

Validating Cyberloafing Antecedents: An Exploratory Factor Analysis Among Malaysian Employees

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ABSTRACT: Cyberloafing, or the use of the internet by employees for personal purposes during working hours, has become a growing concern for organizations seeking to manage productivity and information security. While prior research has identified multiple antecedents of cyberloafing, including job-related stressors and workplace dynamics, there remains a need to validated measurement instruments to assess these constructs reliably. This study reports the exploratory factor analysis (EFA) conducted as part of the initial validation of a new cyberloafing antecedents scale among Malaysian employees. Using pilot data collected from 132 respondents, principal axis factoring with varimax rotation was employed to examine the factor structure. The results supported a multi-dimensional structure, with clear loadings on workplace ostracism, role ambiguity, role conflict, and role overload factors. The Kaiser-Meyer-Olkin (KMO) measure verified sampling adequacy, and Bartlett's test of sphericity confirmed factorability. All extracted factors demonstrated satisfactory reliability, with Cronbach's Alpha values exceeding 0.70. The findings provide preliminary evidence for the construct validity and internal consistency of the proposed scale, contributing to the development of robust measurement tools for cyberloafing research. This study offers a foundation for future confirmatory factor analysis (CFA) and structural model testing in diverse organizational settings.

KEYWORDS: Cyberloafing, Exploratory Factor Analysis, Workplace Stressors, Malaysia, Employee Behaviour, Scale Validation

I. INTRODUCTION

The proliferation of internet technologies and digital devices in the workplace has transformed modern organizational environments, enabling greater connectivity and efficiency. However, this digital shift has also given rise to cyberloafing, defined as employee's use of the internet and digital tools for personal, non-work-related activities during working hours (K. G. Lim, 2002; Koay, 2018). Activities such as browsing social media, online shopping, and streaming content during work time are increasingly common, raising concerns among organizations about potential declines in productivity, breaches of information security, and erosion of workplace discipline (Hadlington & Parsons, 2017; Henle & Blanchard, 2008).

Recent scholarship has recognized that cyberloafing is not merely an individual act of deviance but is often rooted in organizational and psychological factors. Job-related stressors, such as role ambiguity, role conflict, role overload, and workplace ostracism, have been consistently identified as key antecedents driving employees toward cyberloafing as a coping mechanism (Arshad et al., 2016; Koay et al., 2017; Soh et al., 2022). These stressors disrupt employee's engagement with their tasks and contribute to withdrawal behaviours, including internet misuse. Despite the growing recognition of these antecedents, there is a lack of validated measurement tools that reliably capture the multi-dimensional nature of workplace stressors contributing to cyberloafing, particularly within the Malaysian organizational context.

To address this gap, the present study aims to develop and validate a measurement instrument for cyberloafing antecedents through exploratory factor analysis (EFA). Specifically, this research examines the underlying factor structure of four workplace stressors; workplace ostracism, role ambiguity, role conflict, and role overload using pilot data collected from Malaysian employees. By establishing the construct validity and reliability of these measures, this study contributes to the development of robust tools for future research and provides practical implications for organizations seeking to manage cyberloafing behaviour more effectively.

II. METHODOLOGY

This study employed a quantitative, cross-sectional design to develop and validate a measurement instrument for workplace stressors associated with cyberloafing behaviour. An exploratory factor analysis (EFA) approach was selected to identify the

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underlying factor structure of the proposed antecedent constructs, including workplace ostracism, role ambiguity, role conflict, and role overload. EFA is commonly recommended as an initial step in scale development and validation to uncover latent dimensions within item sets (Costello & Osborne, 2005). Data were collected through a structured survey administered to Malaysian employees, and statistical analyses were performed to assess sampling adequacy, factorability, factor structure, and reliability. The methodological steps are detailed in the following subsections.

A. Participants and Procedure

This study employed a cross-sectional survey design to collect pilot data for the exploratory factor analysis. A total of 132 Malaysian employees participated in this study. Respondents were drawn from various organizations using a convenience sampling method. Participation was voluntary, and respondents provided informed consent before completing the questionnaire. Ethical clearance was obtained from the relevant institutional review board to ensure adherence to research ethics standards.

The survey instrument was distributed in online formats to maximize reach. Inclusion criteria required participants to be full-time employees with at least six months of tenure in their current organization, ensuring sufficient workplace experience to respond meaningfully to the stressor-related items. Demographic information such as gender, age, sector, and job tenure was also collected for sample profiling.

B. Instrument Development

The measurement instrument was developed by adapting validated scales from prior research on workplace stressors and organizational behaviour. Four constructs were targeted as antecedents of cyberloafing based on the extant literature; workplace ostracism, role ambiguity, role conflict, and role overload. Workplace ostracism was measured using the 4-item scale developed by Ferris et al. (2008), capturing perceptions of being ignored or excluded at work. Role ambiguity was measured using the 6-item scale developed by González-Romá & Lloret (1998), oversee confusing situation that emerges when job description are not clearly defined. Role conflict was measured using the 8-item scale developed by González-Romá & Lloret (1998), refers to inconsistent demands in the workplace. Role overload was measured using the 9-item scale developed by S & Cahyadin (2012), refers to a condition in which employees are assigned more responsibilities and tasks than they can manage within the available time and resources. All items were rated on a 10-point scale ranging from 1 (Strongly Disagree) to 10 (Strongly Agree). The initial instrument comprised 33 items; 10 items for workplace ostracism, 6 items for role ambiguity, 8 items for role conflict, and 9 items for role overload.

C. Data Analysis Procedure

Exploratory factor analysis (EFA) was conducted to examine the underlying factor structure of the proposed measurement model. Prior to conducting EFA, assumptions regarding sampling adequacy and factorability were assessed using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity. A KMO value above 0.60 and a significant Bartlett's test were considered indicators of suitability for factor analysis.

EFA was performed using Principal Axis Factoring (PAF) as the extraction method, given its appropriateness for identifying latent constructs in social science research (Costello & Osborne, 2005). A Varimax rotation was applied to enhance interpretability by maximizing the variance explained by each factor. Factors with eigenvalues greater than 1 were retained, and items with factor loadings of 0.60 or higher were considered significant. Items with cross-loading exceeding 0.30 on multiple factors were reviewed and considered for removal to improve the clarity of the factor structure.

Internal consistency reliability was assessed using Cronbach's Alpha, with a threshold of 0.70 indicating acceptable reliability (Nunnally & Bernstein, 1994). All data analyses were conducted using SPSS version 26.

III. RESULTS

The results of the exploratory factor analysis (EFA) are presented in this section, beginning with the description of the sample characteristics, followed by assessments of data suitability for factor analysis. The analysis then reports the extraction and interpretation of the underlying factor structure for the cyberloafing antecedent's scale. Finally, reliability statistics are provided to evaluate the internal consistency of the extracted factors. The findings establish preliminary validity and reliability evidence for the proposed measurement instrument.

A. Sample Characteristics

A total of 132 Malaysian employees participated in the study. The sample comprised 55% female and 45% male respondents, with ages ranging from 23 to 54 years ($M = 35.6$, $SD = 7.8$). Participants were drawn from both the public sector (62%) and the private sector (38%), representing various industries including education, services, and manufacturing. The majority of respondents reported job tenure of more than two years in their current organization.

B. Assumptions and Sampling Adequacy

Prior to conducting the exploratory factor analysis (EFA), the adequacy of the data was assessed. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy yielded a value of 0.842, indicating meritorious suitability for factor analysis (Kaiser, 1974).

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Additionally, Bartlett's Test of Sphericity was significant ($\chi^2 (496) = 2345.18, p < .001$), confirming that the correlation matrix was factorable. These results supported appropriateness of proceeding with EFA.

C. Factor Extraction and Loadings

Exploratory factor analysis was conducted using Principal Axis Factoring (PAF) with Varimax rotation. The analysis revealed a four-factor solution, consistent with theoretical expectations. Factors with eigenvalues greater than 1 were retained, and the cumulative variance explained by the four factors was 68.4%. Each factor represented one of the hypothesized workplace stressors; workplace ostracism, role ambiguity, role conflict, and role overload.

Items with loadings above 0.60 were retained for interpretation, while items with low loadings or high cross-loadings were removed. Specifically, 4 items retained for workplace ostracism, 5 items retained for role ambiguity, 6 items retained for role conflict, and 8 items retained for role overload. Several low-loading or marginal-loading items (e.g. RA1 in Role Ambiguity and RC2, RC8 in Role Conflict) were excluded based on the retention criteria. The final factor structure, along with item loadings, is presented in Table I.

Table I: Factor Structure and Loadings (Exploratory Factor Analysis)

Item	Workplace Ostracism	Role Ambiguity	Role Conflict	Role Overload
WO1	0.794			
WO2	0.868			
WO3	0.856			
WO4	0.865			
RO2		0.755		
RO3		0.846		
RO4		0.885		
RO5		0.923		
RO6		0.748		
RC1			0.730	
RC3			0.662	
RC4			0.823	
RC5			0.873	
RC6			0.729	
RC7			0.832	
RO2				0.687
RO3				0.848
RO4				0.829
RO5				0.799
RO6				0.861
RO7				0.814
RO8				0.664
RO9				0.642

Source: Author's compilation
(Loadings ≥ 0.60 shown; suppressed for clarity)

D. Reliability Analysis

Internal consistency reliability was assessed using Cronbach's Alpha for each extracted factor. All four factors demonstrated satisfactory reliability, with alpha coefficients exceeding the recommended threshold of 0.70 (Nunnally & Bernstein, 1994). The reliability statistics confirm the internal consistency of the extracted factors. Details are summarized in Table II.

Role overload achieved the highest reliability ($\alpha = 0.979$), followed by role conflict ($\alpha = 0.960$), role ambiguity ($\alpha = 0.954$), and workplace ostracism ($\alpha = 0.920$). These results confirm the internal consistency and measurement quality of the extracted factors.

Table II: Reliability Statistics (Cronbach's Alpha for Each Factor)

Factor	Number of Items Retained	Cronbach's Alpha
Workplace Ostracism	4	0.920
Role Ambiguity	5	0.954
Role Conflict	6	0.960
Role Overload	8	0.979

Source: Author's compilation

IV. DISCUSSION

The purpose of this study was to validate the underlying factor structure of workplace stressors associated with cyberloafing behaviour by conducting an exploratory factor analysis (EFA) among Malaysian employees. The results supported a clear four-factor structure corresponding to workplace ostracism, role ambiguity, role conflict, and role overload. All retained items demonstrated strong loadings above 0.60, and the extracted factors explained 68.4% of the variance, indicating a robust factor solution. Furthermore, the internal consistency of each factor was excellent, with Cronbach's Alpha values ranging from 0.920 to 0.979.

These findings contribute to the literature by providing empirical support for the multi-dimensional nature of workplace stressors that precede cyberloafing. The confirmation of workplace ostracism as a distinct and reliable factor aligns with previous studies (Ferris et al., 2008; Soh et al., 2022), which highlight exclusion and social rejection as drivers of withdrawal behaviours, including cyberloafing. Similarly, the emergence of role ambiguity, role conflict, and role overload as separate, reliable dimensions supports the application of role stress theory (Rizzo et al., 1970) and the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007) in explaining deviant work behaviours.

Compared to previous validation efforts, the high reliability coefficients reported in this study ($\alpha = 0.90$) demonstrate the strength and internal consistency of the adapted measurement instrument in the Malaysian organizational context. Notably, the role overload factor, with eight items retained and an alpha of 0.979, emerged as the most reliable construct, suggesting that perceptions of excessive workload are a particularly salient stressor in this setting. This is consistent with findings from Arshad et al. (2016), who reported role overload as a significant predictor of cyberloafing among Malaysian.

Beyond theoretical contributions, the validated score offers practical utility for organizational researchers and human resource practitioners. By providing a reliable tool to measure key stressors linked to cyberloafing, organizations can better diagnose and manage antecedent conditions that may foster counterproductive internet use at work. For instance, targeted interventions to reduce role ambiguity or mitigate workplace ostracism may indirectly curb cyberloafing behaviours.

Despite the promising results, this study is not without limitations. The sample size, while adequate for EFA, was limited to Malaysian employees, which may affect the generalizability of the findings to other cultural or organizational contexts. Additionally, this study focused solely on the exploratory phase of validation. Future research is needed to confirm the factor structure using confirmatory factor analysis (CFA) and to examine the scale's predictive validity in relation to cyberloafing outcomes.

In sum, this study advances the field by validating a multi-dimensional scale of cyberloafing antecedents with strong psychometric properties. It lays the groundwork for further model testing and contributes to both the measurement and management of cyberloafing behaviour in contemporary workplaces.

V. CONCLUSION

This study aimed to develop and validate a measurement instrument for workplace stressors associated with cyberloafing behaviour among Malaysian employees. Through exploratory factor analysis, a robust four-factor structure was established, corresponding to workplace ostracism, role ambiguity, role conflict, and role overload. All retained items demonstrated strong loadings, and the factors exhibited excellent internal consistency, with Cronbach's Alpha values exceeding 0.90. These findings provide empirical support for the multi-dimensional nature of cyberloafing antecedents and confirm the psychometric soundness of the adapted measurement scale.

The validated instrument offers both theoretical and practical contributions. For scholars, it provides a reliable tool for measuring key stressors that precede cyberloafing, thereby enabling more rigorous model testing and theory development in future research. For practitioners, the scale offers a diagnostic tool to identify and address workplace conditions that may contribute to counterproductive internet use. By managing stressors such as role overload and workplace ostracism, organizations can foster healthier work environments and mitigate cyberloafing behaviour.

Future research is recommended to extend the validation process through confirmatory factor analysis (CFA) and to test the scale's predictive validity in diverse organizational and cultural contexts. Such efforts will further strengthen the utility of the instrument and advance understanding of cyberloafing dynamics in the evolving digital workplace.

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