Chapter 6 of the book (master thesis)

The desktop operating system Haiku®

Analysis of the operating system with focuses on ease of use, GUI, multimedia capability and an empirical research of the Haiku community

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Abstract

Haiku is an open source, light, fast and user-friendly operating system that is inspired by the "Multimedia Operating System" BeOS. At the moment Haiku is still under development and the latest release was Alpha 2 which is meant to be used only for testing. Unlike many other open source operating systems, such as Linux or FreeBSD, Haiku sets the focus on personal computing and the graphic user interface (GUI) is not just an "Add-On" or "additional windows management system" but it is an essential part of the kernel.

This thesis analyses Haiku, especially regarding the ease of use, the GUI and the multimedia capabilities, by giving an introduction to Haiku, an overview of the history and features of BeOS and a lot of general and technical information about the architecture, the easy of use, the GUI and some other aspects of operating systems in general respectively in the special case of Haiku.

In order to recognize the main fields of application of Haiku and the expectations of the users regarding the further development of Haiku, the Haiku community has been analysed by doing an online survey that was answered by more than one thousand persons.

In summary, the author brings forward the arguments that Haiku could become a powerful, light and user-friendly operating system, but currently there is a lack of compatible modern multimedia software products and drivers for many multimedia devices. The outcome of this is that Haiku will not become a powerful multimedia operating system in near future, but it could become a user-friendly and very fast operating system for low-budget PCs and netbooks.

Acknowledgements

Hereby I want to say

THANK YOU

to the Haiku community and all people that answered my survey!

Special thanks to:

- Axel Dörfler because he added a link to my survey on the official Haiku website (haiku-os.org).
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6. Empirical research about the Haiku community

In opposite to the previous chapters, where the sources of data were books and documentations, in this chapter empirical data will be analysed. The source of data is my online survey that was announced on the official Haiku website and several other Haiku or BeOS related websites.

6.1. General information about the survey

The online survey consists of 24 questions. All questions were optional, this means, that the respondents could freely choose whether they want to answer a question or not.
Furthermore, the respondents could be anonymous. Neither the name nor the address were asked in the survey. The e-mail address was an optional entry.

The online survey was announced in the news section or in other sections of several websites, including the official Haiku website http://www.haiku-os.org and a popular news website about Haiku: http://www.haiku-gazette.de
Furthermore, it was announced in the Haiku General Mailing List. The survey was online from 7th May 2010 to 16th October 2010.

The online survey was technically implemented by using ASP, XHTML, CSS and a Microsoft Access database. ASP was my personal preference because I already had many experiences in programming dynamic websites with ASP. The Microsoft Access database is a simple, yet powerful solution for the small amount of data that will be gathered by the online survey. Furthermore, Access can be used as a data source for the statistical software SPSS which is used for the data analyses. From the beginning on I expected that many respondents will use various operating systems and that their interest in Haiku respectively BeOS is a consequence of their fascination for operating systems in general. Therefore it was very important to take care about the cross browser compatibility of the online survey. This was done by avoiding the usage of JavaScript, Flash and any other technologies that require Plug-Ins or very special web browsers. Furthermore, the XHTML Strict code and the CSS code of the online survey website are valid according to the W3C validation services.

One important goal was to be able to detect multiple participation by the same respondent. In most

cases such phenomena are not a wilful sabotage but simply a technical problem because of a slow connection to the internet, delayed reaction of the server or other reasons. In such cases people sometimes press twice or multiple times the submit button at the end of the survey. The consequence is that the answers are saved twice or multiple times in the data base. Therefore each respondent gets a session id that is automatically created by the ASP program while the online survey website is created and sent to the client. The session id is unique for each client and consists of a random number and the number of remaining seconds until the begin of the next century.

```
Dim MySessionID
Randomize
MySessionID = Int((Rnd * 10000)) + 1 & DateDiff("s", Now(), cdate("1/1/2100 00:00:00"))
```

This unique session id is sent, after pressing the submit button, by using the method post from the client back to the server and saved together with the answers of the respondent in the Access database. By searching for data entries that do not have a unique session id in the Access database, the multiple results can be found and manually deleted. This was the first step of the data clean up.

Additionally, the ASP code saves the duration (in seconds) from the loading of the website until pressing the submit button in the Access data base. In the second step of the data clean up some data entries with durations of less than 60 seconds were manually removed because such entries are often created by robots or by curious people just for fun. Nevertheless, not all entries with durations of less than 60 seconds were removed because in some cases the data seems to be valid and generated by a real person and not by a internet bot. Therefore I had manually to look and decide which result is valid and which one is invalid.
The median value of the duration is equal to 689 seconds. When I created the survey, I expected that the people will need about 10 minutes to answer it. The median duration was about 11 minutes that is not far away from my original expectations.

By processing the two above described clean up steps, the sample size decreased from 1332 to 1296. This cleaned up data is used for data analyses.

6.2. Results of the survey

In this chapter the results of the survey are analysed and interpreted. While in the first subchapter all the questions of the survey and the corresponding aggregated results are presented, further and advanced statistical methods are used to search for correlations in the following subchapter.

6.2.1. Questions and answers

Question 1: How much are you interested in Haiku OS in general?

O not at all (1) O a little bit (2) O medium (3) O fairly (4) O very much (5)

Results:

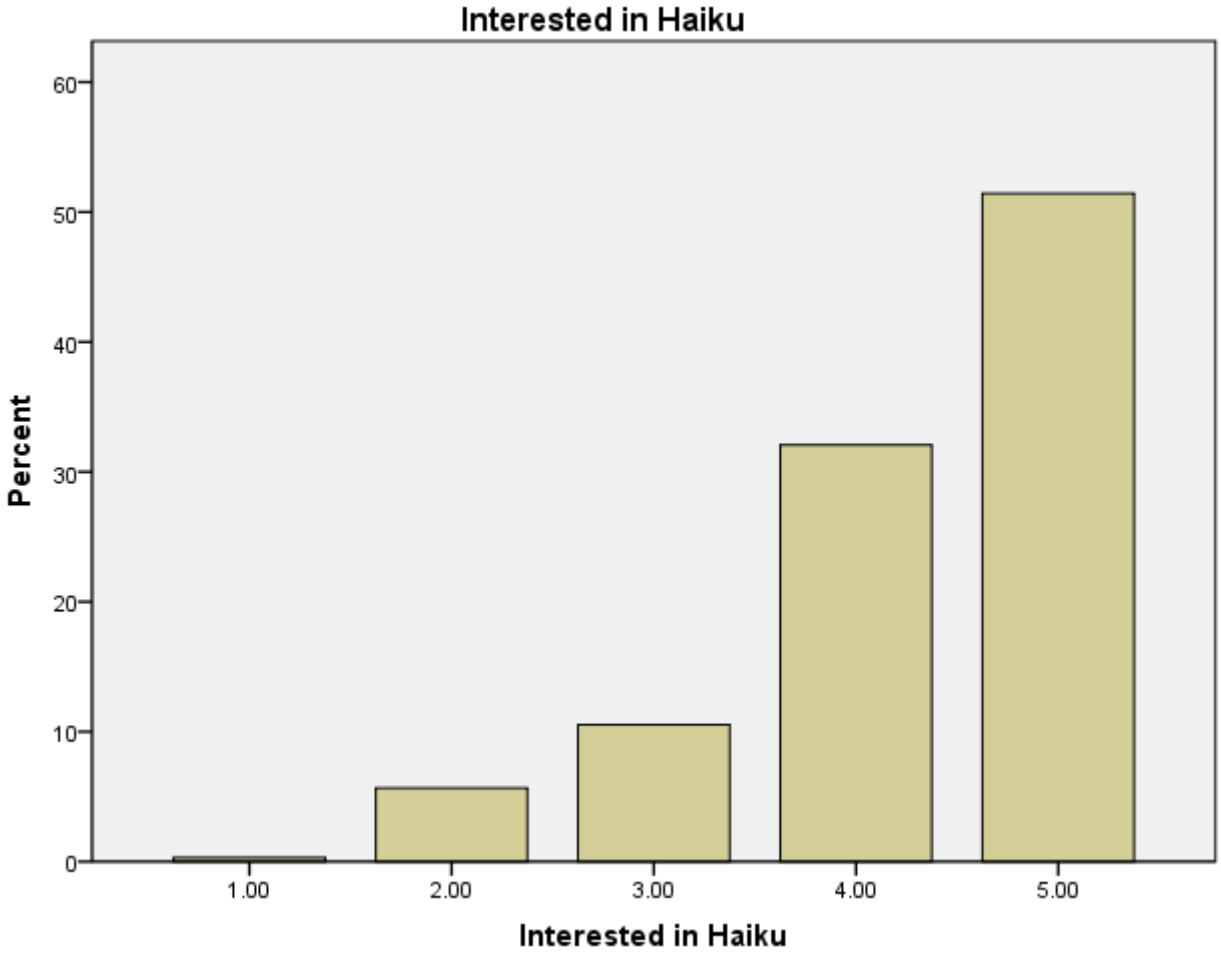
Statistics

InterestedInHaikuR

N	Valid	1291
	Missing	5
Mean		4.2866
Std. Error of Mean		.02477
Median		5.0000
Mode		5.00
Std. Deviation		.89006
Sum		5534.00

InterestedInHaikuR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	.3	.3	.3
	2.00	73	5.6	5.7	6.0
	3.00	136	10.5	10.5	16.5
	4.00	414	31.9	32.1	48.6
	5.00	664	51.2	51.4	100.0
	Total	1291	99.6	100.0	
Missing	System	5	.4		
Total		1296	100.0		



Graphic 16: Survey results regarding the interest in Haiku

There is a great interest in Haiku. The mean is about 4.3 ("fairly interested in Haiku") and the median is equivalent to 5 ("very much interested in Haiku").

Question 2: How much are you interested in BeOS in general?

O not at all (1) O a little bit (2) O medium (3) O fairly (4) O very much (5)

Results:

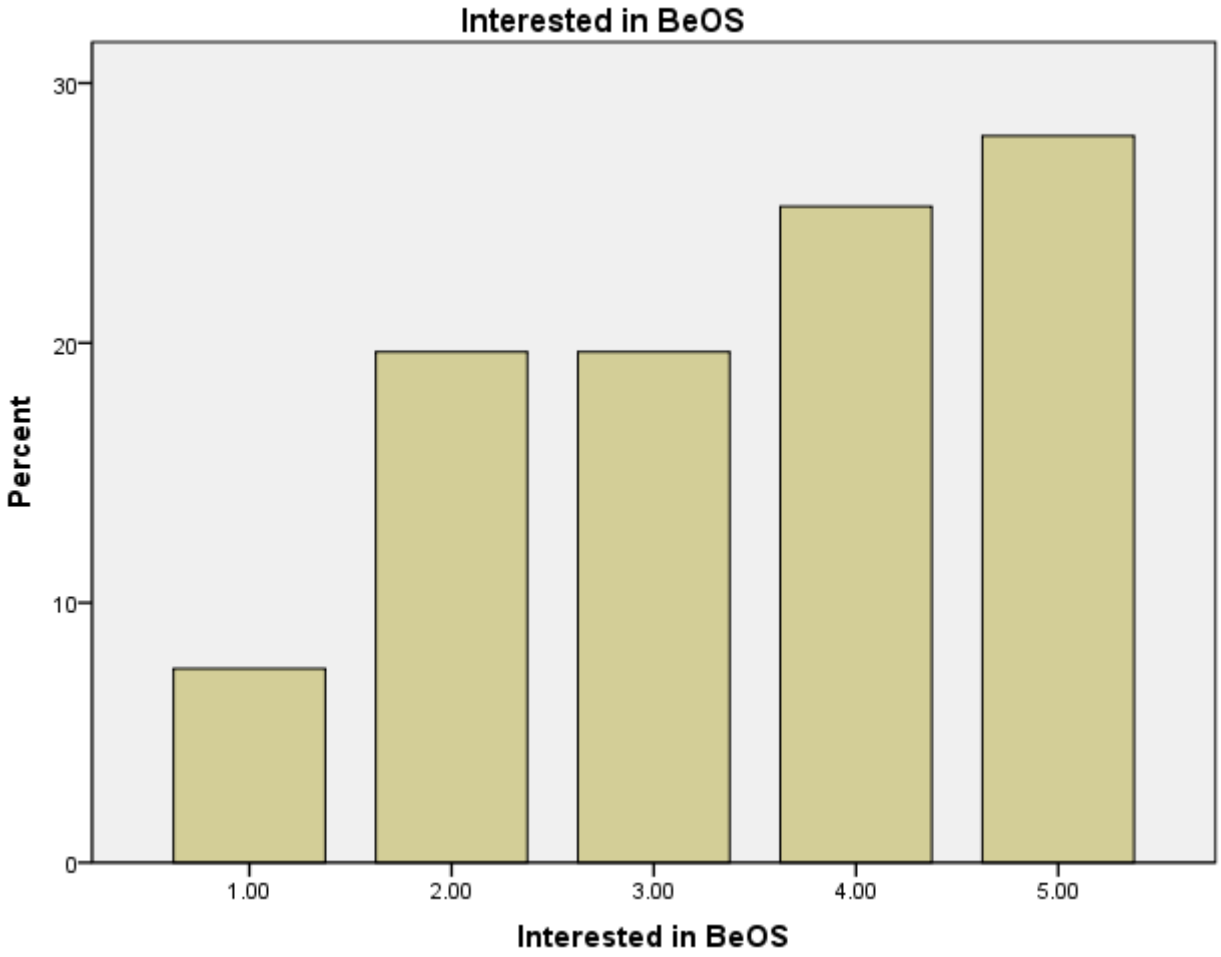
Statistics

InterestedInBeOSR

N	Valid	1287
	Missing	9
Mean		3.4662
Std. Error of Mean		.03581
Median		4.0000
Mode		5.00
Std. Deviation		1.28464
Sum		4461.00

InterestedInBeOSR

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	96	7.4	7.5	7.5
	2.00	253	19.5	19.7	27.1
	3.00	253	19.5	19.7	46.8
	4.00	325	25.1	25.3	72.0
	5.00	360	27.8	28.0	100.0
	Total	1287	99.3	100.0	
Missing	System	9	.7		
Total		1296	100.0		



Graphic 17: Survey results regarding the interest in BeOS

There is a fairly interest in BeOS. The mean is about 3.47 (“medium interested in Haiku”) and the median is equivalent to 4 (“fairly interested in Haiku”). The people are more interested in Haiku than in BeOS. This result is no wonder because BeOS does not support many new hardware devices

and many users hope that Haiku will become a good and proud successor of BeOS.

Question 3: What is your most favourit operating system for x86 compatible computers?

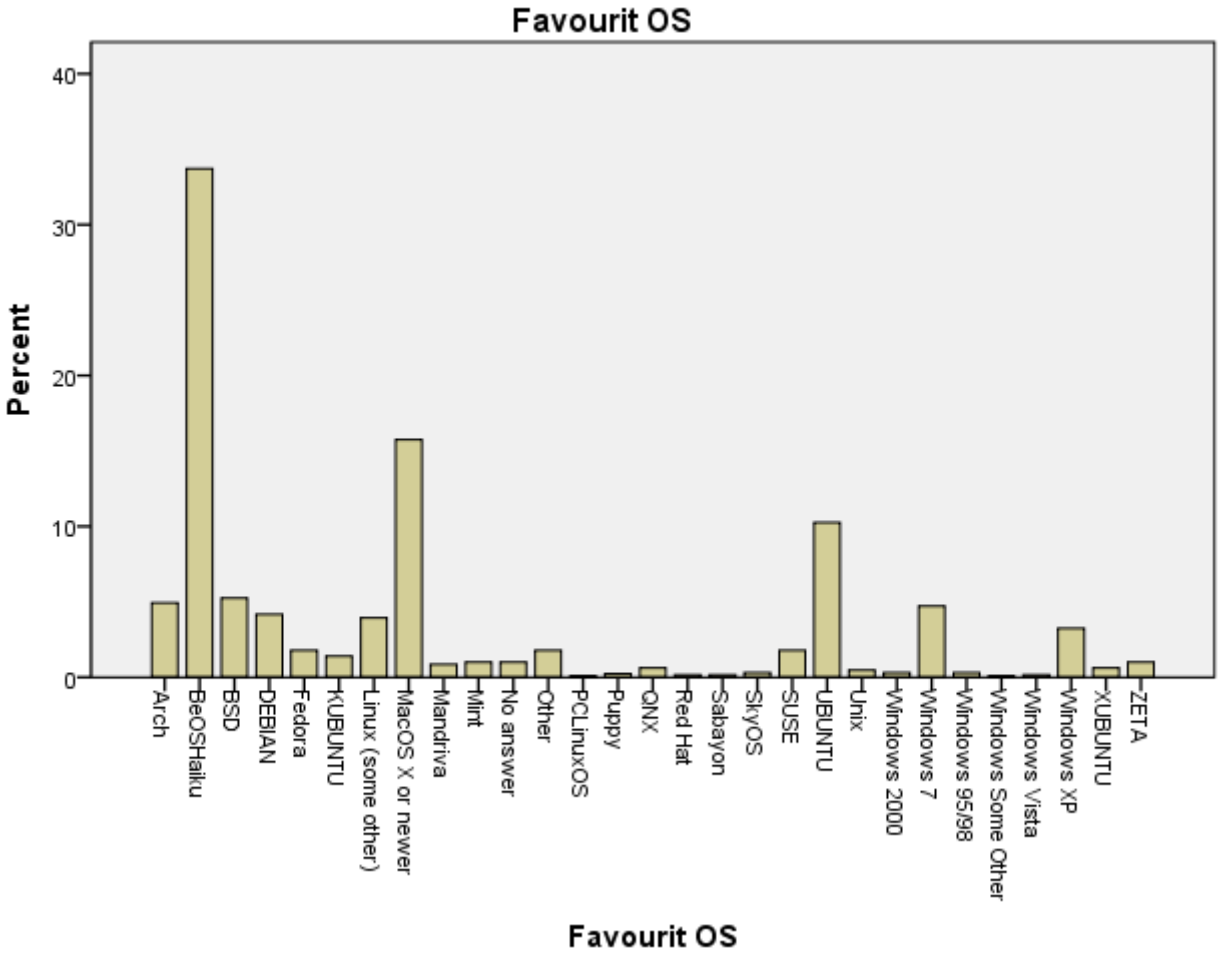
Please select the operating system that you like most of all.

It is not important whether you use it or not.

Results:

Favourit OS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arch	64	4.9	4.9	4.9
	BeOSHaiku	437	33.7	33.7	38.7
	BSD (FreeBSD, PC-BSD or some other BSD)	68	5.2	5.2	43.9
	DEBIAN	54	4.2	4.2	48.1
	Fedora	23	1.8	1.8	49.8
	KUBUNTU	18	1.4	1.4	51.2
	Linux (some other)	51	3.9	3.9	55.2
	MacOS X or newer	204	15.7	15.7	70.9
	Mandriva	11	.8	.8	71.8
	Mint	13	1.0	1.0	72.8
	No answer	13	1.0	1.0	73.8
	Other	23	1.8	1.8	75.5
	PCLinuxOS	1	.1	.1	75.6
	Puppy	3	.2	.2	75.8
	QNX	8	.6	.6	76.5
	Red Hat	2	.2	.2	76.6
	Sabayon	2	.2	.2	76.8
	SkyOS	4	.3	.3	77.1
	SUSE	23	1.8	1.8	78.9
	UBUNTU	133	10.3	10.3	89.1
	Unix	6	.5	.5	89.6
	Windows 2000	4	.3	.3	89.9
	Windows 7	61	4.7	4.7	94.6
	Windows 95/98	4	.3	.3	94.9
	Windows Some Other	1	.1	.1	95.0
	Windows Vista	2	.2	.2	95.1
	Windows XP	42	3.2	3.2	98.4
	XUBUNTU	8	.6	.6	99.0
	ZETA	13	1.0	1.0	100.0
	Total	1296	100.0	100.0	



Graphic 18: Survey results regarding the favourit operating system

The most favourit operating system is BeOS or Haiku ("BeOSHaiku"). ZETA, that is also inspired by BeOS, is not popular. Only about one percent of the persons answered that ZETA is their most favourit operating system. Besides Haiku and BeOS the operating systems Linux (especially UBUNTU), MacOS X (or newer) and Windows (especially Windows 7 and windows XP) are popular among the asked persons. One reason for the quite good result regarding MacOS X could be the fact that originally BeOS was inspired by MacOS and that both operating systems have a focus on multimedia capabilities.

The above displayed statistics include the names of the operating systems and their distribution releases respectively versions. However, it is also interesting to see which operating system families are popular. Therefore the data was recoded by using this syntax in SPSS 19 for both variables: FavouritOS and MostUsedOS (see question 4):

STRING FavouritOSFamilyR MostUsedOSFamilyR (A80).

RECODE FavouritOS MostUsedOS ('?'='No answer') (MISSING='No answer') ('BeOSHaiku'='BeOS or Haiku or ZETA') ('ZETA'='BeOS or Haiku or ZETA') ('BSD (FreeBSD, PC-BSD or some other BSD)'='BSD') ('Arch'='Linux') ('DEBIAN'='Linux') ('Fedora'='Linux') ('KUBUNTU'='Linux') ('Mandriva'='Linux') ('Mint'='Linux') ('PCLinuxOS'='Linux') ('Puppy'='Linux') ('Red Hat'='Linux') ('Sabayon'='Linux') ('SUSE'='Linux') ('UBUNTU'='Linux') ('XUBUNTU'='Linux') ('Linux (some other)'='Linux') ('MacOS X or newer'='MacOS X or newer') ('QNX'='QNX RTOS') ('SkyOS'='SkyOS') ('Unix'='Unix (besides BSD)') ('Windows 95/98'='Windows') ('Windows ME'='Windows') ('Windows 2000'='Windows') ('Windows XP'='Windows') ('Windows Vista'='Windows') ('Windows 7'='Windows') ('Windows Some Other'='Windows') (ELSE=Copy)

INTO FavouritOSFamilyR MostUsedOSFamilyR.

EXECUTE.

The favourit operating system families are BeOS/Haiku/Zeta (about 35 percent), Linux (between 31 and 32 percent) and MacOS X or newer (almost 16 percent). Windows is not very popular (about 9 percent). However, when looking at the results of the next question regarding the most used operating system, the ranking looks very different.

Question 4: What operating system do you mostly use on x86 compatible computers?

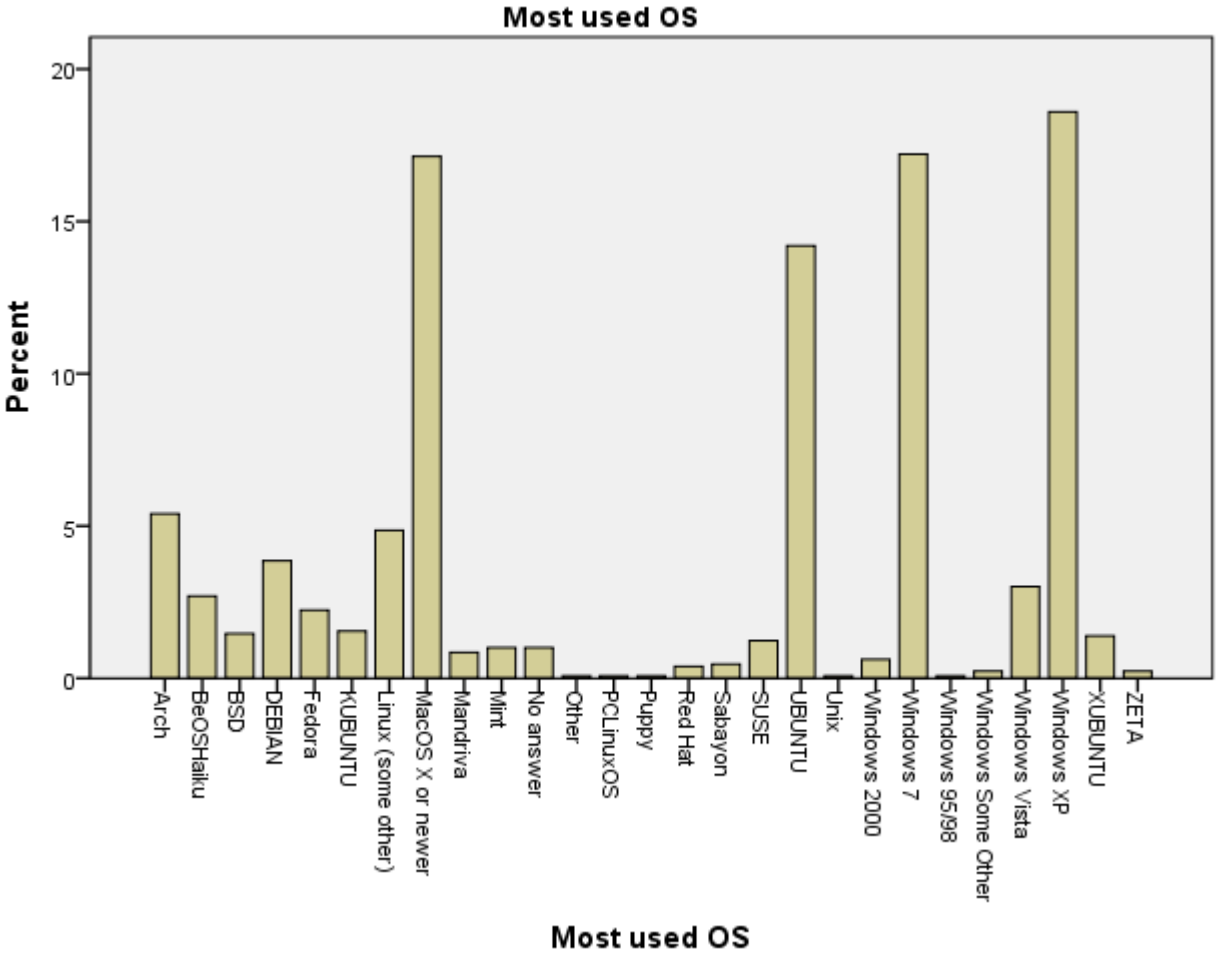
Please select the operating system that you use most of the time.

It is not important whether you like it or not.

Results:

Most used OS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arch	70	5.4	5.4	5.4
	BeOSHaiku	35	2.7	2.7	8.1
	BSD (FreeBSD, PC-BSD or some other BSD)	19	1.5	1.5	9.6
	DEBIAN	50	3.9	3.9	13.4
	Fedora	29	2.2	2.2	15.7
	KUBUNTU	20	1.5	1.5	17.2
	Linux (some other)	63	4.9	4.9	22.1
	MacOS X or newer	222	17.1	17.1	39.2
	Mandriva	11	.8	.8	40.0
	Mint	13	1.0	1.0	41.0
	No answer	13	1.0	1.0	42.1
	Other	1	.1	.1	42.1
	PCLinuxOS	1	.1	.1	42.2
	Puppy	1	.1	.1	42.3
	Red Hat	5	.4	.4	42.7
	Sabayon	6	.5	.5	43.1
	SUSE	16	1.2	1.2	44.4
	UBUNTU	184	14.2	14.2	58.6
	Unix	1	.1	.1	58.6
	Windows 2000	8	.6	.6	59.3
	Windows 7	223	17.2	17.2	76.5
	Windows 95/98	1	.1	.1	76.5
	Windows Some Other	3	.2	.2	76.8
	Windows Vista	39	3.0	3.0	79.8
	Windows XP	241	18.6	18.6	98.4
	XUBUNTU	18	1.4	1.4	99.8
	ZETA	3	.2	.2	100.0
	Total	1296	100.0	100.0	



Graphic 19: Survey results regarding the most used operating system

Although about 34 percent of the people answered that Haiku or BeOS is their favourit operating system, less than three percent of the respondents use them most of all operating systems. However, this is no wonder because BeOS is old and does not support many new hardware devices and the currently newest version of Haiku is still an Alpha version that is officially not recommended to be used for productive purposes. The most used operating systems are Windows, Linux and MacOS.

When looking at the operating systems families instead at the versions and distribution releases of the operating systems (regarding the RECODE syntax, please see the previous question 3), the results show the dominating position of Microsoft Windows (about 40 percent). About 38 percent of the respondents mostly use Linux. MacOS X or newer is the most used operating system of about 17 percent of the asked people. Although 34 percent of the respondents answered that Haiku or BeOS is their favourit operating system, the operating system family of BeOS, Haiku and Zeta is the most used by only about 3 percent of the asked persons.

Question 5: Which of these operating systems do you use at least once per week on any kind of computers?

Multiple choices are possible.

Results:

Totally 1290 valid answers were received. Valid answers are defined by the condition that at least one of the multiple choices (including the answer “other”) has to be selected. This is a useful condition to detect whether somebody answered this question or avoided to answer it. As already mentioned, all questions are optional.

Windows	1021	79.1 percent
Linux	953	73.9 percent
MacOS	465	36.0 percent
Haiku	405	31.4 percent
BSD	152	11.8 percent
BeOS	83	6.4 percent
Unix (besides BSD)	83	6.4 percent
Other	77	6.0 percent
AmigaOS	37	2.9 percent
ZETA	26	2.0 percent
QNX RTOS	10	0.8 percent
SkyOS	5	0.4 percent

The most used operating systems are Windows, Linux, MacOS, Haiku and BSD. There are almost five times more people that use Haiku than BeOS at least once per week.

Question 6: How many hours have you been using BeOS or Haiku on average per week in the previous 365 days?

If you used both (BeOS and Haiku), then please sum up the times.

Results:

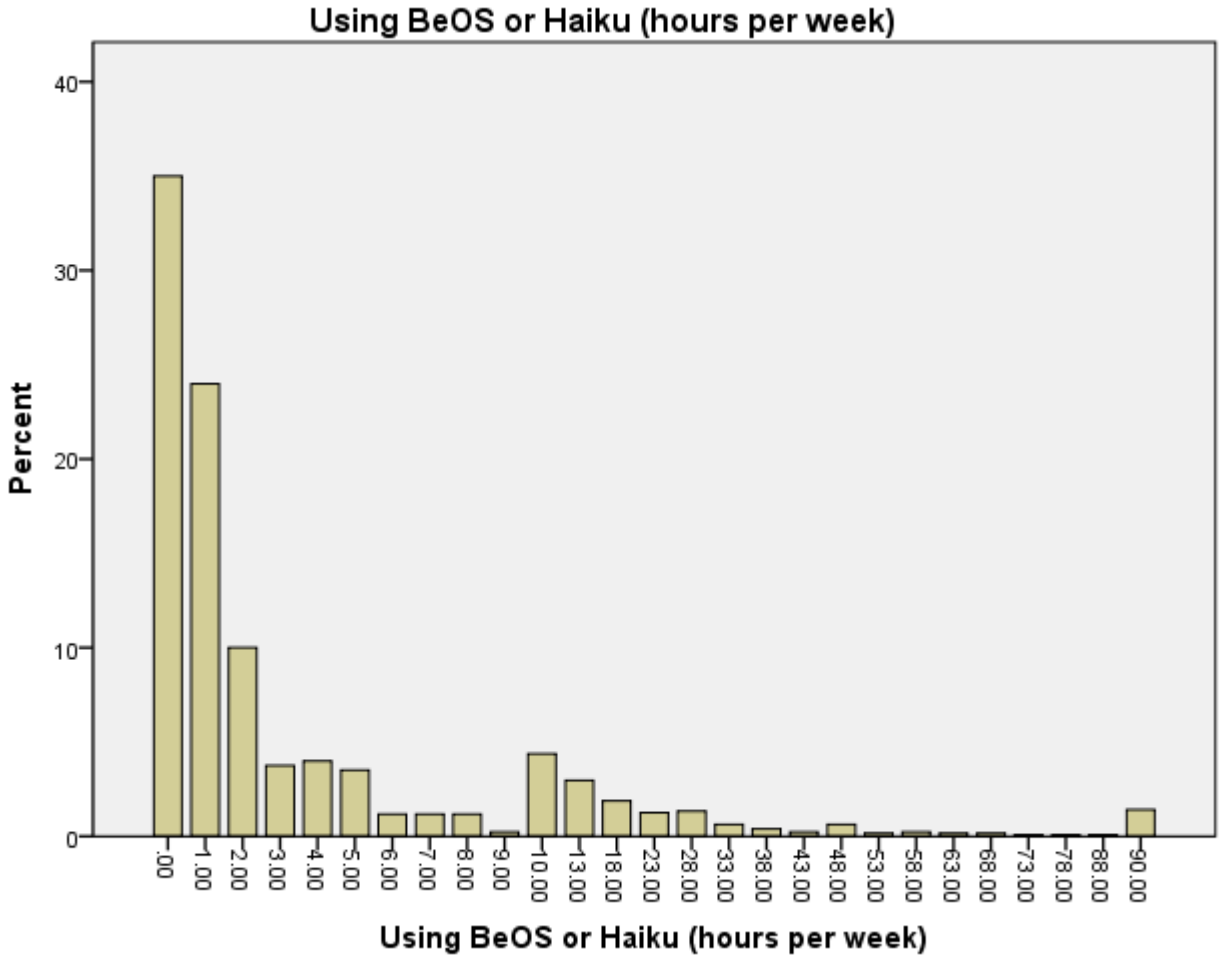
Statistics

BeOSHaikuHoursPerWeekR

N	Valid	1280
	Missing	16
Mean		5.6063
Std. Error of Mean		.38669
Median		1.0000
Mode		.00
Std. Deviation		13.83454

Using BeOS or Haiku (hours per week)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	448	34.6	35.0	35.0
	1.00	307	23.7	24.0	59.0
	2.00	128	9.9	10.0	69.0
	3.00	48	3.7	3.8	72.7
	4.00	51	3.9	4.0	76.7
	5.00	45	3.5	3.5	80.2
	6.00	15	1.2	1.2	81.4
	7.00	15	1.2	1.2	82.6
	8.00	15	1.2	1.2	83.8
	9.00	3	.2	.2	84.0
	10.00	56	4.3	4.4	88.4
	13.00	38	2.9	3.0	91.3
	18.00	24	1.9	1.9	93.2
	23.00	16	1.2	1.3	94.5
	28.00	17	1.3	1.3	95.8
	33.00	8	.6	.6	96.4
	38.00	5	.4	.4	96.8
	43.00	3	.2	.2	97.0
	48.00	8	.6	.6	97.7
	53.00	2	.2	.2	97.8
	58.00	3	.2	.2	98.0
	63.00	2	.2	.2	98.2
	68.00	2	.2	.2	98.4
	73.00	1	.1	.1	98.4
	78.00	1	.1	.1	98.5
	88.00	1	.1	.1	98.6
	90.00	18	1.4	1.4	100.0
	Total	1280	98.8	100.0	
Missing	System	16	1.2		
Total		1296	100.0		



Graphic 20: Survey results regarding the weekly duration of the usage of BeOS or Haiku

The people do not use BeOS respectively Haiku much. The mean duration is equal to 5.6 hours per week. The median is only one hour. The reason for the big difference between the mean and the median is the fact that there are three clusters of people. The biggest cluster (cluster three) consists of persons that do not use Haiku or use it only a little bit (between 0 and 5 hours per week). The next cluster (cluster one) contains people that use it occasionally, the centre of this cluster is at about 34 hours per week. The remaining cluster (cluster two) contains hardcore users. Please note that the value 90 in the chart and the table means “90 or more hours”. Therefore the standard deviation is high, equal to about 13.8 hours.

The SPSS 19 syntax used to calculate the clusters:

```
QUICK CLUSTER BeOSHaikuHoursPerWeekR
  /MISSING=LISTWISE
  /CRITERIA=CLUSTER(3) MXITER(10) CONVERGE(0)
  /METHOD=KMEANS(NOUPDATE)
  /PRINT INITIAL.
```

Initial Cluster Centers

	Cluster		
	1	2	3
BeOSHaikuHoursPer WeekR	43.00	90.00	.00

Iteration History[a]

	Change in Cluster Centers		
Iteration	1	2	3
1	8.359	3.261	2.484
2	.915	1.899	.000
3	.000	.000	.000

a. Convergence achieved due to no or small change in cluster centers. The maximum absolute coordinate change for any center is .000. The current iteration is 3. The minimum distance between initial centers is 43.000.

Final Cluster Centers

	Cluster		
	1	2	3
BeOSHaikuHoursPer WeekR	33.73	84.84	2.48

Number of Cases in each Cluster

Cluster	1	62.000
	2	25.000
	3	1193.000
Valid		1280.000
Missing		16.000

Graphic 21: Calculated clusters regarding the weekly duration of the usage of BeOS or Haiku

In general, most of the respondents do not use BeOS/Haiku or use it only a little bit, some use it occasionally and a there is a small number of people who belongs to the cluster of hardcore users.

Question 7: If you use Haiku or BeOS, then where do you use it?

Multiple choices are possible.

Results:

Totally, there are 1268 valid results where at least one answer was selected.

At home	984	77.6 percent
At work	87	6.9 percent
At school	45	3.5 percent
Not using	281	22.2 percent

Most people use Haiku respectively BeOS only at home.

Question 8: If you use Haiku, then how do you run it?

Multiple choices are possible.

Results:

Totally, there are 1264 valid results where at least one answer was selected.

Installed on a hard disk partition of a physical computer	554	43.8%
Live CD	140	11.1%
Live USB Stick or other flash memory	169	13.7%
Raw Image used with QEMU	76	6.0%
VM Image run in VMWare or VirtuaBox or an other Virtual Machine	548	43.4%
I do not use Haiku or BeOS	231	18.3%

Popular methods to use Haiku are to install it on a hard disk partition or to use a VM Image.

Question 9: Had you been using BeOS before you became interested in Haiku?

Results:

Totally, there are 1284 valid results where at least one answer was selected.

Yes. I had used BeOS before I became interested in Haiku.	889	69.2%
No. I did not use BeOS before Haiku. I began with Haiku.	395	30.8%

Most people who are interested in Haiku have experiences with BeOS.

Question 10: When did you begin to use BeOS or Haiku for the first time?

Please note: if you do not know the exact year, please select approximately the year.

Results:

Statistics

SinceWhenBeOSOrHaikuRString

N	Valid	1258
	Missing	38
Mean		2002.7711
Std. Error of Mean		.13570
Median		2003.0000
Mode		1998.00
Std. Deviation		4.81298

Since when using BeOS or Haiku

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1993	33	2.5	2.6	2.6
	1998	471	36.3	37.4	40.1
	2003	330	25.5	26.2	66.3
	2006	29	2.2	2.3	68.6
	2007	43	3.3	3.4	72.0
	2008	75	5.8	6.0	78.0
	2009	176	13.6	14.0	92.0
	2010	101	7.8	8.0	100.0
	Total	1258	97.1	100.0	
Missing	System	38	2.9		
Total		1296	100.0		

(Graphic 22: When BeOS respectively Haiku was used for the first time)

The respondents started using BeOS respectively Haiku on average in the year 2003. However, please note that this result is only an estimation because the drop down menu contained classes of years instead of exact years for the period from 1991 to 2005.

<option value="2010">2010</option> *<option value="2009">2009</option>*

<option value="2008">2008</option> *<option value="2007">2007</option>*

<option value="2006">2006</option>

<option value="2003">between 2001 and 2005</option>

<option value="1998">between 1996 and 2000</option>

<option value="1993">between 1991 and 1995</option>

Question 11: If you use BeOS or Haiku, then for what purposes?
How often do you use applications in BeOS or Haiku for the following purposes?

Totally 20 purposes were vertically listed and the respondents could give to each of them one of these answers:
never (1), rarely (2), sometimes (3), often (4), very often (5)

Results, ordered by the mean value:

Browsing the web
Mean 3.58 Median 4 Mode 5 Standard deviation 1.35 Valid answers 1086

Internet (general)
Mean 3.45 Median 4 Mode 5 Standard deviation 1.37 Valid answers 1084

Playing music
Mean 3.02 Median 3 Mode 1 Standard deviation 1.48 Valid answers 1064

Playing videos
Mean 2.82 Median 3 Mode 1 Standard deviation 1.46 Valid answers 1049

Writing e-mails
Mean 2.61 Median 2 Mode 1 Standard deviation 1.47 Valid answers 1056

Word processing
Mean 2.09 Median 2 Mode 1 Standard deviation 1.26 Valid answers 1037

Office software
Mean 2.08 Median 2 Mode 1 Standard deviation 1.23 Valid answers 1045

Playing computer games
Mean 1.92 Median 2 Mode 1 Standard deviation 1.11 Valid answers 1025

Other purposes
Mean 1.91 Median 1 Mode 1 Standard deviation 1.33 Valid answers 970

Sound editing

Mean 1.64 Median 1 Mode 1 Standard deviation 1.03 Valid answers 1030

Web design

Mean 1.64 Median 1 Mode 1 Standard deviation 1.07 Valid answers 1026

Web programming

Mean 1.63 Median 1 Mode 1 Standard deviation 1.06 Valid answers 1022

2D design or 2D animation or graphic editing

Mean 1.62 Median 1 Mode 1 Standard deviation 0.99 Valid answers 1036

Music composing or editing

Mean 1.56 Median 1 Mode 1 Standard deviation 0.98 Valid answers 1029

Development or programming of computer games

Mean 1.46 Median 1 Mode 1 Standard deviation 0.95 Valid answers 1021

Web server

Mean 1.46 Median 1 Mode 1 Standard deviation 0.96 Valid answers 1015

Development or programming of HAIKU (kernel, GUI, services, translations, etc.)

Mean 1.45 Median 1 Mode 1 Standard deviation 0.95 Valid answers 1026

Web application server

Mean 1.44 Median 1 Mode 1 Standard deviation 0.92 Valid answers 1022

Development or programming of applications

Mean 1.44 Median 2 Mode 1 Standard deviation 1.42 Valid answers 1022

3D design or 3D animation

Mean 1.26 Median 1 Mode 1 Standard deviation 0.69 Valid answers 1026

If other purposes, please describe them:
MULTILINE TEXTBOX

Among the other purposes often were mentioned these eight ones:

- Testing Haiku in general or features in new nighly builds (95 answers).
- Learning how Haiku or operating systems in general work (32 answers).
- Toying and having fun with Haiku (19 answers).
- Managing files, photographies or videos (11 answers).
- Recording or editing videos (10 answers).
- Communicating by using chats (9 answers).
- Watching TV or listening to radio (8 answers).
- Emulation of other systems (3 answers).

The results show that the people mostly use Haiku respectively BeOS for standard client tasks in the internet, such as browsing the web, writing messages and using chat services, and for playing video or music files. The traditional application areas of the multimedia operating system BeOS, such as editing sounds and videos, composing music or manipulation of 2D and 3D graphics respectively animations, are currently rarely used by the people.

Question 12: How many hours per week do you spend on average for the development (programming, GUI, services, translations, localisations, documentation, community support, etc.) of Haiku?
If you are not developing Haiku, please select 0 hours.
The purpose of this question is to find out how many working hours people contribute in the development of Haiku.

Results:
The valid sample size is 1266 people. Exactly 88 percent of these people do not spend any time for the development of Haiku. Eight percent of the persons spend up to 5 hours per week. The remaining 4 percent of the people spend more than 5 hours per week. About one percent of the respondents spend 20 or even more hours per week (one person spends even 88 hours per week).
The mean is equal to about 0.94 hours. The median is 0. The mode is also 0. The standard deviation is equal to about 4.79.

Question 13: Why are you interested in Haiku?

This is a very important question in this survey. Please write a few sentences about your interests and expectations regarding Haiku.

MULTILINE TEXTBOX

Results:

This question was answered by 1147 people. The interpretation of the answers was done manually. Therefore the results are depending on the researcher and can not be exact and sure.

However, such questions where the respondents can freely write what they think are very useful to discover those opinions and arguments that were unknown to the researcher while creating the questions for the survey.

Answer	Number	Percentage
Fan of BeOS or ZETA	360	31.4 percent
Fast booting or very responsive	345	30.1 percent
Simple or easy to use or easy to learn how to use it	263	22.9 percent
Haiku is light	38	12.0 percent
Haiku is free or open source	137	11.9 percent
Interest in desktop operating system	107	9.3 percent
Interest in alternative operating systems in general	100	8.7 percent
Multimedia capabilities	77	6.7 percent
Low hardware requirements	75	6.5 percent
The graphic user interface is nice or clean	70	6.1 percent
Haiku is stable	54	4.7 percent

Other quite often found answers were that Haiku is unified and ready to be used out of the box. There is only one unified distribution and not such a chaos as it exists in Linux.

Some respondents wrote that they like the operating systems AmigaOS or Mac OS and they hope that Haiku will have some features or some of the look and feel of these operating systems.

Question 14: From your point of view, do you agree or disagree regarding these statements?
Totally 13 statements were vertically listed and the respondents could give to each of them one of these answers:
strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5)

Results, ordered by the mean value:

Statement 1: It is important that an operating system supports file sizes of more than 4 GB per file.
Mean 4.22 Median 5 Mode 5 Standard deviation 0.96 Valid answers 1270

Statement 2: One of the most important reasons why I am interested in Haiku is the fast booting of Haiku.
Mean 4.01 Median 4 Mode 4 Standard deviation 0.94 Valid answers 1268

Statement 3: One of the most important reasons why I am interested in Haiku is the user-friendliness (easy to use, user friendly).
Mean 4.00 Median 4 Mode 4 Standard deviation 0.91 Valid answers 1269

Statement 4: One of the most important reasons why I am interested in Haiku is the multimedia performance of Haiku.
Mean 3.95 Median 4 Mode 4 Standard deviation 0.96 Valid answers 1272

Statement 5: One of the most important reasons why I am interested in Haiku are the low hardware requirements.
Mean 3.94 Median 4 Mode 4 Standard deviation 0.97 Valid answers 1262

Statement 6: I am disappointed by Windows because it is too expensive.
Mean 3.89 Median 4 Mode 4 Standard deviation 1.08 Valid answers 1264

Statement 7: I prefer an operating system with a simple graphic user interface (GUI) that supports only essential features, but it is easy to use and very fast.
Mean 3.75 Median 4 Mode 4 Standard deviation 0.98 Valid answers 1264

Statement 8: I dislike Windows because I do not like Microsoft.

Mean 3.19 Median 3 Mode 3 Standard deviation 1.22 Valid answers 1265

Statement 9: I prefer an operating system that is user friendly, even if this means that I can not configure everything in the operating system.

Mean 3.00 Median 3 Mode 4 Standard deviation 1.20 Valid answers 1269

Statement 10: I prefer an operating system that gives me the freedom to configure all possible settings, even if this means that the operating system is not easy to use.

Mean 2.95 Median 3 Mode 3 Standard deviation 1.11 Valid answers 1262

Statement 11: I prefer an operating system with a powerful graphic user interface (GUI) that supports many modern features such as 3D desktop, although this means that the hardware requirements are high.

Mean 2.72 Median 3 Mode 3 Standard deviation 1.08 Valid answers 1266

Statement 12: I am disappointed by Linux because it is too difficult to use.

Mean 2.65 Median 2 Mode 2 Standard deviation 1.27 Valid answers 1265

Statement 13: I am disappointed by Windows because it is too difficult to use.

Mean 2.27 Median 2 Mode 2 Standard deviation 1.10 Valid answers 1264

It is interesting that most people strongly disagree or disagree that Windows is difficult to use (see the statement 13), but many people think that Windows is too expensive (see the statement 6).

The statement 9 is opposite to the statement 10. The mean values of these two statements are not very different (both about 3) and the median values are equal to 3. However, the Pearson correlation coefficient is equal to -0.448 and the correlation is significant at the 0.01 level (the two tailed significance level is 0.000). It seems that there are two clusters of people. Some of them prefer a user friendly operating system with limited opportunities to configure it, others prefer an operating system with much freedom regarding the configuration opportunities, although such an operating system could be difficult to use. However, most of the people choose the answers disagree (2), neutral (3) or agree (4) and not the extreme answers strongly disagree (1) and strongly agree (5).

The statement 7 is opposite to the statement 11. Most of the persons prefer a simple, easy-to-use and fast graphic user interface that supports only essential features. The Pearson correlation coefficient is equal to -0.426 and the correlation is significant at the 0.01 level (the two tailed significance level is 0.000).

In general, many people like Haiku because it is a fast and user-friendly operating system that has low hardware requirements and supports multimedia features, including big files that are often used for video data (see the statements 1 to 5).

Question 15: From your point of view, please prioritise these tasks for the next versions of Haiku.
Please note that you can set each level of priority only to one task. The idea is to create a ranking by using each level of priority exactly once.
It is very important that you set a level of priority to every task. Otherwise the ranking will not be complete.

Regarding the analysis of the answers, only those answers, where all tasks got a level of priority, will be taken into account. The resulting sample contains 1009 persons.

Results, first ordered by the median, then ordered by the mean value:

In case of ranks it is normally not allowed to use the mean value because the ranks are based on the ordinal measurement level, but the scale measurement level is required for the usage of the mean. Therefore the median should be used in case of ranks. Sadly, there are two tasks with the median rank 6 respectively two tasks with the median level 4. Therefore the mean value had been also calculated and used as an additional value to determine the ranking, although this is, when being exact, not allowed.

A powerful office software, such as OpenOffice or some other
Mean rank 2.47 Median rank 2 Mode rank 1

A powerful graphic editing software
Mean rank 2.96 Median rank 3 Mode rank 2

A powerful video editing software

Mean rank 3.72 Median rank 4 Mode rank 4

A powerful music composition and sound editing software

Mean rank 3.75 Median rank 4 Mode rank 3

A powerful game development framework for Haiku

Mean rank 4.56 Median rank 5 Mode rank 7

A powerful web application server software

Mean rank 5.21 Median rank 6 Mode rank 6

A powerful web server software

Mean rank 5.32 Median rank 6 Mode rank 7

From the point of view of the people, the most important task is the development or porting of a powerful office software, for example OpenOffice.

A high important task is the development or porting of a powerful software for graphic editing. As already mentioned in previous chapters, there are no professional graphic editing tools, such as latest versions of Adobe Photoshop, for Haiku.

Medium important tasks are the development or porting to powerful video editing software respectively music composition and sound editing software.

As already mentioned in previous chapters, Haiku is a desktop operating system. Therefore it is no wonder, that web application server software respectively web server software are not important from the point of view of many people.

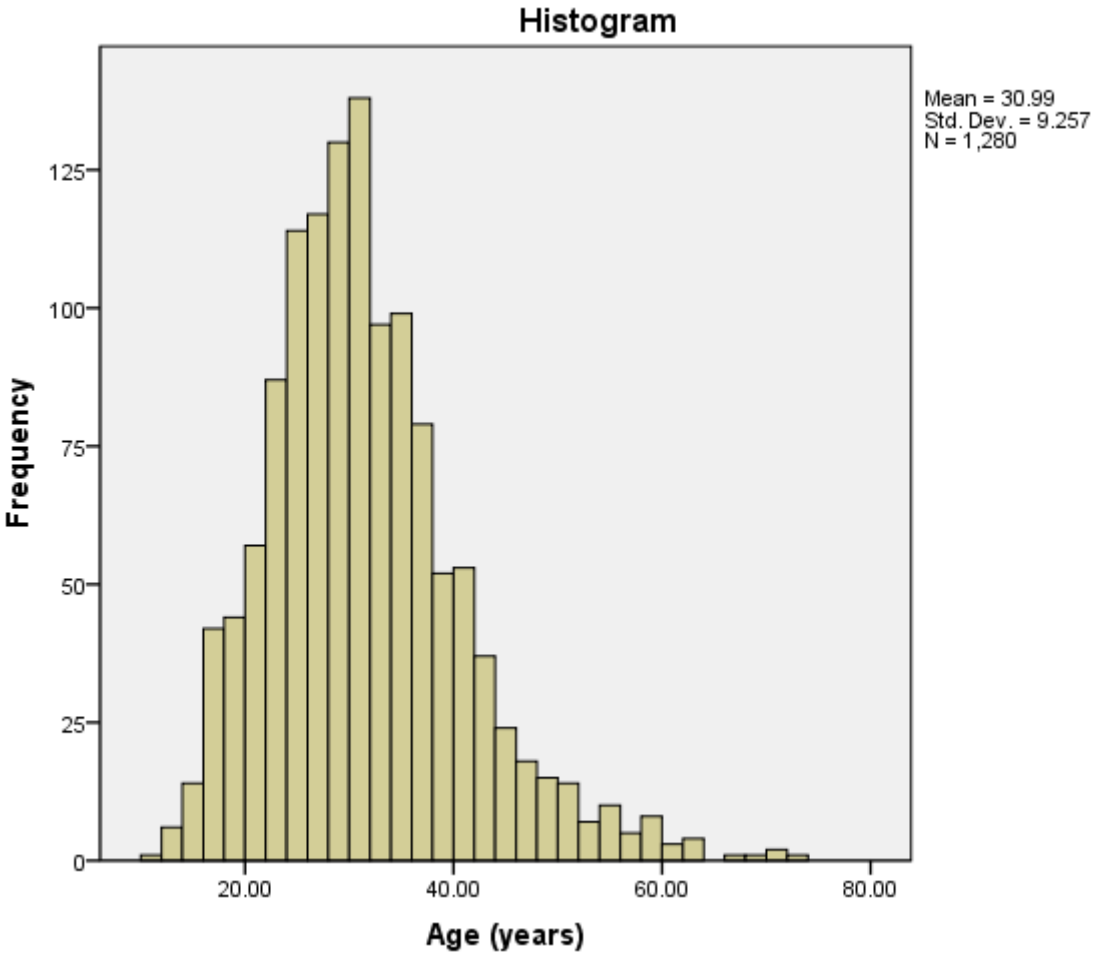
Question 16: How old are you? (years)

Results:

Statistics

AgeR

N	Valid	1280
	Missing	16
Mean		30.9898
Std. Error of Mean		.25875
Median		30.0000
Mode		30.00
Std. Deviation		9.25737



Graphic 23: Age in years

Totally 1280 persons answered this question. On average the respondents are 31 (mean) respectively 30 (median) years old. The standard deviation is equal to about 9.26 years. Most of the respondents (about 78 percent) are between 20 and 40 years old.

Question 17: What is your gender?

O Female O Male

Results:

Totally 1274 persons answered this question. Only 11 (0.9 percent) of the respondents are female. There are about 115 times more males then females. Haiku is still an exotic operating system that is mostly interesting for people who are fascinated by technology and computer sciences. In such fields females are rare in general.

However, such a huge lack of females in this survey is very surprising. One reason may be that many fans of Haiku were fans of BeOS in past. In the previous century there was only a very small percentage of females among computer users. Nevertheless, even this can not totally explain this huge lack of female respondents in this survey.

Perhaps the Haiku community should try to become more fascinating for females by doing some changes regarding the website and the image of Haiku.

Question 18: Where do you live?

Results:

Totally 1256 persons answered this question. The drop down list contained all countries of the world. There are too many to be listed here. Therefore only the top 10 countries ordered by the number of people who answered the survey are listed here now. These include about 67.9 percent of all the persons who answered the survey.

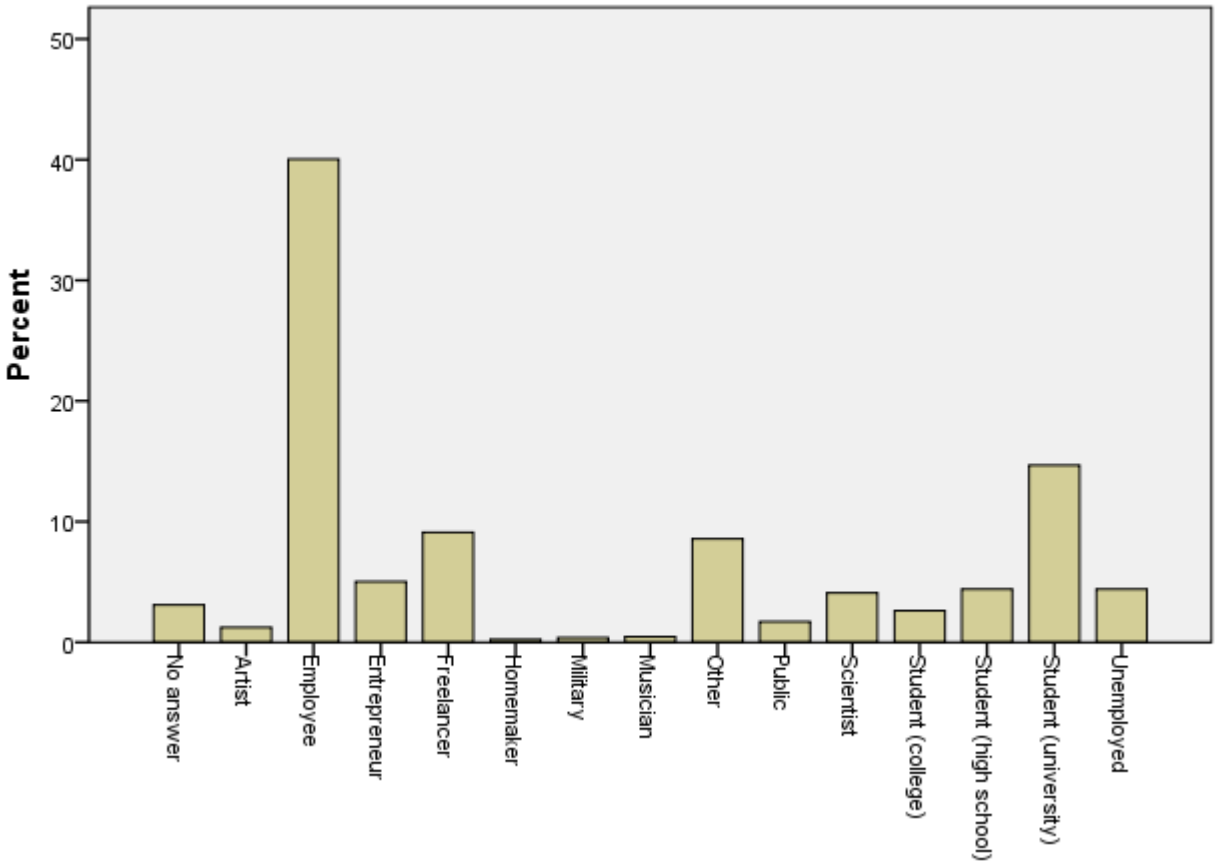
United States of America	305	24.3 percent
Germany	147	11.7 percent
United Kingdom	82	6.5 percent
France	65	5.2 percent
Canada	58	4.6 percent
Sweden	44	3.5 percent
Netherlands	41	3.3 percent
Australia	39	3.1 percent
Italy	39	3.1 percent
Poland	33	2.6 percent

Question 19: What is your current occupation?

Results:

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	40	3.1	3.1	3.1
	Artist	16	1.2	1.2	4.3
	Employee	519	40.0	40.0	44.4
	Entrepreneur	65	5.0	5.0	49.4
	Freelancer	118	9.1	9.1	58.5
	Homemaker	3	.2	.2	58.7
	Military	5	.4	.4	59.1
	Musician	6	.5	.5	59.6
	Other	111	8.6	8.6	68.1
	Public	22	1.7	1.7	69.8
	Scientist	53	4.1	4.1	73.9
	Student (college)	34	2.6	2.6	76.5
	Student (high school)	57	4.4	4.4	80.9
	Student (university)	190	14.7	14.7	95.6
	Unemployed	57	4.4	4.4	100.0
	Total	1296	100.0	100.0	



Graphic 24: Occupation

Question 20: What is your current field of work or study?

If you have more than one field, then please choose the field that is most important for you.

Results:

Field of work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	9	.7	.7	.7
	Arts, graphics, multimedia	57	4.4	4.4	5.1
	Business or economics	49	3.8	3.8	8.9
	Computer sciences or IT	791	61.0	61.0	69.9
	Construction, architecture	26	2.0	2.0	71.9
	Handcraft	6	.5	.5	72.4
	Human sciences	34	2.6	2.6	75.0
	Life sciences	22	1.7	1.7	76.7
	Literature, languages, writing, translations etc.	19	1.5	1.5	78.2
	Machinery engineering	39	3.0	3.0	81.2
	Music or sound	17	1.3	1.3	82.5
	Natural sciences	53	4.1	4.1	86.6
	No answer	47	3.6	3.6	90.2
	Other	123	9.5	9.5	99.7
	Sports	4	.3	.3	100.0
	Total	1296	100.0	100.0	

Graphic 25: Field of work

Most of the people are working or studying in fields of computer sciences respectively information technology. Other people, even those working in fields of arts, graphics, sound, music respectively multimedia (the traditional target group of BeOS) are only a small group (about 5.7 percent) among the people who answered the survey. This indicates that Haiku and BeOS are not playing an important role in professional graphic, sound or multimedia editing.

Question 21: What is your highest degree (education)?

If your degree is missing in the list, then please choose a degree that is similar to yours degree.

Results:

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No answer	35	2.7	2.7	2.7
	Associate degree	40	3.1	3.1	5.8
	Bachelor	323	24.9	24.9	30.7
	Certificate of Higher Education	54	4.2	4.2	34.9
	German Diplom (FH)	20	1.5	1.5	36.4
	German Diplom (Uni)	31	2.4	2.4	38.8
	Doctorate	38	2.9	2.9	41.7
	High school	232	17.9	17.9	59.6
	Magister	5	.4	.4	60.0
	Master	192	14.8	14.8	74.8
	Middle school	55	4.2	4.2	79.1
	Other	82	6.3	6.3	85.4
	Post doctorate	6	.5	.5	85.9
	Some other four years college or university degree	57	4.4	4.4	90.3
	Some other three years college or university degree	50	3.9	3.9	94.1
	Some other two years college or university degree	54	4.2	4.2	98.3
	Undergraduate degree	22	1.7	1.7	100.0
	Total	1296	100.0	100.0	

Graphic 26: Education

When looking at the above listed education levels of the people, then it is not easy to determine the average level of education because there are many very different degrees, depending on the type of school and the differences between the education systems in various countries.

However, these education levels can be ordered within a ranking list. Of course, I am aware of the problems which appear when trying to create a ranking by comparing different degrees and school system from different countries. Often it is not easy to make a decision and some of the decisions may be not correct from some points of view. For example, I did not make differences between a Bachelor degree and a Bachelor degree honours, although there is a difference between these two degrees in the United Kingdom. Therefore this SPSS RECODE statement is just a approximation that does not create a perfect ranking, but the created ranking is sufficient for the purpose of

estimating an average level of education of the people who answered this survey.

RECODE Education (MISSING=SYSMIS) ('?'=SYSMIS) ('Middle school'=1) ('High school'=2) ('CHE'=3) ('ASH'=4) ('SomeOtherTwoYears'=4) ('UGD'=4) ('Bachelor'=5) ('SomeOtherThreeYears'=5) ('DiplomFH'=5) ('SomeOtherFourYears'=5) ('Magister'=6) ('Master'=6) ('DiplomUni'=6) ('Doctorate'=7) ('Post doctorate'=8) ('Other'=SYSMIS) INTO EducationR. EXECUTE.

Both, the median value and the mode value are equal to 5 which means that on average the people who answered the survey have a Bachelor degree or some other more or less similar degree that required between three and four years of studying at a university or college.

Question 22: What is your marital status?

Results:

This question was answered by 1236 people. About 27.8 percent are married. Additionally, about 26.9 percent are not married, but they have a romantic relationship or are engaged. About 0.3 percent are widows. The most frequently chosen option, to be exact 45.0 percent, was the marital status Single. An interesting question is how many people are in any kind of romantic relation and how many are without a partner. This was done by using this SPSS syntax:

RECODE MartialStatus (MISSING=SYSMIS) ('?'=SYSMIS) ('Single'=0) ('Widowed'=0) ('UnmarriedButWithPartner'=1) ('Married'=1) INTO MartialStatusR.

EXECUTE.

Totally only 54.7 percent have a partner. This is less than the average in most western countries. In general, many of the people who answered the survey are single.

Question 23: How many children do you have?

Results:

This question was answered by 1244 people. Both, the mode and median values are equal to zero. The mean is about 0.44 and the standard deviation is equal to about 0.90. About 76 percent of the persons have no children. About 10 percent have one child and another 10 percent have two children. About 4 percent have three or more children.

Question 24: If you like, you can enter your e-mail address in the free text field. This is only OPTIONAL and by doing this, you accept possible further questions about your opinion regarding Haiku or BeOS via e-mail.

If you do not like any further questions, please leave this text field blank.

E-mail address (optional): ONELINE TEXTFIELD

Results:

Totally there are 496 persons that entered an e-mail address. Within the first few weeks of the survey some of them (less than 50) were contacted regarding additional information for the questions 3 and 4 of the survey because many had chosen the answer “other” operating system. Their answers were used to manually update the data sets in the survey and add additional entries (operating systems) in the drop down list of the survey.

6.2.2. Correlations

First of all, it is wise to check whether the survey data is valid and useful for the calculation and interpretation of correlations. An easy way to do this is to take a look at the socio-demographic data. In general, a positive correlation between age and number of children can be expected. Furthermore, people who are married or in a long term relationship have on average more children than people who are single.

These two general expectations can be verified with the correlation coefficients that were calculated by using the survey data:

The Pearson correlation coefficient between age and number of children is equal to 0.461 and the level of significance is equal to 0.000 (N=1239). The Pearson correlation coefficient between the recoded MartialStatusR (see the question 22 in the chapter 6.2.1) and the age is equal to 0.397 and the level of significance is equal to 0.000 (N=1225).

These results show that the data seems to be valid and useful for the calculation and analyses of correlations.

Result: Old people prefer user-friendly operating systems

There is a weak, but highly significant, correlation between the number of children and the importance of user-friendliness regarding operating systems (see statement 9 regarding the question 14 in the chapter 6.2.1).

The Pearson correlation coefficient between age and number of children is equal to 0.110 and the level of significance is equal to 0.000 (N=1223). At first sight the reason for this may be that many people who have children want to spend a part of their free time with them and therefore they neither have the time nor the motivation to spend dozens of hours to learn how to use a complicated operating system. However, this is only a an illusion because there is a strong correlation between the age and the number of children (the Pearson correlation coefficient is equal to 0.461 and the significance level is equal to 0.000). In fact, the age of the people is the relevant variable regarding the importance of user-friendliness of operating systems. In order to eliminate the influence of the age regarding the correlation between the number of children and the importance of user-friendliness of operating systems, the age was used as the control variable in a partial correlation calculation. In this case the correlation between the number of children and the importance of user-friendliness regarding operating systems is only 0.044 and the correlation is not significant (significance level is equal to 0.124). However, when using the number of children as the control

variable, we see a significant correlation between the age and the the importance of user-friendliness regarding operating systems (variable *OSShallBeUFR*). Furthermore, there are significant correlations between the age and the variables *Linux is difficult* (see the statement 12 regarding the question 14 in the chapter 6.2.1) respectively *importance of supporting big files* (see the statement 1 regarding the question 14 in the chapter 6.2.1).

In general, it seems to be that the older the people are, the more they think that Linux is difficult and an operating system shall be user friendly. However, the correlation coefficients are quite small.

Correlations

Control Variables			AgeR	OSShall BeUFR	Linux DifficultR	Big FilesR
ChildrenR	AgeR	Correlation	1.000	.123	.127	-.173
		Significance (2-tailed)	.	.000	.000	.000
		df	0	1209	1209	1209
	OSShallBeUFR	Correlation	.123	1.000	.379	-.026
		Significance (2-tailed)	.000	.	.000	.374
		df	1209	0	1209	1209
	LinuxDifficultR	Correlation	.127	.379	1.000	.003
		Significance (2-tailed)	.000	.000	.	.923
		df	1209	1209	0	1209
	BigFilesR	Correlation	-.173	-.026	.003	1.000
		Significance (2-tailed)	.000	.374	.923	.
		df	1209	1209	1209	0

Graphic 27: Correlations regarding age

Result: Fans of BeOS and Haiku do not hate Microsoft and Windows

There is no significant respectively no worthy of mention correlation between the level of interest in BeOS respectively Haiku and the variables WindowsExpensiveR, DislikeMicrosoftR, WindowsDifficultR and (see the statement 6, 8 and 13 regarding the question 14 in the chapter 6.2.1). The levels of significance are worse than 0.05 or the Pearson correlation coefficient is between -0.10 and +0.10. But there is a weak correlation between the variable LinuxDifficult and the level of interest in BeOS. The Pearson correlation is equal to 0.151 and the level of significance is equal to 0.000 (N=1259). However, this is only a weak correlation.

In general, there seems to be no correlation between the level of interest in BeOS respectively Haiku and the sympathy for other operating systems. A hostility, such as between many Linux fans and Microsoft Windows, seems not to exists in the Haiku community.

Result: Fans of BeOS and Haiku like the simplicity, speed, multimedia features and low hardware requirements of these operating systems

There are highly significant, to be precious all the significance levels are equal to 0.000, correlations (Pearson correlation coefficients between 0.212 and 0.293) between the level of interest in Haiku (InterestedInHaikuR) respectively BeOS (InterestedInBeOSR) and the reason why the people are interested in Haiku (see the corresponding statements regarding the question 14 in the chapter 6.2.1): ReasonHaikuSimpleR (statement 3), ReasonHaikuFastR (statement 2), ReasonHaikuMultimediaR (statement 4), ReasonHaikuLowHardwareReqR (statement 5).

Pearson Correlation Coefficient	InterestedInHaikuR	InterestedInBeOSR
InterestedInHaikuR	1.000 (N=1291)	0.531 (N=1285)
ReasonHaikuSimpleR	0.293 (N=1261)	0.279 (N=1263)
ReasonHaikuFastR	0.216 (N=1266)	0.216 (N=1263)
ReasonHaikuMultimediaR	0.266 (N=1270)	0.292 (N=1266)
ReasonHaikuLowHardwareReqR	0.212 (N=1260)	0.214 (N=1256)

These four reasons were also often given answers regarding the question 13 where the people could freely write in a multi-line text box. Therefore a conclusion is that these four characteristics of Haiku are key features from the point of view of many fans and users of Haiku respectively BeOS.

Result: The marital status and level of education of the members of the Haiku community play no worth of mention role regarding the interest for Haiku and the reasons why they are fascinated by Haiku.

There are no mentionable correlations between the socio-demographic variables marital status and the level of education on the one hand and the variables InterestedInHaikuR and all the reasons why the people are interested in Haiku on the other hand. Whether there are some correlations between these variables and the gender can not be said because only 11 of 1274 people are female in the survey.

6.3. Summary

Although the respondents answered that their favourit operating system is Haiku respectively BeOS, the most often used operating system family is Microsoft Windows (see the results corresponding to the questions 1 to 5 in the chapter 6.2.1).

On average the people use Haiku less than 6 hours per week. When calculating the median instead of the mean, then it is even only one hour per week (see the results corresponding to the question 6 in the chapter 6.2.1).

In general, the respondents use Haiku respectively BeOS at home and very rarely at school or at work (see the results corresponding to the question 7 in the chapter 6.2.1).

When they use Haiku, then it is mostly installed on a hard disk partition of a physical computer or it is used as a VM image run in a virtual machine (see the results corresponding to the question 8 in the chapter 6.2.1).

More than two-thirds of all people answered that they had used BeOS before they became interested in Haiku (see the results corresponding to the question 9 in the chapter 6.2.1). This means that Haiku did not gain many new users and fans. It could be necessary to improve the marketing activities.

When using Haiku or BeOS, most people use applications that are typical for desktop computing, such as browsing the web, playing music, playing videos and internet in general (see the results corresponding to the question 11 in the chapter 6.2.1).

Many people are interested in Haiku because they are fans of BeOS or ZETA. Other often given reasons are the booting speed, the responsiveness, the ease of use and the facts that Haiku is light and free (see the results corresponding to the questions 13 and 14 in the chapter 6.2.1).

The respondents think that the most important tasks for the next version of Haiku shall be the development or porting of a powerful office software and a powerful graphic editing software (see the results corresponding to the question 15 in the chapter 6.2.1). These results are no wonder because there exists no worthy of mention office software for Haiku. The old office software

products available for BeOS are not compatible with Haiku. The most powerful available graphic editing tool is WonderBrush. Although this graphic editing software is useful for small private projects and supports layers, it is not powerful enough to be used for professional graphic editing and can not enter the competition with GIMP or Adobe Photoshop.

Almost all Haiku users are male. Less than one percent of the people, that answered the survey, are female. Most of the people are about 30 years old, have a high level of education and work in fields of computer sciences or information technology. Quite many are singles and about three-fourths have no children (see the results corresponding to the questions 16 to 23 in the chapter 6.2.1).

The older the people are, the more they appreciate user friendly operating systems and the more they think, that Linux is difficult to use.
Most fans of BeOS respectively Haiku do not hate Microsoft. There seems to be no hostility regarding Microsoft or Windows, in opposite to the situation in the Linux community where such a hostility exists.
In general, the fans of Haiku respectively BeOS appreciate the speed, simplicity, low hardware requirements and multimedia features of these two operating systems (see the bivariate correlations and partial correlations in the chapter 6.2.2).