RESEARCH PAPER

Role of Algorithmic Ostracism in Workplace Loneliness Among Gig Workers

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ABSTRACT
The purpose of this research is to gain insight into the extent of algorithmic ostracism, psychological wellbeing and workplace loneliness among gig workers and to gain insight into the indirect relationship between algorithmic ostracism and workplace loneliness through the psychological wellbeing of gig workers. The data of 150 gig workers from various platforms such as Uber, Zomato, Swiggy, Rapido, Amazon/Flipkart was collected, using a structured questionnaire. The research adopted a convenience sampling technique for selecting the gig works. The research employed descriptive design and data analysis technique included Percentage Analysis, Descriptive Statistics, One-Way ANOVA, Confirmatory Factor Analysis (CFI) and Structural Equation Modeling (SEM). They experienced moderate amounts of algorithmic ostracism, psychological well-being and psychological loneliness at work, while the only significant socio-economic variables that had a relation with psychological well-being were workplace loneliness and Educational Qualification, with the latter being the highest. The structural model fit well and psychological well-being was the only significant pathway, as was no relationship between paths of algorithmic ostracism and psychological loneliness in the workplace. The results indicate that there is a need for the gig platforms to have clear algorithmic procedures and a need to improve mental health support for gig workers, which would help minimize the risk of gig workers being excluded and feeling lonely.

Keywords: Algorithmic Ostracism, Gig Workers, Psychological Well-Being, Structural Equation Modeling, Workplace Loneliness
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INTRODUCTION

Algorithmic control has been shown to suppress gig workers' voice behaviour, reducing their willingness to give feedback to platforms [1]. Past researchers have shown that workers need to adapt and change in their normal jobs, to the degree that the systems limit them [2]. However, when the algorithmic conditions are more punitive and ambiguous, workers have also reported a continuous unease and suspicion about the platform, which has been dubbed algorithmic paranoia [3].

Algorithmic oversight does not always have bad consequences. Evidence proposed it can act as both a spur and a barrier to workers' willingness to go beyond their basic duties for customers, depending on how the control is experienced [4]. Stress from algorithmic demands has also been associated with long-term changes to workers' commitment to their gig work, both enhancing and challenging [5]. This stress can be negative and has been indirectly linked to actions which may fly in the face of the platform's interests [6].

Conversely, platforms that are more open in their algorithms can have a positive effect on workers' proactivity in their services [7]. Sense of control over algorithmic processes can be shown to affect a worker's psychological empowerment at work, particularly when the platform is the one that is in control of their emotional behaviour at work [8].

The algorithmic management and app-based labor has been increasingly labelled an unstable space that is crying out for new empirical and theoretical focus from employment relations scholars and HR researchers [9] and has been characterised as a space of struggle in which control is continually negotiated between the control of platforms, algorithms and workers [10]. Data-driven, algorithmic supervision has been shown to have significant impacts on daily job experiences in previous work [11] while newer work questions the neutrality of algorithms, arguing that they are socially produced and reconfigured by workers' everyday practices, including in the food delivery industry [12]. The distinction between algorithmic systems mainly used for controlling workers and algorithmic systems mainly used for providing feedback is important for motivation, behaviour and wellbeing and has been made in another research [13].

The level of trust that workers have in platforms is also related to how these platforms are regulated, as illustrated by the experiences of urban gig workers, whose working conditions range between more and less regulated [14] and by the general literature on algorithmic-management, which is an emerging but

not yet fully developed field of inquiry [15]. Loneliness at work, on the contrary, seems to have been a strong predictor of job turnover, even within short time horizons [16].

Wellbeing seems to be linked to social support, work/life balance, workload and time pressure among informal gig workers in general [17]. Younger workers - especially Gen Y and Gen Z - also experience different pressures and motivations to their wellbeing related to gig work [18]. Longitudinal research further indicates that over time, gig workers are likely to experience increased mental distress because they become increasingly reliant and vulnerable to platform work [19]. Most significantly, recent researches have begun to undermine the gendered understanding of gig work as an act of isolation proposed that the technology which enables the gig platforms has a direct effect on a working-class loneliness [20]. Algorithmic control and loneliness have been research separately in the past whereas the present research seeks to examine the direct association between algorithmic ostracism and loneliness in gig workers.

STATEMENT OF THE PROBLEM

Algorithmic management, which is increasingly the norm and is changing how work is allocated, tracked and assessed and often in opaque, automated processes with little or no human involvement, has increasingly affected the gig economy. The psychological effects of this and the absence of social interaction, have not been studied in depth enough and may relate to the psychological wellbeing and loneliness of gig workers, or gig workers, otherwise known as algorithmic ostracism. Given the multipartite and atomised character of gig work, which is embedded in a gig work system that also has a negative impact on the socialisation opportunities of gig workers, it is necessary to examine the connections between algorithmic ostracism and the psychological wellbeing of gig workers and the part algorithmic ostracism plays in the sense of loneliness within gig work. The purpose of this research is thus to examine the amount of algorithmic ostracism gig workers experience, the direct connection between algorithmic ostracism and workplace loneliness and the indirect connection between algorithmic ostracism and workplace loneliness through the link with psychological well-being.

SCOPE OF THE STUDY

The aim of this research is on the extent of algorithmic ostracism, psychological well-being and workplace loneliness of gig workers and the indirect relationship between algorithmic ostracism and workplace loneliness, which is mediated by psychological well-being. Food delivery, parcel delivery, ride-hailing, freelancing or online delivery by gig workers on various platforms including Uber, Zomato, Swiggy, Amazon/Flipkart and all other platforms related to gig work. The research also entails a comparison of mean differences in algorithmic ostracism, psychological well-being, as well as feelings of loneliness and its indirect relationship in selected socio-economic variables for gig work engagement. This research is expected to provide valuable insights for Gig economy platforms, policy makers, researchers and others researching and addressing the psychological and social problems associated with gig workers in algorithmically-enforced jobs.

OBJECTIVES OF THE STUDY

- To examine the level of algorithmic ostracism among gig workers.
- To assess the psychological well-being of gig workers.
- To analyse the workplace loneliness experienced by gig workers.
- To determine the influence of algorithmic ostracism on workplace loneliness through psychological well-being among gig workers.

LITERATURE REVIEW

Level of Algorithmic Ostracism among Gig Workers

The algorithmic management is an important factor in the allocation and tracking of gig workers' tasks and has been verified as influential in outcomes [21]. Algorithmic governance is presented as a system of contention that has an impact on the inclusion or exclusion of workers [22]. Relative deprivation theory proposed that the effects of algorithmic control can increase gig workers' turnover intentions by creating feelings of unfair treatment and exclusion. [23]. The boundaries of worker autonomy are created by power differentials which influence worker recognition or lack in social and algorithmic structures [24].

An algorithmic control is designed to enhance the connectivity of workers, reducing their autonomy and as a result, their sense of being unacknowledged, thus raising the level of worker frustration [25]. In the workplace, ostracism research proposed that negative consequences of feeling excluded are especially pronounced when people feel like they cannot interact [26]. Algorithmic compensation that is transparent also lowers stress and increases procedural justice, indicating that transparency increases exclusion [27]. Prospected opaque or controlling algorithms leads to workers' sense of disconnection and this sense leads to more workers' intention to leave the organization due to the increased sense of disconnection, perceived usefulness and perceived breach of the psychological contract [28]. Based on this, the following hypothesis is proposed:

H1: The amount of algorithmic ostracism among gig workers is quite high in platforms-based work environments.

Assessing Level Of Psychological Well-Being Among Gig Workers

The scholarship on occupational health hazards, together with that on psychological stress from platform-mediated delivery work, already gives good reason to be concerned about the risks and stress related to digital gig work [29]. The platforms are long-term controlled, which is negatively affecting psychological health and is associated with courier burnout on the platforms [30]. Financial and social security issues are also relevant to the wellbeing of gig workers and job satisfaction is a mediator [31]. Job satisfaction and mental health outcomes differ between gender, highlighting the need to consider gender [32].

The research on a systems perspective reveals that there are psychological stability issues that impact gig workers in Malaysia [33]. Tools for lost wages quantification and challenging algorithmic deactivations reveal ecological and psychological costs of unaccountable platforms [34]. When the benefit of the platform is not consistent in the consumer-platform-worker relationship, vulnerability is an issue for gig workers [35]. The psychological effects are becoming more relevant as the collective worker resistance is gaining more influence [36] This forms the basis of the following research hypothesis:

H2: Algorithmically ostracized gig workers have a strong negative association with mental health.

Assessment of Workplace Loneliness Among Gig Workers

The lack of opportunities for meaningful interactions at the workplace in isolated, task-based allocation of work helps to foster social isolation [37]. Algorithmic management leverage data to monitor and utilize an app to assign tasks rather than with human interaction disconnecting the couriers [38]. Financial precarity and the lack of supportive and secure networks of peers further isolate such individuals [39]. Women and men and also by demographic background, experience varying degrees of loneliness in the workplace, requiring differentiated analysis [40].

There is a lack of institutionalization of Gig workers social belonging, gaps in regulation and organization [41]. The college setting is also distinct from nontraditional jobs and freelance platform work because it fosters a sense of isolation as there is less collegial interaction [42]. Transactional relationships with consumers will not provide for satisfying relationships in the workplace [43]. Job autonomy can lead to a double effect as it can lower awareness of stressors associated with oversight and raise awareness of detachment from the larger work community, an effect that needs to be further explored [44]. This research focused on the following aspects.

H3: Algorithmic ostracism has a positive relationship with gig workers' workplace loneliness.

Influence of Algorithmic Ostracism on Workplace Loneliness through Psychological Well-Being among Gig Workers

Career psychology research indicates that the individual adaptability influences how the worker reacts to stressors, which proposed that links between stressors and outcomes are mediated by psychological resources [45]. Ostracism in the workplace has negative consequences on psychological health and mindfulness acts as a buffer against the effects of ostracism and well-being is a key pathway to downstream outcomes [46]. The well-being is a transmitting process: Loneliness and ostracism are found to be working together in adolescent research and they do so in the presence of social support [47]. Algorithmic management can have a positive impact on engagement through the effects on resource-based processes [48]. Algorithmic pressure has an undesirable impact on gig workers' well-being and avoidance-oriented job crafting is a coping strategy [49]. In digital psychology scholarship, algorithmic work settings are defined as, having an accumulative psychological impact that goes beyond specific stressors [50]. Platform workers' psychological capital and psychological engagement mediate the relations between condition and behaviour [51]. Loneliness in early adolescence has been a subject of research that identifies emotional and externalizing issues as factors shaped by intervening coping factors and aspects of supporting well-being [52]. Drawing on the preceding literature, the following hypothesis is developed:

H4: Algorithmic ostracism significantly indirectly affected gig workers' psychological well-being, with this in turn driving feelings of loneliness at work.

RESEARCH GAP

Previous research have explored algorithmic control/exclusion and psychological stress/gig worker burnout, as well as task-based platform work and feelings of isolation but not linked. Existing research on ostracism and well-being has been conducted in traditional organizational and adolescent settings, while research has lacked a nuanced understanding of how algorithmic ostracism and psychological well-being impacts will affect gig worker well-being in the workplace. This is especially the case where there are no traditional social protection systems in place in gig work settings. In the present context, the current research seeks to fill this gap by using an empirical research to examine how algorithmic ostracism affects the psychological health and the experience of algorithmic workplace loneliness among gig workers.

Figure 1. Conceptual Framework of Gig Work Characteristics and Challenges among Gig

Workers

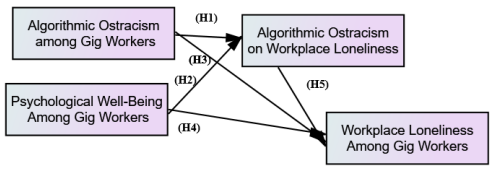


Figure 1 illustrates the hypothesized relationships among algorithmic ostracism, psychological well-being and gig worker work loneliness. This algorithmic ostracism will be a direct effect on the mediation construct (H1), that is, algorithmic decision making is hypothesized to result in feeling excluded from others; algorithmic ostracism will be a direct effect on at-work loneliness (H3), because task-based gig work is hypothesized to be isolationist. Hypothesis 2 (mediator) is also hypothesized to be influenced by psychological well-being, as it is a mediator of workplace stressors and to also directly affect workplace loneliness (H4). Furthermore, the mediating mechanism also has an indirect path between algorithmic ostracism and workplace loneliness (H5), as psychological well-being is the way in which algorithmic ostracism affects workplace loneliness. These two will be seen as a theoretical basis for investigating direct and indirect relationships between constructs.

RESEARCH METHODOLOGY

Research Type: Descriptive

Data Collection

Primary Data: A structured survey was conducted among gig workers engaged in various online platform-based services.

Secondary Data: Peer-reviewed journals, books, RBI reports, bank publications and other reliable digital sources.

Sampling Type: Convenience Sampling

Sampling Universe: Gig workers involved in platform-based employment services such as delivery, ride-hailing, freelancing and online services.

Sample Size: 150

Table 1: Reliability of the Study

Sno	Dimensions	Number of items	Cronbrach Alpha value
1	Level of Algorithmic Ostracism among Gig Workers	5	0.923
2	Assessing Level Of Psychological Well-Being Among Gig Workers	5	0.813
3	Assessment of Workplace Loneliness Among Gig Workers	5	0.828
4	Influence of Algorithmic Ostracism on Workplace Loneliness through Psychological Well-Being among Gig Workers	5	0.989

The Cronbach's alpha internal consistency reliability was determined for the four research dimensions. The Cronbach's alpha was calculated for the 4 research dimensions to determine the internal consistency reliability of the dimensions. The internal coherence of the dimension 'algorithmically ostracized' and 'psychological well-being' and 'workplace loneliness' were $\alpha = 0.923$ and $\alpha = 0.813$ and 0.828 respectively, which were considered satisfactory. The strongest correlation was 0.989 between the dimension of algorithmic ostracism's impact on psychological well-being and workplace loneliness. The means of all the scales in all dimensions indicate the reliability and internal consistency of the instruments used in this research.

Tools used for the study: Percentage Analysis, Descriptive Statistics, ANOVA, Confirmatory Factor Analysis, Structural Equation Modeling.

LIMITATIONS OF THE STUDY

- The experiences of loneliness in work were conceptualized as a unifying construct, which distinguished emotional and social aspects of loneliness.
- Only algorithmic ostracism, well-being and loneliness were considered; other constructs such as job insecurity or algorithmic trust were not considered.
- This research only took into account psychological well-being as a mediator and neglected other factors such as coping strategies or social support.

DATA ANALYSIS AND INTERPRETATION

PERCENTAGE ANALYSIS

Table 2: Socio-Economic Variables of the Gig Workers

Socio-Economic Variables	Particulars	Frequency	Percent
Gender	Male	88	58.7
	Female	62	41.3
Age	21–30 years	18	12.0
	31–40 years	38	25.3
	41–50 years	35	23.3
	51–60 years	34	22.7
	Above 60 years	25	16.7
Educational Qualification	School Level Education	42	28.0
	Diploma	41	27.3
	Undergraduate Degree (UG)	28	18.7
	Postgraduate Degree (PG)	39	26.0
Place of Residence	Rural	23	15.3
	Semi-rural	29	19.3
	Town	45	30.0
	Urban	32	21.3
	Metropolitan City	21	14.0
Primary Gig Platform	Uber	25	16.7
	Zomato	37	24.7
	Swiggy	23	15.3
	Rapido	27	18.0
	Amazon/Flipkart	38	25.3
Type of Gig Work	Food Delivery	20	13.3
	Parcel Delivery	35	23.3
	Ride-Hailing / Bike Taxi	38	25.3
	Freelancing / Online Services	37	24.7
	Other	20	13.3
Work Experience in Gig Work	Less than 1 year	55	36.7
	1–3 years	43	28.7
	3–5 years	38	25.3
	More than 5 years	14	9.3
Employment Status	Full-time Gig Worker	57	38.0
	Part-time Gig Worker	44	29.3
	Student with Gig Work	34	22.7
	Self-employed with Gig Work	15	10.0
Monthly Income from Gig Work	Below Rs.15,000	33	22.0
	Rs.15,001–Rs.30,000	24	16.0
	Rs.30,001–Rs.45,000	54	36.0
	Rs.45,001–Rs.60,000	23	15.3
	Above Rs.60,000	16	10.7
Average Working Hours per Day	Less than 4 hours	19	12.7
	4–6 hours	47	31.3
	7–9 hours	53	35.3
	10 hours or more	31	20.7
Experience of Account	Never	22	14.7
	Once	37	24.7
	Twice	38	25.3

Suspension	Three times	36	24.0
	More than three times	17	11.3
Type of Support Received from the Platform	Technical Support	25	16.7
	Customer Support	51	34.0
	Safety Support	22	14.7
	Financial Support	37	24.7
	No Support Received	15	10.0
	Total	150	100.0

Among 150 gig workers, the gender composition reveals that 58.7% are male and 41.3% are female. The age-wise distribution demonstrates that 25.3% belong to the 31–40 years age group, 23.3% in the 41–50 years group, 22.7% in the 51–60 years group, 16.7% are above 60 years and 12% are 21–30 years. The educational qualification profile indicates that, 28% have completed school-level education, 27.3% hold a diploma, 26% possess a postgraduate degree and 18.7% have an undergraduate degree. The distribution according to place of residence indicates that 30% reside in towns, 21.3% in urban areas, 19.3% in semi-rural areas, 15.3% in rural areas and 14% in metropolitan cities.

The analysis of primary gig platform usage indicates that 25.3% primarily work through Amazon/Flipkart, 24.7% through Zomato, 18% through Rapido, 16.7% through Uber and 15.3% through Swiggy. The pattern of gig work participation reveals that 25.3% are engaged in ride-hailing/bike taxi services, 24.7% in freelancing/online services, 23.3% in parcel delivery, 13.3% each are involved in food delivery and other gig work. The duration of engagement in gig work indicates that 36.7% have less than one year of experience, 28.7% have 1–3 years, 25.3% have 3–5 years and 9.3% have more than five years of experience. The employment structure shows that 38% are full-time gig workers, 29.3% are part-time gig workers, 22.7% are students engaged in gig work and 10% are self-employed individuals undertaking gig work.

The earnings distribution from gig work reveals that 36% earn between Rs. 30,001 and Rs. 45,000, 22% earn below Rs. 15,000, 16% earn between Rs. 15,001 and Rs. 30,000, 15.3% earn between Rs. 45,001 and Rs. 60,000 and 10.7% earn above Rs. 60,000. The work-hour pattern demonstrates that 35.3% work 7–9 hours, 31.3% work 4–6 hours, 20.7% work 10 hours or more and 12.7% work less than four hours daily. The pattern of account suspension among gig workers reveals that 25.3% have experienced suspension twice, 24.7% once, 24% three times, 14.7% have never experienced account suspension and 11.3% have experienced suspension more than three times. The availability of platform support reveals that 34% received customer support, 24.7% received financial support, 16.7% received technical support, 14.7% received safety support and 10% reported receiving no support from the platform.

Table 3: Level of Algorithmic Ostracism among Gig Workers

Particulars	N	Mean	SD
The platform's algorithmic system disregards my grievances, leaving me with a sense of being systematically overlooked.	150	3.15	1.382
Task allocation by the algorithm appears arbitrary, engendering a perception of exclusion.	150	2.76	1.398
I am rarely afforded transparency regarding algorithmic decisions affecting my ratings or incentives.	150	3.02	1.449
The absence of human responsiveness reinforces my sense of communicative isolation.	150	3.15	1.494
The impersonal nature of algorithmic supervision fosters a sense of depersonalisation.	150	2.95	1.455
Valid N (list wise)	150		

As per the aforementioned data, the gig workers agree with platform's algorithmic system disregards their grievances, leaving them with a sense of being systematically overlooked (3.15), being rarely afforded transparency regarding algorithmic decisions affecting their ratings or incentives (3.02) and absence of human responsiveness reinforces

their sense of communicative isolation (3.15). The gig workers disagree with task allocation by the algorithm appears arbitrary, engendering a perception of exclusion (2.76) and impersonal nature of algorithmic supervision fosters a sense of depersonalisation (2.95).

Table 4: Assessing Level of Psychological Well-Being Among Gig Workers

Particulars	N	Mean	SD
I maintain emotional stability despite the unpredictability of gig work.	150	2.92	1.417
Adequate autonomy in structuring work enhances self-efficacy.	150	3.02	1.421
A sense of purpose is derived from gig work, despite its uncertainties.	150	2.95	1.462
Positive relationships and social support help buffer work-related strain.	150	2.89	1.421
I recover quickly from setbacks or challenges associated with algorithmically managed gig work.	150	3.08	1.445
Valid N (list wise)	150		

As illustrated in the preceding table, the gig workers disagree with maintain emotional stability despite the unpredictability of gig work (2.92), sense of purpose is derived from gig work, despite its uncertainties (2.95) and positive relationships and social support help buffer work-related strain (2.89). The gig workers agree with adequate autonomy in structuring work enhances self-efficacy (3.02) and recovering quickly from setbacks or challenges associated with algorithmically managed gig work (3.08).

Table 5: Assessment of Workplace Loneliness Among Gig Workers

Particulars	N	Mean	SD
Talking to customers all day still leaves me feeling emotionally distant.	150	2.89	1.405
There is little camaraderie among gig workers on the same platform.	150	3.17	1.403
Working without a fixed base cuts down my chances for genuine social connection.	150	2.99	1.435
I do not have anyone within my work environment whom I can confide in about work-related concerns.	150	2.95	1.453
A sense of isolation persists even while working in public or shared spaces.	150	3.25	1.404
Valid N (list wise)	150		

The data presented in table 6 reveal that the gig workers disagree with talking to customers all day still leaves them feeling emotionally distant (2.89), working without a fixed base cuts down their chances for genuine social connection (2.99) and anyone within their work environment whom they can confide in about work-related concerns (2.95). The gig workers agree with little camaraderie among gig workers on the same platform (3.17) and sense of isolation persists even while working in public or shared spaces (3.25)

Table 6: Influence of Algorithmic Ostracism on Workplace Loneliness through Psychological Well-Being among Gig Workers

Particulars	N	Mean	SD
I feel psychologically drained due to the way the platform's algorithm manages my work.	150	2.95	1.449
I experience a sense of isolation while performing my gig work.	150	3.11	1.378
I find it difficult to cope emotionally with the platform's impersonal decision-making.	150	3.01	1.419

I feel disconnected from the people I interact with during my work.	150	2.97	1.407
My overall mental well-being has declined since I started relying on algorithm-based work platforms.	150	2.99	1.484
Valid N (list wise)	150		

The statistical results presented in the table the gig workers disagree with feel psychologically drained due to the way the platform's algorithm manages their work (2.95), feel disconnected from the people they interact with during their work (2.97) and overall mental well-being has declined since they started relying on algorithm-based work platforms (2.99). The gig workers agree with experience a sense of isolation while performing their gig work (3.11) and finding it difficult to cope emotionally with the platform's impersonal decision-making (3.01).

Table 7: One-Way ANOVA Results for Algorithmic Ostracism, Psychological Well-Being, Workplace Loneliness and the Indirect Association Across Socio-Economic Variables

Socio-economic Variables	**F (AO)**	**Sig (AO)**	**F (PA)**	**Sig. (PA)**	**F (LP)**	**Sig. (LP)**	**F (IA)**	**Sig (IA)**
Age	1.753	.142	1.078	.370	.102	.982	1.284	.278
Educational Qualification	.515	.672	3.158	.027	1.762	.157	2.471	.063
Place of Residence	.759	.553	.787	.536	1.918	.110	0.912	.456
Primary Gig Platform	.906	.462	.401	.808	.714	.584	1.138	.339
Type of Gig Work	1.493	.207	.905	.463	1.359	.251	1.654	.177
Work Experience in Gig Work	.625	.600	.845	.471	2.183	.093	2.024	.112
Employment Status	.393	.759	.280	.840	.531	.662	0.684	.563
Monthly Income from Gig Work	.526	.717	.979	.421	.428	.789	1.321	.267
Average Working Hours per Day	.851	.468	.959	.414	.350	.789	0.781	.506
Experience of Account Suspension	.926	.450	.582	.676	1.829	.126	1.547	.189
Type of Support Received	1.100	.359	1.714	.150	.321	.864	0.936	.445

from the Platform								

To compare selected socio-economic variables for the research variables (Algorithmic Ostracism (AO), Psychological Well-Being (PA), Workplace Loneliness (LP) and Indirect Association (IA)), a One-Way ANOVA procedure was used. The results indicated that there was an association between Educational Qualification and Psychological Well-Being since the significant value obtained was < 0.05. All other significance values (Age, Place of Residence, Primary Gig Platform, Type of Gig Work, Work Experience in Gig Work, Employment Status, Monthly Income from Gig Work, Average Working Hours per Day, Experience of Account Suspension and Type of Support Received from the Platform) are larger than 0.05, which indicates that there are no statistically significant differences with respect to Algorithmic Ostracism, Psychological Well-Being, Workplace Loneliness and Indirect Association. In addition, the relationship between Educational Qualification and Algorithmic Ostracism, Workplace Loneliness and Indirect Association are not strong, however the Indirect Association is getting closer. The overall results indicate that Educational Qualifications was the only significant socio-economic variable in the influence on Psychological Well-Being while other socio-economic variables showed insignificant difference in the constructs researched.

Table 8: Confirmatory Fit Index for the Structural Model Examining the Relationships among Algorithmic Ostracism, Psychological Well-Being and Workplace Loneliness among Gig Workers

	Component	
	1	2
Level of Algorithmic Ostracism among Gig Workers	**.929**	
Assessing Level Of Psychological Well-Being Among Gig Workers	**.934**	
Assessment of Workplace Loneliness Among Gig Workers		**.911**
Influence of Algorithmic Ostracism on Workplace Loneliness through Psychological Well-Being among Gig Workers		**.955**

The above table shows that level of algorithmic ostracism among gig workers (0.929), assessing level of psychological well-being among gig workers (0.934), assessment of workplace loneliness among gig workers (0.911) and influence of algorithmic ostracism on workplace loneliness through psychological well-being among gig workers (0.955) are taking for the decision-making process of this research.

Table 9: Model Fit Summary for the Structural Model Examining the Relationships among Algorithmic Ostracism, Psychological Well-Being and Workplace Loneliness among Gig Workers

Full Model	CMIN/DF	P	RMR	GFI	AGFI	IFI	CFI	RMSEA
Obtained value	3.321	<.001	0.042	0.945	0.921	0.917	0.942	0.054
Observed value	≤ 5	<.05	< 1	> 0.90	> 0.90	0.7-1.0	0-1	<.08

Table 9 shows the results of the structural model testing the algorithmic ostracism and psychological well-being and gig workers' psychological loneliness. The model was reasonable with regard to the fit of the model to the data. The Chi square value for the model (3.321) is significant, but not a concern as this is a small sample and is within the acceptable limits (≤5). Pre-set threshold for RMR was not met, the GFI (0.945) and AGFI (0.921) were higher than the threshold of 0.90, which means that the observed covariance structure was a good fit. Also, the IFI (0.917) and CFI (0.942) were within their thresholds and RMSEA was less than the acceptable threshold of .08, reflecting a better performance of the model than a baseline model. Overall, these indices confirm good and acceptable fit of the structural model proposed.

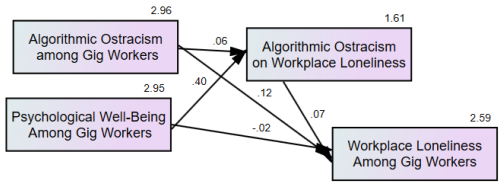
Table 10: Structural Path Coefficients for the Relationships among Algorithmic Ostracism, Psychological Well-Being and Workplace Loneliness among Gig Workers

			Estimate	S.E.	C.R.	P	Label
Psychological Well-	<---	Algorithmic	.062	.082	.759	.448	S

Being (med)		Ostracism					
Psychological Well-Being (med)	<---	Psychological Well-Being	.396	.082	4.832	***	S
Work Loneliness	<---	Psychological Well-Being (med)	.071	.082	.871	.384	S
Work Loneliness	<---	Psychological Well-Being	-.015	.088	-.171	.864	NS
Work Loneliness	<---	Algorithmic Ostracism	.120	.082	1.467	.142	S

Table 10 shows the correlation between the variables of algorithmic ostracism and psychological well-being and work loneliness. The path between Algorithmic Ostracism and the mediator, Psychological Well-Being was not statistically significant (β = .062, C.R. = .759, p = .448) and this indicates that Algorithmic Ostracism does not have a significant influence on the mediator, Psychological Well-Being. The pathway between Psychological Well-Being and its corresponding mediator, however, was statistically significant (β = .396, C.R. = 4.832, p < .001) and had a strong and significant relationship. The indirect effect, Psychological Well-Being to Workplace Loneliness through Mediation was not significant (β = .071, C.R. = .871, p = .384) and the direct effect, Psychological Well-Being to Workplace Loneliness was not significant (β = -.015, C.R. = -.171, p = .864). Moreover, the direct effect of Algorithmic Ostracism on Workplace Loneliness was not statistically significant (β = .120, C.R. = 1.467, p = .142). Overall, of the five structural pathways explored, only the pathway of Psychological Well-Being with the mediator was statistically significant, while the other pathways were not, suggesting that there were few direct and indirect effects of this pathway between the constructs reseracheddied in this pathway.

Fig. 2: Structural Model for Algorithmic Ostracism, Psychological Well-Being and Workplace Loneliness among Gig Workers



The Figure 3 shows the links between algorithmic ostracism and psychological well-being and workplace loneliness among gig workers. Conversely, the path coefficient for Algorithmic Ostracism amongst Gig Workers to the mediating variable Algorithmic Ostracism on Workplace Loneliness was relatively low (β = .06) and the path coefficient for Psychological Well-Being amongst Gig Workers to the same mediating variable was found to be rather high (β = .40). Workplace Loneliness Among Gig Workers (WLGAW) in turn had a small positive relationship with the mediating construct (β = .07). The direct effect of Algorithmic Ostracism (β = .12) and Psychological Well-Being (β = -.02) were relatively small, the latter a very small inverse correlation. The numbers above each construct (2.96, 2.95, 1.61 and 2.59) are the variance estimates for each of the following constructs: Algorithmic Ostracism, Psychological Well-Being, the mediating construct and Workplace Loneliness, respectively. The model shows that the pathway between Psychological Well-Being and the other pathway in the model has a high explanatory power and the other pathways have low explanatory power.

FINDINGS

Socio-Economic Variables of the Gig Workers

Majority of the gig workers were Male. Most of the gig workers belonged to the 31–40 years age group. Majority of the gig workers had school level education. Most of the gig workers were residing in town areas. The majority of the gig workers used Amazon/Flipkart as their primary gig platform. Most of the gig workers were engaged in Ride-Hailing / Bike Taxi work. Majority of the gig workers had less than 1 year of experience in gig work. Most of the gig workers were Full-time Gig Workers. Majority of the gig workers earned Rs.30,001–Rs.45,000 as monthly income from gig work. Most of the gig workers worked 7–9 hours per day. Majority of the gig workers experienced account suspension twice. Most of the gig workers received Customer Support from the platform.

Level of Algorithmic Ostracism among Gig Workers

As per the aforementioned data, the gig workers agree with platform's algorithmic system disregards their grievances, leaving them with a sense of being systematically overlooked, being rarely afforded transparency regarding algorithmic decisions affecting their ratings or incentives and absence of human responsiveness reinforces their sense of

communicative isolation. The gig workers disagree with task allocation by the algorithm appears arbitrary, engendering a perception of exclusion and impersonal nature of algorithmic supervision fosters a sense of depersonalisation.

Assessing Level of Psychological Well-Being Among Gig Workers

As illustrated in the preceding table, the gig workers disagree with maintain emotional stability despite the unpredictability of gig work, sense of purpose is derived from gig work, despite its uncertainties and positive relationships and social support help buffer work-related strain. The gig workers agree with adequate autonomy in structuring work enhances self-efficacy and recovering quickly from setbacks or challenges associated with algorithmically managed gig work.

Assessment of Workplace Loneliness Among Gig Workers

The data presented in table 6 reveal that the gig workers disagree with talking to customers all day still leaves them feeling emotionally distant, working without a fixed base cuts down their chances for genuine social connection and anyone within their work environment whom they can confide in about work-related concerns. The gig workers agree with little camaraderie among gig workers on the same platform and sense of isolation persists even while working in public or shared spaces.

Influence of Algorithmic Ostracism on Workplace Loneliness through Psychological Well-Being among Gig Workers

The statistical results presented in the table the gig workers disagree with feel psychologically drained due to the way the platform's algorithm manages their work, feel disconnected from the people they interact with during their work and overall mental well-being has declined since they started relying on algorithm-based work platforms. The gig workers agree with experience a sense of isolation while performing their gig work and finding it difficult to cope emotionally with the platform's impersonal decision-making.

RECOMMENDATIONS

- Platforms should enhance algorithmic transparency, as this may reduce workers' sense of being overlooked and improve perceived fairness.
- Introducing human-mediated communication alongside algorithmic supervision could help lessen depersonalisation and communicative isolation.
- Strengthening psychological support systems, such as counselling access, may enable workers to better cope with work-related strain.
- Creating platforms for social interaction among gig workers might help reduce workplace loneliness.
- The research should explore additional mediators, such as coping strategies, to better understand these relationships over time.

CONCLUSION

The phenomenon of algorithmic ostracism, psychological well-being and psychological loneliness at work among gig workers and the indirect pathway between algorithmic ostracism and psychological loneliness at work via psychological well-being were explored in the present research. Descriptive results revealed moderate prevalence of algorithmic ostracism, primarily due to unaddressed grievances and poor transparency about decision making, as well as moderate prevalence of psychological well-being and feelings of loneliness at work, but a persistent sense of loneliness, despite working in the same environment.

The inferential analysis revealed that only one variable of educational qualification had significant difference between constructs while the other variables did not have significant difference between constructs. The confirmatory factor analysis showed the difference of constructs and model of the structural equation presented good fit for all the indices.

The structural path analysis results showed that psychological well-being was the only factor that was statistically significant in the model, while algorithmic ostracism and workplace loneliness were not. Based on the findings, the following recommendations were made to the gig platforms: Psychological support system should be improved to lessen the sense of being excluded; Further research on other intervening factors in this area are needed.

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