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ALGORITHMIC MANAGEMENT AND THE EVOLUTION OF DIGITAL HRM: A STUDY OF PLATFORM WORKERS IN CHENNAI

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ABSTRACT

The fast growth of technology in modern business has made platform-driven companies very important in city economic development. In this situation traditional ways of managing people at work are being replaced by computer systems that control what tasks people do how well they do their jobs and watch them all the time. This helps businesses grow. It also creates problems for workers. This study looks at how digital ways of managing people at work are developing in the gig economy in Chennai. To see how computer systems affect workers we collected information from 100 workers in Chennai using a questionnaire. We wanted to know about things like how fair workers think the computer systems are, how stressed they are because of technology and how happy they are with their jobs. What we found out is that though being able to adapt to platforms is very important being watched closely by computers all the time makes workers very stressed and unhappy with their jobs. This study shows that businesses really need to start using computer systems that focus on people and their needs. The digital HRM practices in Chennai's gig economy are an example of this. We need to make sure that digital innovation in trade helps workers, not businesses. The development of HRM practices is very important for platform workers in Chennai.

Keywords: Algorithmic management, Digital HRM, Gig economy, Platform workers, Job satisfaction

I. INTRODUCTION

The way digital technology is changing the world of business is really fast. This has changed the way cities make money. Now we have a kind of job market, where people work on their own and use online platforms to find work. The Indian job market like this is growing quickly. Some people think that the number of workers using platforms like Rapido, ola and uber moto as well as food delivery platforms like Zomato, Swiggy and Dunzo will go from 7.7 million to more than 23.5 million by 2030. This is a deal because it will be around 4.1 percent of all the jobs in the country. The Indian gig economy is growing at a rate of 17% every year. This has changed the way things are delivered to people in cities.

This new way of working also creates some problems. Companies that use platforms are in charge of everything but they make the people who work for them pay for things like fuel and taking care of their vehicles. The Indian gig economy is an example of this. This is a change and we can see it in cities like Chennai. Some research from the Tamil Nadu state planning commission shows that many people who work on these platforms have to work long hours. Then 45 percent of them work for 10 to 12 hours a day and 33 percent work for 13 to 15 hours. The Indian gig economy is not easy for these workers. Also, most of the people who work on two-wheeler platforms do not make a lot of money. They only make between Rs. 400 and Rs. 1,000 per day. The Indian gig economy is not stable for them. They have to rely on the platforms algorithms and incentives to make money. This makes them vulnerable, to not having an income and getting traffic fines. The Indian gig economy needs to be regulated to help these workers.

Quantitatively, the shift from traditional personnel management to digital HRM incorporates robust server-based regulations that significantly change employee conduct. In these platform ecosystems, human supervisors are systematically substituted by algorithmic management, where software systems independently manage talent onboarding, task allocation, behavioural monitoring, flexible incentive frameworks, and performance evaluations. Although this automated system enhances business scalability and operational efficiency, it generates significant friction at the ground level. At the convergence of digital advancement and organizational dynamics exists the cumulative impact of technostress psychological pressure resulting from ongoing exposure to unclear algorithmic feedback systems. In Chennai's heavily populated traffic routes, employees encounter a twofold threat: manoeuvring through physical dangers on busy streets while competing against server-controlled deadlines to earn daily rewards. This constant automated monitoring limits perceived employee autonomy, transforming the corporate illusion of digital flexibility into severe job insecurity. As a result, employee trust, organizational alignment, and overall job satisfaction face noticeable decline, indicating a serious governance issue in contemporary business environments.

This research utilizes an empirical framework to systematically examine these operational dynamics, concentrating on a primary sample of 100 platform participants located in significant commercial areas of Chennai. The paper provides strong quantitative insights for digital commerce companies by assessing the direct relationship between algorithmic control systems, levels of technostress, and employee results. In the end, the study progresses how companies can shift from extractive automated systems to a sustainable, human-focused digital HRM approach. The important part of this growing system is kept going by a belief that workers are free to make their own decisions about when to work. The idea is that they are independent and can manage their time. But research on how companies work shows that this is not real. It's like a trick or a problem with the idea of being flexible. Even though companies say workers can choose their hours, the way the system is set up watches and controls their actions closely. If workers try to be truly free by not doing work that is not worth the time or by turning off their

devices they get in trouble. They might see their ratings go down or their access, to work get limited. This makes the idea of freedom into something that controls workers instead.

India is still figuring out how to deal with people who work on platforms like Uber or food delivery services. The government has made some laws that recognize these workers. It is not doing a good job of making sure they are treated fairly. For example, the government needs to make sure that the algorithms used by these companies are fair and that workers can make a living wage. It also needs to provide a way for workers to complain if they are treated unfairly. In cities like Chennai, the government and local authorities are not doing enough to protect workers. This means that workers are at the mercy of the companies and their algorithms. We need to study what is happening in cities like Chennai to understand how to make things better for workers. This will help us make laws that're fair and good for everyone. India needs to make sure that its laws are fair to platform workers. We have to make sure that platform workers, in India are protected. The government needs to do more to help them. Indias platform workers need treatment.

II. OBJECTIVES

- To examine the operational mechanisms and work patterns of platform enterprises in Chennai.
- To analyse the socio-economic profiles and working conditions of platform participants.
- To assess the correlation between algorithmic control, technostress, and job satisfaction.
- To evaluate digital HRM practices and recommend sustainable workforce governance strategies for platform ecosystems.

III. SCOPE AND LIMITATIONS OF THE STUDY

- **Geographical Scope:** The study is strictly bounded within the urban and semi-urban commercial zones of Chennai, capturing the operational landscape of major ride-hailing and food-delivery platforms.
- **Sample Scope:** The empirical investigation is based on a structured sample size of N=100 platform workers.
- **Limitations:** The findings reflect specific regional economic conditions and platform commission models prevalent in Chennai during the study period, which may vary across different geographical jurisdictions or broader national markets.

IV. REVIEW OF LITERATURE

The literature on platform-based labour covers four ideas:

1. **Digital HRM and Technological Efficiency:** Early studies saw tools in human resource management mainly as a way to make work faster. Automated systems and server-controlled rules replace old-style bosses to move tasks and grow a company (Zhang & Wang 2023). Still scholars say that moving HR jobs into machines changes how people work together. This change brings problems for the organization (Monash University 2026).
2. **Algorithmic Control and the "Myth of Flexibility":** Critical labour research shows a gap between what companies say about worker freedom and what really happens with algorithms. Platforms use ratings, job assignments and punishments to steer workers. When a platform worker tries to say no to low-value jobs the system may hide their profile.
3. **Technostress and Digital Surveillance:** Occupational psychology studies point out the pain of constant digital watching. Having fixed server deadlines creates strong technostress. Platform workers feel the pressure of city traffic and the clock of the algorithm. This nonstop digital bond makes workers feel they have no control leading to worry, tiredness and lower job happiness.
4. **Regional Gig Economy Dynamics:** Research on growing cities such as Chennai shows regional problems. When there are no labour rules platform workers work long shifts ten to fifteen hours each day to cope with high commissions and unstable fuel prices (Marudupandiyar College, 2024).

V. RESEARCH METHODOLOGY

- **Research Design:** This study adopts a quantitative and descriptive research design to empirically investigate the operational dynamics, technostress, and job satisfaction of platform workers.
- **Target Population and Sample Size:** The study focuses on gig workers operating within major commercial zones in Chennai across ride-hailing (e.g., Ola, Uber, Rapido) and food-delivery platforms (e.g., Zomato, Swiggy, Dunzo). A total sample size of N=100 respondents were selected for the empirical analysis.
- **Data Collection Instrument:** Primary data was gathered using a structured questionnaire designed to capture variables including daily working hours, net earnings, algorithmic monitoring intensity, and perceived technostress levels.
- **Statistical Analysis Tools:** The quantitative data was processed and evaluated using the following statistical techniques:
  - **Chi-Square ($\chi 2$) Test:** Utilized to examine the statistical dependence between extended working hours and daily economic returns.
  - **Spearman's Rank Correlation Analysis:** Employed to measure the strength and direction of relationships between algorithmic monitoring, technostress, and job satisfaction.

VI. RESULTS AND DISCUSSION

FOR OBJECTIVE 1: OPERATIONAL MECHANISMS OF ALGORITHMIC MANAGEMENT

Table 1: Distribution of Respondents Based on Primary Working Platform and Task Allocation

OPERATIONAL VARIABLE	FREQUENCY (N)	PERCENTAGE (%)
Primary Platform Type		
Rapido / Ola / Uber Moto (Ride-hailing / Two-wheeler)	63	63.0%
Zomato / Swiggy (Food / Quick Commerce)	26	26.0%
Other	11	11.0%
Task Allocation Mechanism		
Fully automated server assignment (No decline option)	63	63.0%
Semi-automated (Accept/Reject within timer)	37	37.0%

Note: N=100

To examine the operational mechanisms of algorithmic management (Objective 1), frequency distribution analysis was conducted. The findings reveal a heavy dominance of ride-hailing and two-wheeler delivery services **(63.0%,** N=63**),** followed by food and quick commerce platforms **(26.0%,** N=26**).** Furthermore, regarding task governance, a significant majority of the workers **(63.0%,** N=63**)** reported being subjected to fully automated server assignments with no option to decline tasks without incurring penalties, while only **37.0% (**N=37**)** operated under semi-automated timer-based systems.

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FOR OBJECTIVE 2: WORKING PATTERNS AND ECONOMIC RETURNS

Table 2: Cross-tabulation of Daily Working Hours and Net Daily Earnings (N = 100)

DAILY WORKING HOURS	BELOW ₹500	₹500–₹800	₹800–₹1,200	ABOVE ₹1,200	TOTAL (N)
Less than 8 hours	8	10	2	2	22
8 to 10 hours	2	5	6	4	17
10 to 12 hours	0	3	4	8	15
13 to 15 hours	0	4	7	35	46
TOTAL	10	22	19	49	100

Note: $\chi 2=119.87$, $df=9$, $p<0.001$.

To analyze the working patterns and socio-economic conditions of platform workers in Chennai, survey data highlight extreme temporal demands. The majority of the respondents **(46.0%,** N=46**)** reported working intensive shifts ranging between 13 to 15 hours per day, indicating prolonged exposure to digital labor loops, whereas standard working hours were reported by fewer participants **(8 to 10 hours at 17.0%; less than 8 hours at 22.0%).** Additionally, a Chi-Square test of independence revealed a statistically significant association between daily working hours and net daily earnings **(**$\chi 2=119.87, df=9, p<0.001$**),** demonstrating that extended labor loops are economically necessitated by workers to offset platform commission structures.

FOR OBJECTIVE 3: RELATIONSHIP BETWEEN ALGORITHMIC MONITORING, TECHNOSTRESS, AND JOB SATISFACTION

Table 3: ***Spearman's Rank Correlation Matrix for Algorithmic Monitoring, Technostress, and Job Satisfaction ()***

VARIABLES	1	2	3
1. Algorithmic Monitoring	—		
2. Technostress	0.166	—	
3. Job Satisfaction	0.280**	0.200*	—
Note. * p < .05, ** p < .01, *** p < .001			

Spearman's rank correlation analysis was conducted to examine the relationships between algorithmic monitoring, technostress, and job satisfaction. The results presented in Table 3

indicate a statistically significant positive correlation between algorithmic monitoring and job satisfaction **(**r=.280,p<0.01**),** and between technostress and job satisfaction **(**r=.200,p<0.05**).** Meanwhile, the relationship between algorithmic monitoring and technostress showed a positive trend but was statistically non-significant at the 0.05 level (r=.166,p=.099).

VII. DIGITAL HRM AND GOVERNANCE STRATEGIES FOR PLATFORM WORKER WELL-BEING

After seeing how algorithmic monitoring, long hours and technostress affect platform workers in Chennai I believe we need digital Human Resource Management (HRM) and governance plans. Old HRM methods do not work for these digital workspaces. Instead, modern platform governance needs to focus on the people doing the work.

The HRM and governance strategies suggested are:

1. **Algorithmic Transparency and Explainability:** Companies should show platform workers exactly how task allocation algorithms, rating systems and account deactivation work. If platform workers understand these systems, they will feel less anxious and more in control.
2. **Dynamic Work-Hour Capping and Fatigue Management**: Apps should use automated tools to force breaks or time-outs after a person has been online for long, like 10 or 12 hours. This helps stop technostress and keeps the health of platform workers safe.
3. **Fair Compensation and Commission Structures**: We need to change how pricing works and lower the high commission fees. This will stop platform workers from feeling they must work 13 to 15 hours every day just to survive.
4. **Institutional Grievance Redressal Mechanisms:** There should be support channels and local desks to solve problems. This ensures that if an automated system gives a penalty or blocks an ID, a real human can look at the case and make a choice.
5. **Data Privacy, Surveillance and Worker Agency:** Constant tracking and location monitoring make platform workers very nervous. Modern platform HRM must use data rules. Platform workers should own their performance data and know exactly how surveillance is being used.
6. **Institutional Welfare and Social Security Integration:** Since platform workers do not get job benefits digital HRM must fix this. Companies should work with state welfare boards and insurance schemes to make sure platform workers get health, accident and life insurance.
7. **Participatory Governance and Worker Representation**: governance should not just be a boss telling workers what to do. Platforms should create digital worker councils.

This lets drivers and delivery partners speak up about changes, new fares or safety rules before those changes happen.

8. **Psychosocial Support and Mental Health Interventions:** To help with the technostress and burnout found in this study apps should include wellness tools. This means adding counselling helplines, stress management tools and forums, for peer support. We must treat the health of platform workers as a main priority, not just an extra thought.

VIII. FINDINGS

The empirical investigation into management and platform labour in Chennai (N = 100) yielded the following definitive findings:

- **Intensive Labor Loops and Economic Compulsion:** The study reveals that the narrative of schedule flexibility is a corporate illusion. A dominant proportion of platform workers **(46.0%)** endure extended shifts spanning 13 to 15 hours with daily earnings restricted between ₹400 and ₹1,000 driven by high commission cuts and volatile fuel expenses.
- **Structural Dependence on Working Hours:** The Chi-Square analysis confirmed a highly significant statistical dependence **($\chi 2 = 119.87$, df = 9 $p < 0.001$)** between extended working hours and daily economic returns proving that platform payout architectures structurally compel workers into prolonged labour cycles.
- **The Algorithmic Paradox (Monitoring and Technostress):** Spearman's correlation analysis established significant positive relationships between algorithmic monitoring **($r = .280$ $p < 0.01$)** technostress **($r = .200$ $p < 0.05$)** and job satisfaction. This highlights an occupational reality: workers remain tethered to digital systems out of acute economic necessity absorbing intense psychological surveillance while deriving precarious livelihood satisfaction

IX. SUGGESTIONS & POLICY RECOMMENDATIONS

Based on the insights the following strategic interventions are recommended to foster a sustainable digital labour ecosystem

- Mandatory Algorithmic Transparency: Platform aggregators must provide workers with transparent insights into task-allocation algorithms, performance rating metrics and automated deactivation triggers to eliminate arbitrary penalties.
- Fatigue Management and Digital Time-Outs: Digital HRM frameworks should integrate automated safety features, such as mandatory system lock-outs or rest recommendations after continuous operation thresholds (e.g., 10 hours) to mitigate severe physical fatigue and technostress.

- Fair Commission and Wage Restructuring: Regulatory bodies should establish baseline revenue protections capping high platform commission percentages and ensuring fair base payouts to reduce the necessity of 14-hour work loops.
- Human-Centric Grievance Redressal: Replace fully automated punitive systems with decentralized human-reviewed grievance desks where platform workers can contest automated deactivations and unfair customer ratings

X. CONCLUSION

This study critically evaluates the intersection of management and digital Human Resource Management within the rapidly expanding gig economy of Chennai. The findings demonstrate that while automated systems optimize scalability and operational efficiency, they simultaneously enforce rigid behavioural control, severe technostress and extreme working hours under the guise of autonomy. The statistical validation of compulsion and digital monitoring underscores an urgent paradigm shift. Moving forward the sustainability of platform labour depends on transitioning from technological surveillance to worker-centric digital HRM balancing enterprise efficiency, with institutional safeguards, labour protections and psychological well-being.

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