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Factors Affecting Knowledge Management in the Situation of Pandemic in Case of Ftvti, Ethiopia

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Abstract

The research topic is "Factors affecting knowledge management in the situation of Pandemic in case of Fedaral Technical and Vocational Training Institute (FTVTI), Ethiopia". The COVID-19 pandemic has had serious implications on educational systems globally and, hence, the use of online learning in higher education promote knowledge sharing among students and it result in the improvement of reflective thinking among them. In the research design; selected Descriptive research approach and quantitative study with hypothesis testing on purposively selected students of higher educational institute in Ethiopia as FTVTI, Addis Ababa. The population under the study was 4564, and the sample size 367 was determined. The expected findings related to Knowledge sharing practices preferred by the students and its effects, for that the core students physical and monetary requirements to sustain the knowledge management like developing/economically poor countries like Ethiopia.

Keywords: Pandemic, Knowledge Management, Students of Universities, Global.

INTRODUCTION

Knowledge Management (KM) of higher education students is the responsibility of Higher Education Institutions (HEIs) and there is a global competition to produce competent students. During pandemics like COVID-19 all educational institutions were challenged to perpetuate their academic study programs that were used to be offered in a face-to-face modality in the normal times. Almost it was a global phenomenon that all countries were announcing lockdowns, Higher Education Institutions not an exception (HEI) also announced lockdowns. It was however; observed after the overwhelming of the

pandemic online platforms were becoming trending including higher learning institutions with the existing knowledge management practices to enable them perpetuate education in times of such crises.

REVIEW OF LITERATURE

Since the emergence of COVID-19 in December 2019, HEIs around the world has encountered unprecedented crises (Ross, 2020; Mutinda, Liu, 2021). Due to this, students, academic staff, and administrations have been forced to comply with the guidelines and recommendations set by government agencies, and students have been encouraged to continue learning remotely and online (Wang, De Laquil, 2020). The global COVID-19 pandemic has caused disruption to everyone in the HE sector, but postgraduate students are the most vulnerable cohort (Toresdahl, Asif, 2020). With regard to postgraduate students, the research shows that family, friends, teachers, and peers provide emotional, technical, and tangible supports (Choy; Delahaye; Saggers, 2015; Hutchings, 2017), but they were also sources of stress (Carter, 2014; Gardner, 2008; Ezebilo, 2012), and particularly for those who struggle to balance the personal–professional boundaries of life. Hence, a human, supportive, and respectful response from the higher education sectors is crucial (Halabchi; Ahmadinejad; Selk-Ghaffari, 2020). As a consequence of the pandemic, universities were constrained to carrying out their activity with students exclusively online (Sobaih; Hasanein; Abu Elnasr, 2020). Moreover, (Agarwal et al., 2022) have stated that "artificial intelligence" is highly required for defining "AI-enabled technologies" that can easily demonstrate COVID-19 effects within various fields such as health care, retail, manufacturing, education, food services, "media and entertainment" and "knowledge management system". It's important to have a solid security and data privacy plan in place to ensure the protection of personal information (Gursoy *et al*., 2019).

RESEARCH PROBLEM

The corona virus pandemic has generated changes in the teaching-learning process in higher education institutions and has influenced the interaction between teachers and students. As a consequence of the pandemic, universities were constrained to carrying out their activity with students exclusively online (Sobaih, A.E.E.; Hasanein, A.M.; Abu Elnasr, A.E, 2020). In this regard, many governments took measures in order to avoid spreading the virus and to ensure the continuity of the educational process, and universities worldwide adopted online learning (Ali, W., 2020).

RESEARCH METHODOLOGY

Here the researcher adopted pragmatic worldview philosophy with the exploratory method approach and for this paper adopted only quantitative analysis (Creswell, J. W. 2003). The well structured quantitative questionnaire includes 8 demographic variables and 27 dependent variables. The collected data analyses after process and coding and decoding. The process of systematically apply statistics in logical techniques to describe and illustrate, condense and recap and evalute data, the researcher apply the simple frequency, cross tabulation and chi-square test for demographic variables and reliability, descriptive stastistics mean, SD, t-test, ANOVA, correlation and factor analysis for the dependent variables systematically to invent the hidden ideas and writing the empirical part of the paper.

POPULATION AND SAMPLE

The teachers with bachelor qualification who need to upgrade to masters with current statistics 4,564 can cope with relative independent learning capability (Federal TVET Agency, 2021) is the population under study and the and the sample size 367 was determined by the (Yamane, 1967) formula.

OBJECTIVES

To investigate the impact of online teaching methods to sustain KM in HEI, Federal TVT Institute Addis Ababa, Ethiopia

ANALYSIS

Chi-Square Test for the variables, Family Annual income per annum(p.a) * Enrolment type

Here the researcher tests the goodness of fit the data from the selected respondents.

Table 1: Chi-Square Test for the variables Family Annual income p.a and Enrolment type

		Family Annual income per annum (in Birr)				Total	Chi-Square	d.f	P-Value
		< 36000	36001-60000	60001-96000	> 96000				
Enrolment type	Regular	111	87	111	25	334			
	Extension	15	18	0	0	33	23.268[a]	3	.001
Total		126	105	111	25	367			

Ho**:** There is no association between family annual income per annum and enrolment type.

H_1: There is association between family annual income per annum and enrolment type

The table 1 describes that, P-Value (0.001) < 0.01, So Null Hypothesis has been rejected at 1% level of significance. Hence, Alternate Hypothesis (H_1) has been accepted. Therefore, there is association between family annual income per annum and enrolment type.

Table 2: Reliability Statistics

Cronbach's Alpha	N of Items
.899	27

The reliability value 0.899 that is close to '1' then all the selected 27 variables reliable and support to Factors Affecting Knowledge Management related variables.

Table 3: Scale Statistics

Mean	Variance	Std. Deviation	N of Items
90.49	297.773	17.256	27

The above table 3, revels that the combined mean, variance and standard deviation of the all the selected 27 variables under the Factors Affecting Knowledge Management related variables. The combined mean is 90.49 (average mean value more than 3) and moderate standard deviation is 17.256 (average S.D less than 0.63).

t-TEST

This is independent sample t–Test, test variable is Knowledge Sharing Practices related (7)variables and Independent variable should be in two groups which is selected gender.

Null Hypothesis H_0: There is no significant effect of sex (gender) on Knowledge Sharing Practices.

Alternate Hypothesis H_1: There is significant effect of sex (gender) on Knowledge Sharing Practices.

Table 4 reveals that except 5th variable, all variables p-values > 0.05 that is Null Hypothesis has been accepted at 5% level of significance showing that there is no significant difference in the opinion of male and female on Knowledge Sharing Practices variables. i.e male and female students have same opinion on the 6 variables, and difference of opinion on 'Impact of practical sessions on students'.

Table 4: t- Test to know the opinion of gender on Knowledge Sharing Practices variables

	Sex	N	Mean	S,D	t-value	P-Value	S/NS
The use of online teaching method (Zoom meeting) impact on students	Male	282	3.91	1.334	1.596	.111	NS
	Female	85	3.65	1.429	1.538		
Ability of the students in using technology in knowledge sharing	Male	282	4.50	1.142	1.095	.274	NS
	Female	85	4.34	1.160	1.085		
The availability of internet infrastructure to the students	Male	282	3.99	1.221	.086	.932	NS
	Female	85	3.98	1.185	.087		
during covid 19 situation, the communication (telegram, instagram, mobile network, e-mail, whatsapp, etc.,) among students and teachers	Male	282	4.29	1.246	-.576	.565	NS
	Female	85	4.38	1.046	-.632		
Impact of practical sessions on students KM	Male	282	3.62	1.252	-3.569	.001	HS
	Female	85	4.15	1.075	-3.873		
Quality of assessment of individual student performance	Male	282	4.09	1.074	-.593	.554	NS
	Female	85	4.16	1.122	-.579		
Peace and security of the country during covid 19 situation the online knowledge sharing in HEI,	Male	282	4.06	1.189	-.093	.926	NS
	Female	85	4.07	1.270	-.089		

HS=Highly Significant (*at 1% Level of Significance), **S**=Significant (**at 5% Level of Significance), **NS** =Not Significant (***at 1% & 5% Significance).

FACTOR ANALYSIS – the influence of Present academic study (Under Graduate and Post Graduate students) **on "KNOWLEDGE SHARING - EFFECT (9 variables)"**

Table 5: KMO and Bartlett's Test[a]

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.730
Bartlett's Test of Sphericity	Approx. Chi-Square	379.080
	df	36
	Sig.	.001

a. Only cases for which Present academic study = Under Graduate are used in the analysis phase.

Table 5 specifies that the KMO value is greater than 0.5, which necessitates factor analysis and the researcher identified latent factor as indicated. Its KMO value is 0.730 at 1% level of significance.
The table 6, Eigen values and Extraction sum of squared loadings and Rotation Sums of Squared Loadings of four prime components stood at 78% of Eigen value.

Table 7 revels that, after rotation of 7 iterations the nine variables are became a four components as per the influence of Under Graduate students, the first component Rotation Sums of Squared Loadings are

24% with supporting three variables component scores 0.814, 0.765 and 0.717; second component Rotation Sums of Squared Loadings are 19% with supporting two variables component scores 0.874 and 0.799 ; third component Rotation Sums of Squared Loadings are 19% with supporting two variables component scores 0.888 and 0.723; and fourth component Rotation Sums of Squared Loadings are 11% with supporting two variables component scores 0.803 and 0.773.

Table 6: Total Variance Explained[a]

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.628	40.311	40.311	3.628	40.311	40.311	2.179	24.215	24.215
2	1.350	14.998	55.309	1.350	14.998	55.309	1.731	19.237	43.452
3	1.047	11.632	66.941	1.047	11.632	66.941	1.718	19.089	62.541
4	1.021	11.342	78.283	1.021	11.342	78.283	1.417	15.742	78.283
5	.582	6.463	84.746						
6	.471	5.228	89.974						
7	.337	3.747	93.721						
8	.307	3.416	97.137						
9	.258	2.863	100.000						

Extraction Method: Principal Component Analysis.

a. Only cases for which Present academic study = Under Graduate are used in the analysis phase.

Table 7: Rotated Component Matrix[a,b]

	Component			
	1	2	3	4
Effects the punctuality of the students attendance through online learning time	.814	.177	.267	.019
During covid 19 time, the student promotion rate to the next semester is higher	.765	.027	.208	.295
The authorization of getting online recorded knowledge sharing sessions is permitted	.717	.491	.098	.009
The understanding of knowledge and concept of the session in zoom meeting is very interesting	.025	.874	.286	.093
The teaching material of each courses are available on time	.378	.799	-.107	.109
Examining (mid and final) the students through online is fair	.227	.021	.888	-.023
Students satisfaction is high on the number of hours during online classes	.212	.169	.723	.259
Individual interaction on knowledge sharing with teacher is good	.405	.058	-.095	.803
Students are well satisfied by online teaching methodologies during pandemic situation	-.114	.153	.424	.773

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

b. Only cases for which Present academic study = Under Graduate are used in the analysis phase.

Similarly when post-graduate students are considered for factor analysis; the KMO value is 0.813 at 1% level of significance. The Eigen values and Extraction sum of squared loadings and Rotation Sums of Squared Loadings of three prime components stood at 70% of Eigen value. And after rotation of 7 iterations the nine variables are became a three components as per the influence of Post-Graduate students, the first component Rotation Sums of Squared Loadings are 36% with supporting six variables with component scores 0.887, 0.838, 0.729, 0.702, 0.604 and 0.574; second component Rotation Sums of Squared Loadings are 21% with supporting two variables component scores 0.814 and 0.751; and third component Rotation Sums of Squared Loadings are 13% with supporting one variable component scores 0.788.

ANOVA

Null Hypothesis H_0: There is no significant effect of student family annual income on CORE FACILITIES PROVIDED BY FTVTI

Alternate Hypothesis H_1: There is significant effect of student family annual income on CORE FACILITIES PROVIDED BY FTVTI

Table 8: One Way ANOVA for CORE FACILITIES (laptop/tab/network/digital learning app or software) PROVIDED BY FTVTI **by student** family annual income

		Sum of Squares	df	Mean Square	F	Sig.
University funding or providing laptop / tab facility to the students during online classes time	Between Groups	2.398	3	.799	.422	.737
	Within Groups	686.856	363	1.892		
	Total	689.253	366			
University developed digital learning app is most appropriate to use during online classes time	Between Groups	1.024	3	.341	.243	.866
	Within Groups	509.864	363	1.405		
	Total	510.888	366			
University network strength or capacity upgraded during online session time	Between Groups	8.564	3	2.855	2.413	.066
	Within Groups	429.496	363	1.183		
	Total	438.060	366			
The students are getting a gift internet package from university during online classes	Between Groups	9.906	3	3.302	1.550	.201
	Within Groups	773.544	363	2.131		
	Total	783.450	366			
The university given a training to the students, to make them capable of using digital technology during online classes	Between Groups	15.361	3	5.120	3.408	.018
	Within Groups	545.320	363	1.502		
	Total	560.681	366			
To meet the demand of practical session classes university providing pre-recorded video files to simulate the KM	Between Groups	16.247	3	5.416	3.689	.012
	Within Groups	532.941	363	1.468		
	Total	549.188	366			

Above table 8 reveals that 5th and 6th variables p-values < 0.05 that is Null Hypothesis has been rejected. Hence, alternate hypothesis H_1 is accepted at 5% level of significance showing that there is significant effect of student family annual income on CORE FACILITIES PROVIDED BY FTVTI.

That is FTVTI students with different income groups have different opinions on the "The university given a training to the students, to make them capable of using digital technology during online classes" (5th variable) and "To meet the demand of practical session classes university providing pre-recorded video files to simulate the KM" (6th variable) of CORE FACILITIES PROVIDED BY FTVTI factor. All variables p-value .054 > .05 except 5th and 6th variables, hence null hypothesis has been accepted at 5% level of significance, i.e., That is FTVTI students with different income groups have same opinions on the first four variables.

CORRELATION

Correlation is a bivariate analysis that measures the strength of association between two variables and the direction of the relationship.

Null Hypothesis H_0: There is no significant effect of dependent variables on dependent variables.
Alternate Hypothesis H_1: There is significant effect of dependent variables on dependent variables.

Table 9: Correlations on 'factors that impede the process of knowledge sharing variables'

		(V-23)	(V-24)	(V-25)	(V-26)	(V-27)
Financial constraint of the student for digital learning time (V-23)	Pearson Correlation	1	.571**	.387**	.487**	.463**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	367	367	367	367	367
Substitution of power fluctuations during digital learning time(V-24)	Pearson Correlation	.571**	1	.515**	.488**	.370**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	367	367	367	367	367
Maintaining motivation levels of student during digital learning time(V-25)	Pearson Correlation	.387**	.515**	1	.594**	.494**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	367	367	367	367	367
Perception of administrative staff to support digital learning system(V-26)	Pearson Correlation	.487**	.488**	.594**	1	.540**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	367	367	367	367	367
Technological adoptability of students during digital learning time(V-27)	Pearson Correlation	.463**	.370**	.494**	.540**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	367	367	367	367	367

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

Table 9 revels that, all the variables (V 23 to 27) are significant at 1% level and there is positive moderate correlation among the selected 5 variables under this factor.

RESULTS

The main contribution of the research study is to elaborate the specific observations in a particular context that help to generalize the information with different approaches. It can suggest for delivering the particular theories for operating the scientific research study with delivering full of concepts.

The desired Focus online teaching methodology with an active engagement of students will trigger other training modalities like blended learning, virtual and augmented reality which in turn can be scaled up to other training institutes.

SUGGESTIONS

Government of Ethiopia, needs to alocate the nessasary budget to train the HIE students as digital learning, adoption of technology freiendy training and providing nessasary electronic godgets like tab and laptops, etc., and their economical support to strengthen the network issues and power issues at digital learning time.

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