ANALYSIS OF DESKTOP OPERATING SYSTEM (O.S.) USED IN HIGHER EDUCATIONAL INSTITUTION (H.E.I) OF KARNATAKA, INDIA

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Abstract: This research paper presents analysis of operating system (O.S) used in computers in higher education institutions (HEI). Regular updating and upgrading to higher version of system software is necessary to ensure the data security and helps to avoid security threats. For this research data is collected through online; data is collected for from 81 higher education institutions of Karnataka, India. In this analysis it is observed that most HEIs are not updating technology and training methods in their premises. We also found that most of the institutions where computer science course is not offered they do not aware of open source software and they think that windows is the only operating system available for desktop computers. By this research we found that only few higher education institutions which offer computer science and computer application courses are recently upgrading their systems to higher versions due to syllabus changes, but still upgrading to newer versions of operating system is not properly managed. From the collected data we could analyse that Windows is most commonly used operating system and Linux or Ubuntu is second most commonly used operating system and no other operating systems are used in any higher education institutions in Karnataka University affiliated colleges.

Keywords: operating system, windows, Linux, Ubuntu, Security, Higher Education Institutions.

I. Introduction:

Operating system is interface between user-application and computer hardware, which is most crucial component of computer. Many operating system is available for desktop computers, in which some are with paid licence and some are open source software-which are available for free of cost. All these operating systems are regularly improved to tackle software and hardware issues. Such improvements are updated in user computers regularly. It is recommended that operating system and other software must be regularly updated and upgraded to the latest versions to avoid data loss and security threats. Data security and integrity is directly related to the operating system. If we do not regularly update operating system there may chance of data loss and users may face several software issues. There are different desktop operating systems available they are Microsoft – Windows, Linux, MacOS, etc. The study aims to provide insights into the prevalence of different operating systems and their usage patterns in the academic setting.

Linux OS is a very popular operating system that is being used all over the world for not only personal use, but also used majorly in supercomputers and data centres. It has replaced Windows and Mac OS due to its numerous advantages in security and versatility of OS. Anyone can use and modify the system to their liking and a large number of distributions run on this kernel.

Although Linux OS is well known for having better security than other operating systems, since most distributions are created with privacy, information security, and anonymity in mind, they are still vulnerable to some attacks. Similar to the risks that most computers face, Linux OS is still vulnerable to viruses that can be downloaded from the internet. This can be prevented by basic security including scanning for viruses, using firewalls and setting up file permissions.[6] Since linux is also an open source platform, new features and security patches are released frequently that allows the user to maintain its security.

Windows is an operating system which was developed by Microsoft and it's first version came up on November 20,1985. It is based on the Disk Operating System(DOS) which is well known for it's black screen and command line. After the release of Windows 95, Windows started dominating the market. This was because Windows 95 was the first one to have Graphical User Interface(GUI) in its front and DOS in back. This was indeed a revolution for a non-computer person. Microsoft Windows is the world's most popular consumer operating system and this is why it is so popular. It is used as a standard in many office environments. But at the same time, this popularity makes it a target for malware. Windows is a closed source operating system where the users or security community doesn't have access to the source code.

Table 1.1. Operating system release and obsolete date

Sl no	Operating System	Release Date	Obsolete Date
1	windows xp	Oct 2001	Apr 2014
2	Windows vista	Jan 2007	Apr 2017
3	Windows 7	Oct 2009	Jan 2020
4	Windows 8	Oct 2012	Jan 2023
5	Windows 10	Jul 2015	Jan 2025
6	Windows 11	Oct 2021	In support

From table 1.1 we can see that many windows operating systems are already obsolete by 2023. Even though Microsoft Company has stopped support to many of its operating systems still many HEIs are actively using these operating systems.

The objectives of the study

1. To identify the types of desktop operating systems used in Higher Educational Institutions (H.E.I).
2. To analyse the features and functionalities of each desktop operating system used in H.E.I.
3. To compare the desktop operating systems used in H.E.I based on their usability, security, stability, and performance.
4. To evaluate the level of satisfaction of users (students, teachers, and staff) with the desktop operating system used in H.E.I.
5. To identify the challenges and limitations faced by H.E.I in implementing and using desktop operating systems.
6. To suggest improvements and recommendations to H.E.I on the selection and usage of desktop operating systems.
7. To contribute to the knowledge and understanding of the use of desktop operating systems in H.E.I and its impact on teaching, learning, and administrative processes.

The importance of the study

1. Understanding the current desktop operating system trends used in Higher Educational Institutions (H.E.I), which can help in making informed decisions in selecting and implementing the most suitable operating system.
2. Enhancing the effectiveness and efficiency of teaching, learning, and administrative processes by choosing the most appropriate desktop operating system that meets the needs and preferences of students, teachers, and staff.
3. Identifying the challenges and limitations faced by H.E.I in using desktop operating systems and suggesting recommendations for overcoming those challenges.
4. Contributing to the knowledge and understanding of the impact of desktop operating systems on the performance and productivity of H.E.I.
5. Providing insights into the level of satisfaction of users (students, teachers, and staff) with the desktop operating system used in H.E.I.
6. Assisting H.E.I in making informed decisions on the selection, usage, and maintenance of desktop operating systems, which can lead to cost savings and improved efficiency.
7. Informing future research studies and developments in the field of desktop operating systems and their impact on Higher Educational Institutions.

Methodology:

This research paper describes which operating system is used most in the HEIs of karnataka, India. The study was conducted by surveying HEIs of Dharwad (26 HEI), Gadag(15 HEI), Haveri (25 HEI), Uttar Kannada(15 HEI) districts in Karnataka, India. A total of 81 HEI's were included in this study, and primary data was collected from the HEIs through Google form questionnaire method. I used random sampling of HEIs which are karnatak University affiliated institutions. Karnatak University, Dharwad affiliated colleges are spread over four different districts of karnataka, they are Dharwad, Gadag, Haveri, Uttara kannada. While collecting factors also considered are whether HEI is operational in rural or urban area, whether HEI is government or aided or un-aided. The questionnaire included questions related to the types of operating system used, the version of the operating system and the number of computers running each operating system and for what purpose that particular desktop is used; like used for

laboratory or administrative works. Data collection for this paper is done in the March,2023 to know whether HEIs are technically updated or not.

Results

Only Windows operating system is used in office computers in HEIs of Karnataka, India. Windows 7 operating system is found most convenient for office staff.

Windows operating system is used as primary operating system in laboratory for students' training purpose. Ubuntu operating system is used as secondary operating system which is used with windows 7 or windows 10 operating system in technical course offering HEIs. Other HEIs who do not offer technical course and offers only arts stream use only windows operating system.

The following results found in this research,

Table 1.2. O.S. used for administration /office desktops

O.S.	HEI count	Percentage
windows xp	4	4.94
windows 7	49	60.49
windows 8	2	2.47
windows 10	23	28.40
windows 11	3	3.70
Linux	0	0.00
Others	0	0.00

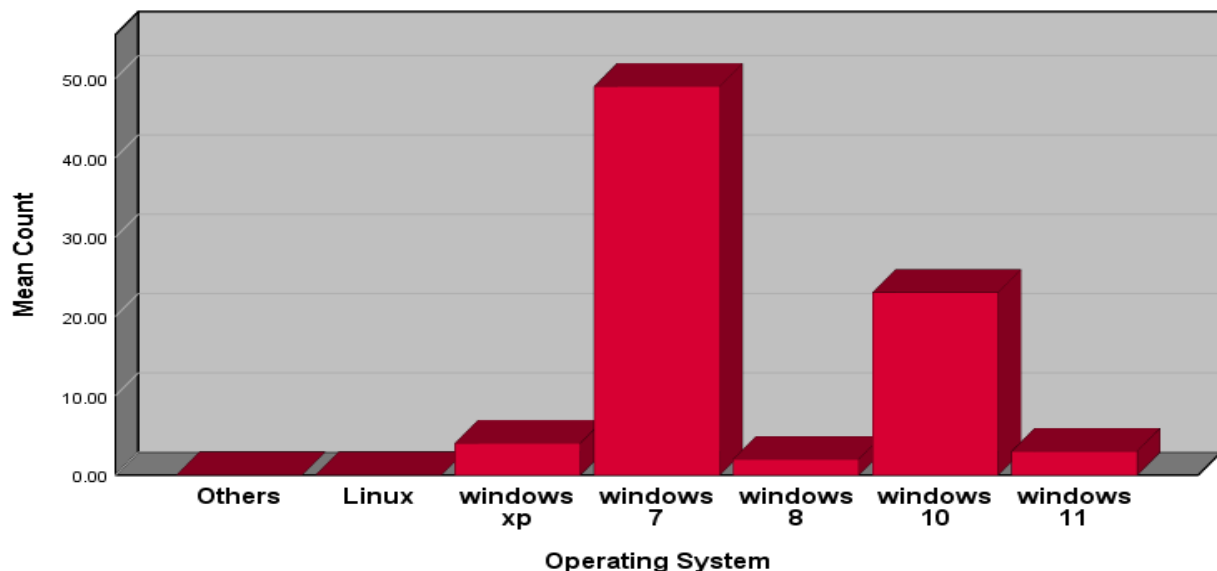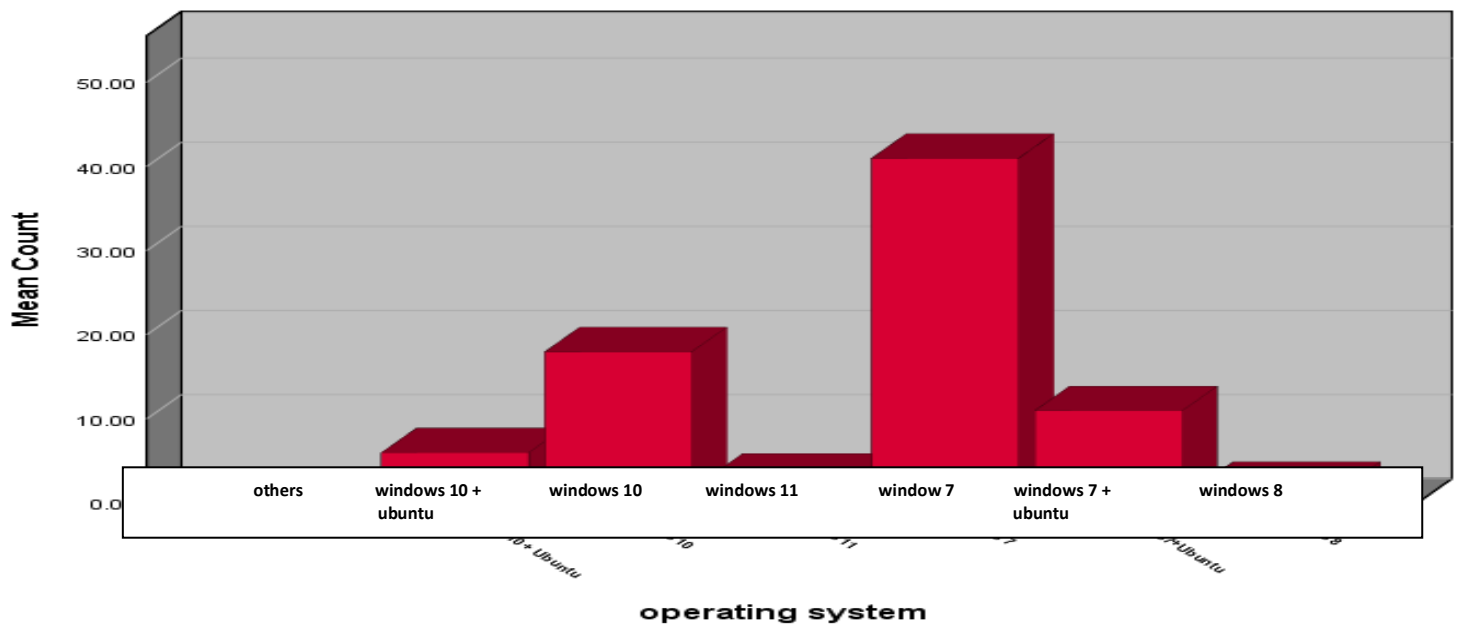Operating System used for Office/Academic purpose in HEIs

Table 1.3 O.S. used for students training purpose.

Type of HEI	HEI Count	O.S.	Percentage
Non-technical course offering HEI	41	windows 7	50.62
	2	windows 8	2.47
	18	windows 10	22.22
	3	windows 11	3.70
Technical course offering HEI	11	windows7+Ubuntu (Multi OS)	13.58
	6	window 10 + Ubuntu (Multi OS)	7.41
	0	Others	0.00

Discussion:

There are several researches available to find out which of the operating system is most popular in the world, but on this topic particularly in Karnataka, India found very less researches. The findings of this study show that Windows is the dominant operating system in HEIs of Karnataka, India, which is consistent with global trends. Linux operating system is not as popular as windows, has a significant presence in the academic setting.

Though there are several work on this topic and many researchers have given in the result that windows is most commonly used operating system, aim of this study was to find out which version of the operating system is most used in HEIs and whether HEIs are aware of the updated versions and obsolete operating system. But this research indicates that most of the HEIs are not aware of the obsolete and new version of operating system. We found that HEIs in Karnataka, India are not much worried updating their operating systems. The most HEIs which offer non-technical course are yet using very old and obsolete windows operating system. From study we also found that these HEIs are not even aware of the open source operating system and most of them think that windows is the only operating system available for computers. The HEIs which offers technical courses like computer science have started recently updating their system to newer version of operating system.

Ubuntu operating system is used as secondary operating system, used only for students training purpose. Research indicates that only HEIs which are offering computer science and computer application are using Ubuntu operating system in laboratory computers.

This analysis show that only two operating system windows and Ubuntu used in HEIs for students' training purpose and only windows operating system is used for office computers.

Office staffs feel windows as convenient operating system. Teachers and students of non-technical HEIs also are comfortable with windows and they don't want to move from windows to Linux. But due to syllabus factor technical course teachers and students are studying Ubuntu and still not comfortable with this operating system.

Conclusion:

The study provides insights into the prevalence of different operating systems used in undergraduate colleges in Karnataka, India. The dominance of Windows is consistent with global trends, while the significant presence of Linux in the academic setting highlights its suitability for educational purposes. The study can serve as a reference for decision-makers in the academic setting in choosing the appropriate operating system for their institution.

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