

Feasibility of BYOD in the Tertiary Institute of Bhutan

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Abstract

The Bring-Your-Own-Device (BYOD) is a trend whereby the individuals bring their personally owned computing devices to the place of learning or the workplace. This trend is said to bring in several advantages as well as disadvantages. The objective of this study was to assess the feasibility of introducing BYOD laboratories in a tertiary institute of Bhutan and propose a modality of BYOD laboratory based on the ownership of the prospective computing devices and the willingness of the owners to use in their devices in their learning place. A survey was conducted in the institute based on the questionnaire to collect the data from the students for which 475 students responded to the questionnaire. It was found that the ownership of prospective computing device for the BYOD laboratory among the students was high in the institute. A modality for the BYOD laboratory is also proposed considering the individuals not owning and also the device owners not willing to use the devices in the learning place.

Keywords: Bring Your Own Device (BYOD), BYOD in Higher Education, Labs, Feasibility, Higher Education

I. INTRODUCTION

These days the work of smart services has spread due to the rise in the use of personal devices. This phenomenon brings to the advent of BYOD era where individuals use their smartphones and personal computers in their work environment. BYOD is one of the general terms of technology and policy for employees to use their own devices while doing their work (Franch, 2012). He further expressed that most of the European colleges have adopted the BYOD and they have found the positive impact on the course of teaching and learning. Accepting the BYOD trend in the College would bring about the change in the way of teaching and learning.

At present Jigme Namgyel Engineering College (JNEC) provides desktop computers for the students to use for the teaching and learning sessions spending a considerable amount of budget on the purchase devices for augmenting the computing laboratory infrastructure in all the departments of the College. On the other hand, due to affordability, a majority of the students are found to be owning laptops for their personal use. This has given rise to the notion of allowing the students to bring their personal laptops into the computer laboratories. Although an insufficient number of college-provided desktop computers and non-working computers in the laboratory is a rare situation; it is likely to arise in the due course of time. If BYOD replaces the current trend, we foresee an agreeable amount of cost savings on the purchase of desktop computers.

This study was aimed at assessing the possibility of implementing the BYOD laboratory in the College based on the students' affordability, the willingness of the students to use in the campus and the likely software support by the laptops owned by the individual students thereby saving the cost of purchase without compromising the academic quality. Basically, this study was driven by the following questions:

- How many students own personal laptops?
- Would their laptops support the intended software used for teaching and learning?
- Will the students be willing to use their laptops in the classes?

II. LITERATURE REVIEW

The “Bring Your Own Device” is a recent trend where employees bring their personally owned computing devices to the workplace which is gaining momentum in the workplace. The concept of BYOD replaced UWYT model which stands for “Use What You Are Told”. They are opposite models when compared to each other (Singh, 2012).

According to Singh (2012), the threats which comes along with the implementation of the BYOD policy are risk to the corporate IT security, lack of control over the devices and complexity involved in setting up while some of the major benefits are improved efficiency and productivity, higher job satisfaction, increased mobility, advantage over the other competitors.

The BYOD programme for laptops, BYOD programme for smartphones, BYOD programme for tablets and BYOD programme for home desktop computers are some of the types deployed in the organizations (Singh, 2012).

According to Leavitt (2013), the concept and the trend of BYOD began to surface in 2003 but gained momentum in 2011. It was pointed out that mobile device management (MDM) applications were developed in order to address some of the challenges regarding the mobile devices such as management of the policy, software distribution, and the management of the inventory.

In a study conducted by Olalere et al (2015), it was reported that BYOD had become prevalent in both emerging economies and developed countries.

When employees have the flexibility to choose the best device for their office work, they become more mobile and productive. The business benefits by having access to its employees anytime, anyplace, blurring the work-leisure divide, and it may save costs by having employees purchase their preferred device rather than providing devices out of the corporate budget (Mahesh & Hooter, 2013).

In a study conducted by one of the security vendors, Trustwave revealed that 90% of vulnerabilities common in desktop computers were also present in mobile devices, regardless of the operating system (Leavitt, 2013).

III. METHODS

A survey was conducted from February 10, 2018, to March 09, 2018 in the College which included all the students from across all the programs. A questionnaire was administered to the students which contained variables on the device ownership, device configuration and the willingness of the device owners to use the device in the Labs. All the collected data were checked individually for the completeness and consistency, and then the data was analyzed. Prior to the data collection, participants were informed about the purpose and objective of the study and they also informed of their rights to refuse to participate. In addition, the participants' consent was obtained verbally and the confidentiality and privacy of the data collected were maintained.

IV. RESULTS

A. Demographic Characteristics of the Study participants:

A total of 475 students participated the in the survey.

B. Device Ownership:

From the total of 475 respondents, 69% (326) of the respondents owned laptops while 31% (149) did not own.

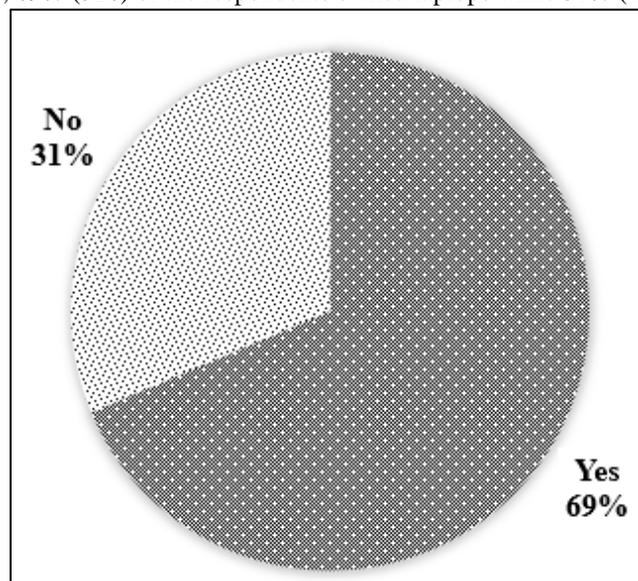


Fig. 1: Percentage of respondents owning the Laptops

C. Laptop Brands:

From the total of 326 laptops owned by the respondents, 60.74% (198) of the laptops are of the Dell brand, followed by HP brand (18.71%). Only 4 respondents owned the Mac laptops.

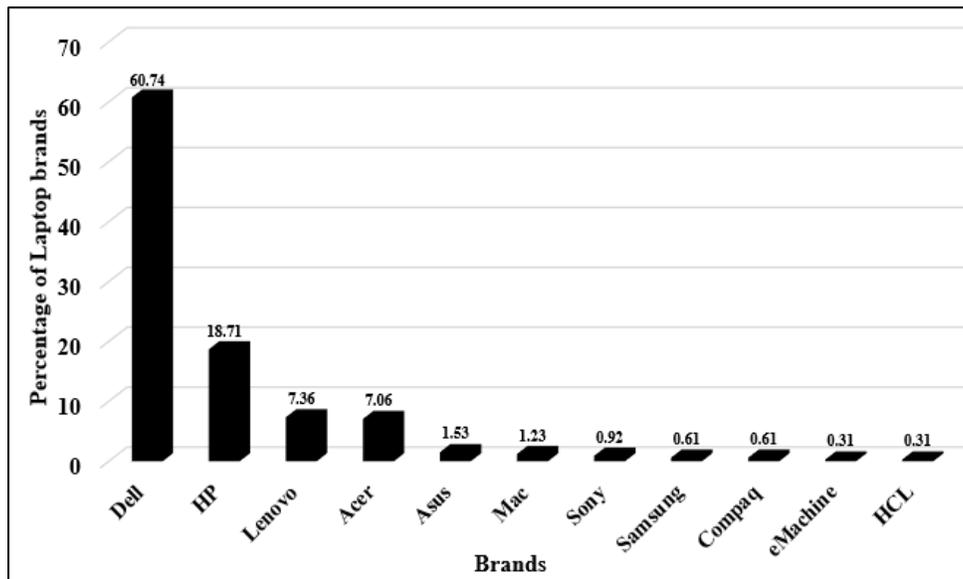


Fig. 2: Percentage of Laptop Brands

D. Amount of RAM Available:

More than 84% of the laptops owned by the students had 4 GB size of the physical memory (RAM) installed, followed by 2 GB (8.59%).

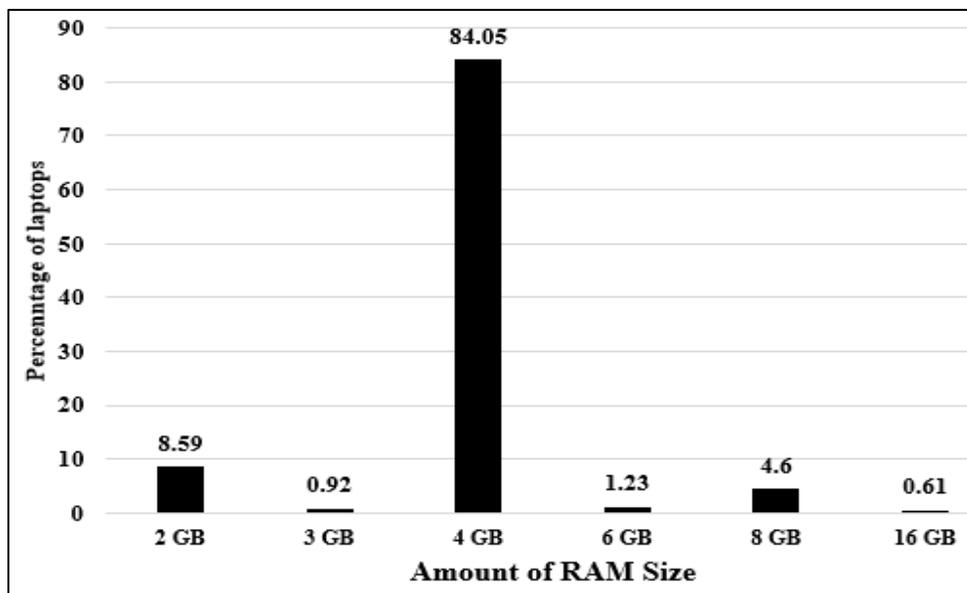


Fig. 3: Percentage of laptops with varying RAM sizes

E. Processor Brands and Models:

A considerable percentage (69.33%) of the respondents' laptop had the processor model of Intel Core i3 variants followed by i5 with 20.25%. It was found that 98.16% of the processors belonged to the Intel family while only 1.84% of the processors were of the AMD processor family.

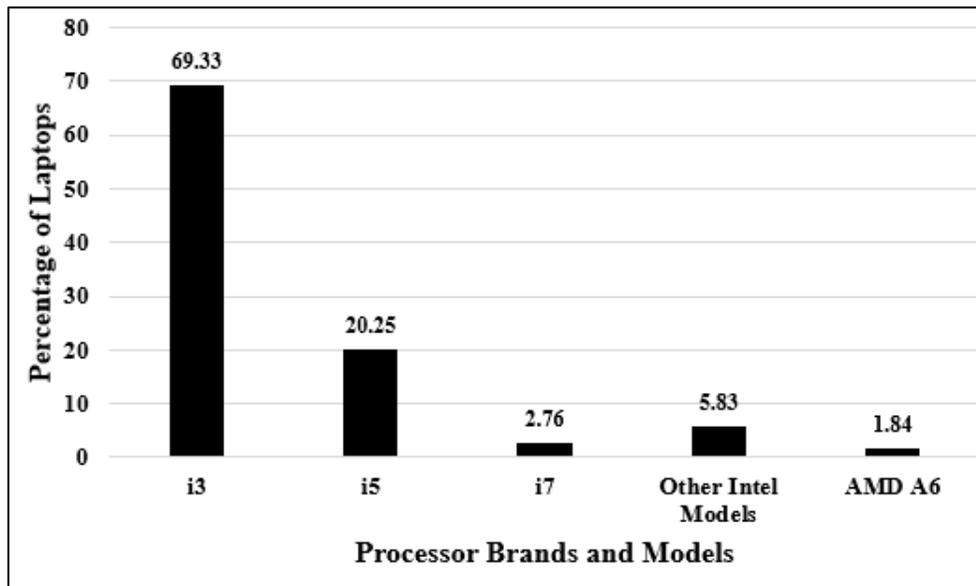


Fig. 4: Percentage of laptops with various processors models

F. Willingness to Use:

From a total of 326 who owns the laptops, 67% showed the willingness to use their laptops for teaching and learning purpose while rest of those who owned laptops declined.

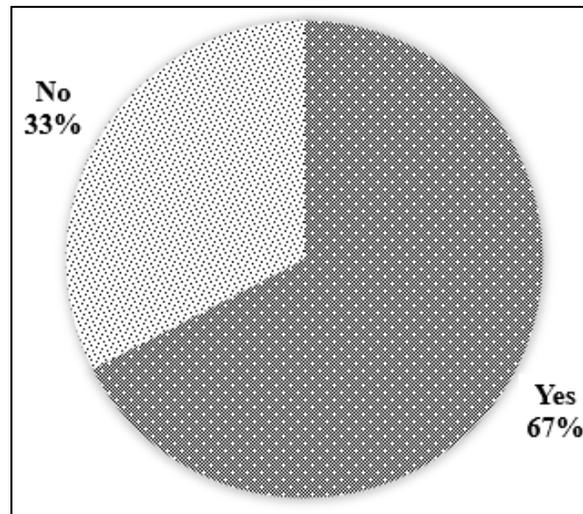


Fig. 5: Percentage of laptop owners willing to use in the Lab

V. DISCUSSION

The purpose of the study was to assess the feasibility of introducing the BYOD in the College based on the ownership, possibility of the software and application support by the student-owned laptops and finally the owners' willingness to use their laptops in the class. From the survey, it was found that the laptop ownership is 69% of the total. However, for what purpose the laptops are being owned and used is not known. Knowingly or unknowingly, accepted or not, the BYOD is already trending in the College. In the survey conducted, it was found that college students preferred using laptops over tablets for learning (Seide, 2015). The percentage of the device ownership is expected to increase every year.

More than 90% of the laptops owned by the students had the physical memory size of 4 GB or greater. So by an average, most of the engineering software and applications can be supported with the RAM size of 4 GB or higher, which indicates that the majority of the software applications used for delivering the courses would be supported by a majority of the laptops when it comes the memory requirement. It is believed that approximately 9.51% of the total laptops owned by the students are unlikely to fully support processor and physical memory-intensive software applications used in the teaching and learning.

As indicated in the survey, 33% of the laptop owners showed their unwillingness to use their laptops in the labs in place of the college-provided desktops for unknown reasons. This could be a decision-making point when it comes to the introduction of BYOD labs in the college when there is a number of device owners willing to use only the college-provided desktops or laptops.

VI. CONCLUSION AND RECOMMENDATION

The cost-saving benefits of the BYOD implementation is foreseen if at all the implementation is possible. However, from the study it was found that the implementation of the full BYOD is not practically possible because some students don't own the devices, from among the owned laptops there are devices with 3 GB or lower physical memory which are likely to cause problems during the use and moreover unwillingness shown by the students to use their device in the labs in place of the college-provided laptops or desktops. This leaves with the 42.94% of devices which can possibly participate in the BYOD lab.

The implementation of a Partial BYOD is found to be feasible in the College, for which it is recommended to continue the current practice of providing the desktops or laptops for use in the laboratories for use to those who don't own and to those who are not willing to use their own devices for unknown reasons.

In the future, the software applications used for teaching and learning, and their hardware requirements can be studied in addition it would be enriching to seek the possible reasons for the students' unwillingness to use their devices in place of the college-provided desktops and laptops.

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