Examining the Effect of Road Traffic Congestion on Stress at Work: Do Perceived Organizational and Supervisor's Support Really Help?

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Abstract
Traffic congestion can lead to various negative consequences for individuals. One of the most disruptive consequences for workers is stress at work. This study aims to examine the relationship between road traffic congestion and stress at work, with perceived organizational support and perceived supervisor support as moderators. A quantitative method with an online survey was conducted on 213 workers in Indonesia who experience traffic congestion while commuting to work or from work. Data analysis was performed using Hayes's PROCESS macro in IBM SPSS Statistics version 26 with model 2 for moderated regression analysis. The result indicates that road traffic congestion significantly affects stress at work (ß = 0.63, p <0.05, CI = [0.48, 0.78]). However, perceived organizational support was not significant in the role of moderator between road traffic congestion and stress at work (-0.12, 95% CI = [-0.29, 0.05]). In addition, perceived supervisor support did not play a role as a moderator between road traffic congestion and stress at work (0.09, 95% CI = [-0.13, 0.31]). These findings demonstrate that the negative consequences of road traffic congestion are very substantial that their impact on stress at work does not diminish even though workers have perceived organizational and supervisor support.

Keywords: Road Traffic Congestion; Stress at Work; Perceived Organizational Support; Perceived Supervisor Support; Worker Stress

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INTRODUCTION

Road traffic congestion is one of the main problems in almost all urban areas in various countries. Especially in major cities in Indonesia, such as Jakarta, which is even ranked among the top ten most traffic-congested cities in the world, with an average speed of just 11 km/h (INRIX, 2025). The congestion in Jakarta has also affected the surrounding satellite cities such as Bogor, Depok, Tangerang, and Bekasi (Sasongko & Setiadi, 2021). Moreover, as Indonesia's population continues to grow, congestion in Indonesia's major cities will continue to increase.

Road traffic congestion is defined as a situation where the number of vehicles exceeds the capacity of the road facilities, resulting in a significant portion of vehicles moving slowly and in an irregular manner (Kumarage, 2004; Weerasinghe et al., 2020). This traffic congestion comprises five aspects: (1) awareness of traffic congestion; (2) readiness for traffic congestion; (3) negative psychological consequences; (4) subjective interpretation of the experience; and (5) coping skills (Weerasinghe et al., 2020).

The occurrence of road traffic congestion evolves various negative consequences, such as the loss of significant time during travel, increased expenditures on fuel, heightened environmental pollution, and a substantially elevated potential for accidents due to extended travel durations (Currie & Walker, 2011; Seyedabrishami et al., 2012). The issues stemming from this congestion must be addressed, as they adversely impact all facets, significantly reducing the effectiveness of specific work activities.

One significant subject profoundly impacted by traffic congestion is the workforce. This is evidenced by Permatasari's (2020) survey, which reported that more than 90 percent of workers experience stress at work due to traffic congestion. Stress at work is a psychological condition that can lead individuals to exhibit dysfunctional behavior in the workplace. It manifests as an individual's response to the imbalance between job demands and their ability to cope (Stranks, 2005). In the context of this research, job demands are related to how workers can address issues arising from traffic congestion. Stress at work comprises three aspects: (1) operational pressure; (2) deterioration of psychological energy; and (3) opportunities to relax (Hennessy & Wiesenthal, 1997).

Stress at work experienced by workers certainly causes various problems, such as reducing work performance (Abdulrahman et al., 2026; Iskamto, 2021; Kotteeswari & Sharief, 2014), reducing job satisfaction (Kumar et al., 2015), even causing physical health problems (Vasantha & Reddy, 2017), which has an impact on increasing worker absenteeism (Brunner et al., 2019; Yang et al., 2015). Therefore, to some extent, stress resulting from traffic congestion requires more serious attention to mitigate the impact felt by workers.

Many studies have been conducted aimed at measuring the effect of road traffic congestion on stress felt by private vehicle drivers (i.e., Bitkina et al., 2019; Habiba & Talukdar, 2025; Popoola et al., 2013; Qi et al., 2013; Ringhand & Vollrath, 2019; Thwe et al., 2017; Vhaduri et al., 2014), as well as public vehicle drivers (i.e., Bawa & Srivastav, 2013; Hatoyama et al., 2019; Hennessy et al., 2007; Hennessy & Wiesenthal, 1999; Hlotova et al., 2014). Unfortunately, only a few studies have focused on measuring the effect of road traffic congestion on stress at work felt by workers. There are only three studies up to now (i.e., Jin et al., 2022; Haider et al., 2013; Weerasinghe et al., 2020). None of the three studies have also examined the

Indonesian context. Therefore, this study was conducted to try to explain the effect of road traffic congestion on stress at work in workers in Indonesia.

Moreover, the findings from these three studies on workers remain inconsistent. On the one hand, the research by Haider et al. (2013) and Weerasinghe et al. (2020) demonstrates that road traffic congestion plays a significant role in elevating stress at work. On the other hand, the study by Jin et al. (2022) reveals contrasting results, suggesting that road traffic congestion does not significantly impact stress at work. This discrepancy arises from the ability of the surveyed workers to tolerate the negative consequences of road traffic congestion, rendering them resilient to experiencing stress at work.

The inconsistency in the findings of the three previous studies may be influenced by other variables as moderators, for example, perceived social support, in the form of perceived organizational support (Sarfraz et al., 2019), and perceived supervisor support (Yang et al., 2015). Perceived organizational support is the extent to which workers feel appreciation and attention from the organization in return for their contributions (Sarfraz et al., 2019). Some research results show that perceived organizational support is one of the antecedents of stress at work (e.g., Canboy et al., 2023; Loi et al., 2014). Perceived organizational support can be through a fair environment, meaningful rewards, positive work arrangements, and good supervisory relations (Rhoades & Eisenberger, 2002). Karatepe (2012) explained that perceived organizational support can effectively mitigate worker's workplace problems. Therefore, high perceived organizational support will show workers that there is emotional support and assistance from the organization when facing high demands at work. This, in turn, can reduce psychological distress or perceived job stress.

On the other hand, perceived supervisor support can also create a comfortable work environment that minimizes worker's stress (Sloan, 2012). Some research results also show that perceived supervisor support is one of the antecedents of stress at work (e.g., Jung et al., 2020). This can occur because supervisors are in a position to address worker complaints and help workers get the necessary resources (Boz et al., 2009). Perceived supervisor support is defined as the extent to which workers feel that their supervisor values their well-being and contributions and cares about the level of stress their subordinates feel (Eisenberger et al., 2002; Kath et al., 2012). Cummins (1990) reported that workers with good relationships with supervisors and coworkers will usually be successful and productive at work, even when under conditions of severe job stress.

Nevertheless, the results of a meta-analysis study by Viswesvaran et al., (1999) showed that the moderating effect of perceived social support proved inconsistent and tended to depend on the source of social support, the recipient of social support, and the type of stressor studied. The results of the meta-analysis research are still relevant because some recent research results show the inconsistent role of the perceived social support variable. For example, Sarfraz et al. (2019) found that perceived organizational support significantly moderates workplace ostracism and stress. However, Xu and Yang (2021) found that perceived organizational support does not significantly moderate between job stress and exhaustion. Therefore, this study seeks to deepen the understanding of perceived social support, which plays a role as a moderator, especially in the Indonesian context.

Based on the existing theoretical gap, the first hypothesis (H1) proposed in

this study is that road traffic congestion positively affects stress at work. The second hypothesis (H2) proposed is that perceived organizational support moderates the relationship between road traffic congestion and stress at work. The third hypothesis (H3) proposed is that perceived supervisor support moderates the relationship between road traffic congestion and stress at work.

METHOD

Design

This research design is quantitative non-experimental with a survey method. This study examines the role of moderator variables in influencing the independent variable with the dependent variable. The research model is contained in Figure 1 below.

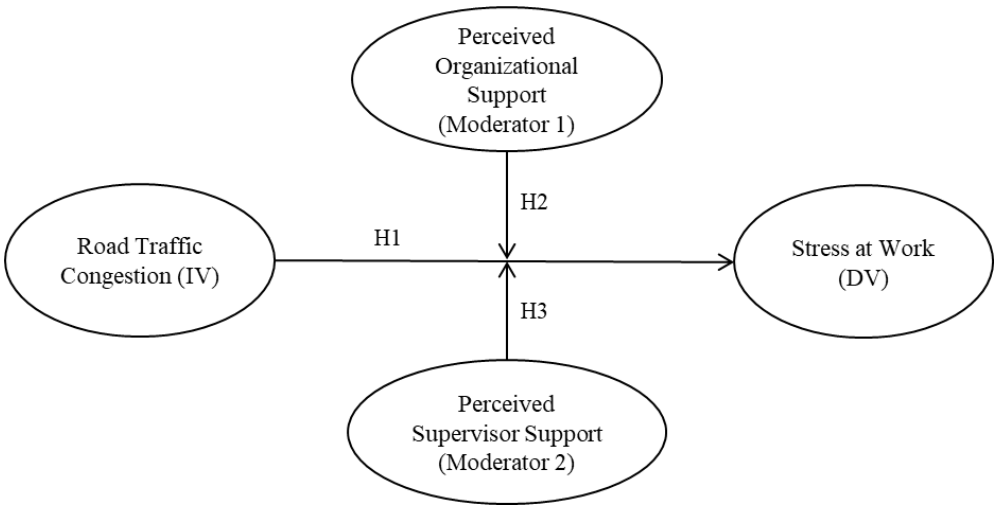


Figure 1. Research Model

Participants

The participants in this study were workers at organizations in Indonesia who experienced traffic congestion while commuting to work or from work. The G*Power 3.1 application was used to calculate an adequate sample size for this study. The program showed that to achieve an effect size of 0.15, a minimum of 89 participants was required at 95% statistical levels (Faul et al., 2007). The sample selection technique used was convenience sampling, which was part of non-random sampling. The research sample successfully collected and analyzed in this study was 213 participants.

Instrument

The measuring instrument used in this study was a Likert scale consisting of 6 answer options, namely 1 = Strongly Disagree; 2 = Disagree; 3 = Slightly Disagree; 4 = Slightly Agree; 5 = Agree; 6 = Strongly Agree. Stress at work was measured by a Weerasinghe et al., (2020) scale developed from Hennessy and Wiesenthal (1997). An example item was "I felt uncomfortable for several hours at work after experiencing traffic jams on the way to work". The item analysis results showed that the reliability of the measuring instrument from the Cronbach alpha score was 0.76.

Road traffic congestion was measured using the scale of Weerasinghe et al. (2020). The scale used consists of 13 items. An example item was "I feel that my time is wasted when I am stuck in a traffic jam". The item analysis result showed the reliability of the measuring instrument from the Cronbach alpha score was 0.80. Perceived organizational support was measured by the scale of Eisenberger et al. (1986). The scale used consists of 8 items. An example item was "The organization where I work really cares about my well-being". The item analysis result showed that the reliability of the measuring instrument from the Cronbach alpha score was 0.86. Perceived supervisor support was measured by a scale developed by Puah et al. (2016). The scale used consists of 8 items. An example item was "My supervisor is willing to listen to my safety-related problems". The item analysis result showed that the reliability of the measuring instrument from the Cronbach alpha score was 0.90.

Data Analysis

The data analysis technique used Hayes's PROCESS macro in the IBM SPSS Statistics version 26 application. Hayes model 2 (moderated regression analysis) was used to test the hypotheses in this study. The normality test in this study was not carried out because bootstrapping was carried out (N = 5,000 samples) (Hayes, 2022).

RESULT AND DISCUSSION

The study used a self-report measurement tool so that there was the potential for common method variance. The common method variance was evaluated using Harman's single-factor test, which resulted in a variance value of 21.03%. The resulting variance value was below 50%, so it can be concluded that the data in this study passed the common method bias test (MacKenzie & Podsakoff, 2012).

Table 1. Respondent Demographics

Characteristics	N = 213	Percentage
Age		
Generation Y/Millennials (23-42 years old)	34	16%
Generation Z (18-22 years old)	179	84%
Gender		
Male	86	40.4%
Female	127	59.6%
Distance from Residence to Workplace		
<5 km	79	37.1%
5-15 km	95	44.6%
16-30 km	23	10.8%
>30 km	16	7.5%

Table 1 shows that the majority of respondents in this study are in the millennial/Y generation (n=179), most of the respondents are also female (n=127), and respondents who are workers mostly have a distance between their residence and workplace of 5-15 km (n=95).

Table 2. Correlation among the Variables

Variable	M	SD	1	2	3	4	5	6	7
1. Gender (M[a]=86; F[b]=127)	-	-	1	-	-	-	-	-	-
2. Age (tahun)	26	5	-0.06	1	-	-	-	-	-
3. Distance (km)	11	10	-0.03	0.16*	1	-	-	-	-
4. RTC[c]	4.1	0.7	0.08	-0.20**	-0.09	1	-	-	-
5. POS[d]	4.6	0.8	0.13	-0.03	-0.03	-0.14**	1	-	-
6. PSS[e]	4.6	0.7	0.12	-0.09	-0.11	0.24**	0.64**	1	-
7. Stress at Work	4.1	0.9	0.14*	-0.10	-0.05	0.60**	0.15*	0.18**	1

[a]M = Male; [b]F = Female; [c]RTC = Road Traffic Congestion;
[d]POS = Perceived Organizational Support; [e]PSS = Perceived Supervisor Support

Table 2 summarizes each research variable's mean, standard deviation, and intercorrelation. The analyzed data shows that respondents' gender correlated with stress at work ($p>0.05$), while age and distance from residence to work do not correlate with stress at work ($p>0.05$). Therefore, only gender is included as a covariate in the regression analysis for the hypothesis.

Moderated regression analysis was conducted using PROCESS macro v 3.0 model 2 (Hayes, 2022). This study aims to explain the role of road traffic congestion on stress at work and examines the moderating effects of perceived organizational support and supervisor support. The regression coefficient data presented in Table 3 shows that road traffic congestion, perceived organizational support, perceived supervisor support, the interaction between road traffic congestion and perceived organizational support, and the interaction between road traffic congestion and perceived supervisor support explain 39% of the total variance in leader support ($R2 = 0.39$, $F = 21$, $p<0.001$).

Table 3. Hayes Process Macro Model 2 Analysis Results (Moderated Regression Analysis)

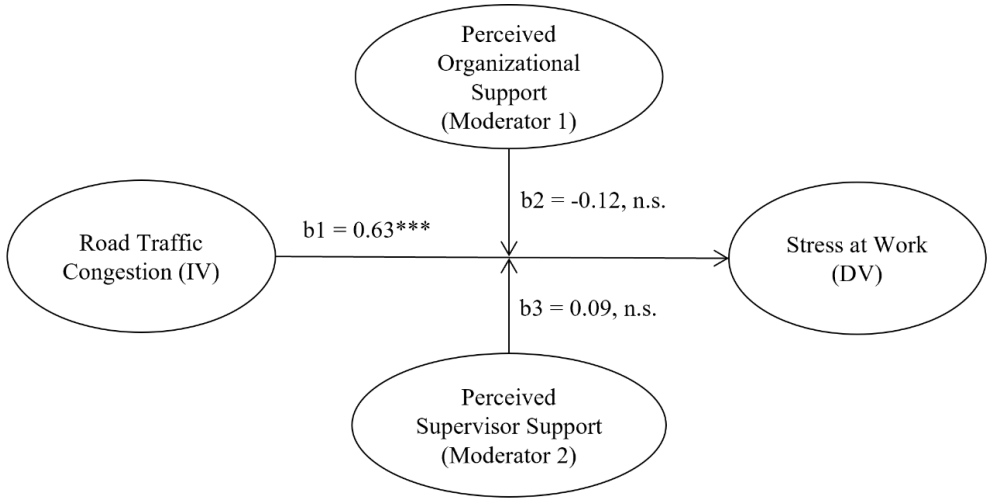
Variable	Stress at Work				ULCI
	β	se	p	LLCI	
Road Traffic Congestion	0.63	0.08	0.00	0.48	0.78
Perceived Organizational Support	-0.16	0.07	0.03	-0.30	-0.01
Int_1 (KLL*POS[a])	-0.12	0.09	0.14	-0.29	0.05
Perceived Supervisor Support	0.14	0.09	0.11	-0.03	0.31
Int_2 (KLL*PSS[b])	0.09	0.11	0.43	-0.13	0.31
Control Variable					
Gender	0.16	0.10	0.11	-0.04	0.35
R^2	0.39***				
F	21				
df1	6				
df2	206				
Int_1 (KLL*POS)					
ΔR^2	0.01				
F	2.14				
p	0.14 (n. s.)				
Int_2 (KLL*PSS)					
ΔR^2	0.00				
F	0.61				
p	0.43 (n. s.)				

[a]POS = Perceived Organizational Support
[b]PSS = Perceived Supervisor Support
Note: ***p<0.001; n.s. = not significant

The results of this research hypothesis test are also summarized in Table 3, which shows that road traffic congestion plays a significant positive role in stress at work (β = 0.63, se = 0.08, p<0.001). The results of the hypothesis model analysis in this study can be seen in Figure 2. This finding suggests that road traffic congestion can stress workers at work. Therefore, this result confirmed the study's first hypothesis (H1). The finding of H1 supported by this data is in line with several other research results (i.e., Haider et al., 2013; Jin et al., 2022; Weerasinghe et al., 2020; Gottholmseder et al., 2009), which explain that spending more time on the streets positively increases feelings of stress at work. Especially if it is in a highly congested location or area, the potential to experience stress is much higher.

Negative experiences in traffic jams also cause many negative consequences for employees, such as tiredness before starting work, loss of concentration, occasional anger, more mistakes, industrial accidents, and poor job performance (Assiseh et al., 2015). Worse, road traffic jams are unpredictable, leaving employees with nothing to control (Dewi & Salendu, 2023). This makes workplace stress and frustration inevitable (Lachmann et al., 2017). In line with the explanation in resource drain theory, which is one of the classic theories that explains the relationship between work and family. Where when limited time and energy resources must be divided from one domain to another, the allocation of available resources to the main domain is reduced. This is manifested in workers who are often exposed to traffic, reducing their time to interact with family or relatives (Morris & Madsen, 2007).

Congestion experienced by individuals can also have an impact on their activities, both personal and social activities. These impacts include sleep disturbance (Nie & Sousa-Poza, 2015), interference with physical activity (Christian, 2012), and social participation in the community (Mattisson et al., 2015). These can increase the potential for employees to experience more stress at work.



Note: n.s. = not significant; ***p < .001 (2-tailed).

Figure 2. Moderated Regression Analysis Model Results

This study's effect of perceived organizational support is seen in the interaction between road traffic congestion and perceived organizational support in influencing leader support (β = -0.12, se = 0.09, p>0.05). The role of perceived organizational support is not significant in moderating the relationship between road traffic congestion and stress at work (F= 2.14, p>0.05, ΔR2 = 0.01). These results indicate that even though there is perceived organizational support, its presence still cannot reduce the impact of road traffic congestion on stress at work. This shows that the second hypothesis (H2) proposed in this study is not supported by the data.

Furthermore, the moderating role of perceived supervisor support is assessed through the interaction between road traffic congestion and perceived supervisor support (β = 0.09, se = 0.11, p>0.05). Similar to perceived organizational support, the role of perceived supervisor support also is not significant in moderating the relationship between road traffic congestion and stress at work (F = 0.61, p>0.05, ΔR2 = 0.00). These results indicate that perceived supervisor support does not provide any effect change in the relationship between road traffic congestion and stress at work perceived by workers. The third hypothesis (H3) proposed in this study is also not supported by the data. The results of the interaction between road traffic congestion, perceived organizational support, and perceived supervisor support in influencing stress at work can be seen in Figure 3.

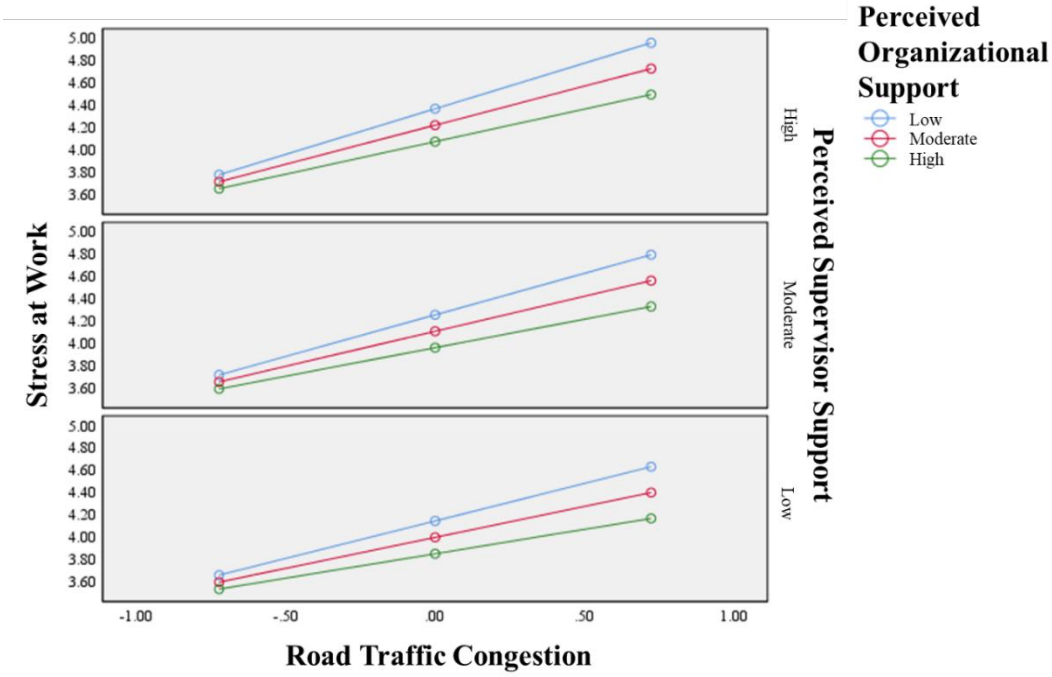


Figure 3. Interaction between Variables

Unlike the expectation, the findings in testing the second hypothesis (H2) and the third hypothesis (H3) in this study show that perceived support in the form of perceived organizational support or perceived supervisor support does not significantly moderate the relationship between road traffic congestion and stress at work. This finding is in line with the results of research by Ganster et al. (1986), which shows that social support has little effect on reducing the impact of stressors (traffic congestion) on stress. This is because the consequences of traffic congestion on

stress are overmuch. These consequences are not only psychological but also physical (Gimenez-Nadal & Molina, 2019; Wang et al., 2023). It further proves that the effects of urban settings in the form of traffic jams have too much impact on workers, even perceived support from organizations and superiors cannot help them much in reducing stress at work. This phenomenon leads to frustration and helplessness for workers because it is difficult to avoid.

Another reason that can be explained is that perceived organizational support and perceived supervisor support tend to be less concrete when compared to perceived co-worker support (Loi et al., 2014). Perceived organizational support is usually in the form of a fair environment, meaningful rewards, positive work arrangements, or perceived supervisor support in the form of good supervisory relations (Rhoades & Eisenberger, 2002). These supports are not directly meaningful to reduce the impact of road traffic congestion on stress at work. It is different from perceived co-worker support in the form of providing effective support through verbal communication or helping with certain tasks whose benefits will be directly felt by workers (Loi et al., 2014).

Ultimately, this study's findings that perceived support is not a significant moderator also confirm the findings of the meta-analysis by Viswesvaran et al. (1999). This analysis clarifies that the evidence of the moderating effects of social support variables is inconsistent. This inconsistency depends on several aspects: (1) who provides the social support; (2) who receives the social support; (3) the type of stressor being investigated. Therefore, this research indicates that perceived organizational support and perceived supervisor support are insufficient to overcome stressors' impact on stress at work.

CONCLUSION

Based on the analysis conducted in this study, it can be concluded that road traffic congestion experienced by workers significantly contributes to increased stress at work. This finding indicates that the negative consequences of encountering road traffic congestion have a substantial adverse impact on employees, particularly in escalating workplace stress. Moreover, the perceived organizational support and perceived supervisor support felt by workers are insufficient to mitigate the stress at work caused by the effects of road traffic congestion. This study has limitations, namely its reliance on self-report measures, which leaves room for potential common method bias. Although the results of Harman's single-factor test indicate that the data in this study are free from common method variance, Baumgartner et al. (2021) recommend implementing additional measures to reduce the potential for common method bias. Future research using self-report measures should consider data collection with time lags between predictor and outcome variables to address this issue. In addition, to provide a more comprehensive explanation of the role of perceived social support variables, future research should explore the role of perceived support from other sources, such as perceived co-worker support and perceived family support.

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