



Munich Personal RePEc Archive

What is the effect of wages and supervision on productivity? The perspective of Sunyani Technical University staff

Tetteh, Rebecca and Mohammed, Safura and Ahmed Azumah, Ayisha

Sunyani Technical University

20 July 2017

Online at <https://mpra.ub.uni-muenchen.de/81473/>
MPRA Paper No. 81473, posted 20 Sep 2017 09:01 UTC

What is the effect of wages and supervision on productivity? The perspective of Sunyani Technical University staff

Rebecca Tetteh¹ Safura Mohammed², Ayisha Ahmed Azumah³,

1 Senior Assistant Registrar, Department of Electrical/Electronic Engineering, Sunyani Technical University, Sunyani Ghana: Phone: +233244247493. Email: reccateth@yahoo.com (Corresponding author)

2 Senior Assistant Registrar, Department of Computer Science, Sunyani Technical University, Sunyani Ghana: Phone: +233244465576. Email: safantwi@gmail.com

3 Assistant Registrar, Department of Accountancy, Sunyani Technical University, Sunyani Ghana: Phone: +233244529929. Email ayisha.ahmed59@yahoo.com.

Abstract

The study examines the influence of wages and supervision on employee's productivity for Sunyani Technical University using standard Ordinary Least Square method (OLS). The findings of the study indicate that wages and supervision have influence on productivity; however, supervision is ranked higher to influence productivity than wages. The management of higher institutions should consider the findings of the study to ensure that workers are appropriately supervised, and well paid to improve productivity and performance. Further studies should replicate the current study in a comparative study using private and public institutions in a causal study using structural modelling method.

Keywords: Performance, demographics, wages

Jel Codes: E24, J31, J41

1. Introduction

Since the earlier works on employee productivity and performance by workers (such as Becker and Stigler, 1974; Weiss, 1980; Akerlof, 1984; Shapiro & Stiglitz, 1984; Okuno-Fujiwara, 1987; Akerlof & Yellen, 1990; Allgulin & Ellingsen, 2002) a large literature has evolved that investigate the potential effect of extrinsic motivation on productivity and performance based on various theories such as efficiency wage theories (avoiding shirking, minimizing turnover, selection, sociological theories, and nutritional theories).

The question of whether wage/salary and supervision are determinants of employee's performance has been an issue of particular interest of human resources managers, managements of organisations, labour economists, sociologists, psychologist, and policy makers (see, e. g. Brudney & Coudry, 1993; Luthans, 1998; Ewing & Payne, 1999; Igalens & Roussel, 1999; Hinkin & Tracey, 2000; Lambert, Hogan, Barton & Lubbock, 2001; Leiter, 2001; Brunetto and Farr-Wharton, 2002; Pagon, 2002; Robbins et al., 2003; Byrne, 2003; Frye, 2004; Tessema & Soeters, 2006; Harris, Kacmar, Zivnuska, & Shaw, 2007; Hom, Roberson, & Ellis et al., 2008; Roelen et al., 2008; Ojokuku & Sajuyigbe, 2009; Funmilola, Sola, Olusola, 2013; & Sajuyigbe, Olaoye & Adeyemi, 2013).

According to some researchers (Ojokuku & Sajuyigbe, 2009; Sajuyigbe et al., 2013) wage significantly influences employee's productivity and performance resulting from job satisfaction. Lambert et al. (2001), Frye (2004), Tessema and Soeters, (2006), Ojokuku and Sajuyigbe (2009), Sajuyigbe et al. (2013) reported of significant positive link between employee's performance and wage.

High wages according to these researchers help attract and retain highly skilled labour into organisation, and since wage helps workers to fulfil their personal goals in life they become motivated and give their best to the organisation in the form of more effort, other things being equal (Ehrenberg & Smith, 2009; Owens and Kagel (2010), Georgiadis, 2013).

Other empirical works such as the research by Brunetto and Farr-Wharton (2002); Okpara (2004); Ojokuku and Sajuyigbe, (2009); and Sajuyigbe et al. (2013) indicate that supervision influences job satisfaction and employee's productivity and performance in an organisation. However, the findings of Roelen et al., (2008) study did not support that of previous studies on the effect of supervision on job satisfaction and employee's productivity and job performance.

What has been a long debate in the literature has to do with the mix of wage and supervision in an organisation as a way of influencing performance. Whether there should be higher pay couple with less supervision or more supervision or whether there should be low wage couple with more supervision or less supervision in the incentive model (Leonard, 1987; Groshen & Krueger 1990; Cappelli & Chauvin, 1991; Wadwhani & Wall, 1991; Neal, 1993; Weakliem & Frenkel, 1993; Rebitzer, 1995; Ewing & Payne, 1999) and the relational model (Akerlof, 1982; Leibenstein, 1987; Wielers & Lindenberg, 1991; Angell & Lundborg, 1995; Bewley, 1999; Lindenberg, 2001).

The findings in the empirical literature are mixed and called for further studies to add to the literature. The conclusion from the review is that employers will continue to put in policies to maximise organisational goals of profit maximisation resulting from increase effort and as such research is needed to determine what motivate employees most to increase output taking into account different economies and different cultures which is the focus of the current study.

The purpose of the present study is to examine whether employees in the survey are influenced by wages and supervision to increase their productivity and performance, and which variable influence their productivity most. The study further investigates whether demographics influence the results.

The study is based on the research question such as: (a) what is the effect of on productivity? (b) what is the effect of supervision on productivity? (c) wages and supervision, which influence productivity most? (d) what is the effect of demographics on the effect of wages, and supervision on productivity?

The paper is based on the assumptions that (i) wages influences employee's productivity; (ii) supervision affects productivity of employees; (iii) wages do not influence employee's productivity than supervision; and (iv) demographic differences exist in (i), (ii).

The paper focuses on only the effect of wages and supervision on productivity of employees and no other determinants of productivity and performance such as promotion, work itself, and working conditions. The findings are challenged by the limitations of the estimation method (i.e, the standard OLS regression), and the primary data obtained from the survey such as missing responses.

The rest of the paper is organised into 4 sections. Section 2 looks at the method; section 3 considers the results; section 4 deals with the discussions of the findings and section 5 concludes the study.

2.1 METHOD

2.1 The Research Design

The study is based on quantitative design of the effect of salary and supervision on employee's productivity and performance and not qualitative design. The effect of salary and supervision on productivity are quantified and explained.

2.2. Target Population/Sample

The target population for the study is the teaching and non-teaching employees of Sunyani Technical University from the rank of senior administrative assistants to senior lecturers. The sample size is 100 selected through convenient sampling method.

2.3. Data

The study uses cross-sectional primary data obtained from the respondents in the survey using self-designed questionnaire with 10 items using Likert scale for the responses on the effect of wages and supervision on productivity. The questionnaires were self-administered during the working periods of the employees at their work places.

2.4. Conceptual Framework and Empirical Model

The study investigates the effect of wages and supervision on employee's productivity with employee productivity as the dependent variable and wages and supervision as the independent variables. The effect of demographic variables on the responses of the effect of wages and supervision is also examined to determine whether demographic variables significantly influences the responses on the effect of wages and supervision on productivity. The empirical models are as specified in equations (1) and (2). Where EP= employee productivity; W=wages; Su=supervision; α , γ , and β = parameters; ε = error terms.

$$EP_t = \alpha + \beta W_t + \gamma SU + \varepsilon_t \dots \dots \dots (1)$$

2.5. Estimation Methods

The standard OLS regression method is used to model the influence of wage and supervision on employee's productivity.

3. Results

3.1 Demographics features of respondents

Figure 1 to Figure 8 shows the results of the demographic characteristics of the respondents in the study. The results show that majority of the respondents are males (69%); most of them have Master's Degree (42%) followed by those with higher national diploma (HND); majority of the respondents are Christians (83%); most of the respondents are in the age groups of 28-32 and 33-37 (25%); the rank of most of the respondents are senior administrative assistant (32%) followed by lecturers; majority of the respondents have worked 5-10 years in the institution (52%); majority of the respondents are married (65%); and most respondents do not have a child (37%) followed by those with one child.

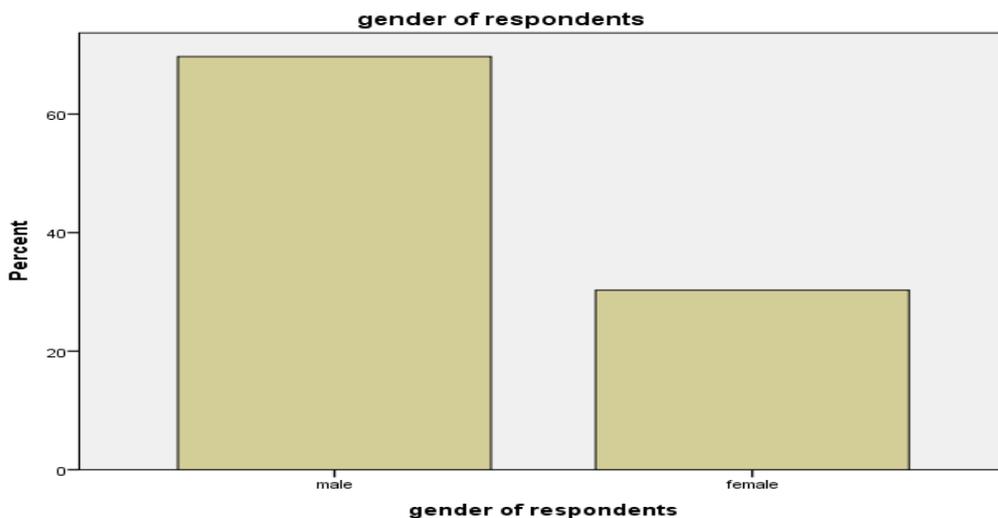


Figure 1 Gender of Respondents

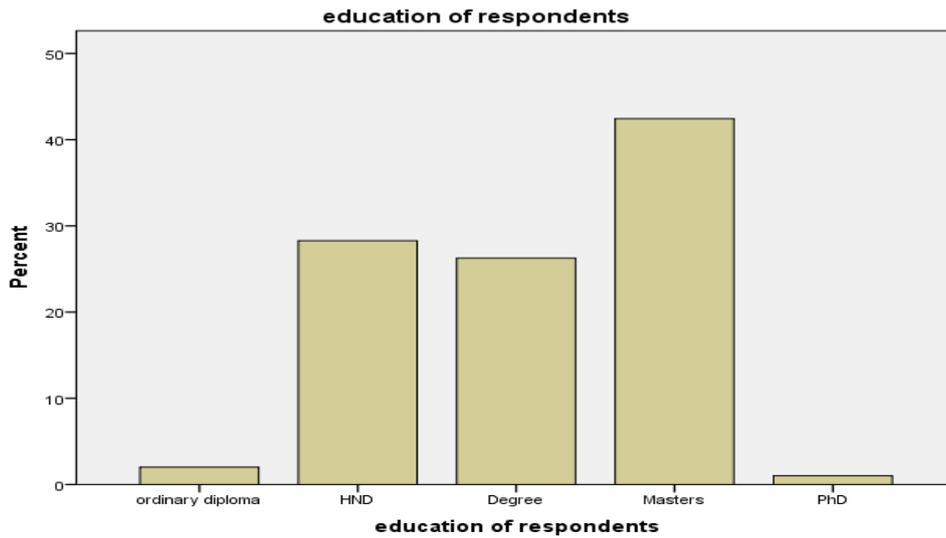


Figure 2 Educational level of respondents

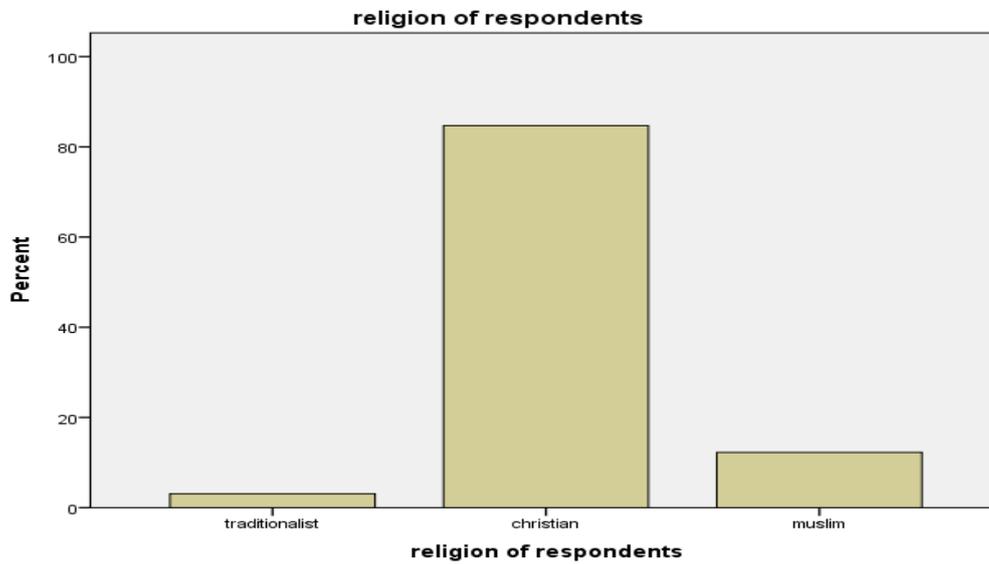


Figure 3 Religious affiliations of respondents

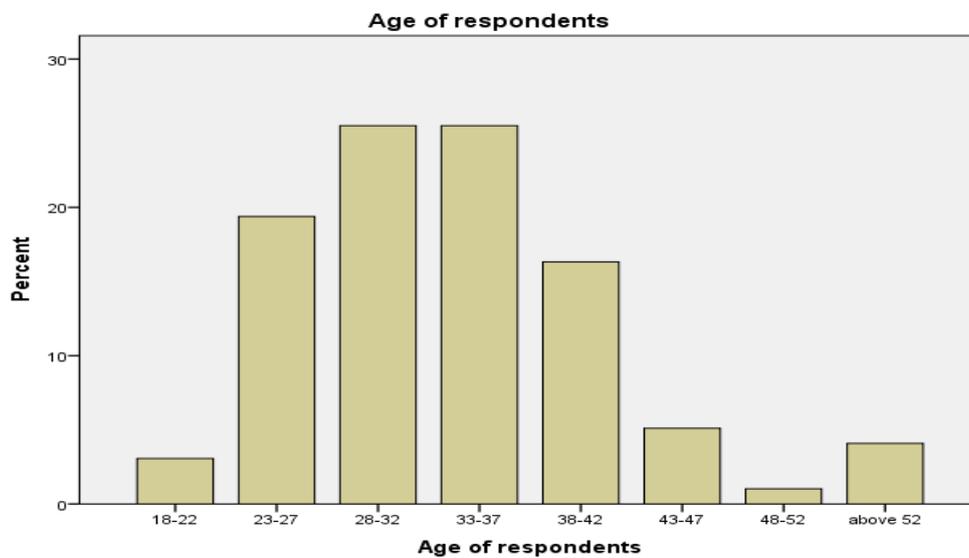
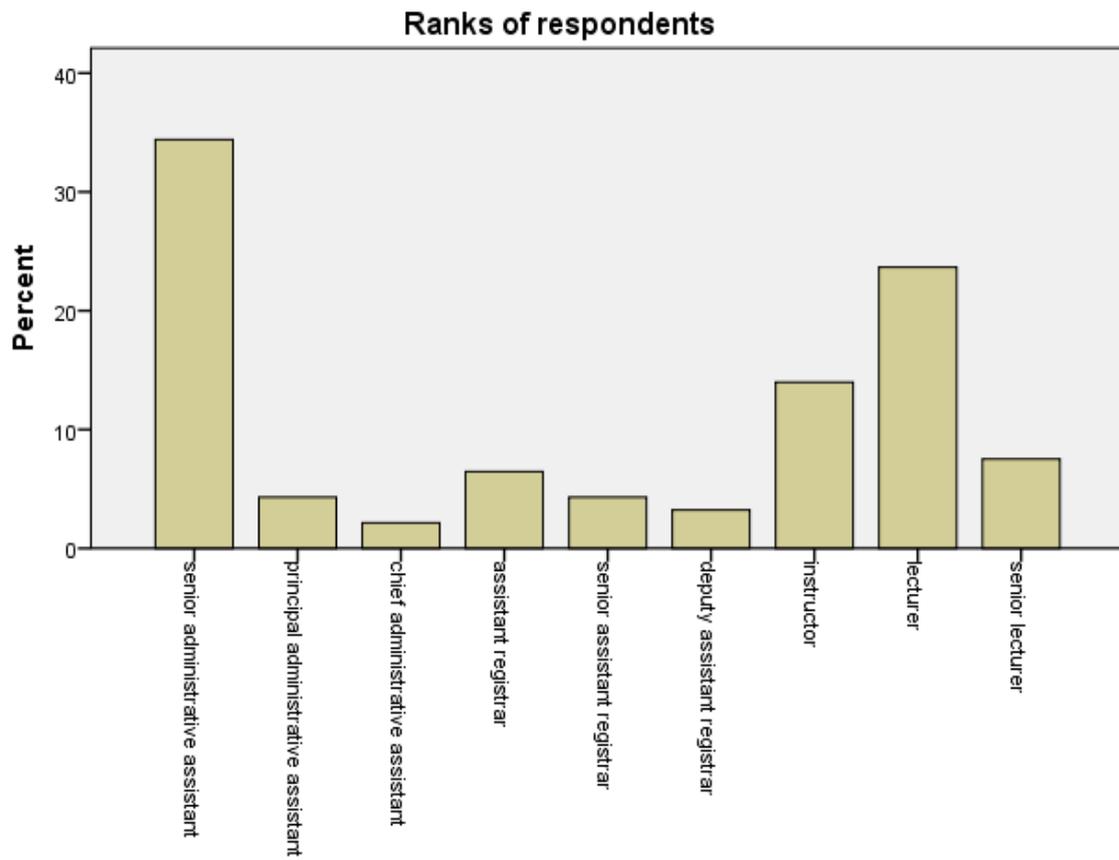


Figure 4 Age distribution of respondents



Ranks of respondents
Figure 5 Ranks of respondents



years of working(experience)
Figure 6 Years of experience of respondents

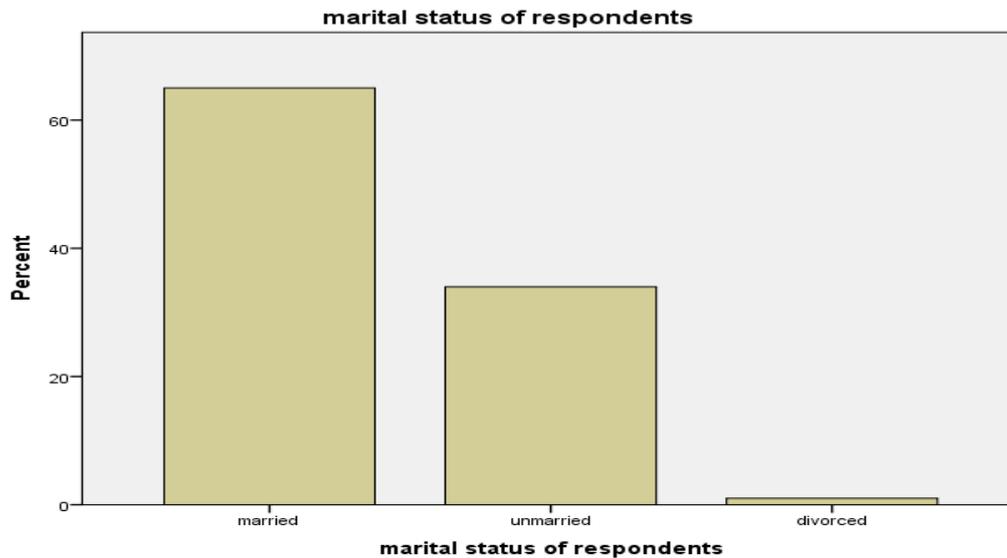


Figure 7 Marital status of respondents

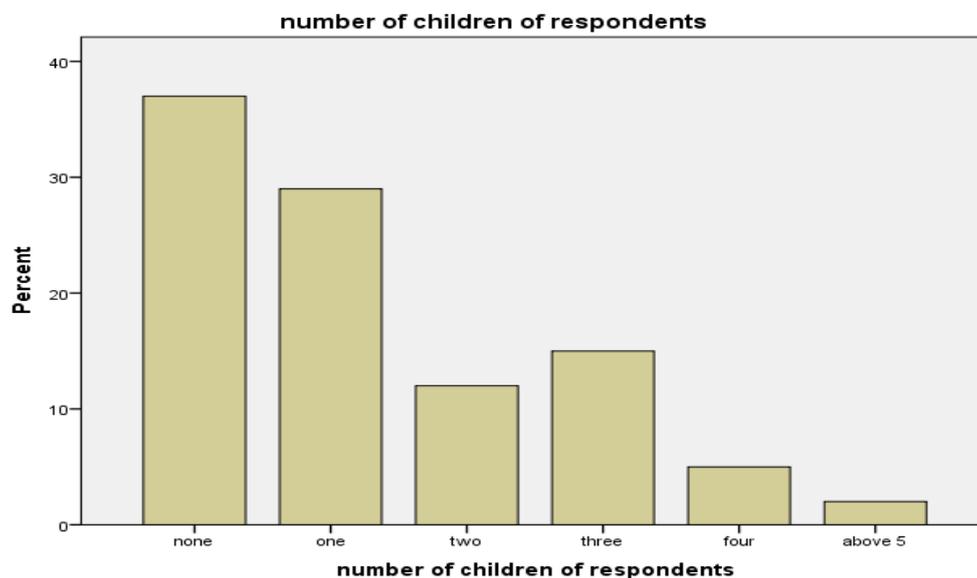


Figure 8 Number of children of respondents

3.2 Effect of supervision and wage on productivity of employees

Respondents were asked whether supervision and wages influences their productivity positively. Table 1 and Table 2 report the results on the effect of supervision and wage on workers' productivity. The results show that significant majority (72%) of the respondents strongly agree/agree that supervision influence productivity (Figure 1). The results in Table 2 indicate that majority (50%) strongly agree/agree that wage affect productivity of workers.

The results show that supervision influence productivity more than wage as shown in Table 1 and Table 2. These results are scientifically formalised by comparing the means of the responses from the respondents and reported in Table 3. The results show that supervision influences productivity than wages since the mean response for supervision of 3.786 is greater than that for wages of 3.527.

Table 1 whether supervision increase productivity

Responses	Frequency	Percentage (%)
Strongly disagree/Disagree	11	11
Uncertain	15	15
Strongly agree/Agree	72	72
Missing response	2	2
Total	100	100

Author's computation, July 2017

Table 2 whether wages increase productivity

Responses	Frequency	Percentage (%)
Strongly disagree/Disagree	13	13
Uncertain	30	30
Strongly agree/Agree	50	50
Missing response	7	7
Total	100	100

Author's computation, July 2017

Table 3 Ranks of factors influencing productivity

Factors influencing productivity	Mean	Standard deviation	Variance
Supervision	3.786 (1)	0.955	0.912
Wages	3.527 (2)	0.996	0.991

Author's computation, July 2017

3.3 The effect of demographics on whether supervision and wages influence productivity

The effect of demographic variables on the responses of the effect of supervision and wages on productivity was examined to determine whether demographic variables have significant effect on the results. Table 4 and Table 5 report the results for supervision and wages respectively.

The results in Table 4 show that only ranks of respondents show significant effect on the results of the effect of supervision on productivity at 5% level of significance. Age, ranks, and years of experiences have negative effect on the responses of the effect of supervision on productivity. The rest of the demographic variables have insignificant positive effect on the results.

Table 4 The effect of demographics on the influence of supervision on productivity

Model	Coefficients	Standard Errors	T-statistics	P-values
Constant	3.750	0.878	4.270	0.000***
Gender	0.016	0.215	0.072	0.943
Education level	0.059	0.140	0.425	0.672
religion	0.136	0.274	0.498	0.620
Age	-0.112	0.101	-1.108	0.271
Ranks	-0.075	0.036	-2.071	0.042**
Years of working	-0.056	0.134	-0.418	0.677
Marital status	0.090	0.243	0.371	0.712
Number of children	0.152	0.118	1.288	0.201

Author's computation, July 2017. Note ***, and ** denote significance at 1% and 5% levels

The results in Table 5 indicate that only years of working (at 5% level of significance), and marital status (at 10% level of significance) of respondents show significant effect on the results of the effect of wages on productivity. Age, educational level, religion, marital status, and years of experiences have negative effect on the responses of the effect of wages on productivity. The rest of the demographic variables (gender, ranks, and number of children) have insignificant positive influence on the results.

Table 5 The effect of demographics on the influence of wages on productivity

Model	Coefficients	Standard Errors	T-statistics	P-values
Constant	5.123	0.914	5.603	0.000***
Gender	0.107	0.224	0.480	0.633
Education level	-0.121	0.144	-0.837	0.405
religion	-0.039	0.305	-0.127	0.900
Age	-0.060	0.100	-0.601	0.550
Ranks	0.022	0.037	0.606	0.546
Years of working	-0.316	0.133	-2.376	0.020**
Marital status	-0.471	0.244	-1.933	0.057*
Number of children	0.083	0.126	0.656	0.514

Author's computation, July 2017. Note ***, **, and * denote significance at 1%, 5% levels, and 10% respectively.

4. DISCUSSIONS

The present study investigates the effect of supervision and wages on productivity of employees, and to determine which influences productivity most from the perspective of employees in a survey. The findings of the research indicate that supervision and wages influence productivity of employees with supervision influencing productivity more than wages.

The finding that supervision influence productivity is in agreement with the results of published studies in this area (e.g. Brunetto & Farr-Wharton, 2002; Okpara, 2004; Ojokuku & Sajuyigbe, 2009; Sajuyigbe et al., 2013). The findings are not in support of that of Roelen et al. (2008) study that reported supervision influences productivity and performance positively. Proper supervision makes workers more responsible in an organisation and that makes them take appropriate actions to avoid problems in the work place. Supervision helps to sustain skill and knowledge development. They will not also shirk their responsibilities under appropriate supervision (Roberson, 2008).

The findings of the research that wages influence employees' productivity are consistent with previous findings in the study area such as Lambert et al. (2001), Frye (2004), Tessema and Soeters, (2006), Ojokuku and Sajuyigbe (2009), Sajuyigbe et al. (2013) who reported of significant positive influence of wage on productivity and performance. High wages help attract and retain highly skilled labour into organisation, since employees need to meet their individual needs. The workers are motivated to increase output and performance.

5. CONCLUSION

The main aim of the paper is to examine the effect of wages and supervision on employee's productivity for Sunyani Technical University using survey data. The standard Ordinary Least Square method was employed. The present results indicate that wages and supervision influence productivity. However, supervision influences productivity more than wages in the survey.

Management should consider these findings in implementing policies to improve productivity. Appropriate supervision strategies should be adopted in an organisation so that employees can give out their very best in the performance of their duties to ensure increase

productivity and performance. Some workers may shirk in an organisation in the face of higher wages if they are not supervised properly.

Future studies should consider other determinants of productivity such as promotion in a causal studies using structural modelling method and many other institutions in a comparative study to determine whether the findings will be replicated.

REFERENCES

- Akerlof, G., & Yellen, J. (1990). The fair wage-effort hypothesis and unemployment. *Quarterly Journal of Economics*, 105(2), 255–283.
- Akerlof, G. A. (1982). Labor contracts as partial gift exchange. *Quarterly Journal of Economics* 87, 543-569.
- Akerlof, G. (1984). Gift exchange and efficiency-wage theory: Four views. *American Economic Review*, 74(2), 79-83.
- Allgulin, M. and Ellingsen, T. (2002). Monitoring and Pay. *Journal of Labour Economics*, 20(2), 201-216.
- Agell, J., & Lundborg, P. (1995). Fair Wages in the Open Economy. *Economica* 62, 335-351.
- Becker, G., & Stigler, G. (1974). “Law Enforcement, Malfeasance and the Compensation of Enforcers”. *Journal of Legal Studies*, 3(1), 1-19.
- Bewley, T. (1999). Why wages don’t fall during a recession. Harvard university press, Cambridge, Massachusetts.
- Brudney, J. L., & Coundrey, S. E. (1993). Pay for performance: Explaining the differences in managerial motivation. *Public Productivity Manage. Rev.*, 17(2), 129-144.
- Brunetto, Y., & Farr-Wharton, R. (2002). Using social identity theory to explain the job satisfaction of public sector employees. *Int. J. Public Sector Manage.*, 15 (7), 534-551.
- Cappelli P. and K.Chauvin (1991) “An Interplant Test of the Efficiency Wages Hypothesis”, *Quarterly Journal of Economics*, 106, 769-787.
- Ehrenberg, R. G., & Smith, R. S. (2009). Modern Labor Economics: Theory and Public Policy, 10th Edition, Pearson.
- Ewing, B. T., & Payne, J. (1999). “The trade-off between supervision and wages: Evidence of efficiency wages from NLSY”. *Southern economic journal*, 66(2), 424-432.
- Frye, M. B. (2004). Equity-based compensation for employees. Firm performance and determinants. *J. Finan. Res.*, 27(1), 31-54.
- Funmilola, O. F., Sola, K. T., Olusola, A. G. (2013). Impact of job satisfaction dimensions on job performance in a small and medium enterprise in Ibadan, South Western, Nigeria. *Interdisciplinary journal of contemporary research in business*, 4(11), 509-522.
- Georgiadis, A. (2013). Efficiency Wages and the Economic Effects of the Minimum Wage: Evidence from a Low-Wage Labour Market. *Oxford Bulletin of Economics and Statistics*, 75, 6.
- Groshen, E. L., & Krueger. A. B. (1990). “The structure of supervision and pay in hospitals.” *Industrial and Labour Relations Review*, 43, 134-146.
- Harding, D., & Pagan, A. (2002). “Dissecting the cycle: a methodological investigation”. *Journal of Monetary Economics*, 49(2), 365-381.
- Harris, K. J., Kacmar, K. M., Zivnuska, S., & Shaw, J. (2007). The impact of political skill on impression management effectiveness. *Journal of Applied Psychology*, 92, 278-285.
- Hinkin, T. R., & Tracey, J. B. (2000). The cost of turnover: Putting a price on the learning curve. *Cornell Hotel and Restaurant Administration Quarterly*, 41, 14-21.
- Hom, P. W., Roberson, L., & Ellis, A. D. (2008). Challenging conventional wisdom about who quits: Revelations from corporate America. *Journal of Applied Psychology*, 93, 1-34
- Igalens, J., & Roussel, P. (1999). A Study of Relationships between Compensation Packages. Work Motivation and Job Satisfaction. *J. Organ. Behav.*, 20, 1003-10025.

Lambert, E. G., Hogan, N. L., & Barton, S. M. (2001). The impact of job satisfaction on turnover intent: a test of structural measurement model using a national sample of workers. *Soc. Sci. J.*, 38, 233-51.

Leibenstein, H. (1987). "Entrepreneurship, Entrepreneurial Training, and X-Efficiency Theory". *Journal of Economic Behaviour and Organisation*, 8(2), 191-205.

Leonard, J.S.: 1987, "Carrots and Sticks: Pay, Supervision, and Turnover". *Journal of Labor Economics*, 5, 136-152.

Lindenberg, S. (2001). "Intrinsic Motivation in a New Light". *Kyklos*, 54, 317-342.

Luthans, F. (1998). *Organizational Behaviour*, 8 Edition, McGraw-Hill/Irwin, Boston, p. 147

Nash, M.(1985). *Managing Organizational Performance*. Jossey-Bass, San Francisco, CA.

Neal, D. (1993). "Supervision and Wages across Industries". *Review of Economics and Statistics*, 75, 409-417.

Ojokuku, R. M, & Sajuyigbe, A. S. (2009). "Effect of Pay Satisfaction Dimensions on Job Performance in Selected Tertiary Institutions in Osun State, Nigeria". *African Journal Institute and Development (AJID)*. A publication of the Department of Public Administration, Obafemi Awolowo University. Ile- Ife. 4(1&2), 86-95.

Okpara, J. O. (2004). Personal characteristics as predictors of job satisfaction. An exploratory study of IT managers in a developing economy. *Inform. Technol. People*, 17(3), 327-338.

Okuno-Fujihara, M. (1987), "Monitoring Cost, Agency Relationships and Equilibrium Modes of Labor Contracts". *Journal of the Japanese and International Economies* 1,147-167.

Owens, F., & Kagel, J. (2010). 'Minimum Wage Restrictions and Employee Effort in Incomplete Labor Markets: an Experimental Investigation'. *Journal of Economic Behaviour and Organization*, 73, 317-326.

Rebitzer, J. B. (1995). "Is there a trade-off between supervision and wages? An empirical Test of Efficiency Wage Theory". *Journal of Economic Behaviour and Organization*, 28, 107-29.

Robbins, S. P. (2003). *Organizational behaviour concepts, controversies, application*. 8th ed, Publisher: Prentice-hall International. New Jersey, USA.

Roelen, C. A., Koopmans, P. C., & Groothoff, J. W. (2008). Which work factors determine job satisfaction? *IOS Press*, 30, 433-439.

Sajuyigbe, A. S., Olaoye, B. O., & Adeyemi M. A. (2013). Impact of Reward on Employees Performance in a Selected Manufacturing Companies in Ibadan. *International Journal of Arts and Commerce*, 2(2),

Shapiro, C., & Stiglitz, J. (1984). "Equilibrium Unemployment as a Worker Discipline Device". *American Economic Review* 74: 433-444.

Tessema, M., & Soeters, J. (2006). Challenges and prospects of HRM in developing countries. Testing the HRM-performance link in Eritrean civil service. *Int. J. Hum. Res. Manage.*, 17(1), 86-105.

Wadhvani, S., & Wall, M. (1991). "A Direct Test of the Efficiency Wage Model Using Micro-Data.", *Oxford Economic Papers*, 43, 529-48.

Weakliem, D. L., & Frenkel, S. J. (1993). "Work Discipline in Contemporary Capitalism", *Research in Social Stratification and Mobility* 12, 83-112.

Weiss, A. (1980). "Job Queues and Layoffs in Labour Markets with Flexible Wages". *Journal of Political Economy* 88, 526-538.

Wielers, R., & Lindenberg, S. (1991). "Beloning en allocatie op een informele arbeidsdeelmarkt", *Mens en Maatschappij*, 66, 5-20.

