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Investigating the Effect of Piece-Rate and Time-Rate Payment Systems on Promoting Wage and Production: The Case of the Garment Sector in Bole-Lemi Industrial Park

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Abstract

The study's goal was to find out how piece-rate and time-rate payment systems affected salary and production growth in the garment industries in the Bole Lemi industrial park. It was decided to use the piece rate at Lyu plant and the time rate at Evertop factory. Over a sample size of 300, the Relative Importance Index, Multiple Regression, and Mediation Analysis were used. Both primary and secondary sources were used to compile the data. When sampling the population, the study employed random sampling procedures. The relative relevance index indicates that the following factors have a substantial impact on Lyu factory production: Product Type, Input Material Quantity, Style Change Time, and Absenteeism. When paid on a time basis, the production is less affected by the type of product, the quantity of input materials, and the length of style changes. Nevertheless, absenteeism, machine downtime, and management style all have a significant impact on production. The main conclusion of the mediation analysis for the Lyu factory is that the mediator (production) has a positive and significant effect on wage, whereas for the Evertop factory, the effect of production on pay is negligible. The results also indicate that Lyu employees' wages and output were higher than those of Evertop employees. The study strongly suggests that Evertop Factory implement the piece rate payment system since it clearly demonstrates that it can inspire workers because production is a mediator of wage, thus as production increases, wages also do.

***Keywords*:** *Piece-rate payment system, time-rate payment system, wage, and production*

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Introduction

Compensation is a payment to an employee in return for their contribution to the organization because they are doing the work. Human resources are the backbone of an organization, especially in the textile and garment industries, where they are mandatory. "From the 18th century up to the last third of the 20th century, these were the two dominant payment methods in the manufacturing and production industries" (Hart, 2016). For developing countries, industrial parks can maximize resource integration for limited production factors within a certain spatial scope.

Garment manufacturing companies employ a lot of people for the minimum wage. Ethiopia is one of the developing nations currently giving high priority to the expansion of the garment and textile sector, the opportunity of cheap labor force is one of the reasons to attract investors to opening their factories Ethiopia. Due to the rise of opening garment industrial parks investors throughout the world are interested to invest in this sector. Time rate payment is currently widely used in developing nations depending on the input; today, the majority of companies that make clothing do it with incentives. Motivating employees is essential to get them started on increasing output in the normal working conditions found in clothing factories.

Ethiopia's economy-wide labor productivity grew by an average of 4.94% per year from 2000 to 2016. However, in terms of its absolute level, Ethiopia's labor productivity is still low, even by the standard of latecomer countries. (FDRE Policy Studies Institute, 2020). The incentive system is important for motivating the employees working in the factory. A piece rate system is a type of compensation system in which employees are paid based on the amount of work they complete or produce. Every operation has its own price rate; this system helps the production by helping every worker use their capacity as much as possible because they earn money per item they produce. Currently, the majority of garment manufacturing firms have adopted an incentive and piece rate wage system.

Problem Statement and Objectives

Bole-Lemi garment manufacturing companies experience production delays; in Ethiopia's industrial parks, the majority of these companies are focused on exporting. The willingness of nations to open their markets to US consumers through Free Trade Agreements (FTA), particularly

the African Growth and Opportunity Act (AGOA), They sold their goods exclusively to markets abroad, including those in the United States, Canada, China, Korea, etc. Production delays in manufacturing companies that export their goods are a serious problem because they reflect on the effectiveness of the company. Unfortunately, exporting by air cargo, which costs $3 per kilogram, is the only option when a production delay occurs. For instance, a 40-fit container must ship a product weighing between 12,000 and 13,000 kilograms.

The serious issue is not only one of extra payment but also of brand production owner. Every brand has pre-request standards when they visit a factory, which means they also have requirements for delivery date perfection. Most of the time, if a delay occurs, customer relations deteriorate, and there is a risk that they won't continue, which is bad for all businesses. Every aspect of business is typically impacted by a shipment delay. Because business must continue, customer engagement is crucial in the apparel industry. Negative effects of export delays include those situations and dissatisfied customers. When an exporter fails to deliver on their promises, an importer is less likely to do business with them. Previously (Binyam, 2021), studies assessed the impact of piece rate systems on employee motivation and productivity in the case of ferric belt metal processing and engineering factories. The study is focused only on one organization; it tries to determine the effect that financial incentives have on quantity and quality products while ignoring other variables such as raw material availability and technological changes during the study period. My research differently compares and contrasts the piece rate system with the time rate of two different garment manufacturing companies.

The study's objective is to investigate how piece rate and time rate systems affect wages and production in the apparel industry in the Bole Lemi industrial park. The following are some of the specific goals: comparing the piece rate and time rate systems used in the enterprises in Ethiopia's Bole Lemi industrial park; analyzing the direct and indirect effects of the time and piece payment system on wage through production; Investigating how the piece-rate and time-rate systems affect wage and production growth in the garment manufacturing industry in the Bole Lemi industrial park. Thus, the following are the research questions: What elements are crucial in figuring out how well these manufacturing companies are performing in comparison? Which form of payment has the biggest effect on employee output and pay? Which linkage—the direct or indirect effect—can dominate the effect?

Review of Related Literature

Pay systems are a vehicle for rewarding employees for their contribution to the organization. Compensation is a significant factor that affects work relationships, which in turn can impact the overall performance of an organization (Hur, J. et al., 2018). Any organization's workforce can be highly motivated, effective, and productive depending on the level and distribution of pay. An employer tries to encourage employees to produce more work by linking compensation to output, which lowers the cost of producing one unit of output. Therefore, it is crucial for businesses to create pay structures that both they and their workforce value and that fairly compensate workers for the effort they put forth. Even though incentives come in a variety of forms, well-designed staff incentive programs can have a positive and significant impact on the effectiveness, efficiency, and caliber of business operations. On the other hand, poorly designed schemes may result in serious negative consequences (Mathis & Jackson, 2010).

Piecework is the simplest method of performance-based pay, characterized by getting paid at a specific rate for each piece of output produced. This means that the system is simple, straightforward, and easy to operate and understand (Binyam, 2021). But the general rule of thumb is that incentive schemes must be transparent so that staff members affected should easily understand the mechanics of the calculation (Wiley, 1997). Despite the potentially positive productivity effects, piece rate incentives may not always increase productivity. Individual performance in teamwork is challenging to gauge, so free-riding is encouraged. Group-based incentive programs may not have much of an impact on individual productivity in such a situation. Additionally, multitasking may lead to perverse incentives. When employees are expected to complete multiple tasks, they will only pay attention to the ones that will be highly rewarded, ignoring the others. It's not always guaranteed that implementing a piece rate incentive program will boost production. An incentive, whether financial or not, is something that makes picking one alternative over others easier, more motivating, or justifies it in the manufacturing industry. The ultimate objective of incentives is to enhance organizational success and provide value for money. In the manufacturing sector, an incentive is a factor—financial or otherwise—that makes it easier, encourages, or provides justification for selecting one alternative over another. A wage depending on the quantity of hours worked is known as a time rate incentive. An operator is given an incentive depending on the production objective they must fulfill during certain hours.

Theoretical Literature Review

Expectancy Theory

According to the expectation hypothesis, a person's inclination to act a certain way depends on how firmly they believe their behavior will lead to a specific outcome and how appealing that outcome is to them personally. The theory's central concept is that people will be motivated if they think their activities will lead to the desired outcome (Redmond B. F., 2010). According to expectancy theory, if an employee believes that their efforts will result in a positive performance evaluation and that a positive review will result in organizational benefits like a bonus, a pay increase, or a promotion, they will be driven to put up a high degree of effort. The needs of the employee will subsequently be met by these rewards.

Equity Theory

The term "inequity theory" is at least as appropriate. The main driving force considered is the desire for equity, but for this force to be activated, there must be some perception of inequity. These theories primarily focus on the motivational effects of perceived exchange imbalances and the exchange relationships between individuals and groups. Beyond the organizational relationships that are the focus of this article, applications of this type of theory have been made to a variety of contexts, including those involving exploitation, assistance, and intimate relationships (Walster et al., 1973). When the ratio of a person's outputs to inputs differs noticeably from the ratio thought to exist for the reference source, it is said that inequality exists. As a result, individuals may believe that their contributions to a job are undervalued in comparison to what other employees are compensated for. When individuals believe they are much harder workers than other employees but are compensated equally, this may occur.

Motivation-Hygiene Theory

According to Frederick Herzberg, the field of job satisfaction has a comparable discontinuity (Herzberg, 2005). The results of following research included a list of motivational elements and a second list of factors that contribute to job discontent (hygiene factors). Because it incorporates deductive and inductive elements, it is therefore impossible to adequately separate the theory from the preliminary study (Herzberg et al, 1959). The concept of job enrichment was born out of this theoretical framework, and management found it to be particularly intriguing.

Need Theory

The idea behind needs-based motivation theory, according to Steel and Konig (2006), is that motivation arises from a person's desire to meet or satisfy a need. The need theory's fundamental tenet is that people are driven to accomplish goals at work that will meet their needs. It enhances the expectancy theory by examining the degree to which results inspire people to make significant contributions to a job and perform at a high level. When an employee performs at a high level and aids the organization in achieving its objectives, a manager must ascertain what needs the employee is attempting to satisfy at work and make sure that the employee receives outcomes that help satisfy those needs. (Whittington & Evans, 2005), elaborated further on this theory by stating that "each of these needs operates at all times, although one deficient set dominates the individual at any given time and circumstance." Humans are motivated to meet their needs for a variety of reasons, both internal and external. While externally motivated people are frequently influenced by factors controlled by others, such as money and praise, internally motivated people are typically influenced by factors that lead to a sense of accomplishment and pleasure (Deci & Ryan, 1985). Maslow's theory of the hierarchy of needs is frequently represented as a pyramid, with the most basic needs at the base and the highest needs at the top. The needs were represented in this way to highlight the importance of each need in relation to the others, with the physiological needs at the base being the most significant and inclusive category (Redmond, 2010).

Empirical Literature Review

Using data from the US for over 100,000 employees in 500 firms in the clothing and footwear industries, it was found that piece rate schemes offer nearly 14 percent higher hourly wages in both sectors after adjusting for individual characteristics, occupational classification, and individual firms. (Seiler, 1984). (Lazear, 2000) Reveals information from a significant American auto glass manufacturer that switched its workforce's compensation from hourly wages to piece rates. According to the findings, the company experienced a 44 percent increase in productivity, which translated into an increase in pay for current employees of roughly 10 percent for every eight hours worked. In a similar vein, Chandararot, K., and Dannet, L. (2009) showed that piece-rate workers in the Cambodian apparel industry earned an extra $107.3 on average each month.

Both Heywood and Wei (2006) use the National Longitudinal Study of Youth to examine how the nature of the payment influences work satisfaction in the US. They established a link between individual performance pay and improved pay satisfaction and job satisfaction. Even though piece rates increase pay satisfaction, the individual performance pay measure suggests that they might reduce overall satisfaction. Without specifically focusing on piece rate pay, the majority of earlier studies examined the impact of performance-based compensation on job satisfaction. For example, Green and Heywood (2008) investigate the relationship between performance-related pay and a variety of job-related factors, including overall job satisfaction, pay satisfaction, job security satisfaction, and hourly satisfaction. After adjusting for this, they found a positive correlation between performance pay and job satisfaction. These findings support the idea that performance-related compensation increases chances for worker optimization and generally does not demotivate employees or supplant intrinsic drive. They also appear resistant to a number of alternative specifications.

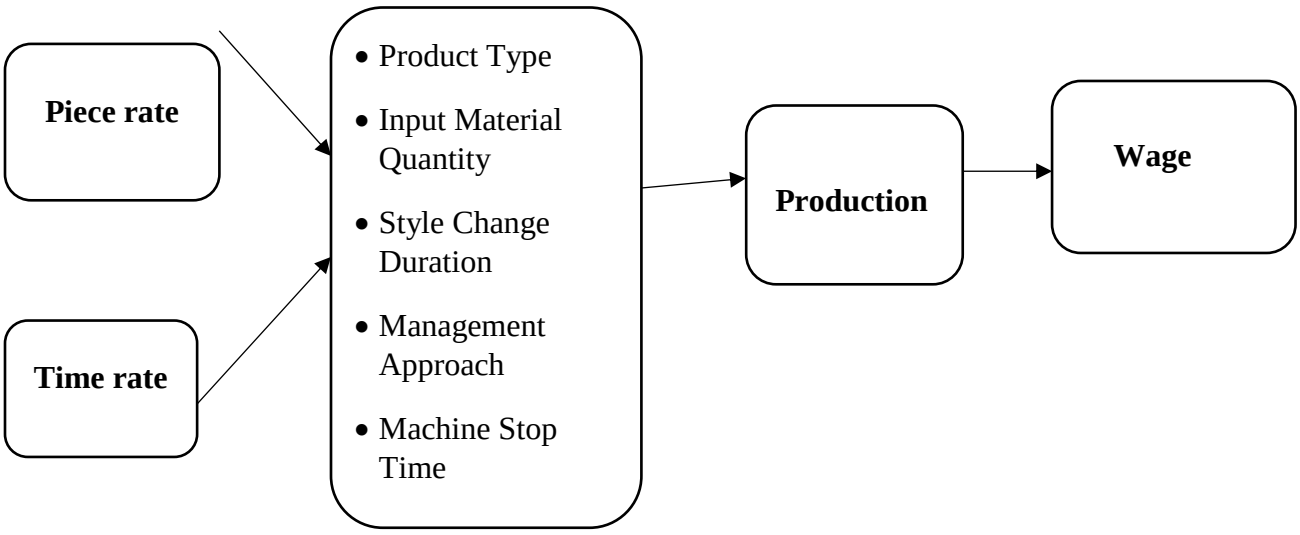
Using data from the British Household Panel Survey (McCausland et al., 2005), examine how performance pay affects various aspects of job satisfaction. They use an econometric framework to determine the pay structure, indigenize salaries, and take self-selection into account. They prove that higher-paid employees experience greater job and pay satisfaction as a result of performance pay. Less well-paid workers, however, are less pleased with performance bonuses. It is common practice for workers in garment factories in developing nations to be paid by the piece, with the hope that this will increase output and, ultimately, profits. However, it's possible that these productivity gains will actually harm the workplace (Borino, 2018). Carefully designed compensation that incents continuous productivity improvements and that shares these gains more equitably may provide a pathway to move from output-based to strategic approaches to compensation that pay the worker for their contribution to the business while also making progress towards wage levels that are sufficient for workers and their families to live on with some discretionary income. This research identifies a pathway for increasing factory productivity to better achieve the goals of factory managers, brands, and workers.

Shi, (2007) carried out two quick field tests involving apple cultivation. Due to the excessively high piece rate, the difference-in-difference estimator from a sample of 28 observations suggests an increase in productivity of 36%. An increase in productivity of 23% is suggested by the before-

and-after analysis of 40 observations. According to survey findings, highly skilled workers favor piece rate contracts over hourly wage agreements. His experiment shows that piece rate incentive systems significantly increase productivity, at the very least by 23%. This experiment supports the notion that piece rate incentive systems increase productivity when used with work whose output can be measured.

Candradewi & Dewi (2019) According to research findings, compensation has a significant impact on employee performance, so the business should pay more attention to it if it wants to increase employee performance. Leaders should always motivate their workforce through beneficiary appreciation because, in this situation, the allowance is most important in forming a compensation construct, according to the respondents' perceptions of compensation. Managers are advised to further boost employee motivation because it can enhance employee performance as motivation can partially mediate the relationship between compensation and employee performance. Because factory workers are paid a minimum wage each month, factories can highly motivate them with incentives to increase productivity. Gielen et al., (2010) conduct an empirical analysis of the effects of performance-related pay on productivity and employment is provided in this paper. They discover that the implementation of performance-related pay, or PRP, boosts firms' productivity by about 9%.

Figure
Conceptual Framework



Source: Own Design based on Literature

Research Methods

Research Design

The study aims to compare the two compensation and wage systems and their effects on production and wages in two different garment manufacturing factories. Descriptive research is appropriate when a problem is structured, but the intention is not to research connections between causes and symptoms. Typical descriptive studies are concerned with the assessment of attitudes, opinions, demographic information, conditions, and procedures. Explanatory research is more interested in understanding, explaining, predicting, and controlling relationships between variables than detecting causes (Creswell, 2012). Accordingly, both descriptive and explanatory design was adopted in this research as it suits the objectives of this research.

Research Approach

Both quantitative and qualitative research methods were used. Quantitative methods use computational, statistical, and mathematical tools to analyze relationships between two variables or concepts. The study looked at how piece-rate systems and incentive systems can help to increase productivity and wage employment. As a result, the study used a quantitative (Creswell J. W., 2014). The study compares the effects of the two compensation wage schemes on production and wages in two various textile manufacturers. The association between two variables or concepts was established and studied using a quantitative research approach. It is utilized for the methodical and scientific exploration of the links between quantitative phenomena and properties.

Sampling Technique

In order for the management to comprehend the working conditions of the employees' behavior, records, payrolls, efficiency data, and increment data, they should use random sampling techniques without any bias. Focus group discussion and interview were made with union representatives and management staff (Sharma, 2017).

Total Population and Sample Size

In order to Yamane Israel (1973) recommended the formula for random sample for 1200 firms and set the optimal sample to be 300 (125 Lyu factories and 175 Evertop Factories). The mediation analysis is conducted to know how much the independent variable explains the dependent variable.

$$n = \frac{N}{1+Ne^2}$$

In addition to descriptive and Relative Importance Index analysis, the study employed the multiple regression considered both production and wage as dependent variables and product type (PP), Input material quantity (IMQ), Style change duration (SCD), Absenteeism and turnover (AT), Machine stop time (MST), Managerial approach (MA). On the other hand, the mediation analysis takes production as mediator variable in the relationship between the explanatory variables and wage in the pay system. This research used both primary and secondary data. The primary data was collected directly from employees through a questionnaire and an interview. Secondary data was gathered from books, published research, and related report documents and journal papers. The mediation analysis is conducted to know how much the independent variable explains the dependent variable.

Content validity involves the degree to which the study is measuring what it is supposed to measure. More simply, it focuses on the accuracy of the measurement (John & Soto, 2007). All measures used to construct the instruments should have shown an acceptable level of construct and content validity in previous studies and are used with some modifications in this study. Additionally, several measures were employed to ensure that the results were free from material errors in the design of the questionnaire. Such measures are the clarity of the instructions, the clarity of the questions, the layout of the questionnaire, and other comments.

Results and Discussion

A total of 125 employees of the Lyu factory and 175 employees of the Evertop factory received questionnaires, which were created and distributed. As a result, 115 and 175 surveys were correctly completed and returned, giving Lyu Factory and Evertop Factory corresponding return rates of 92% and 100%. Responses from 175 respondents for the incentive (time rate) payment system and a total of 115 respondents for the piece rate payment system were successfully gathered and used for analysis.

General Information (Demographic Data) of the Respondents:

The first section of the questionnaire is made up of questions concerning the respondents' demographic characteristics. The demographic details of the respondents are shown in the following table.

Table 1

Demographic Information of The Lyu & Evertop Factory Respondents

		Lyu factory respondents		**Evertop factory respondents**	
		Frequency	%	Frequency	%
Gender	Female	99	86.1%	161	92.0%
	Male	16	13.9%	14	8.0%
Age	Below 20 years	0	0.0%	3	1.7%
	20 – 26 years	92	80.0%	135	77.1%
	27 – 32 years	21	18.3%	37	21.1%
	33 – 40 years	2	1.7%	0	0.0%
	Above 40 years	0	0.0%	0	0.0%
Marital Status	Single	72	62.6%	104	59.4%
	Married	42	36.5%	71	40.6%
	Divorced	1	0.9%	0	0.0%
	Widowed	0	0.0%	0	0.0%
Educational Qualification	Below greed 12	62	53.9%	148	84.6%
	Complete 12th grade	44	38.3%	10	5.7%
	Certificate	7	6.1%	5	2.9%
	Diploma	2	1.7%	10	5.7%
	First Degree	0	0.0%	2	1.1%
Years of Service in your current company	Below 1 years	8	7.0%	20	11.4%
	1 - 3 years.	26	22.6%	41	23.4%
	3 -5 years	32	27.8%	58	33.1%
	5 - 7 years	39	33.9%	53	30.3%
	More than 7 years	13	11.3%	3	1.7%
Job Category	Daily labor	4	3.5%	0	0.0%
	Assistant operator	10	8.7%	0	0.0%
	Operator	101	87.8%	175	100.0%
	Assistant Supervisor	0	0.0%	0	0.0%

Source: Authors' Computation

According to Table 1, the demographic data for gender shows that, out of the 115 respondents, there were 99 females and 16 males, which accounted for 86.1% and 13.9%, respectively. Thus, the majority of the employees are female. 92 (80%) of respondents were between the ages of 20 and 26, 21 (18.3%) were between the ages of 27 and 32, and the remaining 2 (1.7%) were between the ages of 33 and 40. Thus, the majority of the respondents were 20–26 years old, which shows that most employees are youths. In the Evertop factory, the demographic data for gender shows that, out of the 175 respondents, there were 14 males and 161 females, which accounted for 8% and 92%, respectively. Thus, the majority of the employees are female and young.

Factors Affecting Production

In this section, various RIIs are used to analyze the collected data. The summary of descriptive statistics of all variables that are evaluated based on a 5-point Likert scale ("1" being "strongly disagreed" to "5" being "strongly agreed"). According to (Mbamali and Okotie, 2012), RII 0.60 indicates that the item is of low significance, 0.6 RII 0.80 indicates that the item is of high significance, and RII 0.80 indicates that the item is of very high significance. Note that SDA = strongly disagree, DA = disagree, N = neutral, A = agree, and SA = strongly agree.

Factors affecting Production at Lyu factory (Piece rate payment)

Based on the above results of the study, it can be seen that the sale price of the product and the operation piece rate have a direct relationship, which has the highest significance for production according to the equity theory. The outcome-input ratios for the individual and the reference source are equal; equity, balance, or reciprocity exists.

Table 1

Descriptive Statistics for Product Type at Lyu Factory

Statement	SDA	DA	N	A	S A	Total Score	RII	Rank
	Freq.	Freq.	Freq.	Freq.	Freq.			
The type of product is determined under the interest of customer	4	1	7	54	49	488	0.85	7
There is product type have same operation with others but the working payment is different,	0	8	6	38	63	501	0.87	5
For different product type with the same operation, I score different amount daily production target	2	2	8	34	69	511	0.89	3
The sale price of the product and the operation piece rate have a direct relationship	1	1	6	38	69	518	0.90	1
I think there is a product type I am interested to do always that type of product	1	1	5	46	62	512	0.89	2
I believe that there is a product type that leads to my machine for routine machine stoppage	1	4	8	37	65	506	0.88	4
I think am selective product type before I decide to work overtime, I need to check which type of material ready for overtime	0	3	6	58	48	496	0.86	6

Source: Author's Computation

Employees are interested in learning other operations if there is no input material available because of an operation, as shown by the study's results in table 3. Employees are proficient in multiple operations, and the quantity of input materials dictates how much they can produce each day. This quantity also affects their compensation.

Table 3

Respondents Response for Input Material Quantity

	SDA	DA	N	A	S A	Total Score		
	Count	Count	Count	Count	Count		RII	Rank
Input material quantity determines my daily production target	2	8	10	51	44	472	0.82	2
Every day I am interested to check the input material quantity on my way	1	10	15	53	36	458	0.80	5
The amount of input material quantity has effect on my wage	3	10	15	51	36	452	0.79	6
I believe that if there is less amount of input material the supervisor has responsibility to arrange next order before we stop production,	6	4	14	51	40	460	0.80	4
If there is no input material due to my operation, I am interested to learn other operation and work,	3	8	7	49	48	476	0.83	1
I am skilled more than one operation	4	7	11	50	43	466	0.81	3

Source: Author's Computation

Employees are interested in learning other operations if there is no input material available because of an operation, as shown by the study's results in table 3. Employees are proficient in multiple operations, and the quantity of input materials dictates how much they can produce each day. This quantity also affects their compensation.

Table 4

Respondents Response for Style Change Duration

	SDA	DA	N	A	SA	Total		
	Freq.	Freq.	Freq.	Freq.	Freq.	Score	RII	Rank
When I am working same style for long time its improver my Production	2	2	8	56	47	489	0.85	1
Working same style continuously earn more money because of production speed improvement	7	13	13	50	32	432	0.75	5
When we started new style production, I am not waiting only supervisor to learn other operations	2	11	10	60	32	454	0.79	4
With my spare time I am interested to train other operations.	3	2	11	55	44	480	0.83	2

Source: Author's Computation

As seen in Table 5, absenteeism has a negative impact on workers' production because it ranks first with a RII of 0.86. So, it can be concluded that absenteeism has a detrimental impact on employees' production, and when employees miss work, they are aware that their incentive pay would be withheld.

Table 5

Respondents Response for Absenteeism

	SDA	DA	N	A	S A	Total		
	Freq.	Freq.	Freq.	Freq.	Freq.	Score	RII	Rank
when I am absent from work, I easily expect that my incentive wage becomes deduct	4	8	18	63	22	436	0.76	3
when I feel worried in the work place need to absent from work	0	4	13	59	39	478	0.83	2

Source: Author's Computation

Thus, based on the responses of the respondents at Table 6, it can be concluded that sensors are important to quickly identify which machines are having problems, that the mechanics are qualified to fix the machines, that employees immediately notify their leader when a machine stops working, and that if a machine has a problem and it takes time to fix it, production will suffer.

Table 6

Respondents Response for Machine Stop Time

Statement	SDA Freq.	DA Freq.	N Freq.	A Freq.	S A Freq.	Total Score	RII	Rank
The mechanics are skilled enough for fixing my machine	2	8	7	58	40	471	0.82	2
The mechanics are stand by when machine stops happens fix properly	4	21	16	58	16	406	0.71	9
Sensors are important to identify easily which machine gets trouble	2	3	4	73	33	477	0.83	1
When the machine gets stop, I immediately report to my leader	0	10	8	59	38	470	0.82	3
If there is get trouble to my machine takes time to fix its negatively affect my Production	4	6	10	55	40	466	0.81	4
When machine stop happens as much as possible need to fix quickly	3	6	12	62	32	459	0.80	5
If there is machine stoppage happens and takes time to fix, I am interested to do my work by changing another same machine	6	8	11	59	31	446	0.78	6
Keep machine clean is important to minimize machine stop time	9	8	12	61	25	430	0.75	7
I agree that to clean my machine to clean before and after work	4	20	11	60	20	417	0.73	8

Source: Author's Computation

Table 7 lists and ranks the management approach's impact on production at the Lyu facility. Because the relative important index (RII) is more than 0.8, the factors with the highest rankings that have values of RII 0.80 are considered to be factors of extremely high relevance. The management approach, which came in first place and had a relative performance index (RII) of 0.82, does not affect employee's production. It was followed by good expertise by managers with a relative performance index (RII) of 0.81. In addition to that management approach have also a direct contribution with employees' wage.

The impact of management on employee experience and engagement is a crucial element of corporate performance, employee productivity, and personal happiness. The most immediate impact on the employees they supervise comes from the managers. They are in charge of ensuring that the performance of their department and its employees is in line with the overall corporate goals. They are essential in influencing organizational culture. They serve as a conduit between top decision-makers and grassroots activists.

Table 7

Respondents Response about Management Approach

Statement	SDA Freq.	DA Freq.	N Freq.	A Freq.	S A Freq.	Total Score	RII	Rank
There is technically educated managerial personal	6	41	18	27	23	365	0.63	6
Managers are good expertise to manage	1	8	13	53	40	468	0.81	2
Understand well company's rules and regulation leads to good management approach	7	14	13	50	31	429	0.75	5
Management approach not affects employees Production	2	8	8	57	40	470	0.82	1
I believe management approach have direct contribution with my wage	4	10	17	51	33	444	0.77	3
I think that factory management not appreciate lazy workers un fairly to get better payment	5	19	13	38	40	434	0.75	4

Source: Author's Computation

Factors affecting Production at Evertop factory (incentive (time rate) rate payment

Based on the study's below findings in Table 8, it is possible that product type has little bearing on the production in time rate payment system. But, the sale price of the product and the operating piece rate have a direct link as ranked first with RII 0.63

Table 8

Respondents Response for Product Type

Statement	SDA Freq.	DA Freq.	N Freq.	A Freq.	S A Freq.	Total Score	RII	Rank
The type of product is determined under the interest of customer	31	67	20	44	13	466	0.53	5
For different product type with the same operation, I score different amount daily production target	34	65	16	45	15	467	0.53	4
The sale price of the product and the operation piece rate have a direct relationship	20	46	21	65	23	550	0.63	1
I believe that there is a product type that leads to my machine for routine machine stoppage	31	55	28	49	12	481	0.55	3
I think am selective product type before I decide to work overtime, I need to check which type of material ready for overtime	18	64	25	49	19	512	0.59	2

Source: Author's Computation

Table 9 of the study's data reveals that the quantity of the input material has little bearing on the t imely payment of wages.

Table 9

Respondents Response for Input Material Quantity at Evertop Factory

Statement	SDA Freq.	DA Freq.	N Freq.	A Freq.	S A Freq.	Total Score	RII	Rank
Input material quantity determines my daily production target	30	60	32	40	13	471	0.54	4
Every day I am interested to check the input material quantity on my way	13	34	24	78	26	595	0.68	1
The amount of input material quantity has effect on my wage	38	79	21	25	12	419	0.48	6
I believe that if there is less amount of input material the supervisor has responsibility to arrange next order before we stop production,	33	75	22	40	5	434	0.50	5
If there is no input material due to my operation, I am interested to learn other operation and work,	33	56	21	54	11	479	0.55	3
I am skilled more than one operation	22	65	28	45	15	491	0.56	2

Source: Author's Computation

Based on Table 10, it is clear that when employees work in the same manner for a prolonged period of time, their production does not increase significantly. This is because they do not care whether or not their output is high, and they are not motivated to educate other employees.

Table 10

Respondents Response for Style Change Duration

Statement	SDA Freq.	DA Freq.	N Freq.	A Freq.	SA Freq.	Total Score	RII	Rank
Working one style for long period of time is better	36	91	20	21	7	397	0.45	5
When I am working same style for long time it improver my Production	39	63	34	29	10	433	0.49	2
Working same style continuously earn more money because of production speed improvement	40	67	27	31	10	429	0.49	3
When we started new style production, I am not waiting only supervisor to learn other operations	22	76	25	44	8	465	0.53	1
With my spare time I am interested to train other operations.	46	70	22	29	8	408	0.47	4

Source: Author's Computation

According to Table 11, absenteeism that impairs employee performance has a RII of 0.5, indicating that it is of low relevance. Employees who experience boredom at work must miss work, according to RII 0.69.

Table 11

Respondents Response for Absenteeism

Statement	SDA Freq.	DA Freq.	N Freq.	A Freq.	S A Freq.	Total Score	RII	Rank
Absenteeism negatively affects my Production	40	76	8	37	14	434	0.50	3
when I am absent from work, I easily expect that my incentive wage becomes deduct	38	52	12	51	22	492	0.56	2
when I feel bored in the work place need to absent from work	13	39	18	70	35	600	0.69	1

Source: Author's Computation

The ranking in Table 12 reflects the impact of machine stop time at the Evertop factory. The mechanics are skilled enough to fix the machine, which ranked highest with a relative performance index (RII) of 0.79, and Keep machine clean is important to minimize machine stop time, which has a relative performance index (RII) of 0.7 ranked second.

Table 12

Respondents Response for Machine Stop Time

Statement	SDA Freq.	DA Freq.	N Freq.	A Freq.	S A Freq.	Total Score	RII	Rank
The mechanics are skilled enough for fixing my machine	2	20	16	88	49	687	0.79	1
The mechanics are stand by when machine stops happens fix properly	9	38	28	80	20	589	0.67	4
When the machine gets stop I immediately report to my leader	10	33	32	84	16	588	0.67	5
If there is machine stoppage happens and takes time to fix, I am interested to do my work by changing another same machine	16	41	33	69	16	553	0.63	6
Keep machine clean is important to minimize machine stop time	9	34	22	80	30	613	0.70	2
I agree that to clean my machine to clean before and after work	18	36	13	75	33	594	0.68	3

Source: Author's Computation

Consequently, it may be concluded that management style has an impact on how employees are paid for their production in real time. This is supported by the RII (0.81), which is shown in Table 13 below. Yet, the management strategy has no impact on the 0.77-rated employee production.

Table 13

Respondents Response for Management Approach

Statement	SDA Freq.	DA Freq.	N Freq.	A Freq.	SA Freq.	Total Score	RII	Rank
There is technically educated managerial personal	24	47	11	70	22	541	0.62	5
Managers are good expertise to manage	10	24	18	79	44	648	0.74	4
Understand well company's rules and regulation leads to good management approach	16	21	10	72	56	656	0.75	3
Management approach not affects employees Production	10	22	9	77	57	674	0.77	2
I believe management approach have direct contribution with my wage	0	13	41	48	73	706	0.81	1
I think that factory management not appreciate lazy workers un fairly to get better payment	36	61	45	21	12	437	0.50	6

Source: Author's Computation

Discussion of Piece rate and incentive (time rate) payment system descriptive result

Regarding production, the maximum production under a piece rate payment was 9844 pieces, with a mean production capacity of 6545 pieces. In contrast, the maximum output for time rate payments was 3190 pieces, with a mean production capacity of 3144 pieces. Thus, the piece rate payment system's mean and maximum production are greater than two times that of the time rate payment system. According to the findings, the piece rate structure leads to high production and less managerial oversight. Employee production is lower when paid on a time basis, necessitating rigorous managerial oversight.

The study clearly reveals piece rate payment system stimulate employees for increased production because when their production grows their wage payment also increase. So, aim for increased productivity to obtain higher pay for your employees. Lyu Factory is more productive than Evertop Factory as a result. Yet, with the time rate payment system, both their output and their pay are less than with the piece rate payment system.

Considering the whole questions, in the case of a piece rate payment system, the total RII for the following factors is 0.88 for Product type, 0.81 for Input material amount, 0.80 for Style change length, 0.82 for Absenteeism, 0.78 for Machine stop time, and 0.76 for Management method. As a result, across all product types, product type has the greatest impact, followed by turnover, absenteeism, and input material quantity. In case of (incentive (time rate) rate payment), For the following factors: Product type (RII=0.55), Input material quantity (RII=0.55), Style change duration (RII=0.45), Absenteeism (RII=0.6), Machine stop time (RII=0.63), and Managerial method (RII=0.70). Machine stop time and absenteeism are the two factors that have the greatest impact of all management strategies.

Mediation Analysis (Direct and indirect effect of variables on Wage)

Table 14 shows a structural equation model for a piece rate payment system. Hence, the impact of production as a mediator on pay. This is advantageous and important. So, as employee production increases, wages rise by a unit of 0.42 as well. The effect of product type on wage is 716.3, which is positive and statistically significant, indicating that different types of products have varying prices. Absenteeism has a -149 effect on wages, which is statistically significant and detrimental. Because the wage is determined based on daily employee production in the case of piece rate payment system, it follows that absenteeism has a negative impact on pay. The effects of management approach are 1473.69, which is a positive and statistically significant effect on pay; the effects of machine stop time are -39.8; and the effect of input material quantity on pay is -380.3. wage is impacted by the structural table of Lyu factory production. In the case of a time-rate payment system, it is only the management approach that affects production positively and significantly. But input material quantity, absenteeism, and management approach put a statistically significant influence on wages, but absenteeism affects wages negatively.

Table 14

Structural Equation Model

	Piece-rate Payment System		**Time-rate Payment System**	
Structural	Coefficient	P-Value	Coefficient	P-Value
Production				
Product type	906.63	0.000	-3.46	0.291
Input Material Quantity	1232.83	0.000	1.43	0.714
Style Change Duration	1457.21	0.000	-3.97	0.178
Absenteeism	-62.72	0.027	-18.67	0.001
Machine Stop Time	-60.29	0.027	-6.62	0.140
Management Approach	90.86	0.794	44.86	0.000
Constant Term	-9344.09	0.000	3080.14	0.000
Wage				
Production	0.42	0.016	0.48	0.436
Product type	716.28	0.024	33.19	0.223
Input Material Quantity	-380.29	0.425	65.33	0.044
Style Change Duration	-2326.35	0.000	3.13	0.898
Absenteeism	-149.89	0.006	-126.53	0.007
Machine Stop Time	-39.81	0.451	-48.09	0.198
Management Approach	1451.33	0.020	198.67	0.013
Constant Term	3132.14	0.145	386.29	0.845
Var (e. Production)	55540.19		523.87	
Var (e. Wage)	199900.10		35824.84	

Source: - Stata Output

Table 15 below illustrates the direct impact of factors on wage in the context of a piece rate payment system. As a consequence, the effect of mediator (production) on wage is 0.42, which indicates that when employees create more, their wages rise, which is positive and statistically significant. The effect of product type, on the other hand, is 716.3, which is also positive and statistically significant. The effect of absenteeism is -149.89, which is significant, and the effect of management approach is positive and statistically significant. The effect of style change duration is -2326.35, which is negative and significant. It means that when employees work in the same style for a long period of time, their wages are negatively impacted. Previously, we saw that they worked with different product types and received different pay for each style. The direct effects of machine stop duration and input material quantity are, respectively, -39.8 and -380.3, but they have a negligible impact. Wage has a considerable impact on the mediator (production), product kind, style change length, absenteeism, and management style.

In the case of a time-rate payment system, absenteeism and management style have statistically significant influence on production. Moreover, the quantity of input materials and absence both significantly affect wage directly.

Table 15

Direct Effects

	Piece-rate Payment System		**Time-rate Payment System**	
Structural	Coefficient	P-Value	Coefficient	P-Value
Production				
Product type	906.63	0.000	-3.46	0.291
Input Material Quantity	1232.83	0.000	1.43	0.714
Style Change Duration	1457.21	0.000	-3.97	0.178
Absenteeism	-62.72	0.027	-18.67	0.001
Machine Stop Time	-60.29	0.027	-6.62	0.140
Management Approach	90.89	0.794	44.86	0.000
Wage				
Production	0.42	0.016	0.48	0.436
Product type	716.28	0.024	33.19	0.223
Input Material Quantity	-380.29	0.425	65.33	0.044
Style Change Duration	-2326.35	0.000	3.13	0.898
Absenteeism	-149.89	0.006	-126.53	0.007
Machine Stop Time	-39.81	0.451	-48.09	0.198
Management Approach	1451.33	0.027	198.67	0.013

Source: - Stata Output

The Indirect effects are described in Table 16. The indirect effects of product type on wage are 387.44 positive and statistically significant. As a result, production with other variables is 0 (no path), which means there is no way production is related to those independent variables indirectly; instead, production only has a direct relationship with those variables. The indirect effect of input material quantity on wage is 526.84, while the indirect effect of style change time is 622.73, which has a large impact on wage. It is common for diverse product types to boost wages (positive and statistically significant).

When using a piece rate payment system, an employee's daily personal output has an impact on their pay. If there is an adequate supply of input materials, workers can concentrate on their task without worrying about a shortage; for this reason, the quantity of input materials has an impact on pay. The effects of input material quantity, product type, and style change length were all substantial, whereas the indirect effects of absenteeism, machine downtime, and management style were all insignificant. But nothing is statistically significant indirect effects in the case of time-rate payment system.

Table 16

Indirect Effect

	Piece-rate Payment System		**Time-rate Payment System**	
Structural	Coefficient	P-Value	Coefficient	P-Value
Wage				
Production	0 (no path)		0 (no path)	
Product type	387.44	0.024	-1.68	0.531
Input Material Quantity	526.84	0.027	0.69	0.741
Style Change Duration	622.73	0.027	-1.93	0.500
Absenteeism	-26.80	0.103	-9.09	0.448
Machine Stop Time	-25.76	0.103	-3.22	0.491
Management Approach	38.84	0.795	21.85	0.442

Source: - Stata Output

Table 17 shows the overall effect of variables on wages for a piece rate payment system. Therefore, the mediator, product type, style change duration, absenteeism, and management style have a significant impact on wage. The effect of the mediator (production) on wage is 0.42, which is positive and significant. The effect of the product type is 1103.72, which is positive and statistically significant. Both the amount of input material and the duration of the machine stoppage had no discernible effects. However, in the case of time-rate payment system, Absenteeism and management approach put significant pressures on production while material quantity and absenteeism do the same on wage.

Table 17

Total Effects

	Piece-rate Payment System		**Time-rate Payment System**	
Structural	Coefficient	P-Value	Coefficient	P-Value
Production				
Product type	906.63	0.000	-3.46	0.291
Input Material Quantity	1232.83	0.000	1.43	0.714
Style Change Duration	1457.21	0.000	-3.97	0.178
Absenteeism	-62.72	0.027	-18.67	0.001
Machine Stop Time	-60.29	0.027	-6.62	0.140
Management Approach	90.89	0.794	44.86	0.000
Wage				
Production	0.42	0.016	0.48	0.436
Product type	1103.73	0.000	31.51	0.246
Input Material Quantity	146.55	0.736	66.03	0.042
Style Change Duration	-1703.61	0.001	1.19	0.961
Absenteeism	-176.70	0.001	-135.62	0.003
Machine Stop Time	-65.58	0.217	-51.32	0.168
Management Approach	1490.18	0.027	220.53	0.003

Source: - Stata Output

Conclusion and Recommendation

The relative importance index revealed that product type, input material quantity, style change duration, and absenteeism affect the production of Lyu Factory with very high significance, while machine stop time and management approach have high significance. Whereas, in the case of time rate payment, product type, input material quantity, and style change duration have lower significance for production, while absenteeism, machine stop time, and management approach have high significance. The findings also revealed that the production and wage of employees of Lyu Factory were higher than Evertop Factory, which is due to the piece rate payment system used by Lyu Factory, which can motivate employees. Due to the direct effect mediation analysis for piece rate payment, mediator (production), product type, style change duration, and absenteeism, the management approach has a significant effect on wage. The indirect effect of product type, input material quantity, and style change duration has a significant effect on wages. In the case of a time rate payment system, direct effect input material quantity, absenteeism, and management approach have significant effects on wages. Because of the insignificant effect of the mediator, no variable has a significant indirect effect on wage.

Based on the findings, the study recommends the following: The study recommends Evertop Factory use a piece rate payment system because the study clearly shows that a piece rate payment system can motivate employees because production is a mediator for wage, and when production increases, wages also increase. Lyu factory raises wages by increasing production, selecting product types, lowering absenteeism, and developing a good management approach. It is better for Evertop Factory to shift their payment system to a piece rate payment system because the production of the employees has a significant effect on wages. This leads to a reduction in personal biases and a fair system for the employer and employee. If Evertop Factory continues with its incentive payment system, it can optimize production by decreasing absenteeism and increasing management control. Also, Evertop Factory improves wages by maximizing input material quantity, reducing absenteeism, and implementing management control.

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