S33	4	3.27	.959	0.920	146.57	396.938	.613	.935
S34	4	3.22	.975	0.951	146.62	403.387	.432	.936
S35	4	3.62	.865	0.748	146.23	402.218	.528	.935
S36	4	3.41	.919	0.845	146.44	401.735	.507	.936
S37	4	3.37	.907	0.823	146.48	403.040	.478	.936
S38	4	3.47	.843	0.711	146.38	402.783	.526	.936
S39	4	3.62	.837	0.701	146.23	402.152	.549	.935
S40	4	3.27	.880	0.774	146.58	405.893	.412	.936
S41	4	3.46	.809	0.654	146.39	402.341	.563	.935
S42	4	3.46	.783	0.613	146.39	405.347	.486	.936
S43	4	3.59	.773	0.598	146.25	406.833	.444	.936
S44	4	3.35	.930	0.865	146.50	402.604	.477	.936

* $r=.08$ ($p<.05$); $.10$ ($p<.01$)

Table-4b : Descriptive statistics of scale and Reliability (Cronbach's Alpha)

Statistics for Scale	Mean	Variance	Std. Deviation	Alpha Coefficient	N of Items
	149.85	421.275	20.525	0.94	44

One of the most commonly used reliability coefficient i.e. Cronbach's Alpha was calculated and was 0.94, significant at 0.001 levels. The internal consistency of the scale is quite high and this gives a support that the scale is highly reliable. Inter-correlations among dimensions of the scale are given in Table 5.

Table-5 : Descriptive statistics and inter-correlation among HPWS dimensions.

Dimensions	Descriptive Stats					Correlations*									
	Range	Mean	SD	var	a	X1	X2	X3	X4	X5	X6	X7	X8	HPWS	
F1	38	38.09	6.01	36.08	0.86	1									
F2	20	15.21	3.59	12.87	0.80	.39	1								
F3	18	17.29	2.94	8.62	0.76	.47	.44	1							
F4	16	13.80	3.28	10.75	0.84	.45	.43	.50	1						
F5	16	13.46	2.75	7.59	0.76	.65	.44	.44	.50	1					
F6	20	17.18	3.18	10.13	0.75	.49	.39	.43	.41	.44	1				
F7	19	17.69	3.29	10.83	0.75	.49	.47	.54	.53	.48	.42	1			
F8	18	17.39	2.77	7.66	0.70	.59	.44	.50	.47	.54	.44	.51	1		
HPWS	127	150.11	20.55	422.11	0.94	.82	.68	.72	.72	.76	.68	.75	.76	1	

* $r = .08$ ($p < .05$); $.10$ ($p < .01$)

Validity

Content (Face and logical) validity of the scale was verified by number of experts, academicians and professionals. Good correspondence was found to exist between the scale results and the considered judgments of experienced observers.

There are various methods to establish construct validity of the tool. Hence, quite a few of them are having limitations as role of time and existence of subjectivity in experts' ratings. To overcome these limitations, Exploratory Factor analysis with Varimax rotation was used to establish the construct validity of the tool. Data screening was carried out in order to overcome existence of multicollinearity (i.e. items that are highly correlated) and singularity (i.e. items that are perfectly correlated) in the scale.

Table-6 : Factorial Validity : Factor loadings, percent of variance and cumulative percent of variance for each dimension.

Items	Factors and loadings							
	F1	F2	F3	F4	F5	F6	F7	F8
S36	.690							
S38	.690							
S41	.672							
S43	.668							
S37	.661							
S42	.634	Innovation Practices						
S35	.585							
S39	.555							
S40	.528							
S34	.513							
S44	.400							
S15		.772						
S14		.767						
S16		.742	Compensation					
S18		.573						
S17		.542						
S3			.725					
S1			.633					
S4			.629	Recruitment Process				
S5			.619					
S2			.519					
S6				.824				
S7				.790	Training			
S8				.721				
S33				.477				
S28					.659			
S29					.645	Autonomy		
S30					.524			

Items	Factors and loadings							
	F1	F2	F3	F4	F5	F6	F7	F8
S32					.508			
S20						.790		
S19						.734		
S21				Multi-tasking		.640		
S22						.488		
S23						.392		
S11							.741	
S12							.645	
S10				Performance Appraisal			.585	
S9							.572	
S13							.413	
S26								.657
S27								.554
S25				Diversity Management				.535
S31								.451
S24								.434
Percent of Variance	12.01	6.88	6.36	6.06	5.95	5.79	5.76	5.12
Cum. Variance	12.01	18.89	25.25	31.31	37.26	43.06	48.81	53.93
Ave. Var. Extracted	0.37	0.47	0.39	0.51	0.35	0.39	0.36	0.28
Composite Reliability	0.86	0.81	0.76	0.80	0.68	0.75	0.73	0.66

Using a more structured method, confirmatory factor analyses presents evidence of the measures' convergent and discriminant validity. Eight factors emerged and confirmed in the factor analysis. The percent of variance accounted by factors varies from 5.12 to 12.01%. In summing up all the six factors explained 53.93% of the total variance. The factorial validity of the scale is highly satisfactory.

Composite Reliability

Composite reliability is a measure of internal consistency in scale items, much like Cronbach's alpha (Netemeyer, 2003) used to ascertain construct reliability. It can be thought of as being equal to the total amount of true score variance in relation to the total score variance (Brunner & Süß, 2005). Composite reliability of the scale was calculated using the following formula.

$$\text{Composite Reliability} = \frac{(\sum_{i=1}^n \lambda)^2}{((\sum_{i=1}^n \lambda)^2 + (\sum_{i=1}^n \delta))}$$

Where, λ is the value of factor loading for respective item and δ is the error variance. The values of composite reliabilities for factors are varying from 0.66 to 0.86 and are given in table-6. To be in acceptable range the value of composite reliability needs to be around 0.70.

Norms

Standard (z – Score)

The standard score (more commonly referred to as z-score) is a very useful statistic, as it enables us to compare two scores that are from normal distribution. Standard (z-scores) scores can be calculated using the descriptive statistics (Mean=149.85, SD=20.53 with N=725) as given in Table 5 and following formula :

$$Z = \frac{(X - \mu)}{\sigma}$$

Where; X is the raw score of *HPWS*, μ is the mean and σ is the standard deviation.

On the basis of descriptive statistics z-score norms have been prepared which are valid for adult male population only. The same have been given in Table-7.

Table-7 : Z-Score Norms for *HPWS*.

Mean = 149.85		SD = 20.53		N=725			
RAW Score	z-Score	RAW Score	z-Score	RAW Score	z-Score	RAW Score	z-Score
88	- 3.013	120	- 1.454	152	0.105	184	1.663
89	- 2.964	121	- 1.405	153	0.153	185	1.712
90	- 2.915	122	- 1.357	154	0.202	186	1.761
91	- 2.867	123	- 1.308	155	0.251	187	1.810
92	- 2.818	124	- 1.259	156	0.300	188	1.858
93	- 2.769	125	- 1.210	157	0.348	189	1.907
94	- 2.720	126	- 1.162	158	0.397	190	1.956
95	- 2.672	127	- 1.113	159	0.446	191	2.004
96	- 2.623	128	- 1.064	160	0.494	192	2.053
97	- 2.574	129	- 1.016	161	0.543	193	2.102
98	- 2.526	130	- 0.967	162	0.592	194	2.151
99	- 2.477	131	- 0.918	163	0.641	195	2.199
100	- 2.428	132	- 0.869	164	0.689	196	2.248
101	- 2.379	133	- 0.821	165	0.738	197	2.297

Contd....

102	- 2.331	134	- 0.772	166	0.787	198	2.345
103	- 2.282	135	- 0.723	167	0.835	199	2.394
104	- 2.233	136	- 0.675	168	0.884	200	2.443
105	- 2.185	137	- 0.626	169	0.933	201	2.491
106	- 2.136	138	- 0.577	170	0.981	202	2.540
107	- 2.087	139	- 0.528	171	1.030	203	2.589
108	- 2.038	140	- 0.480	172	1.079	204	2.638
109	- 1.990	141	- 0.431	173	1.128	205	2.686
110	- 1.941	142	- 0.382	174	1.176	206	2.735
111	- 1.892	143	- 0.334	175	1.225	207	2.784
112	- 1.844	144	- 0.285	176	1.274	208	2.832
113	- 1.795	145	- 0.236	177	1.322	209	2.881
114	- 1.746	146	- 0.188	178	1.371	210	2.930
115	- 1.698	147	- 0.139	179	1.420	211	2.979
116	- 1.649	148	- 0.090	180	1.469	212	3.027
117	- 1.600	149	- 0.041	181	1.517		
118	- 1.551	150	0.007	182	1.566		
119	- 1.503	151	0.056	183	1.615		

Interpretation of the level of the *HPWS* may be seen in Table-8.

Table-8 : Z-Score Norms and interpretation of the *HPWS* (N=725)

S.No.	Range of Z Scores	Grade	Level of <i>HPWS</i>
1	+2.01 and Above	A	Extremely High (Positive)
2	+1.26 to +2.00	B	High (Positive)
3	+0.51 to +1.25	C	Above Average (Positive)
4	- 0.50 to +0.50	D	Average/Moderate (Neutral)
5	- 1.25 to - 0.51	E	Below Average (Negative)
6	- 2.00 to - 1.26	F	Low (Negative)
7	- 2.01 and Below	G	Extremely Low (Negative)

Uses

1. *HPWS* can be used for self analysis, individual counseling for organizational and human resource training and development. An institution can examine their employees' work-

- performance scores and plan intervention to enhance and uphold organizational strategy for high performance work system.
2. In counseling work, after examining the scores of counselee on HPWS and its sub-domains the counselor can help the employee's to get an idea about an area of poor performance in order to overcome on it for improvement.
 3. The instrument can also be used in organizational development practices and consulting work to obtain employee's HPWS profile; to identify factors to develop individual development strategies to increase productivity.

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