Investment Made In Selected Antivirus Software in Different Categories of Users in Selected Districts

Dr. Bhaskar V. Patil[#1], Dr. Prof. Milind. J. Joshi[#2]
[#1]Bharati Vidyapeeth University Yashwantrao Mohite institute of Management, Karad [M.S.], INDIA
[#2]Shivaji University Kolhapur, Kolhapur [M.S.], INDIA

Abstract- A computer virus is software intentionally written to copy itself without the computer owner's permission and then perform some other action on any system where it resides. Now a days, viruses are being written for almost every computing platform Anti-virus protection is, or should be, an integral part of any Information Systems operation, be it personal or professional. There are number of computer virus are created and these computer virus are affected in day today life. The large number of Anti-virus software available in the market and some are being launched, each one of them offers new features for detecting and eradicating viruses and malware. People frequently change their Anti-virus software according to their liking and needs without evaluating the performance and capabilities of the various Anti-virus software available. This research paper highlights the popular antivirus software in different types of users with types of antivirus software in selected Districts. And investements made by the different types of users with their internet used.

Key words: Network, Virus, Security threats, Attack of Computer Virus, Internet, Investement

I. INTRODUCTION

Now a day's computers are very essential part of our life. The uses of computer are increased day by day. A computer people can share information from one computer to another computer with the help of device or media. In the current days there are various ways or method for sharing information because people can carry several gigabytes or terabyte of data from one destination to another destination. We also know history and which devices are used to exchange information in the world. There are several ways a user can go about copying data from one computer to another computer. In the process of exchanging the information using communication media there will be a problem of attack of malware or computer virus. [1] A computer virus is a computer program that can spread across computers and networks by making copies of itself, usually without the user's knowledge. Viruses are capable of displaying different messages, denying all kinds of access, data thefts, changes in valuable data or files, deleting systems or any files, or it disable hardware. Therefore, an early detection and prevention mechanism is very important for the security of the computer. Anti-virus software is a critical link in overall security chain, protecting organization's computers from many types of viruses, including worms and Trojan horses. Using Anti-virus software is a good way to detect viruses and it is advisable to use Anti-virus software on network operating systems and workstations for adequate protection. Anti-virus software is specifically written to defend a system against the threats that malware presents. Anti-virus software may work differently and ranges from large security packages to small programs designed to handle a specific virus. [2]

The large number of Anti-virus software available in the market and some are being launched, each one of them offers new features for detecting and eradicating viruses and malware. Therefore people have a choice of different types of Anti-virus i.e. both in the form of freeware software or licensed software. People frequently change their Anti-virus software according to their liking and needs without evaluating the performance and capabilities of the various Anti-virus software available. Hence there is a need to find parameter for measuring performance of Anti-virus software for finding good and also suitable for the specific needs of the users. [3]
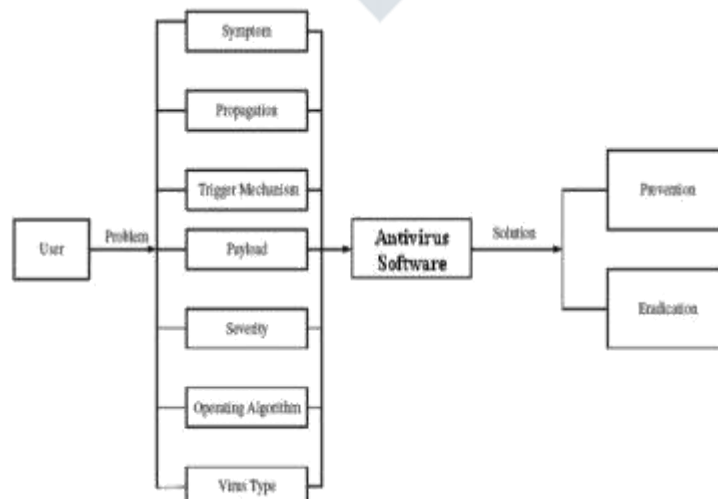
II. WORKING OF ANTI-VIRUS SOFTWARE

Fig 2.1: Prevention from different attack

The use of computers and Internet are increasing day by day for different purposes with more and more users. At the same time these computers and networks are facing number of problems posed by malicious codes like virus, Trojan, etc. The problems which are shown in the above figure [**Diagram 2.1: Prevention from different attack**] which are Symptoms, Propagation, Trigger Mechanism, Payload, Security, Operating algorithm, Virus types discussed in chapter III. These different problems are analyzed by Anti-virus software programs, which provide solutions for prevention and eradication of computer viruses. [5][6][7]

III.   Sample Design

The study aims at collecting data from the users of Anti-virus software. Therefore; invariably all the people using a computer used an Anti-virus software. **Sampling Universe** – The entire users of computers comprises the universe for the study.

3.1 Criteria for sample selections – A study of data of users of Anti-virus software maintained by various Anti-virus software companies and their vendors, it has revealed that there are broadly 9-10 types of users, mentioned in bellow table no 3.1 [**Table No.3.1: Sample size of districts, and Anti-virus Software Users**]. Bellow table gives information about district wise Anti-virus software users in Sangli and Kolhapur districts of geographical scope considered for this study. Researcher undertaken study of these users of Anti-virus software, hence only registered user of Anti-virus software are considered for deciding sample and total 574 users out of 2708 are selected as samples.

➢ In this table, 3 out of 31 banks from Sangli district and 5 out of 45 from Kolhapur district are selected as a part of sample for the study.

➢ 10 out of 95 coaching classes from Sangli district and 14 out of 135 from Kolhapur district are selected as a part of sample for the study.

➢ 13 out of 127 educational institutes from Sangli district and 18 out of 180 from Kolhapur district are selected as a part of sample. In these selected educational institutes, 10 students from each educational institute are selected as respondents for the study. As for the student category random sampling method was adopted, thus total 310 students are selected as a part of sample size.

➢ 13 out of 130 government offices from Sangli district and 25 out of 248 from Kolhapur district are selected as a part of sample.

➢ 5 out of 51 Hotels, travel and tourism business firms from Sangli district and 17 out of 169 from Kolhapur district are selected as a part of sample.

➢ 11 out of 105 industries from Sangli district and 13 out of 126 from Kolhapur district are selected as a part of sample.

➢ 35 out of 345 internet cafes from Sangli district and 37 out of 370 from Kolhapur district are selected as a part of sample.

➢ 18 out of 182 professionals from Sangli district and 27 out of 369 from Kolhapur district are selected as a part of sample.

Therefore; the purposive quota sampling method was adopted for sample selection of these user categories.

Table No.3.1: Sample size of districts, and Anti-virus Software Users

Sr. No.	Anti-virus Software Users	Sangli District		Kolhapur District		Sample Units
		Total Units	Sample Units	Total Units	Sample Units	
1	Banks	31	3	45	5	8
2	Coaching Classes	95	10	135	14	24
3	Educational Institutions	127	13	180	18	31
4	Government Office	130	13	248	25	38
5	Hotel and Travel & Tourism Businesses	51	5	169	17	22
6	Industry	105	11	126	13	24
7	Internet Cafés	345	35	370	37	72
8	Professionals	182	18	369	27	45
9	Students	--	130	--	180	310
	Total	1066	238 [10%]	1642	336 [10%]	574

IV. POPULAR DIFFERENT TYPES OF ANTIVRUS SOFTWARE

Sr. No.	Anti-virus Software Users	Sangli District		Kolhapur District		Sample Units
		Total Units	Sample Units	Total Units	Sample Units	
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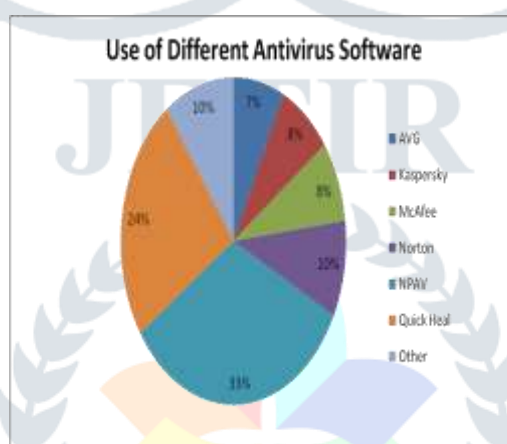Table No. 4.1 – Use of Different Anti-virus Software

Fig No. 4.1 – Use of Different Anti-virus Software

Therefore it can be inferred that NPAV [32.93%] and Quick Heal [24.39%] are the most popular Anti-virus software that are being used by the different category of users.

Table No. 4.2 – Investment Made by Different User Types

User Type Name	Less Than 1000	1001 to 1500	1501 To 2000	2001 To 2500	More Than 2500	Grand Total
Bank	0	3 [37.50%]	2 [25%]	0	3 [37.50%]	8
Coaching Classes	10 [66.67%]	5 [33.33%]	0	0	0	24
Educational Institutions	16 [53.33%]	5 [16.67%]	5 [16.67%]	4 [13.33%]	0	31
Government Office	25 [71.43%]	0	10 [28.57%]	0	0	38
Hotel and Travel & Tourism Businesses	14 [63.64%]	0	8 [36.36%]	0	0	22
Industry	8 [40%]	4 [20%]	7 [35%]	1 [5%]	0	24
Internet cafés	37 [66.07%]	12 [21.43%]	6 [10.71%]	1 [1.79%]	0	72
Professionals	20 [47.62%]	13 [30.95%]	9 [21.43%]	0	0	45
Students	113 [61.08%]	33 [7.84%]	34 [18.38%]	5 [2.70%]	0	310
Grand Total	243 [58.84%]	75 [18.16%]	81 [19.61%]	11 [2.66%]	3 [0.73%]	574

- From the above table it is clear that, majority of the users invest less than Rs.1000 per year for Anti-virus software.
- Only the bank users [37.50%] invest more than Rs. 2500/- per year for Anti-virus software.

Therefore, it can be inferred that the per year investment in an Anti-virus software in the selected area ranges from Rs. 1000/- to

2500/- per year.

Table No. 4.3 – Use of Internet by Different Users

| Antivirus Name	Internet	LAN Only	LAN With Internet	Stand Alone Without Internet	Grand Total
Bank			8 [100%]		8 [1.39%]
Coaching Classes	9 [37.50%]	3 [12.50%]	12 [50%]		24 [4.18%]
Educational Institutions	1 [3.23%]		30 [96.77%]		31 [5.40%]
Government Office	38 [100%]				38 [6.62%]
Hotel and Travel & Tourism Businesses	15 [68.18%]	5 [22.73%]	2 [9.09%]		22 [3.83%]
Industry	20 [83.33%]		3 [12.50%]	1 [4.17%]	24 [4.18%]
Internet cafés	14 [19.44%]		58 [80.56%]		72 [12.54%]
Professionals	41 [91.11%]		4 [8.89%]		45 [7.84%]
Students	276 [89.03%]		3 [0.97%]	31 [10%]	310 [54.01%]
Grand Total	414 [72.13%]	8 [1.39%]	120 [20.91%]	32 [5.57%]	574 [100%]
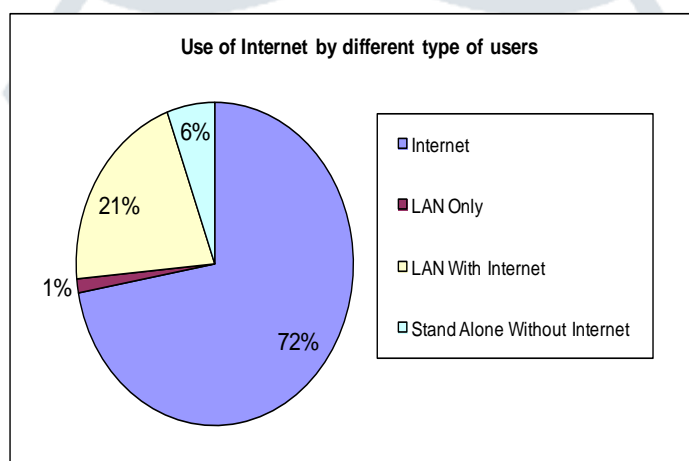
Chart. 5.1.10 – Use of Internet by Different Users

From the above table it is clear that majority of Anti-virus software user use Internet. Only 1.39 % of the users are connected through without Internet in LAN and 5.57% of the Anti-virus software is running on standalone machines.

V. HYPOTHESES

Here the factors of variation are different categories

Set up the Hypotheses

$$H_0 = \mu_1 = \mu_2$$

$$H_1 = \mu_1 \neq \mu_2$$

Null Hypotheses

H$_o$ - Investment made in Anti-virus software by different categories of users differ significantly.

Alternative Hypotheses

H$_1$- Investment made in Anti-virus software by different categories of users does not differ significantly.

To test this hypothesis, the One way ANOVA: Two-Factor without Replication test was applied and the results are presented in following table [table No.5.3.3]

Table No 5.1: The result of ANOVA test between investments made by different categories of user.

User Type Name	Less Than 1000	1001 to 1500	1501 To 2000	2001 To 2500	More Than 2500	Grand Total
Bank	0	3 [37.50%]	2 [25%]	0	3 [37.50%]	8
Coaching Classes	10 [66.67%]	5 [33.33%]	0	0	0	24
Educational Institutions	16 [53.33%]	5 [16.67%]	5 [16.67%]	4 [13.33%]	0	31
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Professionals	20 [47.62%]	13 [30.95%]	9 [21.43%]	0	0	45
Students	113 [61.08%]	33 [7.84%]	34 [18.38%]	5 [2.70%]	0	310
Grand Total	243 [58.84%]	75 [18.16%]	81 [19.61%]	11 [2.66%]	3 [0.73%]	574

Table No 5.2:ANOVA: Two-Factor without Replication

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	2858.8	6	476.4667	3.256778	0.017382	2.508189
Columns	5321.6	4	1330.4	9.093643	0.000128	2.776289
Error	3511.2	24	146.3			
Total	11691.6	34				

The critical (Tabulated) value of F (v1= 14, v2=149) D.F. at α= 0.05 is 1.67 Since the calculated value of the test statistic F is greater than the table value. The hypothesis is rejected. Hence, there is significant difference between two means. It concludes that, Investment made in Anti-virus software by different categories of users differs significantly.

VI. CONCLUSIONS

The antivirus software objective is to behind the viral protection programs is to secure the system using these 3 tasks; Take preventive measure, Detection of the malicious code, Eradication. There are six different brands of Anti-virus software that are being used by the various categories of users in the selected area. The study reveals that NPAV and Quick Heal are the two most popular Anti-virus software brands being used by different categories of users. However it is also revealed that the Norton brand of Anti-virus software is used by majority of the banks on account of its reliability and dependability for secured transaction on the network. Quick Heal brand of Anti-virus software is being used by majority of the coaching classes, government offices, hotel and travel tourism businesses and the industries. Majority of users of NPAV brand are students, educational institutions and professionals. Investment made in Anti-virus software by different categories of users differs significantly.

VII. ACKNOWLEDGMENTS

VIII. REFERENCES

[1]   *Paul Mobbs, Computer Viruses, Association for Progressive Communications, March 2002.*
[2]   *Jacob M. Rutledge, Research report Virus, 2010*
[3]   *Thomas M. Chen, Trends in Viruses and Worms, The Internet Protocol Journal, 23-33*

[4]   *Kiran Karki, Malik H Muzaffar, Virus and Antivirus*

[5]   *Choosing Anti-virus Software, Software Security Solutions, Information Security for Small and Medium-Sized Businesses, 2007*

[6]   *Olivier Henchiri, Nathalie Japkowicz, A Feature Selection and Evaluation Scheme for Computer Virus Detection, International Conference on Data Mining (2006), pp. 891-895*

[7]   *Hsien-Chou Liao and Yi-Hsiang Wang, A Memory Symptom-based Virus Detection Approach, International Journal of Network Security, Vol.2, No.3, PP.219–227, May 2006*

[8]   *Roberto Dillon , A simple guide to Computer Viruses and other dangerous little programs - An Introduction to an Effective Defense, International journal of law and technology, Program and Play - Roberto Dillon, 2007*