CASE STUDY

WINDOWS -

Windows Operating System was introduced into the market in the year 1985, and as a robust and comprehensive kind of software, has almost 90% market share over and above other operating systems. With its great and dominant presence in commercial buildings, industrial facilities, as well as its obvious presence as home computers. Although this assertion is believed not to be so again as a result of overwhelming people's interest in open-source operating systems. The Microsoft Operating System as a family of Microsoft Windows was created as a graphical layer over that of old MS dos with its root from MS-DOS Command line and this it retains till date with DOS Box command prompt that is cmd.exe. Original Windows NT core happens to be the first to take shape in an operating system upon which modern versions are dependent. 32 and 64-bit AMD and Intel systems accommodate Windows OS, DEC Alpha, PowerPC architectures Windows OS, and MIPS is also comfortable with recent versions, likewise low and mid-range servers. Database and web servers also allow Windows operating system to use them. In recent years, Microsoft has proofed significant with marketing and with its finance to establish that Windows interoperability is not in doubt and that it has all that it takes as a platform to run any enterprise application.

Merits of Windows OS

- Technical/Maintenance support: Support is made available either online or offline because of its general acceptability by so many users.
- Compatibility: Windows accommodates almost every application, game works, and different types of drivers.
- Enormous quantity of functions: Getting used to Windows, one would realize that there are many functions one can do almost anything quite easily with when call up.

Demerits of Windows OS

- Viruses: Need to purchase antivirus programs that need to be activated frequently, and this can be done on Auto or Manual mode, although free antivirus exists but with limitations.
- Slow: Windows operating system, particularly Vista and Windows 7 needs a lot of system resources like registers, cache, main memory, processor, disk space, and this makes the system runs slower.
- Price: The cost of purchasing Windows operating system is high and very few users can afford it and this necessitates cracking and makes pirated software versions available.

LINUX -

The GNU's answer to MAC and also Windows is Linux. Yes, what this means is that Linux is a FREE OS, one can perform downloads, modification, and also redistribution without any

cost. Linux is relatively new in the operating system realm. It was written in the year 1991, and also enhanced for current usage. Linux and Windows can be compared to an entity whose floor and roof are either replaceable or not. However, with Linux, as an entity, both floor and roof can be moved in any manner as one want, but Windows floor and roof are very rigid that it remains immovable. One cannot go beyond what Microsoft has designed Linux, designed by Linus Torvalds in the year 1991, heads a group of fresh school open-source Unix's that came to be in the year 1990, it also includes FreeBSD, NetBSD, OpenBSD, and Darvin. All these are a representation of a design direction that the whole group agreed upon. Linux code is different compared to the original UNIX source tree code, however, it uses UNIX standards to behave like a UNIX. Developers in Linux open-source community have a desire to acquire a substantial share of end-user desktops making Linux's intended users increase in number than the users of the old-school Unix's, who have fear share desire in the server and workstation market. The aspiration to reach end-users made Linux developers much more concerned with ease of installation and in resolving software distribution issues as it was more difficult with UNIX as proprietary systems, applications in Linux are forced to display a high degree of ruggedness than their colleagues with proprietary UNIX status.

Merits of Linux OS

- Price: Linux is FREE. It can be downloaded, installed, used, modified without incurring any cost.
- Variety: Linux is nowhere a complete OS but a kernel. The fact that it is a kernel, requires additional ad-ins in form of software. Many of these kinds of distributions or distros exist.
- Virus: The fact that it is open-sourced, it is less vulnerable compared with Mac, does not mean that it's free from virus attacks.

Demerits of Linux OS

- Complicated: A good deal of Computer skills are required to use Linux distros even when some of them are quite easy to use.
- Compatibility: Although Linux has a few percent of the market share like Mac, however, it does not have many programs and games like that of Windows.
- Vendors: Linux has very few vendors selling Linux computers, if one needs a Linux computer, then it might be that one will need to purchase a Windows computer, reformat the hard drive, and then install Linux on it.

MAC OS

Mac OS is much older than Windows OS. It was released one year earlier than its Microsoft counterpart, and it happens to be the first among other OS, ever successful graphical-inclined OS. Mac OS has undergone, two important design transitions, and is on its third stage. The

first transition was from supporting only a single application at one time to the ability to cooperatively multitask multiple applications (MultiFinder); the second was the transition from 68000 to PowerPC processors, the third was the coming together of Mac OS design ideas with a Unix-derived infrastructure in Mac OS X. Mac OS has very high unifying idea significantly different from that of Unix's, this is the Mac Interface Guidelines. These explain a great detail of what an Apps Graphical User Interface is supposed to depict with its expected behavior. One major idea of the Mac Interface Guidelines is that everything should stay where they are kept. Mac operating system apps are termed not huge monoliths. The system's graphic user interface (GUI) supports program instructions or codes, which are partially implemented in a ROM conveyed with the hardware and partly implemented in shared libraries, communicates easily with Mac OS software programs through a quite stable event interface. Hence, the operating system design encourages a distinct and clean separation between the GUI interface and the application engine. Leading-edge Unix's like Linux OS is beginning to borrow ideas like file attributes from Mac OS.

Merits of Mac OS

- Viruses: Apple Macs get almost no viruses. This is because Windows has a very large and superior market share over other OS.
- Reliability: Apple computers offer themselves for Macs to run only on it, and hence less prone to the crashing of hardware and software.
- Looks: often time, Mac seems to look better than its counterpart, windows OS.

Demerits of Mac OS

- Expensive: The cost of purchase of Mac is more than that of Windows.
- Only available on Apple computers: Already having a computer system that is not an Apple, one will not be able to install MAC in such a system. Otherwise, one will need to purchase a new computer system.
- Compatibility: Very few programs can only run on MAC OS, likewise computer games.

DIFFERENCES

- **Cost/Price:** A significant factor to consider is pricing, and as such, it kicks off this list. The macOS is strictly for Apple's hardware, the Macintosh PCs. And depending on the model, the price of a new Macintosh could run into thousands. Windows, on the other hand, can run on external hardware of several manufacturers. Also, Windows and its associated hardware are relatively less expensive. However, you'd still exchange a few hundred bucks for a decent Windows PC. As part of GNU's software licensing, Linux is entirely free to download, alter, and redistribute!
- **Gaming:** There's a vast collection of games available for Windows, majorly due to its wide usage. If you're a gamer, that's good news. Windows-based PCs also benefit from a wide range of graphics cards and gaming hardware upgrades. There are games

for Mac, but it doesn't compare to that of Windows. As for Linux, the available games are relatively few.

- **Ease of use:** Setting up and getting started with Windows is pretty much straightforward. It's one of the reasons why you'll find Windows PCs in several homes and businesses. Mac is easier to use compared to Linux, especially for first-time users.

- **Security/Virus Proof:** Asides from the regularly provided security patches and updates from Apple, macOS is less prone to security attacks due to its closed source software licensing. Due to its open-source licensing, Linux is more vulnerable than a Mac but has less malware developed for it as it's less popular. However, being open-source, Linux has a large community base to help anytime a security breach occurs. Of the three systems, Windows is the most prone to virus attacks due to its popularity among users. And as you'd expect, there are large numbers of malware developed for it. Notwithstanding, several free and paid anti-viruses offer security for Windows users.

- **Percentage of Usage/Popularity:** In a published report by Statista, Windows has 70.92% of the market share for laptop, tablet, and console operating systems making it the most popular OS worldwide. macOS follows with approximately 16% market share and lastly Linux with about 2%.

- **Hardware Support:** macOS shines in this category as it is only available on Apple hardware. As a result, it offers a reliable hardware-software integration that delivers the best results. Linux and Windows, however, can be used on a wide range of computer hardware. Although, stability issues may arise as a result of differences in hardware configurations.

- **User Target Group:** Windows is relatively cheaper than the Mac, so it targets people of all ages and socio-economic classes, making it suitable for many homes and businesses. Mac is more prevalent among creatives – video editors, graphic designers, and animators. For people looking to spend more on something classy and different, Mac is a great option. Linux generally finds popularity among techies – developers and programmers. And that's because Linux is open source, doesn't track its users' digital footprint, and provides a graphical user interface (GUI) or a command-line interface (CLI) for simple and advanced customization.

- **Where they are used:** Desktops, laptops, smartphones, and other devices run on the Windows operating system. Computers, servers, and several embedded systems use Linux. Mac is primarily used on desktops and not recommended for servers due to its high cost.