

Impact of Technological Changes on Job Performance of Teachers in Higher Education Institutions

A study with reference to quality accredited colleges in Province 2, Nepal

Jitendra Kumar Chaudhary*

jitukumunishu@gmail.com

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Abstract

This article assessed the impact of technological changes on job performance of teachers with evidence from quality accredited higher education institutions in province 2, Nepal. The study has been conducted using a descriptive survey research design. The population consists of 105 academic staffs of two quality accredited higher education institutions of province 2. Convenience sampling techniques were employed to select the sample size of 57 academic staffs from the population. Regression analysis was used to analyze the data that was collected using a five-point Likert's scale structured questionnaire. The results showed that technology has influenced job performance of teachers since it simplifies the work to be done. Technology greatly escalates the productivity of employees along with time saving. Use of ICT and the internet can assist teachers to instruct efficiently and students learn more effectively. Thus, to enhance and strengthen the quality of our education, it is the need of the hour to digitize the teaching and learning methodologies. But technological changes adoption in quality accredited higher educational institutions in province 2 is low.

Keywords: *Employee's Performance, Technological Changes, Higher Education Institution*

Introduction

Almost every business in the contemporary environment relies on technology at every level of its activities.

Bauer & Bender's study (as cited in Methode, Osunsan, Florence, Augustine,

Abiria & Innocent, 2019), technological change is an increase in the efficiency of a product or process that results in an increase in output, without an increase in input.

Heeks & Stanforth argue (as cited in Methode, Osunsan, Florence,

* Mr. Chaudhary (a M.Phil. scholar in PU) is a lecturer of Management department at JSMCC, Lahan

Augustine, Abiria & Innocent, 2019) that beyond the standard office information communication technology (i.e. laptop and smart phone), organizations employ information systems, custom software or specialized technology equipment to enhance efficiency in operations. Innovations in technology have the capabilities to decrease the time needed to finish a task, or in some cases phase out the need for a business process or function.

According to Caliskan (as cited in Methode, Osunsan, Florence, Augustine, Abiria & Innocent, 2019), the decision to purchase or upgrade technology can be costly for both large and small operations. This calls for weighing the cost of the upgrade or adoption against the perceived added value to the company. Cost implications can often lead small businesses to delay adoption or upgrades. However, technology that significantly improves with operations can offset cost with an increase in profit in the long run.

Tamilselvi (2017) suggested that faculties should increase their qualifications and update their knowledge innovatively to deliver their academic products to their students. The faculties are suggested to have modern technological approaches like smart board and PPT presentations for the effective teaching.

Deceased are the days when pupils need

to pile into the large auditorium just to hear a speech. Pre-recorded videos can be heard by students anytime, anywhere and as many times as they require. This stands for that classroom time can instead be utilized to augment the speech content, whether through discussion, group exercise, and quiz.

Technology in teaching offers various benefits like smart class rooms and power point teachings that increased the skills of teachers; technologies in teaching motivate the students; the technological perspectives in setting the syllabus are useful for the students; the network between Faculty, Head of the Departments and Principals pave the way for the smooth relationships; Internet and e-mail facilities to faculty are useful to update their knowledge; the faculty are able to store, retrieve and process information about the students through technology. The communication among the stakeholders, students, instructors and management become conducive through technology. The technological augmentation makes the teaching successful at all time. Elderly people are generally immune in changing and implementation of new technologies as they may face bigger challenges in functional conditions. Training and practical experience is likely to call for longer than with younger employees. They should be motivated and convinced properly (Fu, 2009).

Purpose of the Study

To assess the impact of technological change on the job performance of teachers in HEIs

Research Hypothesis

The following null hypothesis was formulated for the study:

H₀: There is no statistically significant impact of technological changes on job performance of teachers in HEIs.

Literature Review

Concept of Employee's Performance

Employee Performance is the successful completion of tasks by a selected individual or individuals, as set and measured by a supervisor or organization, to pre-defined acceptable standards while efficiently and effectively utilizing available resource within a changing environment (Armstrong & Murlis, 2004).

Performance is associated with quantity of output, quality of output, timeliness of output, presence/ attendance on the job, efficiency of the work completed and effectiveness of work completed" (Mathis & Jackson 2009).

The basic functionalities of University employees are teaching, research, public service and other related roles and responsibilities. The teaching roles of universities employees involves preparation, planning and delivering

of lectures, marking and grading scripts, supervision of students on industry training and teaching practice, development of innovative teaching methods, students' consultation and production of teaching materials for students among others. Research roles of university employees, according to Agbionu, Anyalor and Nnwali (2018), are carrying out investigations on identified problem(s), presentation of findings of such investigations in

conferences / seminars and publishing the findings in journals and/or text books. The third role of university employees is community or public service rendering to the school and community at large.

Empirical Review (Technological Changes and Employee's Performance)

An empirical study by Abbas et. al. (2014) examined the effects of information technology on performance of Allied Bank employees in Pakistan. It was figured out that technology greatly escalates the productivity of employees along with time saving. It greatly affects the workload on employees and ensures control over mistakes and frauds. Quick access to information and ease of use enables the bank employees to deliver quality service.

Kute and Upadhyay (as cited in Wanza & Nkuraru, 2016), examined the relationship between technological changes and its

impact on employee performance in commercial printing industry. The study found that technological changes affect employee's performance in various ways like redundancy, employee turnover and the level of motivation at work. It was noted that technological changes affected skills and performance of the employees in the commercial printing industry.

Imran et. al. (2014) conducted a study on the impact of technological advancement on employee performance in banking sector. Findings showed that technological advancement has significant impact on motivation and training of employees. Moreover as the concerned for technological advancement and employee performance, there is significant relationship among them.

Wanza & Nkururu (2016) revealed that technological changes have a great impact on employees' performance due to the rapid technological changes that the world is rapidly adjusting that eases employee's work load and to increase efficiency and effectiveness at work place.

Dauda & Akingbade (2011) found that technology change in the recent years have improved the performance and productivity of Nigerian Manufacturing Industry. Employee's performances have also improved because of a change from an old technology to a new technology, even though workers have not improved

sufficiently to cope with emerging technology. Management have also not substantially benefited from investment in technology as technological change has also not significantly improved the performance and working condition of some workers.

Archibong & Ibrahim (2021) recommended that there is a positive relationship between technology change and employee performance since it simplifies the work to be done and makes work more efficient, it also reduces effort, time, and working methods which speeds up delivery. Technology enhances quality service delivery to university students and the public.

Osunsan et. al. (2015) recommended that the management of commercial banks should embrace technological advancement in enhancing their business operations. This will enable them to meet customer needs by providing fast and quality services. Technological change in the institution should be implemented by making use of customized software, and security sensitive applications that ensure safety of customer personal information. Furthermore, employees must be rightfully trained and facilitated in order to effectively use the new technology. This should be done by training employees to install the software, troubleshoot it in case of a malfunction, upgrade or effectively maintain it.

Pohekar (2018) posits that technology is a collaborative tool that supports traditional subjects and makes it convenient for the users to exchange information with others. In the last two decades, there has been rapid high-technology implementation changes that will continue to determine future of the world in terms of policies, programmes, activities, operations and strategies. All the universities in Nigeria have invested heavily on technological tools since its advent. Changes and advancement in technological tools in the university seems to determine the improvement of employee's performance, reduce human effort and task completion time.

Technology is essential to every organization and its usage has grown at a phenomenal rate within organization. Technological changes seem to be important to job performance of university employees.

Research methods

The study has been conducted using a descriptive survey research design. The study depends on primary data.

Area of Study

The study has been conducted in Province No. 2 of Nepal. The study is undertaken in quality accredited HEIs in Province No. 2. There are only two quality accredited HEIs in Province No.2 till date. They are JSMM Campus Lahan and Hari Khetan

Campus Birgunj.

Period of Study

The primary data is obtained from 1st July, 2021 to 31st September, 2021.

Sample Design

The primary data is collected through survey method. Survey is conducted using well formulated Likert's 5 point scale questionnaire. All the faculties of both the colleges involved in higher education are taken as study population. Total population of the study is 105 teachers working in both HEIs (37 teachers in JSMMC Lahan plus 68 teachers in HKMC Birgunj) Convenience sampling method is applied for generating data. Questionnaires were distributed to 57 respondents (34 teachers in JSMMC Lahan plus 23 teachers in HKMC Birgunj). The questionnaire were distributed and collected through Google Forms via messenger in JSMMC Lahan and whatsapp in HKMC Birgunj. Altogether 44 respondents responded in the survey (27 teachers from JSMMC Lahan and 17 teachers from HKMC Birgunj) yielding response rate of 77%. According to Amin (2004), if the response rate is more than 70%, this is enough to carry on and continue with data analysis. The questionnaires were directly circulated to the college teachers and they are asked to go through the research instrument for a considerable time.

Reliability of Questionnaire as Instrument

Cronbach's alpha was used to determine the reliability of the instruments. Cronbach's alpha measures the internal consistency that is, how closely related a set of items are as a group. The higher the α -value, the more reliable the instruments will be considered. According to Amin (2005), if a $\alpha \geq 0.70$, then the items will be considered as reliable. In other words, the respondents were knowledgeable of the questions, understood them very well and answered them to the best of their knowledge.

Data Analysis

Descriptive statistics, such as mean and standard deviations were used to establish the central tendency and measure of

dispersion of technological change and employee performance respectively. Correlation analysis was used to measure the relationship of technological change with performance of teachers. Simple regression analysis was used to determine the effect of technological changes on job performance of teachers.

$$PoTi = \alpha_0 + \beta (TCi) + \epsilon_i \dots\dots\dots(1)$$

Where, TC = Technological changes;
 ϵ = Error Term, PoT = Performance of teachers; α_0 = intercept line; β = Regression line.

The hypothesis was tested at 0.05 level of significance. Decision rule was that $p = 0.05$, therefore if $p \leq 0.05$ then the null hypothesis was rejected, otherwise it was accepted.

Analysis and Results

Descriptive Results of Variables

Table 1
Descriptive Result of Technological Changes

	Items	SDA	DA	N	A	SA	Total	Missing	Total
TC_1	Laptop and internet facilities are provided to the faculties to update their knowledge.	4(9.1%)	5(11.4%)	7(15.9%)	19(43.2%)	9(20.5%)	44(100%)	Nil	44
TC_2	Smart class rooms and Power Point are facilitated for effective teaching.	2(4.5%)	2(4.5%)	6(13.6%)	24(54.5%)	10(22.7%)	44(100%)	Nil	44
TC_3	HOD uses electronic media to disseminate examination timetables to employees and students.	1(2.3%)	4(9.1%)	6(13.6%)	26(59.1%)	7(15.9%)	44(100%)	Nil	44
TC_4	HOD uses electronic media to conduct departmental meetings.	2(4.5%)	9(20.5%)	6(13.6%)	25(56.8%)	2(4.5%)	44(100%)	Nil	44
TC_5	The communication among the stakeholders, students, teachers and management become conducive through technology.	1(2.3%)	4(9.1%)	8(18.2%)	25(56.8%)	6(13.6%)	44(100%)	Nil	44

Table 2
Descriptive Result of Performance of Teachers

	Items	SDA	DA	N	A	SA	Total	Missing	Total
PoT_1	The teachers have acquired additional degree after the appointment.	Nil(0%)	3(6.8%)	7(15.9%)	29(65.9%)	5(11.4%)	44(100%)	Nil	44
PoT_2	The teachers are providing reading materials to their students.	Nil(0%)	1(2.3%)	8(18.2%)	29(65.9%)	6(13.6%)	44(100%)	Nil	44
PoT_3	The teachers have adopted innovative teaching learning methods.	Nil(0%)	2(4.5%)	8(18.2%)	26(59.1%)	8(18.2%)	44(100%)	Nil	44
PoT_4	The teachers have published books or college /national /international level papers.	Nil(0%)	6(13.6%)	6(13.6%)	27(61.4%)	5(11.4%)	44(100%)	Nil	44
PoT_5	The teachers guide project work/ thesis of Bachelor/ Masters level students independently.	Nil(0%)	Nil(0%)	9(20.5%)	25(56.8%)	10(22.7%)	44(100%)	Nil	44
PoT_6	The teachers finish the assigned course timely.	Nil(0%)	3(6.8%)	5(11.4%)	25(56.8%)	11(25%)	44(100%)	Nil	44
PoT_7	The teachers set question papers/ evaluate the exam papers systematically.	Nil(0%)	1(2.3%)	4(9.1%)	32(72.7%)	7(15.9%)	44(100%)	Nil	44
PoT_8	The teachers check the exam papers timely.	Nil(0%)	3(6.8%)	6(13.6%)	22(50%)	13(29.5%)	44(100%)	Nil	44
PoT_9	The teachers have worked for the welfare/ discipline of the students.	Nil(0%)	Nil(0%)	4(9.1%)	26(59.1%)	14(31.8%)	44(100%)	Nil	44
PoT_10	The teachers are invited as guest lecturers or subject experts.	1(2.3%)	8(18.6%)	5(11.6%)	21(48.8%)	8(18.6%)	43(100%)	1	44

Reliability Analysis

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of scale reliability. It is not a statistical test. It is a coefficient of reliability. Reliability coefficient of 0.70 or higher is considered "acceptable" in social science research.

Table 3
Reliability Statistics of Constructs

Name of Constructs	Cronbach's Alpha	N of Items
Technological Changes	.810	5
Performance of Teachers	.867	10

In above Table 3, Cronbach's alpha for both independent variable (technological changes) and dependent variable (performance of teachers) have found to be greater than 0.70. It satisfied general requirement of reliability for research instruments.

Descriptive Analysis of Variables

Table 4

Descriptive Statistics of Variables

	N	Min	Max	Mean	Std. Deviation
Technological Changes	44	1.60	5.00	3.6500	.76081
Performance of Teachers	44	2.60	5.00	3.9273	.51641
Valid N (listwise)	44				

The mean values of both independent variable (technological changes) and dependent variable (performance of teachers) seem to be greater than 3 which show a positive perception towards the variables amongst the respondents. On the other hand, the value of standard deviation of both independent variable (technological changes) and dependent variable (performance of teachers) are less than 1 which reveals that data is consistent with minimum value 1 to maximum value 5.

Correlation between Technological Changes with Performance

The Pearson correlation coefficient was computed to assess the relationship of technological changes with the performance of teachers.

Table 5
Correlation between Technological Changes with Performance of Teachers

		Technological Change	Technological Change
Technological Change	Pearson Correlation	1	.338
	Sig. (2-tailed)		.026
	N	44	43
Performance of Teachers	Pearson Correlation	.338*	1
	Sig. (2-tailed)	.026	
	N	43	43

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

Table 5 revealed that there was a positive correlation between job performance of teachers and technological change, $r(41) = 0.338$, $p = 0.026$.

Regression Analysis

H2₀: There is no statistically significant impact of technological change on performance of teachers.

Table 6

Impact of Technological changes on Job Performance

Variable	Unstandardized Coefficients		Standard ized Coefficients		Sig.
	β	Std. Error	Beta	t	
(Constant)	30.108	4.045		7.444	.000
Technological Change	.495	.215	.338	2.302	.026
R	0.338				
R ²	0.114				
Adjusted R ²	0.093				
F-Value	5.303	(p=0.026)			

Table 6 revealed that technological changes significantly predicted job performance of teachers, $b = 0.495$, $t(41) = 2.302$, $p < 0.05$. Technological change also explained a significant proportion of variance in job performance of teachers, $R^2 = 0.114$, $F(1,41) = 5.303$, $p < 0.05$.

Discussion

This part discusses the research findings in the previous section based on the objectives and hypothesis of the study.

The above table no. 5 sought to find out the strength of the relationship between independent variables (technological changes) and dependent variable (job performance of teachers). The observed Pearson correlation coefficient between technological changes and job performance of teachers is 0.338 at 0.05 level of significance which expresses that there is positive relationship between them. The result is in line with the findings of the other studies although the bounding between technological changes and job performance is weak in comparison to other studies such as Al-Jaradat et. al., 2013 ($r = 0.648$); Archibong & Ibrahim, 2021 ($r = 0.428$); Osunsan et. al., 2019 ($r = 0.717$).

In the above table no. 6, the R^2 value indicates how much of the total variation in the dependent variable (job performance) can be explained by the independent variable (technological

changes). In this case, 11.4 % can be explained. The result is in line with the findings of the other studies although the impact of technological changes on job performance is weak in comparison to other studies such as Archibong & Ibrahim, 2021 ($R^2 = 0.354\%$), Osunsan et. al., 2019 ($R^2 = 51.4\%$). The β value indicates the change in dependent variable (job performance) by units when independent variable (technological changes) changes by one unit. In this case, job performance increases by 0.495 units when technological changes increases by one unit. The result is in line with the findings of other studies although b value is weak in comparison to other studies such as Archibong & Ibrahim, 2021 ($\beta = 2.151$), Methode et. al., 2019 ($\beta = 0.7$). The result is against with the finding of Ekechi & Umar, 2020 ($\beta = -0.205$)

Conclusion

Technology has influenced employee's performance since it simplifies the work to be done. Technology greatly escalates the productivity of employees along with time saving. Use of ICT and the internet can assist teachers to instruct efficiently and students learn more effectively. Thus, to enhance and strengthen the quality of our education, it is the need of the hour to digitize the teaching and learning methodologies. But technological changes adoption in quality accredited higher educational

institutions in Province 2 is slow.

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