Identifying Employees Productivity Performance Factors and Evaluating their Interrelationship: An Exploratory Case Study in Bangladesh Automobile Assembly Industry

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Abstract

The yearly demand of transportation is booming as the communication systems are developing and population is growing in urban areas. Purchasing ability is increasing faster than ever with the progress rate Of GDP which ultimately increases the desires for cars, motorbikes and commercial vehicles. Nowadays, automobile industry is considered as one of the thrust sectors in Bangladesh. To keep pace with competitive world, the productivity and performance of workers need to be maintained in high level. There are many variables that affect the employees' performance at their work place. These factors include employees' ability, clear understanding of role, organizational support, job content and financial rewards, proper evaluation, manager's decision, environment etc. All these key factors have positive impacts on productivity which directly govern the total production. The study analyzes interaction among the factors applying correlation analysis using SPSS software and prioritizing them in accordance with their existence in workplace. The study showed that the present condition of factors like ability, clarity of role and organizational supports are not satisfactory which indicate the fields of further improvement. Besides, the study found that environmental condition and incentives have the most contributory impacts in the viewpoint of employees.

Keywords
Automobile Industry, Employee Performance, Productivity, Correlation, Key Factors

1. Introduction

In today's world, productivity is considered as an important parameter in the production performance of a workplace and its growth helps boosting the profitability of an organization. Workplaces expect the optimum level of

performance from their workers while work performance is influenced by some factors (Ziapourl, A. et al. 2015, Etebarian, A. et al. 2016). Among the factors of productivity, human resource performance management is regarded as one of the most important driving forces of any organization. Therefore, the performance of human resource management systems is a vehicle to rollout the overall corporate strategy (Matin, H.Z. et al. 2014, Bahadori, M. et al. 2013, Haines, V.Y. et al. 2012). To identify the fields of improvements, managers and workers need to assess the key factors influencing productivity in their workplace. Various models such as ACHIEVE (Ability, Clarity, Help, Incentive, Environment, Validity and Evaluation) are the studied factors affecting workplace performance. However, a few studies have been done to find out interactions among these factors. This study attempts to answer this research gap clarifying the interrelationship of seven factors of ACHIEVE model in an Automobile Company to determine the presence or absence of these relationships those companies (Saber, N.Y. et al. 2015). This paper offers implications for managers aiming to refine the practices to their performance (Ziapourl, A. et al. 2015). Hoboubi et al. (2017) examined the effects of job stress and job satisfaction on workforce productivity, identified factors associated with productivity decrement. They also found that in shift work system 'Role insufficiency and 'role ambiguity' should be improved, support of the supervisor must be increased to reduce the job stress and to enhance job satisfaction (Hoboubi, N. et al. 2017).

Saber et al. (2015) evaluated the interaction of performance factors in ACHIEVE model and found that some of these factors are fully independent on each other, in some instances they had a multiplicative interaction and some others had no interaction (Saber, N.Y. et al. 2015). Ziapourl et al. (2016) analyzed and found that all of the factors were effective in labor productivity. He also suggested that two factors of environment and evaluation has greatest impact on labor productivity in the viewpoint of the university staff (Ziapourl, A. et al. 2015). Akbari et al. (2013) realized that noise has a negative impact on human productivity, and lighting does not affect this and recommended to increase employee productivity, noise control and reduction to less than the standard values (less than 85 dB) is necessary (Akbari, J. et al. 2013). Raman BEDI (2006) demonstrates the presence of gross occupational noise exposure in production plants, believes that occupational noise exposure and related effects are widespread challenges to ensure such noise free environment. A noise hearing program can be arranged to increase awareness among the workers to curve out such issues (BEDI, R. et al. 2006). Bahadori et al. (2013) showed that among factors affecting job satisfaction job security and proportional salary stood first and second while social relations and organization's policy were the least priorities to achieve its predefined goals securing jobs and paying attention to employees' compensation package (Bahadori, M. et al. 2013). Mohammadi et al. (2014) conducted a study to evaluate different models of human resource productivity and comprehensive model. The research shows positive correlation between productivity and significant communication with education and human relationship. The findings indicate a positive correlation between the ability of the model that is usable and functional (Mohammadi, M. et al. 2014). Jacobsen and Andersen (2014) conducted a study which indicate that public managers can create an environment supportive of innovation and performance through the use of performance management tools, but that this is no automatic link (Jacobsen, C.B. et al. 2014). Haines and St-Onge [2012] investigates the mutual influence of practices and context on performance management effectiveness. The results show positive associations between employee training and performance management (Haines, V.Y. et al. 2012).

2. Methods

Employee productivity is merely a function of variable factors which are performed in this area. Hersey and Goldsmith developed a model called "ACHIEVE", an acronym of seven determinants of performance (Hersey, P. et al. 1980). This model aids the authority to determine and analyze the overall efficiency of workers as well as guides him to utilize them in workplace. Atkinson and Reitman first asserted that human performance is closely related to incentive and ability. Ability refers the knowledge, work experience, skills, capability of a worker to complete the job. In simple terms, an employee must have the aptness, potentiality and also willingness to do his responsibility (Atikson, J.W. et al. 1956). However, productivity is not only related to worker's own capacity rather it also depends on organization and environment (Lawrence, P. et al. 1967). A person may have the ability but if he does not know what his main roles are and why the do it, then the gross efficiency will be debilitating. Clarity of role indicates the worker's clear understanding about the job and affirmation of definite work procedures. Employee should have fixed job description, complete information about company's mission and vision, also the strategies to achieve goals within right time

schedule. To increase the work-speed, organizational support is significantly required. Sufficient funds, raw materials availability, ample number of quality machineries are nothing but various fields of organizational support. An employee will obviously be able to boost up his performance if he gets assistance from other departments and company. In reality, people are more motivated when they earn rewards or incentives from organization (Lawrence, P. et al. 1967). Rewards can be classified by two different types i.e., Extrinsic Reward (Profit share, Bonus, Increment, Promotion etc.) and Intrinsic Reward (Recognition and appreciation from manager, Personal achievement or professional development). In order to uphold the performance of worker, company should have daily or periodical evaluation system. Inspection and proper training play a crucial role to achieve sustainable development and growth. Continuous appraisal allows employee to improve his work methods as well as prevents himself doing mistakes which eventually reduces loss of human error (Rezaeeian, A. et al. 1993). The term 'Validity' refers to the justification of manager's decision about human resources, labor division. Authority should give their judgments by a performance-oriented policy. Impartial decisions aid the working environment to be propitious for employees. Sometimes, manager should discuss with his team members before any settlement. Another important decisive factor is connected with environment of workplace like Light-Fan orientation, Noise, Ventilation, Safety issues, Government Legislation, Job nature, Political stability, Trade Union, Personal conflicts etc. These issues should not be overlooked as they put an immense impact on employee productivity.

3. Data Collection

The study was statistical cross-sectional research carried out in an automobile industry of Bangladesh for descriptive and analytical purpose. The sample of study which was based on stratified random sampling consisted of 60 employees. As a part of data collection, survey questionnaires including demographic information about age, sex, marital status, education level, education level were prepared. These questions (34 items) were based on ACHIEVE Model which was proposed by Hersey and Goldsmith (Hersey, P. et al. 1980). It consisted of seven aspects, including Ability (6 items), Clarity of Role (3 items), Help or Organizational Support (6 items), Incentive (4 items), Evaluation (4 items), Validity (3 items) and Environment (8 items). Before performing data collection, approval of authority was taken and each employee's assent was obtained. The explanation of each question was briefed so that they could complete the whole survey easily. Nevertheless, out of 60 participants, 7 did not return. So, 53 participants' data were used to measure the productivity and interaction between performance factors. The questionnaire ratings were based on five-point Likert scale; completely disagree (1), disagree (2), neutral (3), agree (4) and completely disagree (5). Finally, data analysis was carried out using SPSS software version 25. To assess the validity, data were justified by specialists' management. Also, reliability of data was examined by using Cronbach alpha. The alpha (α) value calculated for all variables was 0.858 and as it was greater than 0.7 which indicates the validity of using this data for analysis.

4. Result

At first, demographic information was investigated from the taken data which showed that 87% of participants were male and 13% female. The highest frequency in age was seen among 26-45 years from which most of them were married. The participants had completed different level of study like school, college, diploma and degree level. Of them, 23 employees received their diploma and almost equal portion of participants completed either school level or degree level. It was also observed that the distribution over 6 years' experience was higher than others. More details are provided in the following **Table 1**.

Table 1: Demographic information about employees

Characteristic	Variable	Frequency	Percentage
Age	< 25	8	15%
	26-35	21	40%
	36-45	17	32%
	> 45	7	13%
Marital Status	Married	45	85%
	Single	8	15%
Education Level	Secondary	15	28%
	Higher Secondary	5	9%
	Diploma	22	42%
	Degree	11	21%
Experience	< 3	13	25%
	3 - 5	9	17%
	6 - 10	17	32%
	11- 15	10	19%
	> 15	4	8%
Position/ Designation	Tire-technician	10	19%
	Foreman	21	40%
	Welder	13	25%
	Supervisor	7	13%
	Quality Inspector	2	4%

As shown in **Table 2**, it is vivid clear that highest mean score among the seven factor was Incentive (Mean = 3.82, S. D= 0.6507) and lowest mean score Help or organizational support (Mean = 3.03, S. D= 0.8342). The findings showed that the overall productivity was moderately good. The combined productivity and standard deviation were calculated as 23.49 and 4.4186 respectively. By comparing mean score and medians, we observed that company employees had no objection about getting rewards or incentives which was noticeably a good sign. The environment of factory was reasonably satisfied as its mean stood above the average value. Employees felt the internal conditions auspicious to perform the task as most of them answered 'I agree' to the questions about environment. Evaluation showed that company had arrangements for proper evaluation and feedback system to improve performance of employees. The mean score of Validity reflected that participant mostly thought that their managers often took right unprejudiced decision. That means, they are generally allowed to take own decisions and comment on the way they do their tasks. The results obtained for the factors of Clarity, Ability and Help was alarming sign for the authority. Because the clarity indicated that the company goals and vision were not transparent to the workers. They did not completely perceive of what they were doing. Though they had enjoyed incentives or good working environment, they were deprived of organizational support or help. The lowest score of Help also identified the weakness of authority and argued that company failed to provide support to employees which in turn also weakens the capability of them to do the jobs efficiently.

Table 2: Mean, Standard deviation, Median, Minimum, Maximum and Rank in the variables

Variables	Mean	Std. Deviation	Median	Minimum	Maximum	Rank
Incentive	3.82	0.6507	3.75	2.00	5.00	First
Environment	3.55	0.4298	3.50	2.63	4.50	Second
Evaluation	3.50	0.4116	3.50	2.75	4.50	Third
Validity	3.31	0.7304	3.33	1.67	4.67	Fourth
Clarity	3.23	0.5683	3.33	1.67	4.33	Fifth
Ability	3.05	0.5608	3.17	1.67	4.00	Sixth
Help	3.03	0.8342	3.00	1.50	4.83	Seventh
Total	**23.49**	**4.1860**	-	-	-	-

Pearson correlation Test was used at 95 % confidence level to assess the inter-relationship and impact of factors on each other. The outcome of Pearson Correlation Test is shown in **Table 3**. It is noticeable that the Clarity of Role had no significant correlation with other factors and also had no multiplicative or reducing interaction. On the other hand, Environment had high multiplicative interaction with other factors. Among the significant correlations, the connection between Incentive and Help with the value of 0.807 was the highest and value and the lowest correlation was between Environment and Clarity of Role having a value of 0.055.

Table 3: Results of Pearson's Correlation Test

	Ability	Clarity	Help	Incentive	Evaluation	Validity	Environment
Ability	1						
Clarity	$.314^*$	1					
Help	$.744^{**}$	0.226	1				
Incentive	$.591^{**}$	0.205	$.807^{**}$	1			
Evaluation	$.537^{**}$	0.119	$.599^{**}$	$.488^{**}$	1		
Validity	$.457^{**}$	0.220	$.623^{**}$	$.610^{**}$	$.496^{**}$	1	
Environment	$.561^{**}$	0.055	$.718^{**}$	$.557^{**}$	$.569^{**}$	$.456^{**}$	1

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

To determine which factors are mostly responsible and affecting the productivity of automobile industry, one sample t test was implemented. Confidence level 95 % and average for each question is equal 3 and above 3 in order to find out the key variables responsible for productivity is considered in the analysis. Upon the basis of following **Table 4**, the existing performance of factory became possible only for Incentive, working environment and proper monitoring and supervision. Clarity and Ability played a little role in improving performance of the workers since the low band signal have negative sign and high band signal are also insignificant. From this investigation, managers can take initiatives for improving support to the workers which will ultimately ameliorate the capacity and skill of them.

Table 4: Results of One sample t-Test

| | Test Value = 3 | | | | |
| | t value | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
				Lower	Upper
Ability	0.612	0.543	0.04717	-0.1074	0.2017
Clarity	2.981	0.004	0.23270	0.0760	0.3894
Help	0.220	0.827	0.02516	-0.2048	0.2551
Incentive	9.130	0.000	0.81604	0.6367	0.9954
Evaluation	8.926	0.000	0.50472	0.3913	0.6182
Validity	3.072	0.003	0.30818	0.1068	0.5095
Environment	9.347	0.000	0.55189	0.4334	0.6704

5. Discussion

This study was conducted to identify and analyze employee productivity key variables based on ACHIEVE model among employees in different sections of an automobile industry in Bangladesh. According to this model, productivity depends on some factors like ability, clarity, help, incentive, evaluation, validity and environment. The main motivation to this paper is to investigate the interrelationship among the factors and sort out their ranking based on impact over production capacity.

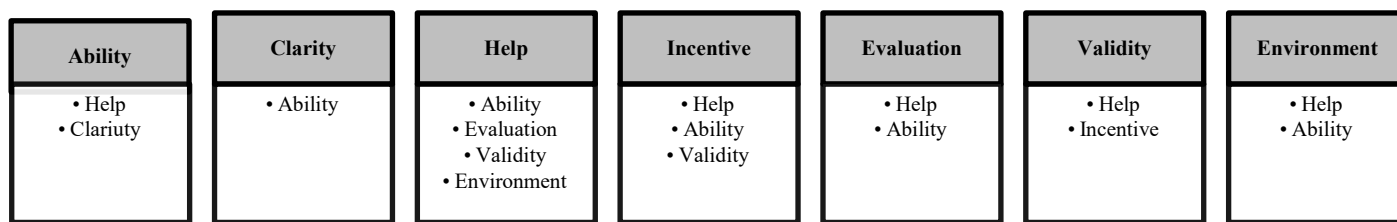| Ability	Clarity	Help	Incentive	Evaluation	Validity	Environment
• Help • Clariuty	• Ability	• Ability • Evaluation • Validity • Environment	• Help • Ability • Validity	• Help • Ability	• Help • Incentive	• Help • Ability

Figure 1: Lists of ACHIEVE factors impacting other variables.

Figure 1 helps us in the understanding of the impact of the factors over one another in this ACHIEVE model. If an individual has clear idea of his responsibilities, he can easily improve his performance and make less mistakes or error in doing job. The contribution of employees will be meaningful if he is aware of company's mission and vision. Company should inform each employee about the goals and strategies upon which its future opportunities will be engendered. Help or organizational support is the prime decisive factors as it enhances most of other variables. If company fails to provide sufficient machineries or standard raw materials, employee cannot produce expected output

which results into low productivity. Not only that, company can suffer a lot because of internal relationship among the workers. Organizational support has also direct impact on Evaluation system.

One cannot measure or assess the performance unless the machineries are good enough. Only proper training and monitoring cannot improve overall efficiency alone. How can we expect productivity if any of organizational support is lacking? Besides, employee cannot make the right decision in right time in absence of proper labor division. Incentives motivated employee to perform the job at his best. Workers will put on the maximum effort if he gets rewards or bonus at regular interval based on his performance. Mental satisfaction aids employees' work efficiency to rise above. If his mind is not fresh and satisfied, he cannot increase the rate of production though he holds a huge experience of work. So, Job contentment is a prime need in case of excellence. Evaluation and feedback system has a direct impact on validity. Managers can give constructive recommendation only when he is well informed about employees' daily performance. All decision made up by authority should be based on performance appraisal which is carried out at a fixed time interval. Consummate monitoring and supervision elevate proficiency in a noticeable manner. Another important fact is that suitable working environment brings not only benefit to performance but also keeps workers' satisfaction in a high position. Sufficient amount of light is required for smooth operation and noise level should be kept within tolerable limit. In addition, the other factors like political stability, personal conflicts also affect the internal working surroundings. From the findings it appeared most of employees thought that they were not being capable of doing job efficiently just because of they did not get enough support from the organization.

6. Conclusion

Managers of an organizations have been trying to improve employee productivity for a long time. For this reason, first of all it is necessary to identify strength and weakness of employee's seven performance factors for an organization. This study offers some guidance for organizational-level that may improve overall performance of human resource. The findings reported from Table-2 suggest that for higher productivity Incentive, Environment and Evaluation has positioned first, second and third successively according to their calculated mean value. So, this paper provides that for improving productivity as well as employee performance managers should give priority to Incentive, Environment and Evaluation. Additionally, the validity is in the fourth priority. Incentives may be provided by giving production bonuses, promoted in the upper positions and designing reward system. Evaluation can be done by providing training facilities, monitoring and proper feedback system, proper performance appraisal system, promotions leaving personal conflict and organizational politics. Environmental factors mean to enrich the workplace environment by providing proper lighting condition and fan orientation, controlling humidity and temperature, proper sitting arrangement, implementing 5S philosophy, fire alarm and fire extinguisher, emergency exit, ventilation and noise level control, proper personal protective equipment. Stress and fatigue have negative impact on the employee performance as well as productivity level. Reducing them may increase the employee productivity. Based on the interview with the employees and their response to the questionnaires enriching the workplace environment can reduce stress and fatigue. As there is scarcity in resources, organization cannot provide equal importance on seven performance factors, so it is wise decision to provide importance based on their impact on productivity.
From the t-Test in Table-4, it is clear that Ability, Clarity, Help and Validity belong to lower and upper value which has negative impact on productivity for current situation of the sample organizations. So, the studied organizations can improve productivity by enriching or revising these factors. To improve ability, management can arrange training programs so that employees can gather more knowledge of the process and may feel less stressed. Clarity can be ensured through better understanding of employees' responsibilities, companies' goals and objectives. Properly updated and excellent machineries and equipment, cooperation of management, friendly and helpful colleagues, adequate number of workers can enrich the office environment. Validity can be checked by testing the management's decision while the findings of this study show the performance factors of ACHIEVE which were not completely independent of each other and in some cases as they had multiplicative interactions. In this study, significant attention was paid to know the process of interaction between performance factors and its impact on productivity. Recognition of good work helps managers improve their performances. The sample size used in the study contained small number of individuals, so further studies can be done with larger samples. Therefore, factors such as incentives, environment,

evaluation, validity, clarity, ability and help have the maximum importance, respectively to enhance labor productivity of Automobile Company in Bangladesh.

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