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Impact of age and experience on wage and productivity: An experience from handloom weavers

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Abstract
There is a close relationship between ageing, experience, wage and productivity. In this paper analyses has been done to study the impact of age and experience on wage and productivity of weavers in Handloom sector of Bodoland Territorial Area Districts, Assam. The paper also determines the impact of different age-group and experience-group on wage and productivity. The weavers are groups according to their age. Three age group are between' (15-25), (26 - 35) and above 35 year of age. The productivity and wages of the weavers are found to decline with increase in age. Weavers are also grouped on the basis of experience between (up to 5 years experience), 6 to 10 and above 10 years of experience. Experience of the weavers is found to be significant at 1 percent level but as experience increases both wage and productivity decline.

Keywords: Age; experience, wages, productivity, weavers

1. Introduction
Wage and Productivity are no though multidimensional affected by Demographic characteristics, organizational factors as well as by geographical/ Locational factor. In Handloom sector Weavers Productivity enhance weaver's Wage. Experience and Age of individual also plays a very important role in determination of productivity and wages of weavers. Experience enables to increase their skill and knowledge and that enable weavers to understand the technique used to increased productivity. But for additional 6 years or 10 years experience, the wage and productivity of weavers are observed to be declining in our study. The age of the weaver also affect the wage and productivity of weaver. Physical strength of individual is very necessary in weaving and it reduced with increased in age. In our study age of weaver has positive relation to their wage and productivity but as they grow older (above 35 years of age), they are found to have negative impact on both productivity and Wage. Different types of work required different physical strength and cognitive abilities and at the same time it is affected by how the work is organized or process. Mental health, physical health condition and bodily coordination have positive influence on any work of the individual.

2. Objectives
a. To analyze the impact of age and experience on Wage of Weavers.
b. To analyze the impact of age and experience on Productivity of Weavers.

3. Methodology and Data collection
The methodology for the study is based on the collection of both primary and secondary data. Secondary data has been collected from books, articles and journals and internet. Primary data has also been collected through field visit in the month of October to December, 2015. From the two districts (Kokrajhar and chirang) of BTAD, a sample size of 200 is collected, 100 observations from each district. It consists of 132 female weavers, 68 male weavers, 132 tribal weavers and 68 non tribal weavers (since majority of weavers are female and STs, they are taken in 2: 1 ratio). Blocks and villages for field survey are selected purposively taking into account the weaving activities. Respondents in selected weavings were identified through simple random sampling. In both Chirang and Kokrajhar district same number of sample size is collected since from secondary data it is observed that that there is no much difference in weavers engagement in handloom sector of those district.

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In order to Study the impact of age and experience on wage and productivity, multiple linear regression has been adopted. Here the first model that study the relationship between age, experience, productivity and wage is

$$W = a + b1P + b2\ EXP + b3\ AG+ + U$$

Here W is wages of Weavers (Dependant variable), P is Productivity, EXP is experience of weaver (in years), AG is age of weavers (in Years) (independent variables), a is constant, b1, b2, b3, are slope of productivity, experience and age respectively. U is error term.

The second model that study the relationship between age, experience, and Productivity is

$$P = a + b1\ EXP + b2\ AG + U$$

Here P is Productivity (Dependant variable), EXP is experience of weaver (in years), AG is age of weavers (in Years) (Independent variables), a is constant, b1, b2, are slope of productivity, experience and age respectively. U is error term.

The study has its limitation. Wage and Productivity are affected by numbers of factors but in our paper we have taken only age and experience that affect wage and productivity of weavers. Moreover the study is confined only to two districts, which are Kokrajhar and Chirang Districts of Bodoland Territorial Area Districts, Assam. Handloom sector is unorganized sector and majority of the owner/manager do not maintain proper records. Moreover our study is based on only 200 sample size hence there may be possible error in generalization of our result.

4. Discussions and Analysis

Table 1: Impact of productivity, age and experience on wage

Explanatory variable	Coefficient	Standard error	t- value	p-value	Collinearity statistics	
					Tolerance	VIF
Constant	944.849	567.77	1.664	.098		
Productivity	144.205	8.990	16.041	.000***	.839	1.192
Experience in years	99.735	21.207	4.703	.000***	.421	2.373
Age	-42.200	15.607	-2.710	.007***	.451	2.218

R square= .77
F value= 57.90, Sig=.000
Dependant variable is wages, SPSS output.

The value of F test indicates that the model is significant at 1 percent level. The value of R square is 0.77, which reveal that 77 percent variation in dependant variable is explained by independent variables. To identify the problem of Multicollinearity in the model, Tolerance and Variance Inflation Factor (VIF) value are accessed. Multicollinearity means the presence of linear relationship among the explanatory variable in the regression model. VIF of above 5 or 10 and the tolerance of less than 0.20 or 0.10 are often regarded as indicating multicollinearity. According to Collinearity statistics, our model is free from multicollinearity.

Productivity is the basic measure of employee work output. It is simply the output of an employee or the amount of work in a specific time. From our estimated regression equations it is found that productivity and experience of weavers has positive impact on wage of weavers and age of weavers have negative impact. So productivity is one of the sole parameter affecting wages of weavers, more the productivity more will be the increment in monthly wages of weavers. Tests the relationship between wages and productivity. The result suggests a strong relationship between wages and productivity. From the field study also, it is observed that productivity growth leads to higher wages to weaver in both the district of handloom sector in BTAD. Again productivity differences are determined by the types of product, design and also the quality of product. Products with sophisticated design takes longer time, needs more skill in production compared to product without design.

Experience of the weavers is also found to be significant at 1 percent level. Experience enables to increase their skill and knowledge and that enable weavers to understand the technique used to increased productivity. It is found that many weavers do not have sufficient experience to function fully and the lack of it may hold back their productivity. Found that work experience accounted for almost one half of the raw gender wage gap. Wannakrairoj W (2012) [13] had analyzed the effect of education and experience on wages of worker in Thailand, especially the differences in rural and urban labour market. Their result suggests a significant relationship between wages and experience in both the rural and urban market. Further he found the diminishing return of experience as the number of years of experience becomes larger. Additional year of experience raises about 4.2 percent of wage in urban areas, and about 4 percent in rural areas. For an additional 10 years of experience, the rural area effect on wage declines by roughly 0.054 percent, and the urban area effect on wage effect declines by around 0.049 percent.

Age of weavers is negatively significant at 1 percent level. That means wages reduces as weavers grow older. The result also suggests that as worker grows older there is a gap between productivity and wages. Weaving needs strength and it is observed that physical strength and health reduced as person grows older. Skirbekk V (2003) [10] found that the individual job performance reduce from around 50 years of aged which contrasts almost lifelong increase in wages. According to him, older individual are less productive, however the productivity variation over life cycle are addressed with emphasis over cognitive abilities affecting labour market performance. Had analyzed the effect of age on productivity and wages. They perform an analysis of the relationship between age, wage and productivity using a matched worker-firm panel dataset from Dutch manufacturing covering the period 2000-2005. They found little evidence of an age related pay-productivity gap.

5. Empirical results examining different aged group and experience group of weavers on their monthly Wages.

In order to examine the relationship between age and experience on wage and productivity, the weavers are groups according to their age. Three age group are between' (15-25), (26 - 35) and above 35 year of age. Weavers are also grouped on the basis of experience. The three groups

are up to 5 years experience, 6 to 10 years of experience and above 10 years. They are regressed separately on monthly wage and productivity to know which experience groups and age group have more impact on wage and productivity.

5.1 Age group of weaver and their monthly wages
W= βo+ β1 A (15 to 25) + β2 A (26 to 35) + β3 A (35 above) + U.
Where W is monthly Wages, A is Age and U is Error term. The methodology used here is similar to the methodology used by Dickerson and Mclntosh (2011) [5] 2010 while

investigating the relationship between productivity, Earning and Age in the early year of working life.

Table 2: Descriptive statistics of different age group and monthly wage.

Age group	Coefficient	Standard error	T value	P value
15-25	4.340	107.8	0.040	.968
26-35	153.038	62.026	2.467	.01
35 above	-93.784	37.724	-2.486	. 01

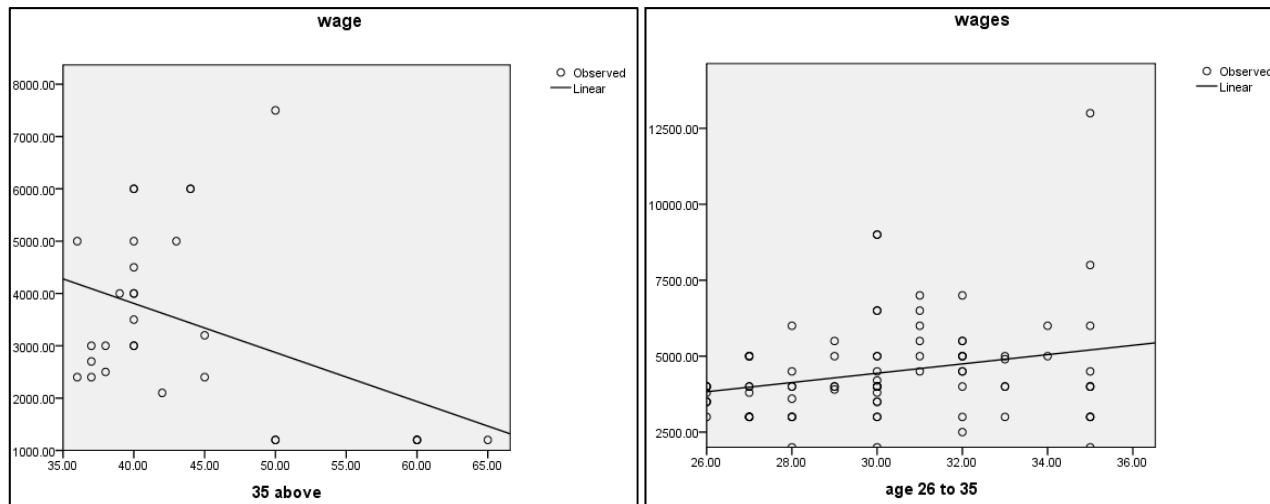Dependant variable is monthly wages, SPSS Output

Fig 1: wages among different aged group of weaver

From the table 1we can examine the slope of wage among different aged group of weavers. Comparison of monthly wages between various aged groups shows that the slope of wage of weaver aged 15-25 is positive. The coefficient of weavers aged 15- 25 though found insignificant shows a positive slope. Again the coefficient of aged 26-35 is significant at 5 percent level. So observing the slope of different aged group of weaver (aged 15-25 and aged 26-35), we can say that wages increases with increase in age but after certain point it decline. The coefficient of aged group above 35 is negatively significant at 5 percent level, which means that wages decrease after aged 35. Dickerson and McIntosh (2011) [5] while examining the hourly wages of workers found that workers of age (16-21) have lower

wage than age group (22-28), they also have lower productivity. Further, they found that for younger workers aged 16-21, wage grew by less than 10 percent while there was a modest increase in real wages for young adult women aged 22-28. Figure 1 also clearly depicts the monthly wage of weavers in relation to their age group.

5.2 Different experience group of weaver and their monthly wages.
W= βo+ β1 E (up to 5 years) + β2 E (6 to 10 years) + β3 E (above 10) + U.
Where W is monthly Wages, E is experience and U is Error term.

Table 3: Descriptive statistics of different experience group and monthly wage.

experience group(in years)	coefficient	Standard error	T value	P value
Up to 5 years	246.472	109.568	2.249	.026
6 to 10 yrs	-40.534	142.177	-.285	.778
Above 10	-42.090	71.649	-.587	.561

Dependant variable is monthly wages, SPSS output

Comparing the slope among different experience group of weaver on their wages, suggests that wages of weavers increases up to certain years of experience, after that it declines. According to the result given in above table, wages of weaver increases up to 5 years of experience and after that it is declining. Comparing the slope of wages among different experience group, it is found that the slope is positive for experience group up to 5 years. The slope become negative for 6 to 10 years of experience of weavers, it further decline as experience of weavers increases. The

literature of Dustmann and Meghir (2005) while examining the wage growth in Germany found the wages of skilled workers grow with experience, with growth starting at 7 percent and then 6 percent a year. The return declines thereafter but even in long run experience leans to a wage growth of 1.2 percent a year. Wage for the unskilled workers grow at 10 percent and 8 percent a year in the first 2 years but they become effectively zero beyond 3 years of work.

6. Factors affecting productivity of weavers

Table 4: Descriptive statistics showing factors affecting productivity of weavers.

Explanatory variable	coefficient	Standard error	t- value	p-value	Collinearity statistics	
					Tolerance	VIF
Constant	31.704	3.686	8.602	.000***		
Age	.013	.119	.113	.910	.447	2.238
Experience	-.389	.161	-2.413	.017**	.419	2.388

Dependant variable is Productivity, SPSS Output

Productivity of Weaver in Handloom sector is affected by different factors like education, training, types of weaver whether part time or full time, Locational factors etc. But here we have analyzed only with that of age and experience. Here Age is found to be insignificant and the experience of weavers is found to be negatively significant.

6.1 Empirical results examining different aged group and experience group of weavers and their monthly productivity.
6.1.1 Productivity of weaver and different aged group
P= βo+ β1 A (15 to 25) + β2 A (26 to 35) + β3 A (35 above) + U.

Table 5: Descriptive statistic showing the slope of different aged group of weaver

Age group	coefficient	Standard error	T value	P value
15-25	.009	.409	.023	.982
26-35	.121	.320	.376	.708
35 above	-.146	.210	-.693	.493

Dependant variable is productivity, SPSS Output

Productivity differences among various age group has been analyzed to know whether productivity differ to some extent among different age group. As indicate in the table slope for aged group 15- 25 is lower than slope for age group 26 to 35, further it decline as age increases above 35. From the table we can interpret the result as, 1 percent rise in the proportion of age 15-25, productivity of weavers increased by .009 percent and for the aged group 26-35, productivity increases by .12 percent. But for the aged group above 35, productivity is decline by .14 percent. *Dickerson and Mclntosh (2011)* [5], while investigation into relationship between productivity, earnings and age in the early years of working life found 1 percent rise in the proportion of worker aged 22-29 result in 4 percent rise in productivity. Similarly they found that 1 percentage point increase in the proportion of a sector's workforce aged 30-39 is associated with 2.84 percent rise in productivity. They found the productivity difference between workers aged 40-49 and workers aged 16-21 statistically insignificant at 0.26 percent, while the final age coefficient is negative, suggesting that an increase in the proportion of 50-59 year old workers is associated with a fall in sectoral productivity of 1.06%, relative to 16-21 year olds.

Table 6: Productivity of weaver and slope of different experience group

experience group(in years)	coefficient	Standard error	T value	P value
Up to 5 years	2.969	.579	5.126	.000***
6 to 10 yrs	-2.859	1.769	-1.616	.121
Above 10	-.208	.231	-.901	.374

Dependant variable is productivity

Positive slope reflect the increase in productivity. The result shows that up to 5 years experience productivity increases after that productivity decline. The coefficient of up to 5 years experience is found significant at 1 percent level. It is also seen from the table that 1 percent rise in proportion of experience up to 5 years, productivity of weavers increases by 2.96 percent. The coefficient of aged group 6 to 10 years indicate the decline in productivity by 2.85 percent which further decline as experience increases. From the result we understand that the weaver become more productive during the first 5 years of his/her experience. The impact of experience on productivity is more up to 5 years after that it diminishes. Basumatary, K (2014) [1] while analyzing the sources of wages- productivity differential found that productivity increases with experience. She found the coefficient of experience up to 5 years significant at 1 percent but the coefficient of above 5 years experience is insignificant according to her result. Jenifer king Rice (2010) [7], studied the impact of teacher experience and found the impact of experience strongest during the first few years of teaching after that marginal returns diminish. Teachers' shows greatest productivity gains during the first

few years of their jobs after that their performance tends to level off according to her study.
Thus it is found that Wage of the weavers is positively determined by their productivity. We have also found that wage and productivity are affected by age and experience of weavers. According to our estimate we have found that productivity and wage of weavers of age group 26 to 35' is higher than the others. We have also found that when an experience is up to 5 years, then it has strong relation with wage and productivity but when experience is above 5 years then both wage and productivity decline. Since skill of the workers can increase productivity. Skill can be increased through additional training, experience and so on which can be promoted through government policy.

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