An Analysis of Medication Delivery Drivers' Incentive Difficulties and Optimization: A Case Study of Company G

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Abstract. Pharmaceuticals grow bigger, and distributing medicines becomes very important for sending sick people medicine and keeping everyone healthy around the world. Transporter does have problems about unfair workload distribution and income inequality so they have very heavy burden and lack of job satisfaction. It not just makes it hard to hand things over effectively, yet increases the risk of society's troubles such as car accidents and medicine safety dangers. This is about long-distance haulers at firm G. By means of literature and dialogue, it identifies issues such as 'imbalance in time' and 'big difference in money' among the worker drivers. To use Two- Factor Theory, Equity Theory and applying metric to create a tripartite efficiency KPI system of evaluation; there is quite a large difference between the top performing and bottom performer. In the end, it offers methods on how to change rewards in order to get both operator and the company advance at once.

Keywords: Freight drivers; Medication delivery; Incentive mechanisms; Mileage efficiency.

1. Introduction

Since the vaccine incident in 2016, the medication distribution sector has received increasing attention; however, the labor protections of those carrying out the distribution—freight drivers—have not been given the attention they deserve. Issues such as dispatch decisions based on experience, a one-size-fits-all compensation system, and the phenomenon where "the more you work, the more mistakes you make, and the more you are penalized" have undermined their motivation and creativity [1]. With their personal and professional lives highly intertwined, drivers are perpetually on the move, spending their days "on the road and sleeping in their vehicles" [2]. Surveys indicate that 26.7% of drivers have no fixed rest periods and are forced to drive while fatigued due to providing loading and unloading services.

According to global studies,as much as 15%-20% of crash involving truck is because driver feel sleepy, which present big dangers in pharmalogical logistic industry[3]. In November 2020, General Secretary Xi Jinping stressed that it is necessary to safeguard the legitimate rights and interests of truck drivers and provide policies support [4]. But there is still some distance from formal execution to actual drivers feeling benefited, so corporate organizations will not have sustained development.

As of now, the company wants to figure out what customers ask for impacts supply chain deliveries speed, but logistics run into difficulty because all final sites do different things [5]. Firm G is about pharma dispensing and its stuff, when on time is big for medicine's safety. However, it is clear from many researches that because there aren't enough administration framework, people have a negative mindset. Quantity of clients and distance varies a lot, mostly based on how we feel at the moment, so the tasks aren't distributed very evenly. Secret labor like packing, unpacking, translating these all are not recorded in shift records increase bodily tension and accident. Rewards program is not good, there's more trouble between irregular work and unfair pay. Therefore, how to balance the labor involved in the payment for improvements made to make it more equitable and inspire the operator has become an urgent matter that Firm G must address.

This study focuses on improving the driver supervision and motivation system of company G, it has the following significance:

Theoretical Value: Chinese drug supply chain industry is still in its early days, most of the existing academic works concentrate on technology progress and practical process but not motivation

framework for long distance haulage employees. By doing an empirical examination of Company G, it employs incentive theory and equity theory to investigate problems with both the amount of work performed by medical transport employees and their compensation; as such, it increases how much is known about the topic.

Practical Value: By proposing some incentive improvement ideas with evidence-based information, we can help company G improve the enthusiasm of drivers, ensure that logistics is both secure and on time, while also providing a reference for other companies in different sectors to improve their management system for vehicles' operators.

2. Theoretical Framework and Literature Review

2.1. Incentive Mechanisms

Incentive Framework refers to managers who use the connection between workers' production and payment as a way of motivation based on the principle of fair motivation and use tools such as promotion, awarding, owning etc. in order to encourage staff and improve organization's productivity [6]. In logistics and transport, this is about getting the drivers' operations yields – like how much they travelled or where many deliveries were made – lined up with their rewards from remuneration and achievements.

As for the research on small and medium sized enterprises, it can be seen that there exist outward (market, government, private) as well as inward (company-led, staff-focused) motivations in the technology innovation incentive structure. To satisfy the requirements, it can boost drives and ingenuity so that the speed and quality of the progress in technology will increase [7].

As for the administration of remuneration, we find that incentives are efficient based on three main standards: legality, fairness and practicability. If there's no equity and practicality, staff would be indifferent and have high employee turnover rate [8].

2.2. Equity Theory

According to Adams' Equity Theory, people are motivated not just by the actual amount they receive (Absolute Value), but also by how fair/reasonable it seems in comparison to others (Relative Value). Staffers evaluate the amount of his or her input compared to the staffer's output: rewards, advancement etc. in comparison to peers (horizontal assessment), current and past benefits received by oneself (vertical assessment) as well as ccomparingone's own salary with other comparable positions in industry. Only when people believe that the amount of effort put into it is proportionate to the results will they have a sense of fairness. Therefore, it is thought that a company's pay system has the greatest impact on employee motivation through the feeling of being fair [9].

Taking first line staff as the viewing angle, then perception of equity is an important mental link between reward system and action. In order to stimulate people's participation, it is necessary to stress that not just how much we are paid but whether our pay is distributed fairly and transparently as well [10].

2.3. Two-Factor Theory

Differentiate those factors that can effect a person from Hygeine to Motivaters according to Herzberb's Two-Factor Theory. Improvements to the first category like remuneration and protocols merely reduce dissatisfaction but do not motivate. It is only after they have been met (advancement, accomplishment), that one feels passionate. As such some authors believe it is necessary for companies to use two strategies at once to employ hygiene factors so as not to frustrate workers and incentives in order to excite them, only through this combination will strong motivation result [11].

Current inquiries about incentive and salary give us some ideas for this investigation. With regard to the problem of reward for medicinal supplies carriers using operation load and pay data as basis.

3. Research and Design

3.1. Designing the Interview Outline and Selecting Participants

3.1.1. Design and Implementation of Interviews

To learn about the working conditions and job satisfaction of the company's active freight delivery drivers, their compensation and motivation for working at Company G were inquired into by way of semi-structured interviews. Interviews have been conducted to provide supplementary data for the analysis of other research and have verified whether hidden workload differences and compensation disparities exist.

3.1.2. Interview Examples

Based on the analysis of the interview records, it was found that the occupational burnout and safety hazards of the drivers are due to "deficiencies" in the company's internal management system. No Guarantees of Rest: Conflicts with customers' schedules leave drivers in a situation where they "reach the warehouse but the doors are not open" or are "on standby in their vehicles", resulting in idle waiting time, and their right to rest is disregarded by the system. Poor operational coordination: Due to insufficient interdepartmental collaboration, drivers are forced to handle unplanned tasks—such as unnecessary detours caused by “confusing entry guidance” and filling in for others to unload cargo—resulting in wasted effort. Lack of transparency in work assignments: “Uneven route allocation” and suspicions of “backroom dealings” have triggered a crisis of trust in management fairness. Imbalanced compensation system: Pay structures are disconnected from work intensity, creating a mismatch between effort and reward. Highly arbitrary task assignments: The principle of “the capable take on more work” has been distorted into “the capable are overworked”; the continuous dispatch mechanism dampens the motivation of high-performing employees without providing commensurate rewards. Ambiguous promotion mechanisms: Job grades and promotion criteria are unclear, rendering long-term incentives ineffective.

3.2. Data Collection

The data is derived from approximately 8,000 order records from Company G between January 2025 and January 2026 (covering operations involving 70 drivers). The fields include driver ID, delivery type, piece-rate pay, mileage, number of customers, and number of items. Records with a delivery amount of ≤1 yuan were removed (considered system test orders or outliers); records with a driving distance or number of items of 0 were also removed, resulting in a sample of 41 valid drivers. The data is reliable and representative.

4. Results of the Empirical Analysis

Based on relevant data regarding the salaries and workloads of a driver team at Company G, descriptive statistics and comparative analyses were conducted using Excel and SPSS to examine the differences and correlations between workload and compensation distribution, thereby providing a basis for problem diagnosis and optimization.

4.1. Developing a Three-Dimensional Efficiency KPI Framework

Calculate three metrics for each driver—revenue per mile, revenue per hour, and mileage efficiency—to generate the main efficiency analysis table. The formulas are as follows:

$$\text{Unit revenue}\left(\frac{\text{RMB}}{\text{km}}\right) = \text{Total delivery amount} \div \text{Total mileage} \tag{1}$$

$$\text{Hourly Earnings}\left(\frac{\text{RMB}}{\text{hour}}\right) = \text{Total Delivery Amount} \div \text{Total Working Hours} \tag{2}$$

$$\text{Mileage efficiency}\left(\frac{\text{km}}{\text{h}}\right) = \text{Total mileage} \div \text{Total labor hours} \tag{3}$$

4.2. Descriptive Statistics and Visualization Analysis



Figure 1: Box-and-whisker plot.

Based on a statistical description of the KPIs and a visual analysis using box plots (Figure 1), we have preliminarily determined that the overall distribution of operational efficiency among drivers is uneven, with significant polarization.

Calculating the coefficient of variation: Revenue per mile is 0.266 (most balanced, with minimal variation in "revenue generated per kilometer" among drivers); revenue per hour worked is 0.768 (highly unbalanced); and mileage efficiency is 0.781 (extremely unbalanced, with significant variation in "revenue generated per delivery" among drivers). Based on previous interviews, a preliminary conclusion is that the variation in revenue per hour worked stems from differences in cargo value or piece-rate pricing; differences in mileage efficiency result from dispatch logic relying on administrative boundaries or fixed routes, leading to situations with high volume but low value or high empty-run rates.

Then used the coefficients of variation to assign weights and calculate a comprehensive driver score for further sample segmentation (revenue per mile weighted at 14.65%, revenue per hour weighted at 42.34%, and mileage efficiency weighted at 43.01%).

Then compared the top 3 high-efficiency drivers with the bottom 3 low-efficiency drivers (Table 1), finding that high-efficiency drivers had lower revenue per hour than low-efficiency drivers (0.520 vs. 0.395). When we re-contextualize one of the low-efficiency cases within the business scenario, we find that this driver handles sporadic deliveries within the city, resulting in high freight costs but low mileage utilization. This further illustrates that the company already has a group of high-efficiency drivers operating on a "low-margin, high-volume" model and a group of low-efficiency drivers operating on a "high-unit-price, low-frequency" model.

Table 1: Summary of Driver Performance Scores by Group.

Category	Number of participants	Overall score range
Top 3 Category (High Efficiency)	3	0.499~0.580
Secondary Efficiency	8	0.125~0.485
Medium	21	-0.277~0.049
Low Secondary Efficiency	6	-0.213~-0.265
Bottom 3 (Low Efficiency)	3	-0.278~-0.414

4.3. H1: KPI Correlation Analysis

Table 2: Key Performance Indicator Correlation Analysis Table.

	Pearson Correlation	*Unit revenue (RMB/km)*	*Hourly Earnings (RMB/hour)*	*Mileage efficiency (km/h)*
Unit revenue (RMB/km)	*Sig. (two-tailed)*	1	-.798**	.843**
	Sum of Squares and Cross-Product		.000	0.00
	Covariance	.516	-3.657	2.037
	Number of Cases	.013	-.091	.051
	Pearson Correlation	41	41	41
Hourly Earnings (RMB/hour)	*Sig. (two-tailed)*	-.798**	1	-.892**
	Sum of Squares and Cross-Product	.000		.000
	Covariance	-3.657	40.710	-19.148
	Number of Cases	-.091	1.018	-.479
	Pearson Correlation	41	41	41
Mileage efficiency (km/h)	*Sig. (two-tailed)*	.843**	-.892**	1
	Sum of Squares and Cross-Product	.000	.000	
	Covariance	2.037	-19.148	11.326
	Number of Cases	.051	-.479	.283
	Pearson Correlation	41	41	41

The results show (Table 2) that mileage efficiency is significantly negatively correlated with revenue per labor hour ($r = -0.892$, $p < 0.01$), with $r = -0.892$ and $r = -0.798$, indicating that the two variables move in opposite directions. This reflects an inherent contradiction within both the company and the delivery industry as a whole: high-value deliveries are inevitably more dispersed, while high-density deliveries are inevitably of lower value. Mileage efficiency is strongly positively correlated with revenue per mile ($r = 0.843$), so it should be used as a core metric for performance evaluation. The covariance of -0.479 has the largest absolute value, indicating a close relationship between the two.

Table 3. Descriptive Statistics Table for Mileage Efficiency by Delivery Type.

	Delivery Type	Number of Cases	Average Standard	Deviation	Standard Error of the Average
$Mileage\ efficiency\ (km/h)$	1.0000	41	2.267563	2.9158253	.4553754
	2.0000	41	.557557	.3884264	.0606620

An analysis of Table 3 reveals that the mileage efficiency of intra-city deliveries is more than four times that of inter-city deliveries and that intra-city deliveries exhibit a higher coefficient of variation, indicating greater variation in drivers' efficiency for intra-city deliveries.

4.4. H2: The Impact of Delivery Type on Mileage Efficiency

Table 4. Independent Sample Test Table for the Effect of Delivery Type on Mileage Efficiency.

		Levene's Test of Homogeneity of Variances		t-test for equality of means					95% confidence interval	
		F	Significance	t	Flexibility	*Sig. (two-tailed)*	Difference between averages	Difference of the Standard Error	lower limit	upper limit
Mileage Efficiency	Assume homoscedasticity	55.645	.000	3.722	80	.000	1.7100065	.4593981	.79577502	.6242379
	No assumption of homoscedasticity			3.722	41.419	.001	1.7100065	.4593981	.78251822	.6374947

The results show (Table 4) that t (41.419) = 3.722, p = 0.001 < 0.01, indicating that the mileage efficiency of intra-city deliveries is significantly higher than that of inter-city deliveries (2.2676 vs. 0.5576). Furthermore, the effect size d = 0.82, which constitutes a large effect.

We identified the following chain of delivery efficiency for this driver team: drivers choose between "high-unit-price, low-density" and "low-unit-price, high-density" modes, which plays a decisive role in their mileage efficiency (H2), thereby influencing revenue per mile and forming a negative correlation with revenue per hour worked (H1).

5. Conclusion

In response to the problems that Company G's drivers have been facing, this paper applies to the three-dimensional efficiency KPI framework to examine the driver incentive system and consider Equity Theory and the Two-Factor Theory. Company G should carry out the following revisions to its compensation system: establish category-based performance evaluation, set goals for mileage-per-unit-cost of city driving and mileage-per-unit-revenue of off-road driving, add loading and unloading frequency to the compensation calculation, build compensation plans according to the difficulty of the route, optimise the commission structure for both main and auxiliary drivers, and use a digital platform to ensure schedule transparency. The four essential areas are compensation incentives, a balanced workload, career development opportunities and welfare services, etc.; at the same time, they will boost driver morale and increase the company's operating efficiency.

Based on quantitative analysis, this paper shows that the two types of driver groups under a "low-margin, high-volume" model and a "high-price, low-frequency" model are different in terms of their incentive problems in logistics. The recommended measures are salary reform and route adjustment; they are feasible and may serve as a model for other pharmaceutical distribution companies.

This study has the following deficiencies: some hours of unrecorded labour were not accurately counted; in future studies, multi-source data will be collected to quantify them more precisely, such as GPS tracks and loading/unloading records. In addition, Expectancy Theory and Reinforcement

Theory can be used to expand the scope of this study. The number of items handled in the data analysis served as a substitute for labour hours, and differences in variables such as time and vehicle type were not controlled for.

In the future, new changes in the driver workforce driven by emerging technologies will also be focused on, such as how autonomous driving technology affects the driving job; therefore, research should be conducted on adapting incentive mechanisms accordingly.

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