

Factors Affect APCS Students' Purchase Behavior towards Laptops

Nguyen Phuc Nguyen

Advanced Program in Computer Science
Faculty of Information Technology
University of Science, VNU - HCM
npnguyen@apcs.vn

Nguyen Huy Hoang

Advanced Program in Computer Science
Faculty of Information Technology
University of Science, VNU - HCM
nhhoang@apcs.vn

Nguyen Dinh Hieu

Advanced Program in Computer Science
Faculty of Information Technology
University of Science, VNU - HCM
ndhieu@apcs.vn

Abstract—Laptop market is a highly competitive market. Therefore, consumers have a wide range of options to choose from, which makes their purchase intentions and behaviors affected by various factors. The authors investigate and evaluate various factors influencing purchase intentions of Advanced Program in Computer Science (APCS) students. There is a similar study conducted by An Giang University students in 2013 for consumers in Vietnam but the authors want to focus on APCS students who tend to have higher understandings about computer. The data is collected and analyzed from 40 APCS students through an internet survey. The results of the study reveal that over 87.1% APCS students are influenced by Price, System Specification, and Branding. The authors believe the outcome can be used to help marketers understand how different factors influence consumer purchase intentions and behaviors, so that marketers can consider using these factors accordingly for an effective selling strategy aiming towards Computer Science students with a larger scale study in the future.

Keywords—Laptops, Consumer Behavior, Purchase Behavior

I. INTRODUCTION

In every aspect of life from entertainment to academics and business, laptops are used due to their convenience and portability, which push the demand for laptops in the worldwide market [1] [2]. In 2013, the laptop market had 180.9 million unit shipments and made up 11.6% market share of smart connected device market worldwide [3]. With laptops made by many manufacturers like Asus, Dell, Lenovo, HP, Apple and others, the laptop market is a competitive market (Fig.1). This provides a wide range of choices for consumers making their buying behaviors towards laptops affected by various factors.

Kotler and Keller define Consumer Buying Behavior to

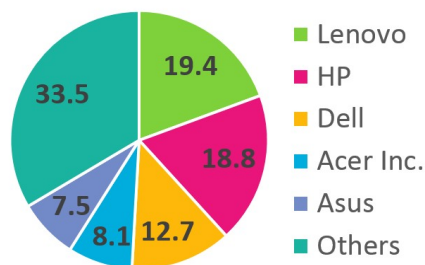


Fig. 1. Worldwide Laptop Market Share 4Q14 (%) [4]

be the study of the ways of buying and disposing of goods, services, ideas or experiences by the individuals, groups and organizations in order to satisfy their needs and wants [1]. According to Vijay R. Kulkarni, Brand, Specification, Price and After Sales Service are the factors affecting the Buying Behavior of students when buying laptops. [5].

Pinki Sharma proposed Price, Friends/ Family member, Brand image, Features and Technology, After sale service always affect the purchase decision of laptop for management and engineering students in India, an Asian developing country like Vietnam [6]. In Vietnam, An Giang University conducted a similar study in 2013 with students who major in Economics and found that model design is one of the most influential factors on consumers Buying Behavior [7]. The authors want to verify those results with APCS students in Ho Chi Minh city, Vietnam, who tend to have significant understandings about computers.

The authors design questionnaires and simulations of real life purchase situation to collect data from APCS Students. The result is then analyzed by the authors to identify and evaluate factors affecting APCS students purchase decision towards laptops. The authors also propose suggestions for marketers to improve marketing strategy aiming towards Computer Science students.

The sample size for the questionnaire and simulations is 50 APCS students. Data is collected by using internet survey with Google form. Collected data is presented graphically with bar charts and pie charts to analyze and draw conclusions.

The results reveal that 87.1% of the participants mostly affected by three main factors: Brand, Specification and Price, which is also the top 3 factors identified by Pinki Sharma [6]. It is also noted that Specification is preferred by 15% more than Brand and 20% more than Price although An Giang University concluded Price as the most important factor considered by consumers when purchasing laptops [7].

After this first introduction chapter, backgrounds and related works are reviewed in chapter II: Literature Review. Methods of collecting and analyzing data are shown in chapter III: Experiments. The main focus of this study, results and data analysis as well as interpretation are presented in chapter IV. Conclusion & Future Work are in chapter V.

II. LITERATURE REVIEW

A. Background

Laptops are self-sufficient computer systems which are completely portable with internal power sources, typically batteries, making them completely portable [8]. A laptop combines the components and inputs of a desktop computer, including display, speakers, keyboard and pointing device (such as a touchpad or a trackpad) into a single device [8]. The first commercially available portable computer, IBM 5100, was released in 1975 and laptops have been continuously evolving ever since [5].

Technically, laptops and notebooks are different in size. A notebook is lighter and has a smaller display of 12 inches while a laptop is heavier and can have a display of up to 20 inches. But technology advancements made it possible to fit stronger parts into a smaller package, the terms laptop and notebook can be used interchangeably [9].

Laptops have many applications in business, education and entertainment [6]. Laptops productivity and portability make them an important part of students study kit as personal environments for learning. Students prefer laptops to desktops because of the convenience they provide [2].

Consumer Behavior is consumers process of selecting, buying, using, and getting rid of products and services to satisfy their needs and the impacts of these processes have on the consumers and society [10].

Sandhusen proposed the Black Box model showing the stimuli and buyers response to study Consumer Behavior [11]:

- Environmental factors consisting of Marketing Stimuli such as product and price and Environmental Stimuli such as culture, economy and politic.
- Buyer's black box consisting of Buyer Characteristics such as perception, lifestyle and motivation and Decision Process from recognizing the product to post-Purchase Behavior.
- Buyers response as a result of environmental factors and buyers black box including product choice, Brand choice, dealer choice, purchase timing and purchase amount.

Purchase Behavior is the social and mental process of making decisions and taking actions of customers when buying and using products [1] [12]. It is an important factor to be taken into account in any marketing strategy [2].

Purchase Intention is an individual's readiness and willingness to purchase a certain product or service [13]. Purchase Intention should be considered by both consumers and marketers because it triggers consumers decision of buying a certain product or service and can be used by marketers to endorse their brands [2].

B. Related Works

In 1992, Geisler and Hoang identified the five stages in the process of buying an IT product [14]:

- 1) Establish the need for the IT product.

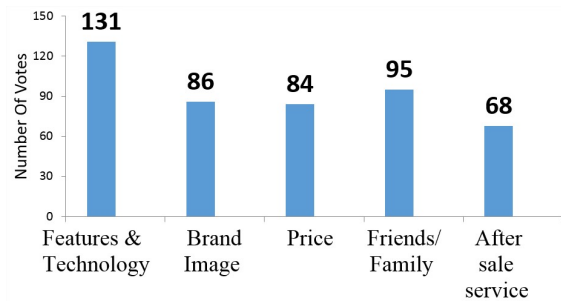


Fig. 2. Number of votes for factors always affect purchase decision in India [6]

- 2) Determine where to use the product.
- 3) Select the technology.
- 4) Select the suppliers.
- 5) Authorize the purchase.

In India, during the year of 2012, Pinki Sharma conducted a survey with sample size of 150 students from different management and engineering colleges from Rohtak and Bahadur Garh city. The result reveals these 5 factors most affect laptop purchase decision: Price, Friends/ Family member, Brand image, Features and Technology, After sale service (Fig.2).

Students Buying Behavior towards laptops is affected by various factors. During the years of 1996-1997, Jarvenpaa and Tedd proposed these factors to be: product understanding, shopping experience, customer service, and consumer risk [15]. But in 2002, it is thought that because of lacking information and simplifications, the various factors evaluated by consumers when buying laptops are abstracted into few perceptual dimensions such as price and usefulness [16]. Factors subjective to consumers like consumers demographic profile and brand perception were not considered.

Students hold a big share in the laptop market [6] so studying factors affecting students Purchase Behavior towards laptop is important for laptop manufacturers [7].

Students process of making a purchase decision differs from other consumer category because of their particular perception of products and their budget [17]. Therefore, students Purchase Behavior towards laptop should be studied distinctively.

In 2005, Hoskins proposed the factors affecting students Purchase Behavior towards laptop were portability, convenience, tough, powerfulness, affordability, size, sturdy, connections, technical specs, battery life, price and laptop security [17]. Surveys in America and India in the same year and in 2006 also confirmed these factors [6].

Two years later, Rockman stated that students social class and brand loyalty were the key factors in students process of buying laptops. Other factors subjective to students like the feeling of pride of ownership also have a great impact [18].

While finding a connection between consumers psychological factors when purchasing laptops such as motivation and pride of ownership with brand related criteria such as brand awareness and loyalty, Farzana found that they work separately in 2012 [19]. Furthermore, studies conducted in India proposed

factors from manufactures and sellers such as price, configuration, and after-sale service have bigger influence on consumers Purchase Behavior than factors subjective to consumers [6].

A study conducted by An Giang University in 2013 on student major in Economics showed that factors like how the laptop looks, price and brand are the most important factors influencing students Purchase Behavior towards laptop [7]. In the same year, Vijay proposed Brand & Features, Price, Visibility & Service Center, Reliability & Responsiveness, Warranty, Guarantee & After Sales Service as the key factors and a laptops features is the most influential for Engineering and Computer Science Students [20].

III. EXPERIMENTS

In this chapter, the authors describe the work setup and overall of the two-part experiment: Survey & Simulation in section A. Furthermore, the main work with in-depth explanation, analysis on Survey and Simulation are presented in sections B and C sequentially.

A. Experiment Setup

The experiments objective is to obtain the most reliable data on the decision making in choosing laptops of computer science students who tend to have a deeper knowledge about computers. Due to that purpose, the authors focus on students from Advanced Program in Computer Science, University of Science, VNU HCM, who hold widespread knowledge about computer in general.

To be more specific, from January 24th to January 29th, 2015, the authors decide to conduct experiments on 44 APCS students. Due to shortage of time, the authors could not expand the sample size in order for more precise data.

The main work consists of two parts: Survey and Simulation. After serious consideration, the authors agree that it is inefficient to just only conduct survey since participants may give spontaneous feedbacks and not the real response or attitude during their laptop purchases. The authors believe the experiment could be improved by adding realistic laptop purchase simulations.

Moreover, thorough analysis could be conducted by comparing the participants answers when they are taking surveys and those when they are taking the simulations. The result is more profound and sufficient as the authors could acknowledge the similarity as well as the difference between partakers answers in two separated conditions. The result is used to discover factors most affect students and those are just their common myths.

The authors mean of conducting survey and simulation is internet survey creator tool known as Google Forms authorized by Google. This tool is chosen because of its fast and convenient survey setup and save time assembling data.

B. Survey design

There are two main things need clarifying in this section. To begin with, the authors wish to acknowledge the number of times participants have actually been in a real life laptop purchase. Furthermore, the authors also desire to learn the

spontaneous choices of partakers when asked about which factors affect them most in a laptop purchase.

In the first question, the authors want to distinguish types of participants, those who have never purchased laptops before and those have done it once or twice or even more. The authors believe that viewpoints vary among each type of partakers which affect directly to their ideas and attitudes towards factors that most affect their laptop purchases.

The next step is obviously that participants are asked:

Which factors most impact you when purchasing laptops?

- Features & Technology
- Brand Image
- Price
- Friends /Family member
- After sale service
- Others

The authors choose these five factors since they are the most accepted factors in Pinky Sharmas work [6]. Therefore, the authors goal is not only just to verify if these factors could be applied in Vietnamese culture, but since Pinky Sharmas objects are Management and Engineering students [6] which differs from the authors objects are Computer Science students, the authors aim for acquire the similarity as well as difference between two areas of expertise in order to find the best strategy for each field of study.

C. Simulation design

The fact that customers have a wide range of choices when purchasing laptops makes it very difficult to simulate such massive sample size. Therefore, the authors decide to apply ordered relations between two separate objects in this sample space.

The difference between two laptops could some parts in Features & Technology or in some cases just their brands if they have the same configuration. There are 10 simulations which includes laptops from various brands and configurations. For each simulation, participants could choose one or none at all. After that, partakers are asked to choose from five factors mentioned in Survey section which one most affected their choices. An example of a simulation is shown in Fig.3.

D. Limitation

- Due to the fact 44 students is not a very big sample size, which may not be representatives of all Computer Science students
- Time constraints which there was not enough time to collect larger data and make a more in-depth analysis

The authors believe that such disadvantages could be managed in the future, with extended scale of the experiment.



Fig. 3. Simulation sample

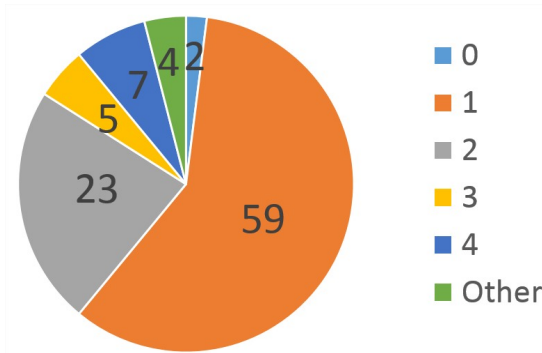


Fig. 4. Amount of participants' laptop purchase(s) (%)

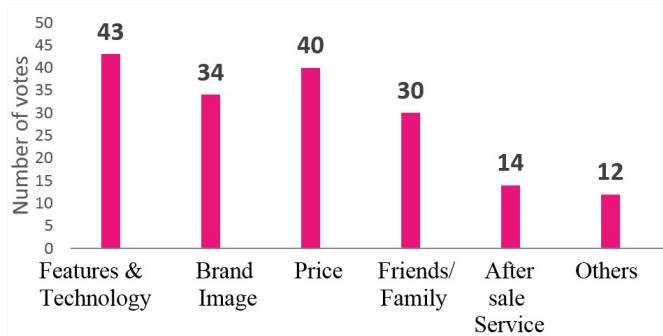


Fig. 5. Number of votes on factors that affect participants' choice in Survey

IV. RESULT

A. Survey result

Fig.4 shows participants' answers when asked how many times they have purchased laptops.

It can be seen from Fig.4 showing the number of laptop purchase made by participants that 98% of participants have at least purchased laptops once.

The number of votes on factors that affect participants' laptop choices as shown in Fig.5 identifies Features & Technology, Brand image, Price, and Friends/ Family members as the 4 dominant factors considered by APCS students when purchasing laptops.

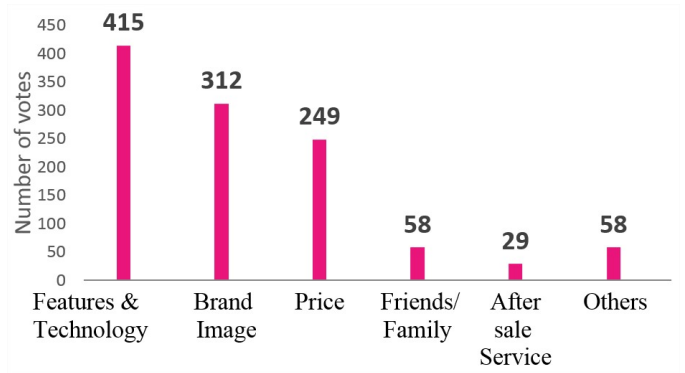


Fig. 6. Number of votes on factors that affect participants' choice in Simulation

Features & Technology, Brand image, Price, and Friends/ Family members are chosen by over 60% of participants. It is also noted that the factor Features & Technology has the most number of votes at 98% possible votes. This result is similar to that of Pinki Sharma's study conducted in India [6], hinting that the 3 main factors identified by Pinki Sharma [6] which are: Features & Technology, Brand image, Price, and Friends/ Family members could be applicable for APCS students.

B. Simulation result

The number of votes for the reason of participants' choice of laptops is shown in Fig.6, each bar represents the number of votes for each factor. Each factor has 440 maximum possible votes.

The simulation result reveals 87% of all the votes are for the 3 factors: Features & Technology, Brand image and Price. This seems similar to the survey result and Pinki Sharma's findings [6] but there is one difference: Friends/ Family members has less than 15% of its possible number of votes. This means only 3 factors: Features & Technology, Brand image and Price are considered by most APCS students while making a laptop purchase. Friends/ Family members is no longer an important factor when participants do a simulation of a realistic buying situation.

Furthermore, Features & Technology has the highest number of votes with 94% of 440 possible votes. This is consistent with the survey result so Features & Technology is playing an important part in the process of purchasing laptops of APCS students.

Interestingly, when comparing between the chosen laptop and the other in each pair of simulation, the authors found that out of the 94% votes for Features & Technology, there are 80% of the votes are choosing the laptop with a dedicated graphic card while ones with integrated graphic card are only chosen 80% of the time. Participants' laptop choice based on graphic card is displayed in Fig.7.

C. Summary

From the result of the survey and simulation, the authors identify the 3 factors Features & Technology, Brand image and Price as the most prominent when it comes to APCS students' purchase behavior towards laptops with Features & Technology as the most important factor.

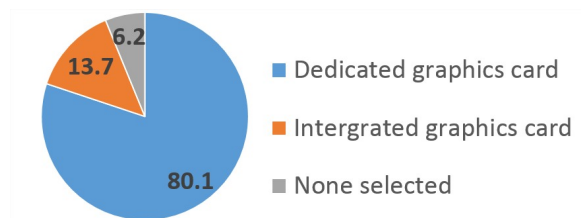


Fig. 7. Laptop purchase decision based on graphic card (%)

V. CONCLUSION & FUTURE WORK

A. Conclusion

This study is carried out to evaluate the factors affecting Purchase Behavior exhibited by APCS students during their laptop purchases. The result of the study affirms that 3 main aspects identified by Pinki Sharma [6] are applicable to APCS students: Features & Technology, Brand image, and Price. Among these 3 factors, Features & Technology is the most dominant factor towards APCS students, in which one important finding reveals that APCS students prefer dedicated graphic cards to integrated graphics cards. The outcome can help marketers consider using these factors accordingly for an effective selling strategy aiming towards Computer Science students.

B. Scope for Further Research

Since the survey only available for 5 days, there are only 44 APCS respondents in the experiment which the authors will expand the sample size of the project in the future with more time and resources.

There are 2 factors: Friends/Family and After sale service, which could not be illustrated in simulations, so the authors will focus on them more in further researches.

REFERENCES

- [1] K. K and K. Philip, *Marketing Management*. Prentice Hall 14th Edition, 2011.

- [2] N. Darakhshan and J. U. Islam, "Purchase intention and buying behavior towards laptops: A study of students in jamia millia islamia university, new delhi, india," 2011.
- [3] (2014, Sep.) Worldwide smart connected device forecast shipments, market share, growth, and 5-year cagr. International Data Corporation (IDC). [Online]. Available: <http://www.idc.com/getdoc.jsp?containerId=prUS25077914>
- [4] (2015, Jan.) Preliminary worldwide pc vendor unit shipment estimates for 4Q14. Gartner. [Online]. Available: <http://www.gartner.com/newsroom/id/2960125>
- [5] K. Vija, "A factorial study of consumer buying behavior of laptops of post graduate students in pune," *International Journal of Management*, 2013.
- [6] P. Sharma, "A study of brand choice of laptops by management and engineering students," *Researchers World*, 2012.
- [7] C. M. Toan, "Nhan to anh huong en quyet dinh lua chon laptop cua sinh vien khoa 8 khoa KT QTKD trung dai hoc An Giang," 2013, to be published.
- [8] R. B. Steven Smith, Mike Hanlon, "Power management for a laptop computer with slow and sleep modes," 1992.
- [9] J. Strickland, *What is the difference between notebooks, netbooks and ultra-mobile PCs*.
- [10] S. Kuester, *MKT 301: Strategic Marketing Marketing in Specific Industry Contexts*, 2012.
- [11] R. Sandhusen, *Marketing*, 2000.
- [12] G. A. P. Kotler, *Principles of Marketing*, 9th ed., 2001.
- [13] M. F. I. Ajzenand, *Understanding Attitudes and Predicting Social Behavior*, 1980.
- [14] W. H. E. Geisler, *Purchasing Information Technologies: Behavior Patterns in Service Companies*, 1992.
- [15] P. T. S. Jarvenpaa, *Consumer Reactions to Electronic Shopping on the World Wide Web*, 1996 - 1997.
- [16] J. L. S. Hong, *A Laboratory Study of Consumers Preferences and Purchasing Behavior with Regards to Software Components*, 2002.
- [17] T. Hoskins, *How to Choose The Best Student Laptop*, 2005.
- [18] S. Rockman, *Its My Laptop*, 2007.
- [19] W. Farzana, *Consumers Psychological Factors Association with Brand Equity of High-Involvement Product: Case of Laptop*, 2012.
- [20] K. Vijay, *A Factorial Study of Consumer Buying Behavior of Laptops of Post Graduate Students in Pune*, 2013.