ENHANCED CLOUD COMPUTING ADOPTION BY DISTINGUISHED ENGINEERING INSTITUTIONS OF CUTTACK DISTRICT-A COMPARATIVE ANALYSIS

Dr Bibhu Kalyan Mishra[1*], Dr Kumar Surjeet Chaudhury[2], Mr.Jasobanta Laha[3], Mr.Binaya Kumar Patra[4], Dr Sanjay Kumar Patra[5], Mr.Gyana Prakash Bhuyan[6], Mr Veeranna Kotagi[7]

Abstract

Cloud computing can be considered as the most emerging technology of this era. Cloud computing can be defined as a collection of software, applications & other IT services which are provided by cloud service provider ,which are stored in different scattered locations like cloud in the sky & can be used by the user through internet as per their need & requirement by cloud service provider on a rent basis or pay-per-service basis. . the researcher observed that most of the engineering institutions of Cuttack district are surviving to get better student retention rate & to attract new students,the cause being lack of complete migration to emrging technolgy like cloud. From this pandemic COVID-19 it has been proved that cloud computing is the software to be adopted in an enhanced way for today & tomorrow. It has become the necessary required software & backbone for virtual platform for common man of Odisha, India & whole world to carry out their regular digital & virtual work from home

Keywords- cloud computing, COVID-19, Enhanced

[1*]Assistant Professor, FOS, Sri Sri University, Cuttack, Odisha, Email: bibhu.m@srisriuniversity.edu.in
[2]Assistant Professor, KIIT Deemed to be university, Email: csurjeet@gmial.com
[3]Assistant Professor, FET, Sri Sri University, Cuttack, Odisha, Email: ijasobanta.l@srisriuniversity.edu.in
[4]Assistant Professor, Computer science engineering & applications, IGIT, Sarang, Dhenkanal, Email: binaya.patra@igitsarang.ac.in
[5]Assistant Professor, Computer science engineering & applications, IGIT, Sarang, Dhenkanal, Email: sanjay.patra@igitsarang.ac.in
[6]Assistant Professor, Department of CSE, Nalanda Institute of technology, Email: gyanaprakash.gp@gmail.com
[7]Assistant Professor, Information Science & Engineering Department, Nitte Meenakshi Institute Of Technology, Bangalore, Email: veerkotagi211@gmail.com

***Corresponding Author:** Dr Bibhu Kalyan Mishra
[*]Assistant Professor, FOS, Sri Sri University, Cuttack, Odisha, Email: bibhu.m@srisriuniversity.edu.in

DOI: 10.48047/ecb/2023.12.si5a.0307

INTRODUCTION

Cloud Computing:

Cloud computing can be defined as a pay-per-use basis software which we can use for storage, operating system,databse & softwares.

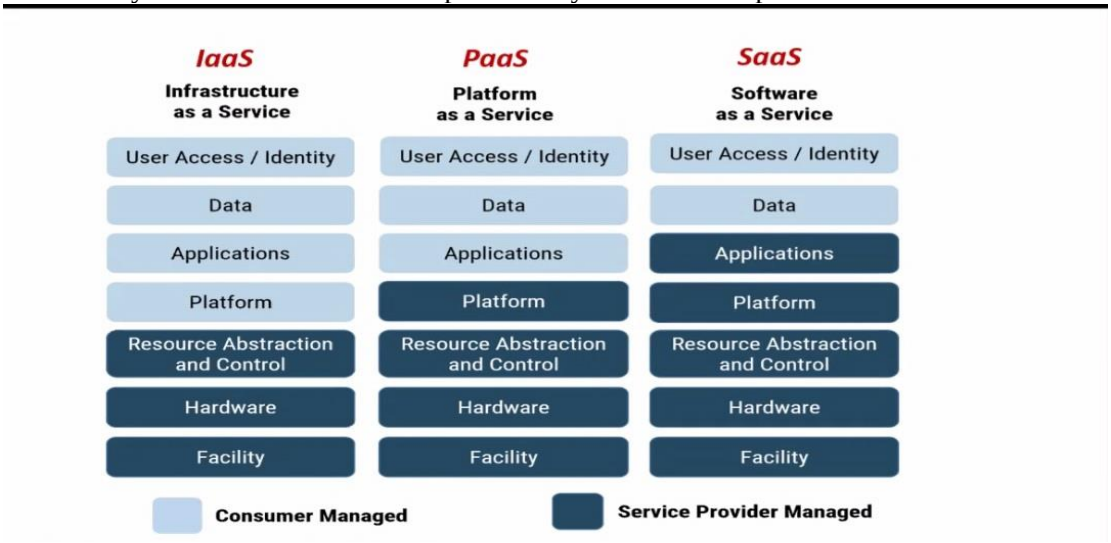
For most part, cloud models are partitioned into two kinds. Deployment models and Service models. In Deployment models, we have three rudimentary kinds of clouds,

- ✓ Public,
- ✓ Private
- ✓ Hybrid cloud.

Cloud computing has drawn extraordinary consideration as of late as aftereffect of its unequaled benefits. services of cloud computing can be given across various areas that incorporate administration, schooling, and banking among others. Endeavors are building up intends to utilize to improve their relocation to cloud. This examination centers around Cloud financial aspects and how SMEs can fix their own appraisal for cloud appropriation. Paper starts by characterizing CC which is characterized by NIST as classical that empowers suitable, on-request accessing of organization to collective configuration pooling of computation assets, for example, applications, organizations, administrations, storage and servers, that could be delivered and provide service without any difficulty & interruption.

Service Models

They are essentially three models of services provided by cloud service provider which exhibited beneath:



1. IaaS: It is infrastructure as a service.Here the cloud service provider will provide only infrastructure to its client as pay-per-use basis.

2. PaaS: It is Platform as a Service (PaaS),.It delivers a framework for developers that they use to develop applications.

3.Saa S: It is Software as a Service, A majority of SaaS applications run directly through your web browser, so you do not need to download it

Problem Statement

Cuttack which is considered as millenium city of Odisha & also known as business capital of Odisha.It bears lots of historical evidence & also known as silver city of India due to its fillegree work on silver.But coming to its education sector especially to engineering instituions ,what the researcher observed that most of the engineering institutions of Cuttack district are surviving to get better student retention rate & to attract new students,the cause being lack of complete migration to emrging technolgy like cloud by these instituions what the researcher found during the survey to collect questionnarie.Another reason being that modern day students prefer on line classes & blended learning mode rather than traditional class room teaching which to some & most extent these instituions lack.

PROBLEM ON HAND

I. Lack of awerness about enhanced adoption of cloud computing technology among engineering instituitons of Cuttack district & among overall population
II. Initial investment for establishment of cloud infrastrucuture is still at higher side for engineering & other institutions & organizations

III. Lack of trust is still there between cloud service provider and clients
IV. Still cloud outage is issue for cloud service provider
V. Still internet bandwidth is a major issue in most part of India
VI. Lack of uniterrupted service provided by the cloud service provider
VII. Security for storage of confidential data & file & information is still an issue
VIII. Cloud service provider are reluctant to give information about their server location to client

OBJECTIVES

1. To inform about finding of study to engineering institutions of cuttack district about importance of enhanced adoption of cloud computing.
2. To know about present IT infrastructure & cloud adoption rate of engineering institutions of cuttack district from ground level survey.
3. To know about knowledge level about enhanced adoption of students & staffs of engineering institutions of cuttack district with well defined questionnaire.
4. To know about overall IT budget of engineering institutions of cuttack district without enhanced adoption of cloud computing.
5. To carry out comparative study of present IT scenario & enhanced adoption of IT scenario of selected engineering institutions of Cuttack district
6. To determine usefulness of enhanced adoption of cloud computing by selected engineering institutions of Cuttack district during pandemic like COVID-19
7. To understand about Engineering institutions' students retention rate due to enhanced adoption of cloud platform which is major concern for all engineering Institutions

LITERATURE REVIEW

(Kaur and Verma, 2012) Keynote that CC are altering entire IT industries, organizations and worldwide economy. Plainly, CC requires viability, security, and dependability. CC had gotten normal in business, govt., instruction, and diversion, it kept up by present 50 million services introduced around world in great many server farms.

(escale,2009) examined 4 instances of CC Software like community oriented site advancement, wikis, synergistic web records, collective tweaking web crawlers for encouraging web cooperation. few libraries use cloud computing and make administration subject to computing programming and administrations from outside. Libraries are executing new web joint effort administrations for client created input and commitments.

(Mollah, Islam and Islam, 2012) said cloud computing is recently arising innovation in present world. In spite of fact that cloud computing innovation has few issues and difficulties, it will be tremendous examination extension and advancement pattern in not so distant future. Cloud computing innovation is anticipated to bring us endless computing capacity, quick chip, tremendous memory, fast organization, dependable framework engineering.

(Diaby and Rad, 2017) introduced assessment, cloud computing in word, CC attributes. Cloud innovation permits foundations to oversee investment.

(Pathak & pal, 2015) communicated in their examination, essential idea of cloud computing, cloud engineering, virtual machine, working framework administrations, business framework administrations, administrations arranged models. They likewise examine about virtualization, principles and conventions, benefits, drawbacks, socio-specialized part of cloud computing.
(Sood, Kour and Kumar, 2016) depicted other computational advancements like conveyed computing, group computing, pay-per -use computing, framework computing and CC. Appropriated computing is sort of equal computing, framework based utility computing, and cloud computing. Bunch computing used to oversee bunch PCs in single PC, cloud computing offers best quality types of assistance with lower cost, there are two kinds of cloud computing, area based and administration based.

(Financier, 2016) has illuminated cloud computing outline, its set of experiences, its administration model, utilization of cloud computing libraries, likewise examine advantages and disadvantages of cloud computing, cloud computing has few issues like protection, security, lawful angle has not been settled, consequently, libraries need to consider everything.

(Mishra and et al 2015) featured fundamental help models, for example, IaaS, PaaS, SaaS and their benefits likewise cloud computing phrasings, for example, lock-In, cloud customer, cloud supplier, IT assets and so on Cloud-based working framework ZeroPC, Jolicloud, Glide OS, Silve OS,

iSpace cloud PC, ZimDesk. Cloud computing is answer for giving clients progressing administrations without disappointment of refreshing.

Research Approach: Both Quantitative & qualitative research approach.

Research Design: First pre-experiment on one group & post experiment on another group.

Population: It consists of staffs, management members & students of selected engineering institutions of Cuttack district

Sampling Technique: Simple random sampling technique.

Sample size: All staffs, management members & students in selected engineering institutions of Cuttack district, total sample size comprises of 400.

Inclusion criteria for sampling:

1] The staffs, management members & students of engineering institutions of Cuttack district who are willingly participated in the study
2] The staffs, management members & students of Cuttack district who are available during the time of data & sample collection.
3] The staffs, management members & students who belong to selected engineering institutions of Cuttack district.

Exclusion Criteria for sampling:

1] The staffs, management members & students of engineering institutions of Cuttack district who are not willing to participate in the study
2] The staffs, management members & students of engineering institutions Cuttack district who are not available at the time of data collection.
3] The staffs, management members & students of engineering institutions of other district.
4] The staffs, management members & students of other sector.
5] The staffs, management members & students of engineering institutions Cuttack district who are mentally challenged

Tool: Present study tool consist of 4 Sections
Section A: Demographic Variables of the sample under the study.

Section B: An assessment proforma to find out benefit,issues & challenges by enhanced adoption of cloud computing by selected engineering institutions of Cuttack district.

Section C: Structure knowledge questionnaire on enhanced adoption of cloud computing by selected engineering institutions of Cuttack district.

Section D: Observational checklist will be use to assess enhanced adoption of cloud computing by selected engineering institutions of Cuttack district.

STATISTICAL TECHNIQUE

Required permission from authorities will be taken before study. Then samples will be selected as per inclusion criteria. The analysis of the data is based on the objectives of the study. The data will be analyzed as following:

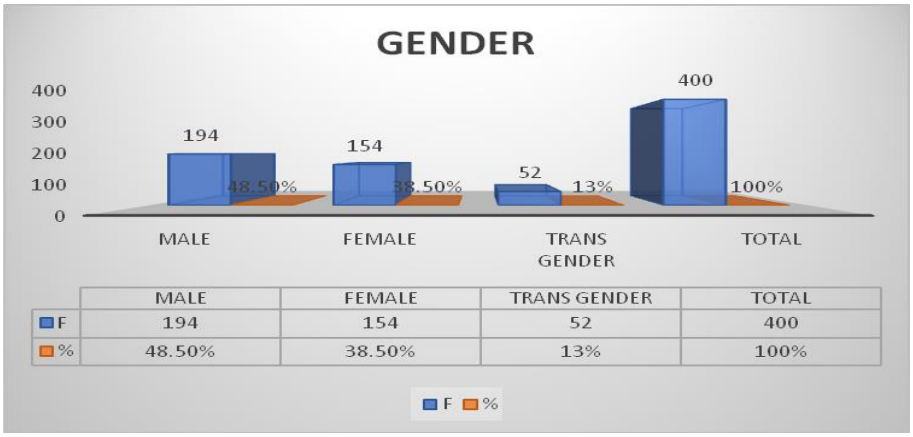
1] The demographic of the subjects will be analyzed using frequency and percentage.
2] The pre-test and post-test knowledge and practice scores will be analyzed using frequency and percentage, Mean and standard deviation.
3] The effectiveness of advance training program on knowledge regarding cloud computing at selected aspects will be analyzed using descriptive and inferential statistical methods. Paired 't' test by measuring the significant difference between pre-test and post-test scores.
4] Using SPSS software version 22

The calculated data will be presented in the form of graphs and tables.

ANALYSIS AND INTERPRETATION

Tab. 1: Distribution of population based on Gender

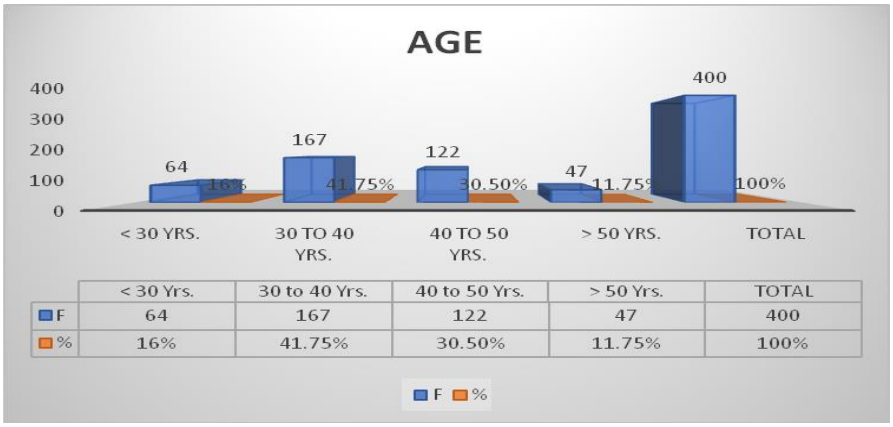
GENDER	F	%
MALE	194	48.50%
FEMALE	154	38.50%
TRANS GENDER	52	13%
TOTAL	400	100%



Graph 1: Gender

Tab. 2: Distribution of population based on Age

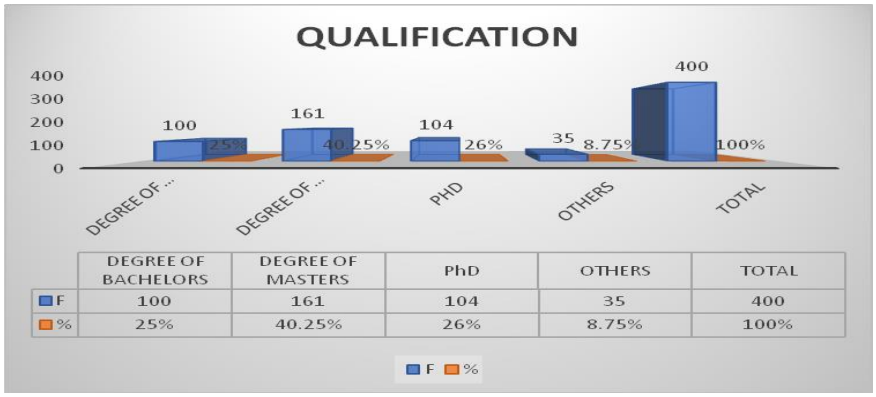
AGE	F	%
< 30 Yrs.	64	16%
30 to 40 Yrs.	167	41.75%
40 to 50 Yrs.	122	30.50%
> 50 Yrs.	47	11.75%
TOTAL	400	100%



Graph 2: Age

Tab. 3: Distribution of population based on Qualification

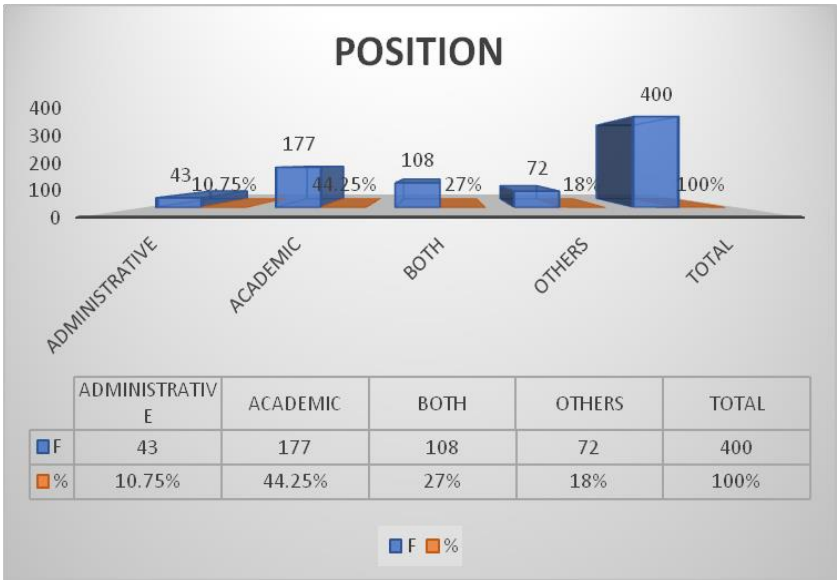
QUALIFICATION	F	%
DEGREE OF BACHELORS	100	25%
DEGREE OF MASTERS	161	40.25%
PhD	104	26%
OTHERS	35	08.75%
TOTAL	400	100%



Graph 3: Qualification

Tab. 4: Distribution of population based on Position

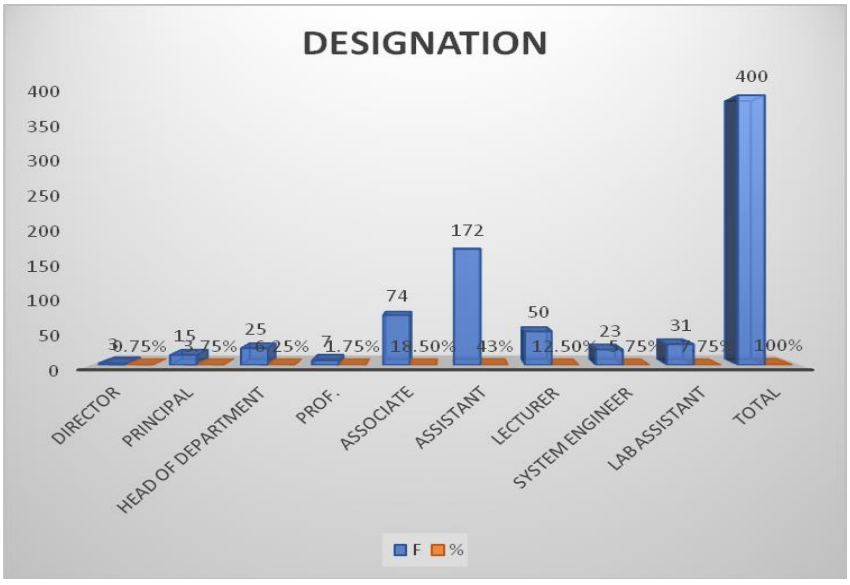
POSITION	F	%
ADMINISTRATIVE	43	10.75%
ACADEMIC	177	44.25%
BOTH	108	27%
OTHERS	72	18%
TOTAL	400	100%



Graph 4: Position

Tab. 5: Distribution of population based on Designation

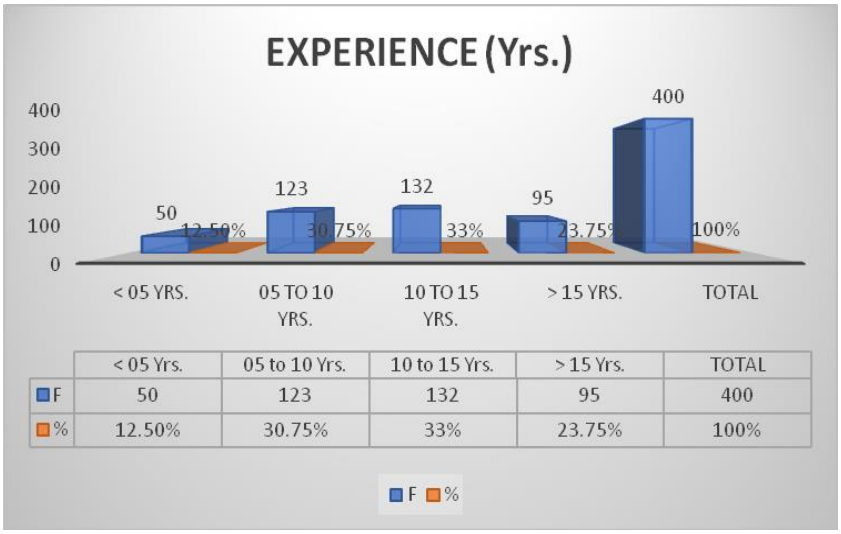
DESIGNATION	F	%
DIRECTOR	03	0.75%
PRINCIPAL	15	03.75%
HEAD OF DEPARTMENT	25	06.25%
PROFESSOR	07	01.75%
ASSOCIATE PROFESSOR	74	18.50%
ASSISTANT PROFESSOR	172	43%
LECTURER	50	12.50%
SYSTEM ENGINEER	23	05.75%
LAB ASSISTANT	31	07.75%
TOTAL	400	100%



Graph 5: Designation

Tab. 6: Distribution of population based on Experience of working

EXPERIENCE (Yrs.)	F	%
< 05 Yrs.	50	12.50%
05 to 10 Yrs.	123	30.75%
10 to 15 Yrs.	132	33%
> 15 Yrs.	95	23.75%
TOTAL	400	100%



Graph 6: Experience (in yrs.)

Model Summary of Linear regression test in SPSS for dependant and all independent variables.

Model		1	2	3
R		0.708[a]	0.751[b]	0.761[c]
R Sq.		0.498	0.563	0.573
Adjusted R Sq.		0.499	0.558	0.574
Std. Error of Estimate		0.55505	0.52002	0.51165
Change Statistics	**R Sq. Change**	0.498	0.064	0.016
	F Change	297.285	42.507	10.789
	df1	1	1	1
	df2	298.0	297.0	296.0
	Sign. F Change	0.000	0.000	0.001
Durbin - Watson		1.622		

DISCUSSION

Enhanced Adoption Of Cloud Computing

Tab. 1 and Graph 1 depicts about distribution of population based on gender. Female engineering students are having 194 (48.50%) ratio whereas males are 154 (38.50%). Trans gender found out in 52 (13%) only. Female are more in number due to type of environment for working, type of profession and timing.

Tab. 2 and Graph 2 illustrates about age factor of population in engineering institutions in Cuttack, Odisha. Maximum people lies between 30 yrs. to 40 Yrs. i.e. 167 (41.75%) whereas age group between 40 yrs. to 50 yrs. are 122 (30.50%). Only, 11.75% population are above 50 Yrs.

Tab. 3 and graph 3 shows about that majority of population is having Master's degree i.e. 161 (40.25%) and 100 (25%) are having Bachelor degree while (26%) of having PhD degree. Based on eligibility in qualification to work in engineering institutions, Master degree is compulsory, but those are pursing master degree, they are also allowed to work on temporary basis in some institutions. PhD is basic requirement to enter in Associate professor or Professor.

Statistics frequency in **tab. 4 and graph 4** depicted that 44.25% of faculties belong to academic work in engineering institutions; whereas 108 (27%) of handle both for example Principal, HOD like designations required to manage academics as well as administrative works. Lab assistant, engineer

like positions are purely for administrative work in ratio of 43 (10.75%).

Tab. 5 and graph 5 illustrates that responses are from various designations of engineering institutions employees at Cuttack. Maximum ratio are 172 (43%) which are designated to assistant post. Designation like associate and lecturer holds 74 (18.50%) and 50 (12.50%) respectively whereas higher designated people like Directors, principal and HOD holds 03(00.75%), 15 (03.75%) and 25 (6.25%) respectively.

Statistics in **tab. 6 and graph 6** depicts that 50 (12.50%) of population are < 05 yrs. old, 123 (30.75%) of population are between 05 to 10 yrs. Whereas 95 (23.75%) of population are of > 10 yrs.

The mean of paragraph #8 "Increment in security as well as information of data." approaches 04.46, t(299)=-325.709, Test-value=24.094, and P-Value = 0.000 which is more modest than degree of importance α=0.050. indication of test is positive, so mean of this section is altogether more prominent than guessed Value 3. We infer that respondents consented to this passage.

The mean of paragraph #9 " Process of Learning will be significantly enhanced." rises to 03.83, t=-52.228, Test-value= 8.704, and P-Value = 0.000 which is more modest than degree of importance α=0.05. indication of test is positive, so mean of this passage is altogether more noteworthy than guessed Value 3. We infer that respondents consented to this section.

All in all, examination result shows of populace concur overall about possibility of enhanced adoption of Cloud Computing by Engineering institutions of Cuttack District. From analyst perspective that populace knows advantages which will get back to Engineering institutions of Cuttack District in Cloud Computing adoption

CONCLUSION

Today crore of individuals use cloud computing services like whatsapp, twitter and Facebook, gmail, google drive, book my show and so forth without realizing that these are gift of cloud computing. Henceforth enhanced Cloud computing adoption technology will efficient for all too as can be utilized with minimal specialized and IT information. It works effectively that we discovered during episode of pandemic COVID-19 in India. Hence it is important not just for selected engineering institutions of Cuttack District but pan India institutions/ organizations & also people to receive cloud computing in enhanced way. Researcher will pass the eight criteria to managments of selected engineering institutions of Cuttack Distict regarding selection of appropriate cloud service provider what the researcher found during conducting the research.

From this pandemic COVID-19 it has been proved that cloud computing is the software to be adopted in an enhanced way for today & tomorrow. It has become the necessary required software & backbone for virtual platform for common man of Odisha , India & whole world to carry out their regular digital & virtual work from home.

To convince management of engineeing institutions of cuttack district that security is not a major issues now-a-days for enhanced adoption of cloud computing Provides benefits to the society to enjoy the services of all types of emerging IT technology through cloud computing platform.In this pandemic Cloud computing platform becomes the heart & backbone during ‘work from home’ concept.Without cloud computing this concept could not be successful as it is now.Not only for education sector but also for all other sector cloud computing became the main software to achieve their goal during complete lock down of whole world & to achieve the ‘work from home concept’.

6.3.RECOMMENDATION

- Engineering institutions of Cuttack district should adopt cloud computing in an enhanced way in their organizations rather than traditional technology.
- Engineering institutions should adopt cloud computing in enhanced way for overall tehcnical growth of their students,faculties & staffs.
- Engineering institutions should provide sufficient bandwidth to their students to use emerging platform like cloud as per AICTE Rules.
- Top management should focus on motivation of staff that help in increase comfort level of staff by introducing some emerging technology like cloud.
- Top management should be aware regarding enhanced adoption of cloud computing & its benefit .
- Top management should make plans which are adequately versatile to adopt cloud computing & to establish its infrastrucutre.
- Management should keep their staff ready to adopt any type of emerging tehcnology like cloud computing & green cloud.

- Top Management should have provisional course of action to get Cloud Computing, and its uses in IT exercises.
- It's fundamental for top organization to offer assistance and necessary requirements to accept Cloud Computing advancement.
- Reception of Cloud Computing in an enhanced way by the engineering institutions of Cuttack District should be through well executed plan & thought process.
- .To deal & manage pandemic problems enhanced adoption of cloud computing by engineering institutions & other organizations is the need of the hour. We have already seen it during the outbreak of pandemic COVID-19 in India & rest of the world
- It's essential to send IT staff to legitimate missions to misuse creative progressions incorporating like Cloud Computing development.
- The managements should hold social events, talks and seminars for IT staff & students at Cuttack District about definition, importance and usage of Cloud Computing Technology.
- Engineering institution's management of cuttack distict & pan India should keep their important data & & information over cloud platform without fearing for security reason what we found from our resarch
- Engineering organizations would find emerging clouds like EduCloud of Microsoft, Google Apps which give Learning Management game plan (LMS) for improvement of showing learning measure.
- Top organization should recognize affectability of various of cloud computing benefit & move step by step in cloud computing development instead of immediately adopting cloud compuitng in an enhanced way.
- Staffs of engineeing institutions of cuttack district should investigate regarding various benefits of enhanced adoption of cloud compuitng.

6.4.FUTURE SCOPES

The future scope of my research topic is very vast. Because during the pandemic COVID-19, we have already witnessed that cloud computing has bceame the backbone of all digital & virtual platform, hence the backbone of life. Here the researcher has confined his study to engineering institutions of cuttack district, Odisha and has successfully found out the benefits of enhacned adoption of cloud computing. So, if the research is further carried out at large scale & national level then the result will be fruitfull & economical & as well as secure for engineering institutions, universities pan India & can bring a revolution in the current education system of new India.

6.5.LIMITATIONS

1] This study is limited to selected engineering Institutions of Cuttack district, Odisha.
2] This study is limited who are in age group of 18-60years.
3] This study is limited who are willing to participate in study.
4] For conduction of this study permission of respective selected engineering institutions was taken.
5] Sample size is confined to 400 due to limitations of time period.

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