Impact of Wage Digitization on the Savings and Financial Inclusion of Tea Garden Workers of West Bengal (India)

Md Nasim Ansari [1]
Jamaluddeen [2]

Abstract

Purpose : This study examined the possible economic and social gains of tea garden laborers in West Bengal because of wage digitalization. The emphasis was on increasing wage transparency, encouraging financial inclusion, and helping tea garden workers manage their money more effectively.

Methodology : The study involved 390 laborers from 12 tea estates in North Bengal and used empirical methods to monitor and quantify the impacts of wage digitalization on savings, income management, and financial inclusion. To conclude, the study applied descriptive statistics, paired *t*-tests, bi-variate regression, and Garret's ranking technique.

Findings : The findings indicated positive impacts of wage digitization on savings increment, control over income, and financial inclusion for tea garden workers of West Bengal. Notably, there was an increase in savings, enhanced income control, and significantly encouraged financial inclusion. Based on the findings, the top three benefits were increased savings, income management, and time-saving. On the other hand, the top three significant obstacles were the distance from bank branches, the unavailability of ATMs, and wage withdrawal charges.

Policy Implications : Digitizing tea garden wages will yield vital policy implications that will highlight enhanced savings and financial inclusion. Advocating digital payment policies benefits workers and management, extending to organized, semi-organized, and unorganized sectors, addressing prevalent cash-based wage systems, and benefiting earners and payers.

Originality : This study enhanced the literature by empirically exploring wage digitalization's impact on West Bengal tea estates. Concrete evidence revealed positive effects on workers' savings, income management, and financial inclusion. The research addressed issues and offered recommendations for successful digitalization implementation in diverse economic and social contexts.

Keywords : **tea garden laborers, wage digitization, savings level, income management, financial inclusion, West Bengal**

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In West Bengal, the tea industry is very important and has a big impact on the lives of people living in Tarai and Dooars (North Bengal). Around 450 tea gardens are currently operating in the area, employing over six lakh people, of which nearly three million are dependent on the industry (Das & Islam, 2021). The industry's destiny is intricately linked with the tea workers, who dedicate a significant part of their lives to the tea gardens (Yasin et al., 2015). Despite their pivotal role, these workers find themselves among the most vulnerable groups in

[1] *UGC Senior Research Fellow (Corresponding Author),* Department of Commerce, University of North Bengal, Siliguri, Darjeeling - 734 013, West Bengal. (Email : rs_nasim@nbu.ac.in) ; ORCID iD: https://orcid.org/0000-0001-6057-1540
[2] *Assistant Professor,* Department of Commerce, University of North Bengal, Siliguri, Darjeeling - 734 013, West Bengal. (Email : qjamaluddeen@gmail.com) ; ORCID iD : https://orcid.org/0000-0003-3239-852X

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society, enduring harsh living conditions since the inception of tea gardens in India (Dutta et al., 2023). The tea industry plays a pivotal role in empowering women, serving as a prominent source of employment for them (Sarkar, 2019), and fostering self-reliance. However, the sector has witnessed labor strikes and conflicts with authorities, primarily centered around wage issues. The traditional practice of cash payments has led to delays and a lack of transparency and accuracy in wage disbursement (Sen Gupta & Bal, 2008). A potential solution to these challenges lies in a singular initiative – wage digitization. In an era of increasing digitization worldwide, India is no exception, with the digitalization of payment systems gaining traction. Kakkad and Jadhav (2021) found that adopting digital payment systems will propel the expansion of the banking sector. Borah (2013) emphasized the difficulties that workers face in their pursuit of an improved standard of life and upward mobility. Workers' economic circumstances have not improved much since independence, despite numerous government initiatives, keeping them mired in a never-ending cycle of poverty. Financial inclusion has emerged over the past two decades as a significant interest for researchers worldwide. In India, the government has introduced various initiatives, including the Pradhan Mantri Jan Dhan Yojana (PMJDY), Atal Pension Yojana (APY), Pradhan Mantri Vaya Vandana Yojana (PMVVY), Sukanya Samriddhi Yojana (SSY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), among others, to facilitate the integration of the economically disadvantaged into the formal financial sector.

Wage digitalization has allowed tea garden workers to join the traditional banking system. Wage digitization, involving the digital recording of attendance and the disbursement of wages through bank accounts instead of cash payments, can address various issues such as transparency, trust, unrest, and dissatisfaction. The Better Than Cash Alliance (BTCA), which was founded in 2012 with support from the Bill & Melinda Gates Foundation, Ford Foundation, USAID, CITI, Omidyar Network, and Visa Inc., aims to encourage responsible digital payments. In 2015, India became a part of this endeavor ("India announces new partnership," 2015), with the aim of benefiting both payment recipients and providers. The hazards associated with handling and carrying currency are reduced by the increased security of digital transactions (Mohania & Mainrai, 2020).

Furthermore, it promotes financial inclusion by providing tea garden laborers access to formal financial services, empowering them to save, invest, and plan. Writing an article on the impact of wage digitization on tea garden laborers would shed light on these benefits, emphasizing the positive transformations in financial security, efficiency, and overall well-being resulting from adopting digital payment systems in their work environment. Thus, the study analyzes tea garden workers' savings behaviors and attitudes toward digitizing wage payments. It also assesses the impact of wage digitization on their savings level and financial inclusion before and after digitization. It also explores the benefits and challenges laborers face transitioning from cash to digital wage payments.

Literature Review

A cashless economy is characterized by digital transactions rather than physical cash exchanges. The implementation of demonetization resulted in a significant and transformative shift in transaction methods among the general populace. One significant result was the significant advancement made by our country in transitioning to a cashless economy (Kotishwar, 2018). Research indicates a transformative impact on workers' financial autonomy and savings in the digital wage payments field within Bangladesh's readymade garment industries. Poutiainen and Chowdhury (2021) and Thakur (2022) highlighted the positive influence, emphasizing improved control over wages, access to financial services, and timely remuneration. Despite these advancements, the comprehensive effects on savings and expenditure behaviors remain a subject for further exploration. Breza et al. (2017) revealed that digital wage payments contribute to increased savings and resilience to unforeseen economic shocks. The advantages extend beyond individual workers, with digital payment systems facilitating reductions in working hour losses, offering transparency, and empowering women within the workforce.

Hasan (2017) underscored the mutual benefits of the bank account system, establishing a win-win situation for workers and authorities.

Additionally, Beck et al. (2007), Corrêa Harcus (2021), and Demirgüç-Kunt et al. (2017) argued that responsible digital payments uphold workers' rights, foster sustainable enterprise development, and broaden financial inclusion, especially for women. Field et al. (2019) have highlighted the correlation between reduced gender disparity and higher labor force participation and women's empowerment through enhanced control over economic resources. The combination of training and direct deposit proves instrumental in elevating the empowerment index, measuring economic activity, and decision-making power over the short and long term. Klapper and Singer (2017) posited that digital payments offer a pathway to financial inclusion, reducing costs, increasing transparency, and empowering women. However, Basri and Shetty (2018) revealed that perceived usefulness, risk, and ease of use influenced e-banking adoption. Perceived risk in e-banking transactions positively connected with trust. Self-efficacy was seen to affect perceived utility and simplicity of usage.

To enhance adoption, banks should offer training for self-efficacy, allocate resources for user-friendly systems, and implement measures to reduce risks like identity theft, fostering trust among potential users. Although digital payment surpasses cash transactions, Klapper and Singer (2017) noted that digital payment is only the first step toward full financial services, not a guarantee of financial inclusion. Thakur (2022) highlighted how digital technology may speed up remittance procedures and facilitate a quicker, less expensive, and more convenient way for underprivileged communities to get their money. Svarer (2020) contributed valuable insights by affirming the positive impact of digital wages on both factories and workers, citing increased efficiency and financial inclusion. Public financial management (PFM) is one area where digitalization has wider ramifications. Cangiano et al. (2019) claimed that integrating digitization into PFM advances modernization objectives by reducing transaction costs and improving service delivery efficiency. Klapper (2023) further contends that digital payments can enhance a company's profitability through streamlined financial transactions, improved security, and increased employee access to formal economic sectors. However, the integration of digitalization in the workplace is not without challenges. Cijan et al. (2019) underscored the importance of managerial understanding to mitigate risks and maximize positive outcomes.

Similarly, Sharma and Thao (2021) shed light on the obstacles that the Philippines faces in implementing digital banking services, such as trust issues, accessibility issues, and infrastructure constraints. The benefits of digital payments include supply-chain accountability, potential audit assistance, and accuracy in worker payments. Notably, Blumenstock et al. (2015) highlighted significant cost savings for companies in Afghanistan that transition to digital wage payment methods, attributing these benefits to the security advantages of eliminating cash transactions. In conclusion, research indicates that digital wage payments have a variety of positive effects, from savings and financial empowerment for individuals to larger advantages for the economy and organizations. While challenges exist, the potential for fostering financial inclusion, reducing poverty, and enhancing efficiency underscores the transformative role of digital payments in diverse contexts.

Objectives and Hypotheses of the Study

Objectives of the Study

(1) To analyze the changes in the level of savings before and after the wage digitization of the tea garden workers.

(2) To assess the impact of wage digitization on the control over income of tea garden workers.

(3) To assess the impact of wage digitization on the saving increment of tea garden workers.

(4) To see the impact of wage digitization on the financial inclusion of tea garden laborers.

(5) To understand the significant benefits and obstacles faced by the tea garden workers with digital wage payment.

Hypotheses of the Study

The following hypotheses will be most effectively examined while keeping the primary goals in mind:

- **H_{01} :** Wage digitization does not impact the savings level of the tea garden laborers.
- **H_{02} :** Wage digitization does not impact the control over the income of the tea garden laborers.
- **H_{03} :** Wage digitization does not impact the financial inclusion of the tea garden laborers.

There are a number of disadvantages and advantages to the conventional wage payment method (cash payment). The laborers in the tea gardens were paid in cash and thus had less control over their liquidity. They failed to save even a tiny portion of their earnings. Our goal is to determine whether or not the digitization of wage transfers has impacted savings rates, income control, and financial inclusion.

Methodology

The study focused on the North Bengal region of West Bengal, utilizing first-hand data and information. A field survey was conducted in the tea gardens between October 2022 and January 2023, employing a questionnaire supplemented by group interviews and discussions with laborers. The questionnaire covered demographic items, income, payment methods, savings before and after digitization, saving behavior, perceived benefits, shortcomings, and the respondents' perception of digital wage payment. In certain tea gardens, convenience sampling was used, and respondents were chosen at random from their places of employment. In all, 406 laborers from twelve tea estates took part in the research. For each characteristic, the questions were constructed using a 5-point Likert scale that went from *strongly disagree* to *strongly agree*. A total of 390 questionnaires were utilized for the analysis that followed from the responses that were gathered. Statistical software, such as MS Excel and EViews SV12, was used to evaluate the data. The hypotheses were tested using a variety of statistical methods, such as the paired *t*-test, the pairwise linear regression model, and the Hac test (for heteroscedasticity). In the context of the digital wage payment system, the advantages and challenges experienced by tea garden workers were also ranked using Garrett's Ranking technique. Study variables utilized:

The research aims to investigate the influence of wage digitization on various factors, incorporating one independent variable and three dependent variables. In this analysis, wage digitization is considered the independent variable, while control over income, savings increment, and financial inclusion are dependent variables (refer to Table 1).

Table 1. ***Reliability Test for the Questionnaire Data***

Variable	No. of Questions	Reliability (Cronbach's α Value)
Wage Digitization *(WD)*	04	1.000
Control Over Income *(COI)*	03	0.958
Savings Increment *(SI)*	03	1.000
Financial Inclusion *(FI)*	04	0.889
For full Questionnaire	28	0.877

- **Model 1 :** Wage Digitization => Control Over Income
- **Model 2 :** Wage Digitization => Savings Increment
- **Model 3 :** Wage Digitization => Financial Inclusion

Data Analysis and Results

Table 2 presents a snapshot of the demographic details of tea garden laborers, revealing a nuanced socio-economic landscape. The gender distribution underscores a notable gender imbalance, with 56.2% of respondents being female. The education parameter unveils a concerning trend, with a majority (87.17%) falling into the illiterate or primary education category, indicating potential barriers to access to higher education. The wage distribution highlights economic disparities, with a significant portion (91.2%) earning between ₹ 4,001–6,000 monthly. Surprisingly, the distance between the bank branch and the residence indicates different levels of geographical accessibility; 42.1% of respondents live within a 6–9 km range, indicating possible difficulties with financial inclusion and accessibility. Overall, the data paints a complex picture of the Tea Garden Laborers' demographics, emphasizing the need for targeted interventions to address gender imbalances and educational disparities and enhance financial accessibility in these communities.

Monthly Savings of the Laborers

Table 3 shows how laborers' monthly savings have been significantly impacted by digitization, revealing a major shift in their financial habits. Prior to digitization, 46 people (11.8%) were among the notable proportion of respondents who saved between ₹ 0 and 200. This group's post-digitalization response rate dropped dramatically to just seven responses (1.8%). Conversely, the ₹ 200–400 savings bracket declined from 230 respondents (59.0%) to 120 (30.8%), indicating a noticeable shift towards higher savings brackets. The most striking change is evident in the ₹400 – 600 savings category, where respondents increased from 103 (26.4%) to 175 (44.2%), showcasing a positive impact on saving levels. According to the research, digitization has not only had an impact

Table 2. ***Demographic Details of Tea Garden Laborers (Respondents)***

Variables	Parameters	Freq.	%
Gender	Male	171	43.8
	Female	219	56.2
Education	Illiterates/primary	340	87.17
	Metric	38	9.7
	HS/Graduates	12	3.1
Wage per month (₹)	2,000 – 4,000	01	0.3
	4,001 – 6,000	356	91.2
	6,001 – 8,000	30	7.7
	8,001 – 10,000	03	0.8
Distance of	0 – 3	67	14.6
Bank-branch	3 – 6	64	16.4
from home (KMs)	6 – 9	164	42.1
	9 – 12	105	26.9

Table 3. ***Savings Level of Laborers***

Monthly Savings	Pre-Digitization		Post-Digitization	
(₹)	No. of Respondents	%	No. of Respondents	%
0 – 200	46	11.8	7	1.8
200 – 400	230	59.0	120	30.8
400 – 600	103	26.4	175	44.2
600 – 800	11	2.8	63	16.2
800 and above	0	0.0	25	6.4
Total	**390**	**100**	**390**	**100**

Table 4. ***Paired t-Test***

Before and After Digitization (Pair)	Mean	*SD*	SE Mean	*t*	*df*	Sig.
Pair 1. Able to save	0.01538	0.17496	0.00886	1.737	389	.083
Pair 2. Frequency of savings	0.83333	0.85168	0.04313	19.323	389	.000 **
Pair 3. Avg. monthly savings	0.74359	1.07119	0.05424	13.709	389	.000 **

Note. ** represents significance at 5%.

on savings habits but has also significantly increased the proportion of workers in higher-income groups, indicating a successful economic outcome following digitization.

The paired *t*-test was executed to assess H_{01}, examining the ability to save, savings frequency, and monthly savings before and after the digitization of wages. The results of the Table 4 test indicate that there is no discernible variation in the ability to save ($p>0.05$). This suggests that employees retained a percentage of their income both before and after digitization. Nonetheless, Table 4 ($p<5\%$) shows a significant difference in the frequency of saves and monthly amounts saved prior to and following the digitalization of wage payments. H_{01} is, therefore, dismissed. Tables 3 and 4 indicate that the adoption of digital salary payment had a noteworthy favorable effect on the savings habits of laborers working in tea gardens.

Pairwise Bi-variate Regression Output

The heteroscedasticity and autocorrelation consistent (HAC) standard errors correct bias in regression analysis caused by heteroscedasticity and autocorrelation in residuals. Heteroscedasticity occurs when error variance varies across independent variable levels, impacting ordinary least squares (OLS) estimates. HAC standard errors provide robust estimates by adjusting for correlation and heteroscedasticity in residuals. The Newey–West estimator is commonly used. The HAC test is not specific but addresses statistical issues in OLS when facing heteroscedasticity and autocorrelation. Thus, we estimated these structures in residuals and computed corrected standard errors to enhance the validity of the hypotheses test.

Investigating how pay digitalization affects financial inclusion, savings, and income control is the goal of the project. Regression analysis was performed on each of the dependent variables—control over income, savings growth, and financial inclusion—one by one with the predictive variable wage digitalization. Table 5 shows that the independent variable, wage digitization, significantly predicts control over income, $F(1,389) = 570.921$, $p < 0.05$, indicating that the factor under study significantly impacts control over income. Moreover, the $R^2 = 0.595$ demonstrates that the model explains 59.5% of the variance in control over income. Similarly, Tables 6 and 7 display that wage digitization significantly predicts saving increment, $F(1,389) = 435.789$, $p < 0.05$, and financial inclusion, $F(1,389) = 50.069$, $p < 0.05$ respectively, which indicates that wage digitization has a

significant impact on both saving increment and financial inclusion. The $R^2 = 0.529$ for saving increment and $R^2 = 0.114$ for financial inclusion, indicating that the model explains 52.9% of the variance in saving increment and 11.4% in financial inclusion.

- **Model 1 :** Impact of wage digitization on control over income.
- **Model 2 :** Impact of wage digitization on savings increment.
- **Model 3 :** Impact of wage digitization on financial inclusion.

Table 5. ***Dependent Variable : Control Over Income***

Method : Least Square

HAC standard errors & covariance (Bartlett Kernel, Newey–West Fixed bandwidth = 6.0000)

Variables	Coefficients	Std. Error	*t*-statistics	Prob.
Constant	1.104973	0.117227	9.425921	0.0010
Wage Digitization	0.721333	0.030193	23.89062	0.0000 **
R-squared	0.595311	Mean dependent var		3.881179
Adjusted *R*-squared	0.594268	*S.D.* dependent var		0.478903
SE of regression	0.305047	Akaike info criterion		0.468413
Sum squared resid	36.10481	Durbin–Watson stat		2.038073

Note. ** represents significance at 5%.

Table 6. ***Dependent Variable : Savings Increment***

Method : Least Square

HAC standard errors & covariance (Bartlett Kernel, Newey–West Fixed bandwidth = 6.0000)

Variables	Coefficients	Std. Error	*t*-statistics	Prob.
Constant	0.889246	0.334133	2.661351	0.0081
Wage Digitization	0.780276	0.083643	9.328628	0.0000 **
R-squared	0.529006	Mean dependent var		3.892308
Adjusted *R*-squared	0.527792	*S.D.* dependent var		0.549543
SE of regression	0.377632	Akaike info criterion		0.895319
Sum squared resid	55.33096	Durbin–Watson stat		2.004324

Note. ** represents significance at 5%.

Table 7. ***Dependent Variable : Financial Inclusion***

Method : Least Square

HAC standard errors & covariance (Bartlett Kernel, Newey–West Fixed bandwidth = 6.0000)

Variables	Coefficients	Std. Error	*t*-statistics	Prob.
Constant	1.505520	0.305067	4.935045	0.0000
Wage Digitization	0.505395	0.079509	6.356432	0.0000 **
R-squared	0.114295	Mean dependent var		3.450641
Adjusted *R*-squared	0.112013	*S.D.* dependent var		0.765772
SE of regression	0.721611	Akaike info criterion		2.190453
Sum squared resid	202.0401	Durbin–Watson stat		1.304500

Note. ** represents significance at 5%.

Furthermore, coefficients were evaluated (Tables 5, 6, and 7) in order to determine the impact of wage digitalization on the dependent variables that were previously discussed. Investigate if pay digitization has a substantial and advantageous effect on financial inclusion, savings growth, and income control in H_{01}, H_{02}, and H_{03}. The findings show that wage digitization significantly and positively impacts tea garden workers' income control ($\beta = 0.772$, $t = 23.894$, $p = 0.000$). Wage digitization, on the other hand, has a significant and positive impact on both saving increment ($\beta = 0.780$, $t = 20.876$, $p = 0.000$) and financial inclusion ($\beta = 0.505$, $t = 7.076$, $p = 0.000$).

Hence, all three hypotheses (H_{01}, H_{02}, and H_{03}) will be rejected. Thus, it can be inferred that wage digitization significantly impacts control over income, savings, and financial inclusion of tea garden workers in West Bengal.

The Regression Equation: $Y = \beta_0 + \beta_1 X + \varepsilon$

- **Model 1:** Control Over Income = 1.104 + 0.772(Wage Digitization) + ε
- **Model 2 :** Savings Increment = 0.889 + 0.780(Wage Digitization) + ε
- **Model 3 :** Financial Inclusion = 1.506 + 0.505(Wage Digitization) + ε

Application of Garrett's Ranking Technique

Our statistical analysis shows a positive impact of digital wage payment on the savings of Tea Garden Laborers. Feeling toward wage digitization got mixed responses as the initiative also came with benefits and hurdles. Garrett's ranking technique ranks workers' identified benefits and obstacles with digital wage payment. Based on Garret's ranking technique, the study had respondents rank different benefits and hurdles based on their impact, which was then converted into a score value and ranked using the following formula:

$$Percent\ Position = \frac{100 * (R_{ij} - 0.5)}{N_j}$$

where R_{ij} = Rank for the ith item by the jth individual;

N_j = No. of items ranked by the jth individual.

The percent position estimated is converted into scores using Garrett's Table (Garret & Woodworth, 1969). Then, for each factor, the scores of each individual are added, and the total value scores and mean values of scores are calculated. The factor with the highest mean value is considered the most important. The advantages and problems that West Bengali tea garden workers face with the digital wage payment system are shown in the accompanying Tables 8 and 9.

Table 8. ***Benefits of Digital Wage Payment***

Benefits	1st*80	2nd*68	3rd*59	4th*53	5th*47	6th*40	7th*32	8th*20	Total Score
Bank Account Opening	3,600	1,292	2,915	1,325	3,290	2,280	2,080	1,080	17,862
Convenience	4,400	1,496	2,655	1,166	3,055	2,520	1,920	1,180	18,392
Expense Reduction	5,040	1,972	2,773	1,378	2,820	2,280	2,016	900	19,179
Savings	4,400	2,924	3,068	1,749	2,538	2,600	1,984	520	19,783
Alcohol Consumption Reduction	3,940	1,972	3,304	2,173	2,585	2,520	1,760	640	18,894
Control Over Income	4,400	1,972	2,832	1,537	3,149	2,800	1,856	680	19,226

Time-Saving	3,760	2,176	3,009	1,749	2,961	2,720	2,464	380	19,219
Security for Money	4,080	2,108	3,127	1,484	2,538	2,760	2,272	660	19,029

Benefits	**$100*(R_{ij}–0.5)/N_j$**	**Percent Position**	**Garret Value**	**Total Score**	**Average Score**	**Ranks**
Bank Account Opening	100*(1–0.5)/8	6.25	80	17,862	45.80	VIII
Convenience	100*(2–0.5)/8	18.75	68	18,392	47.16	VII
Expense Reduction	100*(3–0.5)/8	31.25	59	19,179	49.18	IV
Savings Increment	100*(4–0.5)/8	43.75	53	19,783	50.73	I
Alcohol Consumption Reduction	100*(5–0.5)/8	56.25	47	18,894	48.45	VI
Control Over Income	100*(6–0.5)/8	68.75	40	19,226	49.30	II
Time-Saving	100*(7–0.5)/8	81.25	32	19,219	49.28	III
Security for Money	100*(8–0.5)/8	93.75	20	19,029	48.79	V

Table 9. ***Obstacles to Digital Wage Payment***

Obstacles	**1st*80**	**2nd*68**	**3rd*59**	**4th*53**	**5th*47**	**6th*40**	**7th*32**	**8th*20**	**Total Score**
Lack of Trust	2,400	2,176	3,245	2,279	3,055	3,240	2,464	140	18,999
Distance from Bank	5,200	4,828	3,009	2,279	2,538	2,120	1,440	160	21,574
Unavailability of ATMs	5,360	4,352	3,127	2,067	2,397	1,960	1,760	240	21,263
Savings	4,400	2,924	3,068	1,749	2,538	2,600	1,984	520	19,783
Withdrawal Charges	4,240	3,128	3,304	2,173	3,008	2,160	1,376	660	20,049
Delay in Payments	3,440	3,876	2,832	1,961	2,867	2,640	1,856	400	19,872
Fraud	3,760	2,176	3,009	1,749	2,961	2,720	2,464	380	19,219
No Flexibility	3,520	2,924	3,127	2,332	2,538	2,760	2,336	200	19,737

Obstacles	**$100*(R_{ij}–0.5)/N_j$**	**Percent Position**	**Garret Value**	**Total Score**	**Average Score**
Lack of Trust	100*(1–0.5)/8	6.25	80	18,999	48.72
Distance from Bank	100*(2–0.5)/8	18.75	68	21,574	55.32
Unavailability of ATMs	100*(3–0.5)/8	31.25	59	21,263	54.52
Savings	100*(4–0.5)/8	43.75	53	19,783	50.73
Withdrawal Charges	100*(5–0.5)/8	56.25	47	20,049	51.41
Delay in Payments	100*(6–0.5)/8	68.75	40	19,872	50.95
Fraud	100*(7–0.5)/8	81.25	32	19,219	49.28
No Flexibility	100*(8–0.5)/8	93.75	20	19,737	50.61

Discussion and Recommendations

The research demonstrates the positive effects of implementing digital wage payment, particularly in enhancing savings, income control, and financial inclusion. However, the effectiveness of this initiative could be significantly improved, especially for workers in tea gardens where the bank branches are located at considerable distances. Customer service points (CSP) and local authorized shops are the primary means of cash withdrawal, charging ₹ 10–30 per transaction. This poses a challenge for tea garden laborers, given their daily wage of just ₹ 200. The absence of ATM facilities in tea gardens poses a significant obstacle to the success of the wage digitization initiative in West Bengal. To enhance the effectiveness and promote financial inclusion, key

recommendations include installing ATMs in every tea garden, given that over 65% of laborers reside at considerable distances from the nearest bank branches.

Additionally, CSP should permit fee-free cash withdrawals, a dispute redressal cell should be established for timely resolution of wage-related issues, and efforts should be made to ensure punctual wage payments, with advance notice in case of delays. Furthermore, creating a committee or team to educate laborers on utilizing their bank accounts for withdrawals and maintaining updated passbooks is crucial. Implementing these recommendations can facilitate the successful adoption of the wage digitization initiative across all tea gardens in the region.

Conclusion

Based on the above analysis and discussions, it can be inferred that the digitization of wages significantly impacts income control, savings accumulation, and financial inclusion of tea garden laborers. Even though the average monthly salary of these laborers is relatively low, falling below ₹ 6,000, they can still save a modest portion of their earnings. By addressing the outlined recommendations and overcoming the mentioned obstacles, there is potential for a notable improvement in the economic circumstances of the laborers. In order to optimize the advantages of pay digitalization, the government and authorities in tea gardens might take proactive steps for the workers. In the West Bengal areas of Tarai and Dooars, many tea gardens still lack computerized salary payment systems. After resolving these issues, the management of tea gardens may accept wage digitization, which could change workers' financial circumstances. Additionally, wage digitalization might reach unorganized, semi-organized, and organized sectors in India, where cash is still the primary means of wage payment, benefiting payers as well as earners.

Limitations of the Study

Some gaps in the current study provide opportunities for more investigation. The research, which was limited to 12 tea estates in the Tarai and Doors region of West Bengal, may only apply generally to a small number of tea garden laborers. It is necessary to consider a larger geographic area in order for future research to provide a deeper grasp of the subject.

Authors' Contribution

Md Nasim Ansari conceived the idea and developed qualitative and quantitative designs for the empirical study. He extracted research papers with high reputations, filtered these based on keywords, and generated concepts and codes relevant to the study design. Dr. Jamaluddeen verified the analytical methods and supervised the study. The interviews with the tea garden workers were conducted by Md Nasim Ansari, some in colloquial language and some in English. The same were further transcribed and translated into English by both the others. The authors did the numerical computations using MS Excel and EViews SV12. Md Nasim Ansari wrote the manuscript in consultation with Dr. Jamaluddeen.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this manuscript.

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About the Authors

Md Nasim Ansari is a UGC Senior Research Fellow at the University of North Bengal, Department of Commerce, dedicated to pursuing a Ph.D. under the guidance of Dr. Jamaluddeen. His expertise lies in the intersection of finance and agricultural economics, contributing valuable insights to the academic realm.

Dr. Jamaluddeen works as an Assistant Professor in the Department of Commerce at the University of North Bengal. He received the Dr. Radhakrishnan Post-Doctoral Fellowship (JRF) and a Ph.D. in business from Banaras Hindu University (BHU). His specialties are marketing and finance.