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Administrative Burden Scale – Development and Psychometric Properties

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Abstract

The research on administrative burden is highly important as it provides a tool to measure and address administrative burdens in academic settings, contributing to improved work efficiency and job satisfaction. Teaching and research responsibilities, along with administrative burdens such as paperwork and institutional requirements, place significant demands on assistant professors in universities. The purpose of the study was to develop the administrative burden scale (ABS) for assistant professors in the English language. The study was conducted in different steps. Initially, a construct was conceptualized, and then an item pool of 55 items was generated for the administrative burden. After that committee approach was involved to determine face and content validity through the item content validity index (I-CVI) based on 7 experts. Later on, pilot testing was conducted on 30 assistant professors, selected through a purposive sampling technique. Lastly, exploratory factor analysis was performed on a sample of 200 assistant professors. The ABS consisted of 24 items divided into 4 subscales - documentation & paperwork, meetings & committees, students support & communication, and research & publication. Four factors account for 69.23% variance in the dataset, which play a substantial role in explaining the observed variability, providing valuable information about the underlying structure of the construct. All the factors had an alpha reliability of more than 0.70, which supports the notion of internal consistency. The study was able to create a valid scale which defines areas that assistant professors consider to be most administratively demanding. It is a useful tool in understanding the burdens that these employees experience. Its use can help design policies and interventions that alleviate administrative burden thus enhancing faculty health and productivity in teaching and research.

Keywords: *administrative burden scale, assistant professors, documentation & paperwork, research & publication*

Introduction

In the ever-changing university environment, the faculty members have a key responsibility of creating new knowledge, undertaking research and producing society's next generation. Nevertheless, they have not been given much attention when it comes to the amount of administrative pressure they bear. In recent years, administrative responsibilities for the university teachers have been enhanced in a way that interferes with their main task of teaching and research. These tasks, ranging from committee work to extensive paperwork, significantly reduce their overall productivity. Despite the clear impact of this burden, there remains a gap in the literature, as no standardized tool exists to specifically measure it. While existing scales assess related constructs such as job satisfaction, occupational stress, and work-life balance, none focus on the distinct administrative tasks that consume a significant portion of university teachers' time, highlighting the need for a dedicated administrative burden scale (ABS) tailored to the academic environment.

The existing studies reflect that Sandra Hart developed NASA Task Load Index (NASA-TLX) to measure the subjective workload imposed on different tasks (Hart & Staveland, 1988). This scale was specifically developed for aviation and space missions, but the primary purpose was to measure the perceived workload, such as temporal, physical, and mental demands. Furthermore, the subjective workload assessment technique (SWAT) was developed to assess the subjective workload imposed on employees performing complicated tasks, especially in high-demand fields (Reid & Nygren, 1988). This scale has a subjective rating with three levels (low, medium, and high) across three significant dimensions, such as psychological stress, mental effort load, and time load to assess the workload. This scale is

not specifically developed for the education sector; therefore, cannot be used. In addition, another scale of Workload Profile developed by Wilson and Corlett assessed the workload within the organizational setting. The scale had eight workout dimensions: speech output, auditory processing, manual output, visual processing, spatial processing, verbal processing, central processing, response selection, and execution (Rubio et al., 2004). This scale cannot be used in the current study as it focuses on the physical and mental needs, neglecting the administrative demands expected from the university teachers.

Moreover, Brief Job Stress Questionnaire (BJSQ) developed by Shimazu in 1998 aims to measure job-related stress and its numerous dimensions within the workplace. The scale highlights the various factors of the work environment, such as workload perception, stressors, level of social support, and time pressure (Watanabe et al., 2023). This scale understands the job-related stress in various work settings but does not provide a detailed analysis of how administrative burden influences teaching quality. Likewise, Kim et al. developed the Psychological Burden Scale in 2018 to measure the psychological burden linked with health and safety. It is based on 26 items within five sub-scales: negative self-management, work attitude, human error, organizational activity, and safety and health workload (Kim et al., 2018). This scale only discusses the psychological burden, but the current researcher needs to explore the burden related to administrative tasks.

The lack of an existing scale that explicitly studies the administrative burden on university teachers, especially assistant professors, highlights the development of dedicated and new instrument. It will not only fill the academic research gap but also help develop policies to alleviate unnecessary administrative pressures on university teachers and help them be more productive in teaching.

Materials and Methods

Research Objectives

To develop and psychometrically evaluate a comprehensive and contextually relevant tool to measure administrative burden tailored specifically for assistant professors

Sample

Semi-structured interviews were conducted with seven assistant professors of different universities (public and private) till saturation point. A sample of 200 assistant professors was selected for EFA as the study of MacCallum et al. (2001), a sample size of at least 200 is generally considered adequate for EFA. Purposive sampling technique is used, which is the most effective technique for collecting rich information from the research participants (Obilor, 2023).

Ethical Considerations

Ethical considerations were maintained throughout the research. All the participants are informed about the nature of the study and ensured that confidentiality will be maintained. They were permitted to leave the study at any point if they feel uncomfortable. They were also permitted to withdraw their responses from the study. All the ethical considerations were appropriately followed throughout the research.

Inclusion & Exclusion Criteria

The inclusion criteria of the study were assistant professors with at least 1 year professional experience, who are from diverse academic departments within both public and private sector universities located in Lahore, and both male and female assistant professors were eligible for participation

The exclusion criteria of the study were assistant professors without a Ph.D. degree (who attained this post solely based on experience), teachers holding academic ranks other than assistant professors, such as lecturers, associate professors, professors, visiting, tenured, or adjuncts, or holding the position of head of departments, and assistant professors with physical or visual disabilities

Step I: Construct Conceptualization.

Initially, the construct was conceptualized based on existing literature, theoretical background, and semi-structured interviews with the research participants.

Step II: Generation of Item Pool.

An initial pool of 55 items was generated from the empirical evidence (deductive approaches) and interview data (inductive approaches) for the administrative burden imposed on assistant professors.

Step III: Face and Content Validity.

Face and content validity were preferred to ensure that the developed construct is substantively and visually appropriate for the intended purpose.

Table 1: ***Item-Content Validity Index (I-CVI) and Scale – Content Validity Index (S-CVI) for ABS***

Item No.	I-CVI	S-CVI
1	0.8	0.93
2	0.8	
3	0.8	
4	1	
5	1	
6	0.8	
7	0.8	
8	0.8	
9	1	
10	1	
11	1	
12	1	
13	0.8	
14	1	
15	1	
16	1	
17	1	
18	0.8	
19	0.8	

20	0.8
21	1
22	1
23	0.8
24	1
25	1

Note. *ICV-I > 0.75, ABS = Administrative Burden Scale*

I-CVI is a statistical measure used to validate the content of the administrative burden scale. A total of seven panels of experts including assistant professors, early-career faculty, senior faculty members, and educational psychologists, signed scores to the 55 items of the scale. The cutoff criteria of 0.78 was considered a threshold to consider the item content valid. Of 55 items, 30 had I-CVI below the cutoff criteria; therefore, these items were removed from the scale. The Scale - Content validity index (S-CVI) was quite strong and provided an inclusive evaluation of the scale in terms of its content validity.

Step IV: Pilot Testing

In the preliminary study of the psychometric properties of the ABS, a pilot test was conducted on 30 participants (M = 94.90; SD = 17.75). The participants showed a high level of comprehension by mentioning that all the scale items were clear and understandable. The participants did not show any ambiguity in understanding any item. This study came up with the insight that scale is user-friendly, psychometrically sound, and contextually relevant.

Results

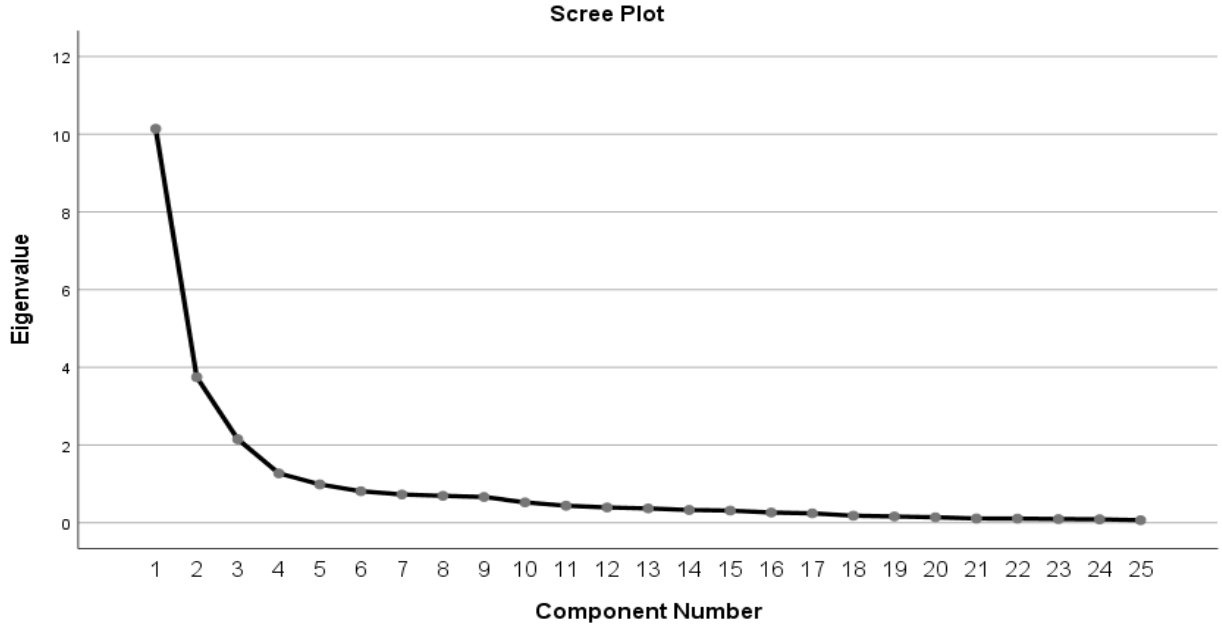
Determining Factor Structure through Exploratory Factor Analysis (EFA)

EFA was performed on 25 items measured on a 5-point Likert scale strongly disagree to strongly agree to determine the factor structure of the scale. The decision to use the Likert scale was based on the reason that the response process of the Likert scale is simple, needs less cognitive load, and has upsurge the quality of data as well Likert scale is highly used in social sciences research; therefore, it can be easily used with the other scales in social sciences research (Croasmun & Ostrom, 2011).

To assess the appropriateness of sample size, Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity was computed for the whole dataset to assess the overall appropriateness of the dataset for factor analysis. KMO statistics value in the data was 0.85, which indicates more suitable data for the factor analysis (Kaiser, 1960). The dataset showed a significant p-value (<0.05), representing that the correlation matrix is not an identity matrix, supporting data adequacy for the factor analysis.

The scree plot derived from EFA shows a distinct elbow point where the eigenvalues exhibit a sharp decline. In the above scree plot, the decline is noticeable after the fourth factor, suggesting that retaining four factors is optimal to explain the variance in the data set. Four factors are aligned with the theoretical expectations; therefore, they are deemed significant for understanding the underlying structure of the study constructs.

Figure 1: Scree Plot



Note. *Figure shows a scree plot derived from EFA.*

Table 2: Mean, Standard Deviation and Factor Loading of ABS

Scale Items	M	SD	F1	F2	F3	F4
Item 1	4.05	1.04	.63			
Item 2	4.06	1.03	.59			
Item 3	3.94	1.05	.79			
Item 4	3.65	1.02	.80			
Item 5	3.76	1.09	.87			
Item 6	4.01	1.02	.83			
Item 7	3.76	0.95	.69			
Item 8	3.82	1.04	.70			
Item 9	3.64	1.19		.78		
Item 11	4.07	0.88		.76		
Item 12	3.87	0.92		.81		
Item 13	3.69	0.97		.53		
Item 14	3.50	1.10			.75	
Item 15	3.49	0.99			.72	
Item 16	3.50	1.00			.80	
Item 17	3.60	1.06			.75	
Item 18	3.66	1.05			.76	
Item 19	3.67	1.15			.80	
Item 20	3.61	1.10			.75	
Item 21	4.15	0.86				.75
Item 22	3.74	1.19				.79
Item 23	3.91	0.95				.77
Item 24	3.92	0.94				.77
Item 25	4.10	0.95				.70

Note. *N = 200; M = Mean; SD = Standard Deviation; F1 = Documentation & Paperwork; F2 = Meetings & Committees; F3 = Students Support & Communication; F4 = Research & Publication; Factor Loading > 0.50, ABS = Administrative Burden Scale*

Factor loading represented the direction and strength of the association between items and latent factors. The items with a factor loading above 0.5 were considered significant contributors to the relevant factors. For instance, items 1-8 reflected high factor loading on factor 1, "documentation & paperwork," items 9, 11, 12, and 13 reflected high factor loading on factor 2, "meetings & committees," items 14-20 reflected high factor loading on factor 3 "students support & communication," and item 21-25 reflected high factor loading on factor 4 "research & publication." Item 10 had a factor loading of less than 0.5, which showed ambiguity; therefore, it was removed from the scale to enhance scale precision and clarity.

Table 3: Eigen Values and Variance Explained by Four Factors of ABS

Factors	Eigenvalue	% of Variance	% of Total Variance
F1-Documentation & Paperwork	5.25	21.00	21.00
F2- Meetings & Committees	4.89	19.57	40.57
F3- Student Support & Communication	4.16	16.66	57.23
F4- Research & Publication	3.00	12.00	69.23

Note. *N = 200; F1 = Factor1; F2 = Factor2; F3 = Factor3; F4 = Factor4; ABS = Administrative Burden Scale*

The eigenvalues represent the variance explained by each factor extracted through EFA. The higher Eigenvalue shows higher explanatory power; typically, the eigenvalue above 1 is considered significant (Kim & Mueller, 1978). In the current analysis, Factor 1 has an Eigenvalue of 5.25, explaining 21% variance; Factor 2 has an Eigenvalue of 4.89, elucidating 19.57 variance; Factor 3 has an Eigenvalue of 4.16, showing 16.66 variances; and Factor 4 has an Eigenvalue of 3.0, reflecting12% variance. Overall, these four factors account for 69.23% variance in the dataset. This interpretation indicates that the identified factors has a substantial role in explaining the observed variability, providing valuable information about underlying structure of the measured construct.

Table 4: Cronbach's Alpha of ABS

Factors	**k**	**M**	**SD**	**Range**	**a**
F1-Documentation & Paperwork	8	31.04	6.51	10-40	0.93
F2- Meetings & Committees	4	15.26	3.37	4-20	0.86
F3- Student Support & Communication	7	25.00	6.12	7-35	0.91
F4- Research & Publication	5	19.82	4.08	6-25	0.88

Note. *N = 200; k = number of items; a = Chronbach's Alpha; ABS = Administrative Burden Scale*

The table shows the number of items and alpha value of each factor. Factor 1 has an alpha reliability of 0.93, followed by alpha reliability of 0.86, 0.91, and 0.88 for Factor 2, Factor 3, and Factor 4. All the factors have an alpha reliability of more than 0.70, which indicates strong internal consistency, shows that the items within each factor are closely related, and measures similar underlying constructs reliably.

Table 5: Inter-factor Correlation of Factor1, Factor2, Factor 3, Factor 4, and Total ABS

Sr. No	Variable	1	2	3	4	5
1	F1-Documentation & Paperwork	-				
2	F2- Meetings & Committees	.34**	-			
3	F3- Student Support & Communication	.33**	.67**	-		
4	F4- Research & Publication	.53**	.40**	.53**	-	
5	Administrative Burden Scale	.76**	.72**	.81**	.78**	-

Note. *N = 200; **p<.01; ABS = Administrative Burden Scale*

This table shows a correlation between different factors and the total scale. Witte and Witte (2017) stated that the strong correlation coefficient is between 0.7 and 1.0, moderate is between 0.3 to 0.7, and weak is between 0 to 0.3. In the above table, Factor 1,2,3,4 strongly correlates with the total scale, indicating a consistent and robust relationship between study variables. Besides, the inter-correlation of all the factors is moderate, suggesting some degree of association but not as strong as in the case of strong correlation.

Discussion

The study aimed to develop an Administrative Burden Scale (ABS) for assistant professors. Using EFA, the researcher sought to identify the associated factors contribute to the administrative burden faced by assistant professors. EFA findings showed the emergence of four distinct factors contributing to the administrative burden, including (i) Documentation & Paperwork, (ii) Meetings & Committees, (iii) Student Support & Communication, and (iv) Research & Publication. These four factors have been aligned with the previous research highlighting the administrative challenges experienced by assistant professors and regular teaching responsibilities. The crucial role of universities is to alleviate the administrative burden of improving teaching quality. More importantly, the EFA results support the arguments that the administrative burden facing assistant professors is multi-dimensional. All the identified factors work in concert to address the role of the administrative burdens that complicate the professional lives of assistant professors in academia.

The study results are the most relevant to those universities that enhance the organizational climate for assistant professors. Thus, by recognizing the complex nature of the administrative burden, the institutions can use such a range of approaches, including the administrative burden can be reduced through reorganizing the work processes and hiring the other administrative employees whose tasks would be to perform the administrative duties which are imposed on assistant professors. The limitation of the study is that the tool is primarily developed for assistant professors in university setting but other teaching faculty including visiting, professors, adjunct, or lecturers are not included.

The development of the ABS has implications on the administrative management of universities and the health of faculty members. In this manner, which specific domains of assistant professors' work are most heavily laden with administrative duties can be better known, and how such administrative tasks influences faculty productivity, satisfaction, and well-being. The ABS can be used to support policy changes that will help alleviate the burden and let assistant professors devote more time to what they were hired for: teaching and research. Furthermore, the scale offers a basis for subsequent studies of the connection between administrative responsibilities and career progress in academia.

The study suggests that universities should consider minimizing paperwork and streamlining institutional expectations that would cut down on the documentation and bureaucratic tasks

embraced by the scale. Exclusive secretarial staff should be recruited or else should offer devices that help in handling meetings, documents and communications can go a long way in easing the workload of faculty members. University leadership should consider revisiting the current set policies in an effort to limit meeting and committee interferences that claim most of their time thus leaving them with little time for their work.

Conclusion

The research developed ABS, a valid and reliable tool for assessing the administrative burden on assistant professors. The study found that the four subscales of the ABS form a reliable and valid measure to assess strains related to administration. Based on the result of internal consistency coefficients and the amount of variance assigned to the four factors, this scale is useful for research and practice in higher education. Subsequent research may extend from these observations to examine ways of alleviating administrative pressure and improving faculty's quality of life.

Contribution of Authors:

Shabana Noureen: Conceptualisation, Methodology, Writing, and Reviewing

Shamaila Asad: Supervision from conceptualisation till writeup.

Conflict of Interest:

There is no conflict of interest in the article

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