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Underload in Organizational Roles: Development and Validation of Framework for Measurement

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Revalidation of Pareek's Organizational Role Stress (ORS) framework identified Role Underload (RU) caused by lack of utilization of competent and willing employees. Srivastav's new ORS framework included a RU Scale but it measured RU consistently higher. This necessitated improvements in RU measurement. Conceptualization of RU, development of improved RU scale, and establishing its reliability and validity have been reported. Improved RU scale was tested on 73 respondents in a business school. Reliability of the scale was assessed and improved by computation of Cronbach's alpha, Corrected Item-Total Correlation, Item-Deleted Cronbach's alpha, and pruning of weak items. Improved RU scale demonstrated satisfactory internal consistency reliability. Validity of improved RU scale was confirmed by exploratory factor analysis. The new RU scale can be used to identify underloaded roles for enhancing their effectiveness.

Keywords: Organizational Roles, Role Effectiveness, Role Stress, Measurement Scale, Role Underload.

Organizations are networks of interconnected roles (Pareek, 1993). Study of human behavior in organizations is incomplete unless it is done at the level of organizational roles. Organizational role is defined by the expectations held not only by the occupant of the role but also by all the significant persons connected with that role. Problems encountered by the role occupant during the course of role performance give rise to stress. Stress in organizational roles was first reported by Kahn, Wolfe, Quinn, Snoek and Rosenthal (1964), identifying three role stressors – Role Conflict, Role Ambiguity and Role Overload. Measurement scales for role conflict and role ambiguity were developed by Rizzo, House, and Lirtzman (1970). Scale for development of role overload was developed by Beehr, Walsh and Taber (1976).

Pareek (1982) expanded the framework of role stress and developed Your Feelings About Your Role (YFAYR) for measuring eight role stressors – Inter-Role Distance, Role Stagnation, Role Ambiguity, Role Erosion, Role Overload, Role Isolation, Role Inadequacy and Self-Role Distance. Pareek (1983) further enhanced the role stress framework and developed Organizational Role Stress (ORS) framework and scale for measuring ten role stressors - Inter-Role Distance, Role Stagnation, Role Expectation Conflict, Role Erosion, Role Overload, Role Isolation, Personal Inadequacy, Self-Role Distance, Role Ambiguity, and Resource Inadequacy. It may be noted that role ambiguity in YFAYR included not only the ambiguity caused by unclear expectations but also ambiguity perceived due to conflict in role expectations. These were separated in ORS in the form of New Role Ambiguity (excluding ambiguity perceived due to conflict in role expectations) and Role Expectation Conflict. Further, role inadequacy in YFAYR included inadequacy of internal resources (or competence of the role occupant) and inadequacy of external resources (information, material, equipment, facilities, people, finances) required for performing in the role. These were separated in ORS as personal inadequacy and resource inadequacy. ORS scale was reported as a classic inventory by Gordon (2004) and used extensively for research on role stress (Pestonjee, 1999).

A new role stressor called Role Underload was identified by Srinivasan and Anantharaman

(1988) as a result of revalidation of YFAYR and by Srivastav and Pareek (2008) as a result of revalidation of ORS.

Conceptualization of Role Underload

The first reference to role underload can be traced to Sales (1970) who described it as a condition in which an individual is faced with task requirements needing considerably lesser time than what is available. Ganster, Fusilier and Mayes (1986) reported that work underload is stressful and positively related to dissatisfaction and depression. Spector, Dwyer and Jex (1988) reported work underload as a job stressor and measured work underload by measuring the quantum of work and amount of free time available. Kahn and Cooper (1993) reported that qualitative work underload results from routine and repetitive tasks and leads to lack of mental stimulation; on the other hand, quantitative work underload results from very few tasks to do, leaving excess time available after completing all the tasks. Both types of work underload are stressful. Cooper and Dewe (2004) have highlighted that role underload is associated with underutilization of the role occupant and is stressful for the role occupant.

Role Erosion in ORS Framework

Pareek (1982, 1983) did not identify role underload as a role stressor in YFAYR and ORS frameworks for role stress measurement. Role erosion, one of the ten role stressors in ORS framework, however, is the fore-runner of role underload. Role erosion is measured by 2 items representing deprivation in the role (reduced importance of the role, and taking away some functions from the role) and 3 items representing the desire of the role occupant to do more (seeking more responsibilities, enhanced workload, and higher challenges). Confirmatory factor analysis of data collected from 453 public sector executives on 50 items of ORS scale revealed a clear split between the above-mentioned 'deprivation' items and 'desire to do more' items (Srivastav & Pareek, 2008). Deprivation truly represents erosion of the role. On the other hand, 'desire to do more' represents underload in the role. This indicated the need to split the ORS Version of Role Erosion into New Role Erosion (represented exclusively by deprivation items) and Role Underload (represented by 'desire to do more' items). Role Underload was thus identified as an additional role stressor beyond the ten role stressors defined in ORS framework (Pareek, 1983).

Redefining Role Underload

Role Underload (RU) is distinctly different from *Role Erosion* (RE). RE reflects deprivation in the role without a desire to do anything about it but RU reflects the desire to do more. RU is the problem of competent and enthusiastic role occupants who want to make higher contributions while their organizations fail to utilize their working capacity or potential. RU manifests when the workload assigned in the role is qualitatively or quantitatively below the working capacity or potential of the role occupant who is craving for making higher contributions.

Role Underload in NORS Framework

Srivastav (2009) developed an improved framework for measurement of role stress called *New Organizational Role Stress* (NORS) following the recommendations from ORS revalidation study (Srivastav & Pareek, 2008). NORS scale comprised 71 items divided into 11 constituent scales for measuring Inter-Role Distance, Role Stagnation, Role Expectation Conflict, Role Erosion (in its new form as explained earlier), Role Underload (new role stressor identified in ORS revalidation study), Role Overload, Role Isolation, Personal Inadequacy, Self-Role Distance, Role Ambiguity and Resource Inadequacy.

Development of Role Underload Scale in NORS was guided by 'desire to do more' items in Role Erosion Scale in ORS (Pareek, 1983), viz. *I would like to take more responsibility than I am handling at present; I can do much more than what I have been assigned; and I wish I had been given more challenging tasks to do*. Apart from three statements seeking more responsibilities, enhanced workload, and higher challenges, two additional items were included to cover the 'desire to use full potential' and 'desire to use unutilized capacity'.

Role Underload Scale (RUS) developed as a part of NORS was the first ever role underload

scale. Labelled as RUS-1 (Version-1 of RUS), it comprises five directly scoring items (labelled as 1a, 1b, 1c, 1d, 1e) as follows: (1a) *I would like to have more responsibilities in my current role;* (1b) *I would like to contribute much more in my current role;* (1c) *I would like to do more challenging tasks in my current role*; (1d) *I would like to use my full potential in my current role;* (1e) *I would like to use my unutilized capacity in my current role.*

RUS-1 items are scored as 1, 2, 3, 4, or 5 depending on how strongly the item is applicable for the respondent's role (1 for not applicable and 5 for always applicable). Role underload score for the respondent (in the range 0-10) is obtained by computing respondent's average for item score, subtracting 1 from the item average, multiplying the remainder by 2.5.

Validation of NORS

Four studies were conducted for validating NORS framework and scale on (i) 117 respondents from public sector banks in Goa; (ii) 116 respondents from private sector banks in Goa; (iii) 45 respondents from business schools in Bangalore; (iv) 14 respondents from state police department in Bangalore.

Cronbach's alpha for the combined study on 292 respondents as above for 71 item NORS scale was 0.870 and that for its 5 item *Role Underload Scale* (RUS-1) was 0.732. Cronbach's alpha for 7 out of 11 constituent scales was higher than 0.6. It was higher than 0.5 for 2 scales, higher than 0.4 for one scales and higher than 0.34 for one scale.

Role stress profiling (Srivastav, 2013), earlier described as role stress audit (Srivastav, 2011a), was done for each one of the above-mentioned studies, measuring the 11 role stressors and ranking them from 1 to 11, rank 1 being the strongest and rank 11 the weakest. Though none of the above-mentioned organizational groups had any symptom of role underload, yet role underload was the first ranking role stressor in each of these studies. At the individual level, percentage of respondents having role underload as the first ranking role stressor was 35.9, 42.2, 57.8, and 35.7, respectively. A majority of respondents in each study group, however, did not agree with the findings of role stress profiling. They did not have any inclination for enhancing their workload or responsibilities in their current roles.

Findings of role stress profiling for the above-mentioned studies raise some doubts on the validity of NORS (Srivastav, 2009).

Rationale for the Study

NORS validation study reported above, calls for further improvements in the framework for measurement of role stress. Since development and validation of a multi-dimensional measurement scale is cumbersome and time-consuming, it was decided to do it step-by step, first for each constituent scale and then for the resultant super-scale - NORS. Role underload being the most recent addition to role stress framework, improvement of role underload scale has been taken up on the first priority.

It appears that the first role underload scale: RUS-1 is measuring role underload consistently higher than other role stressors, irrespective of the reality. RUS-1 is not able to adequately discriminate among different levels of role underload present in the group under study. The present study is aimed at enhancing the validity of role underload measurement.

Method

Development of improved role underload scale was done on 73 respondents (faculty members, research assistants and supporting staff) in a prominent business school in Bangalore (Srivastav, 2011b).

The desired improvement of the scale may not be realized in one step. Scale development is generally done through an iterative process of moving from a lower version of the scale to its higher version with better psychometric properties (reliability, validity and discriminating power).

Each step of scale development was carried out employing the following scale development techniques (Rattray & Jones, 2007) for assessment and improvement.

Item Generation and Review

Face validity of a measurement scale means that the scale is appearing to measure what it is

designed to measure. It is a basic requirement for construction, development or improvement of any measurement scale (Priest, McColl, Thomas & Bond, 1995; Rattray & Jones, 2007). Items are generated for a new scale and reviewed for an existing scale (Oppenheim, 1992; Bowling, 1997), keeping in view what needs to be measured, taking the views of available experts in the field and the prospective respondents for scale development, incorporating the wisdom from relevant published literature (Cooper & Dewe, 2004; Ganster, Fusilier & Mayes, 1986; Kahn & Cooper, 1993; Sales, 1970; Spector, Dwyer & Jex,1988; Srinivasan & Anantharaman, 1988; Srivastav & Pareek, 2008).

Workshop of Respondents

Data collection using role underload scales under different stages of development was done through a workshop of respondents conducted to know about respondent's understanding of different items of measurement scale and for assessing the validity (or non-validity) of measurement made. Further, respondents' views were also obtained on possible redundant or missed out dimensions in the measurement scale.

Role Stress Profiling

Role Stress Profiling (RSP) or ranking the scores of 11 role stressors at individual and group levels (Srivastav, 2013) was done on 17 respondents who were common to both the development sample and the sample in one of the earlier NORS studies. RSP was done in two ways: (i) using original form of NORS (measuring role underload with RUS-1); (ii) using modified NORS (replacing RUS-1 with the latest version of RUS).

Focus Group Discussions

Respondents having role underload as the first ranking role stressor were identified to form a Focus Group for each profiling exercise. In-depth interactions were held with each focus group to assess face validity of role underload measurement, to identify possible reasons for higher measurement of role underload, and for obtaining their inputs for designing the improved version of role underload scale.

Identifying Cues for Improvement

Cues for improvement of role underload scales under development are identified in multiple ways, starting with *Item Analysis (through review and feedback explained above under Item Generation and Review, Workshop of Respondents, Role Stress Profiling,* and *Focus Group Disussions*) and following it through with measures to assess reliability and validity explained hereunder.

Assessing Scale Reliability

Reliability of a measurement scale refers to stability, repeatability or internal consistency of its questionnaire (Jack & Clarke, 1998). It is necessary to assess and enhance the reliability of a measurement scale under development. It is also desirable to demonstrate the reliability of an established measurement scale before taking inferences from the measurements made through it.

Cronbach's Alpha (CA) statistic (Kline, 1993) was used to assess internal consistency reliability of different versions of role underload scale. For good internal consistency reliability, CA should not be lower than 0.8 for established scales and not lower than 0.7 for scales under development. Lower than 0.7 values for CA reflect poor grouping of items in the scale (Bowling, 1997; Bryman & Cramer, 1997). CA was computed by using Statistical Package for Social Science (SPSS).

Improving Scale Reliability

Scale reliability is improved by deleting weak items in the scale. Sometimes deleting a weak item may lead to jeopardizing the theoretical construct of the scale. In such cases, the particular item may be replaced by a stronger item. Item wording in measurement scales plays a great role in determining its discriminating power. Weak items in the scale were identified in two ways as described below.

Corrected Item-Total Correlation (CITC) (Ferketich, 1991) represents correlation of an item with the scale's total after removing the item. Computed by using SPSS, CITC was used to identify weak items. Too high (higher than 0.8) or too low (lower than 0.3) values of inter-item

correlation, both are undesirable. Values above 0.8 denote that the items are merely a repetition of one another. On the other hand, values below 0.3 denote that the items are not representing the same construct. Items yielding CITC below 0.3, need to be deleted unless it is essential to retain the item to represent the construct being measured.

Item-Deleted Cronbach Alpha (IDCA) (Santos, 1999) for an item represents modified CA obtained after deleting the item from the scale. IDCA was computed by using SPSS. A weak item would yield to IDCA which is higher than the original CA for the scale. Normally such an item needs to be deleted from the scale, unless it is essential to retain the item to represent the construct being measured.

Assessing Scale Validity

Validity of a measurement scale (Bryman & Cramer 1997) signifies that the scale is measuring what it is designed to measure. It is necessary to assess and enhance the validity of a measurement scale under development. It is also desirable to demonstrate the validity of an established measurement scale before taking inferences from the measurements made through it.

Exploratory Factor Analysis (EFA) (Ferguson & Cox, 1993) was done to explore the factor structure of different versions of role underload scale for ensuring its construct validity. Role underload scale has been constructed around a single component factor and EFA should yield only a single factor for its validity to be established. *Eigen Value* of higher than 1.0 (denoting higher than average variance) was specified for factor extraction by *Principal Component Analysis* (PCA). It may be noted that the higher the Eigen value, the higher is the percentage of variance explained by the component factor concerned. *Varimax* rotation was done for better definition of factors in case more than one factor was extracted.

Improving Scale Validity

If the construct validity does not prove for the measurement scale, it needs to be redesigned. This may lead to elimination, splitting, or combining of certain factor(s). Introduction of new factor(s) may be needed in some cases.

Finalizing New Role Underload Scale

New role underload scale was finalized through repeated enhancements from a lower version to the next higher version, representing possible improvement in reliability, validity, and/or discriminating power, correcting the tendency for higher measurement.

Comparative study of the original and the new scale was made by computing the mean, standard deviation, range, minimum and maximum (for measurements made on the development sample) and by considering vital parameters of the two scales.

Results and Discussion

Results from application of selected scale development techniques for assessment and improvement are reported and discussed in the order of execution.

Cues for Improvement of First Role Underload Scale

1. Role underload was measured on 73 respondents from business school (the development sample), using the first role underload scale: RUS-1. Reliability assessment was done for finding the possible cues for improving role underload measurement. The scale has acceptable reliability with CA = 0.73. CITC values for the five items (0.453, 0.374, 0.534, 0.447, 0.661) are in the acceptable range. IDCA values for the five items (0.699, 0.724, 670, 0.703, 0.609) are lower than scale CA. Scale CA could not be improved by deletion of any item. Reliability assessment of RUS-1 did not offer any cue for improvement.

2. Validity assessment for RUS-1 (on the development sample) was done through EFA using PCA for extraction of factors having Eigen values greater than 1.0.

Table 1. Validity Assessment of RUS-1 for N = 73

Item	Factor Loadings
1a	0.655
1b	0.583
1c	0.733
1d	0.660
1e	0.827
Eigen Value	2.426
Variance	48.53

Table-1 furnishes the result of validity assessment. A single factor with moderate to high loadings (0.583 – 0.827) was obtained with Eigen value of 2.426 explaining variance of 48.53%. Unidimentional nature of role underload and construct validity of RUS-1 was therefore proved. Validity assessment of RUS-1 did not offer any cue for improvement.

3. *Role Stress Profiling* (RSP) was carried out on the profiling sample of 17 respondents (explained in 'Method Section' above) using NORS (making use of RUS-1 for role underload measurement). Role underload emerged as the most prominent (first ranking) role stressor at the group level. At the individual level the profiling sample had 8 respondents with role underload as the most prominent role stressor.

4. *Focus Group Discussions* were carried out with the above-mentioned 8 respondents. Notwithstanding their high scores on role underload, three of these respondents clearly expressed that they were not interested in increasing their qualitative or quantitative workload. Also a consensus emerged in the focus group that respondents did have a tendency to score role underload items on the higher side because of social desirability of (i) accepting more responsibility and challenges (items 1a, 1c); (ii) willingness to make more contributions (item 1b); and (iii) utilizing full potential and unutilized capacity (items 1d, 1e). Group consensus also emerged that true scores for these items (which would have been lower) could have jeopardized their image as 'good employees'. Social Desitability Bias (SDB) (Fisher, 1993) was possibly the cause of higher role underload measurement by NORS/RUS-1.

Enhancement of First Role Underload Scale

Item wording significantly influences (Bowling, 1997; Rattray & Jones, 2007) the reliability and validity of measurement scales. The second version of role underload scale: RUS-2 was designed to take care of SDB reflected in measurements through RUS-1.

In the second role underload scale: RUS-2, item 1a was replaced with item 2a: *Lack of assigned responsibilities in my current role limits my contribution*. Item 2a focuses on whether or not the contribution of the respondent is getting limited by lack of responsibilities in contrast to item 1a which focused on desire for accepting higher responsibilities.

Item 1b was replaced with item 2b: *Workload in my current role needs to be enhanced*. Item 2b focuses on workload in current role in contrast to item 1b which focused on desire to make higher contribution.

Item 1c was replaced by item 2c: *Lack of challenges in my current role restricts my contribution*. Item 2c focuses on whether or not the contribution of the respondent is getting limited by lack of challenges in contrast to item 1c which focused on desire to do more challenging tasks.

Item 1d was replaced by item 2d: *My role offers me opportunities to utilize my potential*. Item 2d, a reverse scoring item, focuses on whether or not opportunities are available in the role for utilizing respondent potential in contrast to item 1d which focused on desire to use full potential.

Item 1e was replaced by Item 2e: *My role utilizes my capacity to perform*. Item 2e, a reverse scoring item, focuses on whether or not the role for utilizes respondent's capacity in contrast to item 1e which focused on desire to use unutilized capacity.

Enhancement of Second Role Underload Scale

RUS-2 comprising items 2a, 2b, 2c, 2d, and 2e was subjected to reliability assessment as done for RUS-1. The scale has unacceptable reliability, scale CA value (0.683) being lower than 0.7.

CITC values for items 2a, 2b, 2c, 2d (0.469, 0.440, 0.682, 0.377) are in the acceptable range but CITC value for item 2e (0.236) is below the lower acceptable limit of 0.3. IDCA values for items 2a, 2b, 2c, 2d (0.619, 0.632, 0.511, 0.660) are lower than scale CA but IDCA for item 2e (0.709) is higher than scale CA. It is very clear that deletion of item 2e is desirable for improving scale CA from 0.683 to 0.709.

Third role underload scale RUS-3 was realized by deleting item 2e from RUS-2. To distinguish the third version from the second version, items 2a, 2b, 2c, 2d were relabelled respectively as 3a, 3b, 3c, 3d.

Enhancement of Third Role Underload Scale

RUS-3 comprising items 3a, 3b, 3c, and 3d was subjected to reliability assessment as done for RUS-1 and 2. The scale has acceptable reliability, scale CA (0.709) being higher than 0.7.

CITC values for items 3a, 3b, 3c (0.549, 0.537, 0.705) are in the acceptable range but CITC for item 3d (0.233) is below the lower acceptable limit of 0.3. IDCA values for items 3a, 3b, 3c (0.611, 0.621, 0.503) are lower than scale CA but IDCA for item 3d (0.793) is higher than scale CA. It is very clear that deletion of item 3d is desirable for improving scale CA from 0.709 to 0.793.

Fourth role underload scale RUS-4 was realized by deleting item 3d from RUS-3. To distinguish the fourth version from the third version, items 3a, 3b, 3c were relabelled respectively as 4a, 4b, 4c.

Reliability of Fourth Role Underload Scale

RUS-4 comprising items 4a, 4b, and 4c was subjected to reliability assessment as done for RUS-1, 2 & 3. The scale has acceptable reliability, scale CA being 0.793. RUS-4 has the highest CA among different versions of role underload scale.

CITC values for items 4a, 4b, 4c (0.628, 0.633, 0.646) are in the acceptable range. IDCA values for items 4a, 4b, 4c (0.726, 0.722, 0.707) are lower than scale CA. Hence there is no scope for enhancing the reliability of RUS-4 by item deletion.

Validity of Fourth Role Underload Scale

Validity assessment was done for RUS-4 in the same way as done earlier for RUS-1.

Table 2. Validity Assessment of RUS-4 for N = 73

Item	Factor Loadings
4a	0.807
4b	0.803
4c	0.872
Eigen Value	2.123
Variance	70.77%

Table-2 furnishes the result of validity assessment for RUS-4. A single factor with high loadings (0.803 – 0.872) was obtained with Eigen value of 2.123 explaining variance of 70.77%. Unidimensional nature of role underload and construct validity of RUS-4 was thus proved. Validity assessment of RUS-4 did not offer any cue for further improvement.

Role Stress Profiling with NORS/RUS-4

Role Stress Profiling (RSP) was carried out on the profiling sample using NORS after replacing RUS-1 with RUS-4 as done earlier with NORS retaining RUS-1. Role underload ceased to be the most prominent (first ranking) role stressor at the group level. At the individual level, the profiling sample had only 5 respondents with role underload as the most prominent role stressor.

Discussions with the new focus group comprising the above-mentioned 5 respondents revealed greater face validity of role underload measurement (compared to earlier focus group formed after role stress profiling with NORS/ RUS-1). All the members of the new focus group agreed with their measurement and experience of role underload. This reflected accomplishment of the much desired correction in the earlier trend of higher role underload measurement associated with RUS-1. Face validity was thus evident in measurements made by RUS-4

Conclusions

In the light of results obtained from reliability and validity assessment of RUS-4 followed by correction in the trend of higher role underload measurement and the resulting face validity,

RUS-4 can be finalised as The New Role Underload Scale (NRUS). Its comparison with RUS-1 or The Original Role Underload Scale (ORUS) is furnished in Table-3.

Table-3: Comparison of Original and New Role Underload Scales

Sample Size: N = 73	Original Scale	New Scale
Number of Items	5	3
Nature of Items	Direct Scoring	Direct Scoring
Face Validity	Poor	Good
Dimensionality	Unidimensional	Unidimensional
Variance Explained	48.53	70.77
Cronbach's Alpha	0.73	0.793
Mean	6.27	2.92
Standard Deviation	2.18	2.48
Range	8.5	9.17
Minimum	1.5	0.00
Maximum	10	9,17

Both the scales are unidimensional. Factor loadings are moderate to high in case of ORUS but high for NRUS. The variance explained by the single factor is significantly higher in case of NRUS. As compared to ORUS, NURS has yielded a lower mean, indicating correction in the trend of higher measurement. As compared to ORUS, NURS yielded lower minimum and maximum values of measured role underload with higher range of measurement. This also points towards correction in the trend of higher measurement. Higher standard deviation obtained in NURS measurements indicates better dispersion of measured values and higher discriminating power of the new measuring scale.

To recapitulate, The New Role Underload Scale comprises three direct scoring items as follows:

1. Lack of assigned responsibilities in my current role limits my contribution.
2. Workload in my current role needs to be enhanced.
3. Lack of challenges in my current role restricts my contribution.

Items are scored as 1, 2, 3, 4, or 5, depending on how strongly they apply for respondent's role in the organization, 1 for not applicable and 5 for always applicable. Role underload score in the range: 0-10 is obtained by taking the mean of respondent's item score, subtracting 1 from the mean, and multiplying the remainder by 2.5.

Limitations of the Study

Development of improved role underload scale was carried out in business school setting. It needs further testing on larger samples in industrial organizations. Social desirability bias reported in the study was not measured for different versions of role underload scale.

Recommendations

1. Improved role underload scale presented in this study with acceptable reliability, validity and discriminating power can be used for identifying underloaded roles in organizations. Such roles can be redesigned for higher role effectiveness possibly through the use of *Process Based Role Analysis and Design* (Srivastav, 2012).

2. Further research may be conducted on role underload, its determinants, and correlates in different types of organizations across age groups, hierarchical levels, qualification levels, functional groups and genders. Individual and organizational strategies for dealing with role underload may be emphasized for wellbeing and effectiveness at both levels.

3. All the constituent scales of NORS may be re-examined for possible improvements on the lines of role underload scale. Improved NORS framework with improved constituent scales may be revalidated.

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