FLOSS Final Report – Part 1

Free/Libre Open Source Software: Survey and Study

Use of Open Source Software in Firms and Public Institutions
Evidence from Germany, Sweden and UK

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1 Introduction

This report constitutes the first part of the final report from the FLOSS project,[1] which was conducted from June 2001 – June 2002 by Berlecon Research and the International Institute of Infonomics at the University of Maastricht. The project was financed by the European Commission under the Information Society Technologies (IST) thematic programme.

Report is part of FLOSS project

Purpose of the FLOSS project was – among other things – the collation of a base of hard data on the importance and role of Open Source and free software in today's economies as well as an impact assessment for policy and decision-making. This report provides such data in the form of the results from a survey about the use of Open Source software (OSS)[2] in European enterprises and public institutions, about their motivations for using OSS, and about the benefits they derive from its use.

Project provides data on OSS usage

From February to May 2002 the fieldwork for the FLOSS user survey was conducted. Altogether 1,452 companies and public institutions in Germany, Sweden and UK with at least 100 employees were asked by telephone whether they use Open Source software. 395 of these were indeed using Open Source software in some way or another or were at least planning to do so within the next year. These establishments were interviewed in detail.

Fieldwork in spring 2002 with 395 detailed interviews

There are two sorts of results from this survey. First of all, the number of companies in the different regions that use Open Source software provides some information about the actual popularity of OSS within these establishments. As this survey was only conducted at the establishment level, the focus is on deliberate economically motivated usage decisions and not on the use of OSS for ideological or other personal reasons.

Two sorts of results

And secondly, the answers to several detailed questions posed to those establishments actually using OSS provides more insight into the motivations for and benefits from using Open Source.

As the survey has been conducted among enterprises as well as public sector institutions, we will call the survey units "establishments" to capture the for-profit as well as the non-profit entities. We will call both "professional users" to distinguish them from private users of Open Source software.

Some definitions

This report is organised as follows: Chapter 2 describes the survey's methodology as well as its effectiveness. It also contains important information about how the survey results can be interpreted. Chapter 3 presents results about the spread of Open Source

Outline of the report

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1. Free/Libre Open Source Software: Survey and Study. More information about the project can be found on the Internet at the following sites: www.infonomics.nl/FLOSS / and www.berlecon.de/services/FLOSS/.
2. We have restricted this survey to Open Source software to obtain clear conclusions. Including all other sort of free software as well as those software pricing schemes where some software parts are freely available would only lead to confusion. As the survey results show, the price tag does play an important role for the decision, though.

usage within the three countries in general as well as for specific usage areas. Chapter 4 contains survey results about the attitude of Open Source using establishments towards Open Source. And finally, chapter 5 contains survey results about the benefits OSS users derive from this sort of software in four different usage areas.

2   Survey methodology

In designing the survey of professional OSS users, two major objectives had to be met. First of all, the survey should provide fairly accurate information about the use of OSS in general as well as in several popular application areas (e.g., as server operating system). And secondly, the survey should provide reliable information about the motivation for and benefits from using Open Source software.

Two major objectives ...

To obtain this information, a two-step approach was chosen, where establishments were first asked whether they are currently using OSS or planning to do so within the next year, together with a short definition of Open Source software. Altogether 1,452 establishments were asked this question. If they answered with yes, as 395 did, they were given a detailed set of questions. Within these establishments, the target person was the person responsible for IT decisions and administration. The person should be able to answer questions about the establishment's IT decisions and in addition have a basic understanding of the technical issues.

... and a two-step survey approach

The professional user survey was conducted by telephone from February to May 2002 by PbS AG from Munich. Telephone interviews have been chosen, as it is rather difficult to reach the targeted IT decision makers in other ways. People being responsible for IT related issues in commercial establishments currently belong to the most often interviewed professionals and are therefore typically reluctant to participate if they are not directly contacted.

Survey conducted by telephone

Survey sample

The survey was intended to yield information about OSS use in several countries of the European Union. Due to budgetary restrictions, interviews could only be conducted for a limited number of countries. We have chosen Germany, Sweden and the UK. While the first and the last represent significant markets in the European Union, the second is a typical case for a small country, which has in addition a high IT usage rate. Furthermore, especially Germany and Sweden were of interest, as desk research revealed that they show opposite extremes of OSS usage: According to the last Internet Operating System Counter from April 1999[3] in Germany 42,7% of Internet hosts were running Linux, while the same figure for Sweden was only 16,9%.

Regions Germany, Sweden and the UK

To be able to compare the survey outcome by region, size or industry, the sample was stratified by eight strata or quota. Country, establishment size and industry were chosen as characteristics for determining to which stratum an establishment belonged. Indicator for size was the number of employees per establishment. Entities with less than 100 employees were not included in the sample.

Survey stratification by two size classes ...

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3.   Leb.net/hzo/ioscount/.

❑   Quota one contains establishments with 100 to 500 employees per unit.
❑   Quota two contains establishments with more than 500 employees per unit.

... and four industries

In addition, there were four sample quotas based on industries. We distinguish between the public sector and three quotas of the private sector. The private sector quotas were differentiated according to the amount of IT spending in relation to the revenues per industry. Motivation for this stratification was that industries with a high IT intensity – and thus high IT expenditures – might be more familiar with OSS and might therefore show a different usage pattern from those with lower IT spending ratios.[4]

High IT intensity

Quota one includes private industries with a high IT intensity. The IT spending in relation to revenues is 4.1 percent or higher. According to the NACE classification,[5] industries in this quota are:

❑   NACE J: Banking, insurance, and other finance
❑   NACE I 64: Communications industry
❑   NACE I 60-63: Transport industry
❑   NACE K: Business services
❑   NACE N: Health industry

Medium IT intensity

Quota two includes private industries with medium IT intensity. The IT spending in relation to revenues is a minimum of 2.8 percent but smaller than 4.1 percent. According to the NACE classification, industries in this quota are:

❑   NACE E: Utilities
❑   NACE DA-DJ: Process manufacturing, which includes all industries that transform raw materials into products or into substances with new physical and chemical properties (food, drink and tobacco, textile and leather, wood and fibre, paper and paper products, chemicals, rubber and plastics products, preliminary processing of non-metallic mineral products and metals)
❑   NACE DK-DN: Discrete manufacturing, which includes industries that transform semi-finished products into final products (machinery and equipment not elsewhere classified, electrical and optical equipment, transport equipment, furniture, and recycling)

Low IT intensity

Quota three includes private industries with low IT intensity. The IT spending in relation to revenues is lower than 2.8 percent. According to NACE, industries in this quota are:

❑   NACE G 51: Wholesale trade
❑   NACE G 50 and G 52: Retail and automobile trade
❑   NACE H: Hotels and tourism
❑   NACE F: Construction Industry

Public sector

Quota four includes the public sector. According to the NACE classification, we defined it as:

❑   NACE L: Government
❑   NACE M: Education

Because of supposedly low use of Open Source software agriculture, mining and other services were not included in the survey. According to NACE classification these are NACE A-B (Agriculture), NACE C (Mining) and NACE O (Other Services).

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4.   The usage ratios were taken from META Group and Rubin (2001): IT Spending as a % of Revenue, www.metricnet.com.
5.   NACE = Nomenclature statistique des Activités économiques, official classification of industries used in the European Union.

	UK		Sweden		Germany		Total
	small	large	small	large	small	large	
High intensity (NACE I,J,K,N)	7	20	20	20	20	20	107
Medium Intensity (NACE D, E)	9	1	20	20	20	20	90
Low Intensity (NACE F, G, H)	7	7	21	14	21	19	89
Public sector (NACE L, M)	20	13	20	16	20	20	109
Source: Survey results.							

Table 2–1
Survey observations per strata

This stratification of the sample can be summarised in a matrix. Each cell in the matrix contains the number of observations in the sample for establishments with these characteristics. These cells do not show identical numbers of observations for a variety of reasons. First of all, due to budgetary constraints and high refusal rates, fewer interviews were conducted in the UK than in the two other countries. Secondly, in some cells the number of establishments in the universe was rather small, the refusal rates were higher than on average and/or the usage of Open Source software was less widespread. In one extreme case a combination of these led to the situation that only a single observation exists.

Observation matrix for survey

Participation and refusal

Participation in this survey was rather uneven, with relatively high refusal rates in many categories. As stated above, at the time of conducting this survey IT decision makers were difficult to reach. Not only had they been surveyed many times during the previous e-commerce boom, but they were in addition busy coping with tightened budgets and with restructuring their establishments e-business activities.

IT decision makers were difficult to reach

As table 2–2 shows, the refusal rates differ between countries as well as between industries and size classes, ranging from as low as 5.6% (large public sector establishments in Sweden) to as high as 91.5% (large medium IT intensive companies in Germany).

Refusal rates differ between countries and industries

A major assumption for the subsequent analysis is that the OSS usage patterns of those that refused outright, do not differ from those that took part. If this is not the case, the OS usage would most likely be higher with those companies that participated than with those that refused, biasing OSS usage rates upwards. Justification behind this guess is that those not using OSS might more likely refuse when they hear the topic of the survey as they consider it to be not of interest.

Assumption of equal OSS usage patters between participants and refusals

	UK		Sweden		Germany	
	small	large	small	large	small	large
High intensity (NACE I,J,K,N)	86.5%	57.8%	62.7%	50.2%	76.6%	83.3%
Medium Intensity (NACE D, E)	72.3%	83.8%	42.9%	22.8%	69.2%	91.5%
Low Intensity (NACE F, G, H)	80.3%	87.0%	21.4%	31.7%	79.7%	88.1%
Public sector (NACE L, M)	53.4%	72.4%	29.9%	5.6%	77.9%	63.3%
Total	76.2%		39.8%		82.0%	
Source: Survey results.						

Table 2–2
Refusal rates in survey

Weighting scheme

To be able to draw conclusions about the use of Open Source software in the different countries, weights have to be calculated for each cell to bring the sample distribution in accordance with the real distribution of establishments across these cells. Otherwise the stratification of the sample would lead to distortions. E.g., cells with a high number of observations in the sample but a low number of establishments in reality would have a larger weight in our sample than in reality. If they differ significantly from the remaining ones, the results could be significantly distorted without weighting.

Weights derived from address broker data

To calculate these weights, we used distributions of addresses over size classes and industries from major address brokers in the surveyed countries, as no detailed official statistics exist. The brokers chosen were Bertelsmann/Creditreform in Germany, Dun & Bradstreet in the UK and PAR-Guiden for Sweden. These weights are used directly in the calculation of the Open Source penetration in chapter 3. The results in that chapter are thus representing the universe of all establishments with 100 or more employees within the industries investigated.

Further weighting by OSS penetration rates

For all other calculations, the results are further weighted by the OSS penetration rates in the different cells. Thus, all information in chapters 4 and 5 is representing the universe of OSS using establishments with 100 or more employees within the industries investigated in each of the three countries.

Countries normalised to identical size

To avoid combined results to be dominated by Germany – which has about ten times the size of Sweden – we normalised the weights to identical country sizes. Thus the Swedish establishments using OSS have the same weight in the combined sample as UK or German establishments. The pooled results can then be interpreted as averages of the countries.

Questionnaire

Extensive pre-testing period

The survey questionnaire was prepared as a result from previous work done in the FLOSS project. In preparing the questionnaire, we had numerous interviews with representatives from establishments that use Open Source software with the purpose to find out which questions can and which cannot be asked in such a survey. Several pre-tests were conducted with preliminary versions of this questionnaire. One of the results of these tests was that most representatives could not give any detailed monetary figures for the benefits they derived from using Open Source software. Therefore the questions were posed in a different way. More detail is given in chapter 5.

Questionnaire reprinted in appendix

The full questionnaire in the English version is reprinted in the appendix to this report. Establishments were surveyed in their local language.

3   Professional use of Open Source software

Measuring the professional use of Open Source software in companies and public institutions is more difficult than measuring the use of commercial software. As OSS can be freely duplicated, the number of sales by distributors, by hardware manufacturers that have pre-installed this software, as well as by Internet sites offering this software for download does not correlate in a reliable way with the actual number of installations.

Measuring OSS professional use poses special challenges

On the one hand, as OSS can be freely copied, one would assume that the actual number of installations is higher than the number of copies sold or downloaded. But on the other hand, as OSS is typically (almost) free, there might be many purchases, distributions on magazine CD-ROMs or downloads that lead to a short installation for testing purposes, followed by deletion. One would intuitively assume the first effect to be larger, but there is – at least to our knowledge – no reliable estimation of the latter's size. The whole issue is further complicated by the fact that neither CD-ROM distributions nor downloads (and also not some surveys)[6] distinguish between private and professional users.

As a consequence of these problems, even the usage numbers provided by professional market research companies like Forrester, Gartner, IDC or META Group differ. In addition, much of the research has further problems: Most work has been published in 1999 or 2000 and might not be accurate any more. Also one cannot exclude that the Internet hype of 1999 and 2000 has biased some of the results, especially those looking into the future. And finally, many of the studies are focused on Linux and do not provide much information about the professional use of other forms of OSS.[7]

Usage number by market research companies differ considerably

How large the differences between estimations are can be shown using Linux as an example: In summer 2001 Gartner stated that Linux was installed on almost 9% of those servers shipped in the third quarter of 2000. At the same time, however, IDC stated that Linux already constituted around a third of the server market.[8] According to IDC, in summer 2001 already 40% of companies in the US and Europe were already using Linux on test or production systems.

These differences show that one has to take into account whether the respective numbers describe software installations shipped with the hardware (especially important for operating systems like Linux) or whether they also include software installed later. The latter can only be obtained by asking the respective users directly. Also, one has

Caveats for careful investigations

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6. Example is a survey conducted on the website of the German IT magazine c't in June 2001. 9,213 respondents filled out a questionnaire about their use of Linux. How important professional users were is unclear. Cf. Diedrich, Oliver (2001): Und was machen Sie mit Linux?, c't 17/01, 186-189.
7. An overview can be found in Schmitz, Patrice-Emmanuel (2001): Study into the use of Open Source Software in the Public Sector, Part 2: Use of Open Source in Europe.
8. Computerwoche (2001): IDC veröffentlicht optimistische Linux-Prognose, 16.8.2001.

to disinguish between percentages of compaies and percentages of server installations. Finally, one has to distinguish between the operational use of Open Source software and the installation for testing purposes. These potential problems have been taken care of in the FLOSS professional user survey.

The following section 3.1 contains information about the use of Open Source software in establishments in Germany, Sweden and UK in general. Section 3.2 goes into more details and presents results about the usage of Open Source software in different software application areas.

3.1   OSS use in general

Considerable usage differences among countries

Figure 3–1 shows that the usage of Open Source software differs considerably among the three countries investigated. While 43.7% of establishments in Germany are using OSS, only 31.5% of British establishments and only 17.7% of Swedish establishments do so.

*Figure 3–1
Usage of Open Source
software by country*
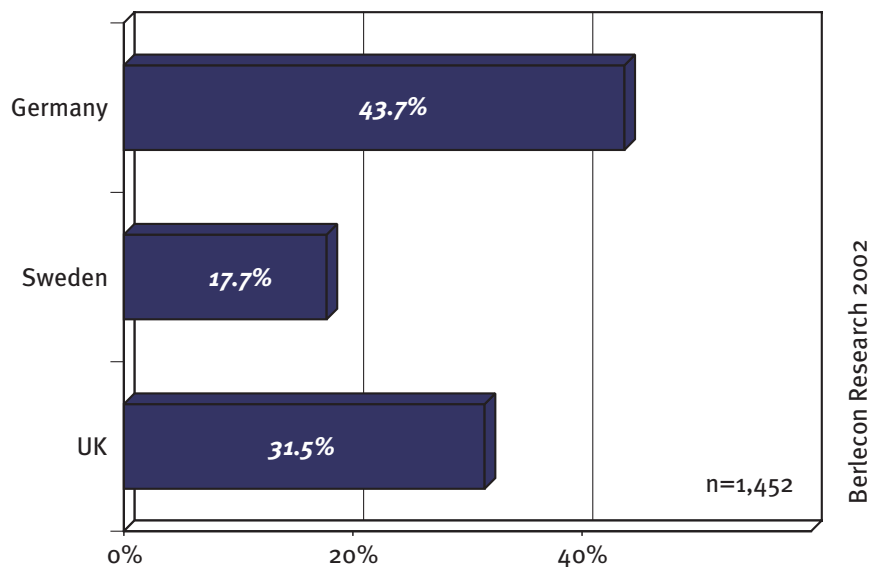
For Germany and Sweden these numbers fairly accurately replicate those obtained by the Internet Operating System Counter (IOSC) in 1999.[9] These project calculated Linux to be running on 42.7% of hosts in Germany and on 16.9% of hosts in Sweden. For the UK, the IOSC figured Linux to be running on 24.3% of hosts. Thus, the correlation is not as strong as for Sweden and Germany, although the ranking is the same.

Also differences with respect to size

As table 3–1 shows in more detail, usage rates not only differ by country, but also within countries. For example, the OSS usage rates of larger establishments are higher than those of small establishments in 8 of the 12 cells. This result is plausible since large establishments typically have a more diverse IT infrastructure increasing the probability that for some purpose OSS is being used. One would therefore expect higher OSS usage rates in these establishments.

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9.   Leb.net/hzo/ioscount/

	UK		Sweden		Germany	
	small	large	small	large	small	large
High intensity (NACE I,J,K,N)	25.0%	74.1%	20.4%	13.2%	27.0%	51.3%
Medium Intensity (NACE D, E)	39.1%	9.1%	14.6%	32.8%	45.5%	51.3%
Low Intensity (NACE F, G, H)	25.0%	14.3%	13.6%	20.3%	52.8%	44.4%
Public sector (NACE L, M)	32.8%	38.2%	16.4%	23.5%	44.4%	69.0%
Total	31.5%		17.7%		43.7%	

Source: Survey results (n=1,452).

Table 3–1
Current and planned professional use of OSS in Germany, Sweden and UK

Quite consistently observable are above-average OSS usage rates in the public sector. In 5 out of 6 cells is the OSS usage rate higher in the public sector than on average in the respective country. There are also differences between the usage rates in the three different private sector segments. These are, however, not in any way systematic across countries and size classes.

Differences with respect to country and sector

The highest usage rate across all cells could be observed in large companies with high IT intensity in the UK. 74.1% of those companies contacted stated that they are using Open Source software. The lowest rate – not counting the cell with only one OSS using observation – could be observed within large companies with high IT intensity in Sweden (13.2%). This shows that one has to be very careful with generalisations about what sort of establishment tends to use OSS.[10]

Results have to interpreted with appropriate care

One also has to be careful in interpreting the results as they rest on the assumption that those establishments that refused to participate and those that could not be reached differ not significantly in their OSS use from those surveyed. Also it has to be considered that for the large UK companies with medium technology use only a single OSS using observation exists.

3.2   OSS use by IT area

Table 3–2 shows the average percentage of establishments using Open Source software in the four different IT areas they were asked about. Most popular is the use of OSS as server operating system: On average 15.7% of establishments either currently use Open Source software like Linux or Free/Open BSD for server operating systems in regular IT operations or are planning to do so within the next year. As one can see, the differences between countries are considerable. While 30.7% of German establishments employ OSS this way, only 10.1% of Swedish and 6.4% of British establishments do.

OSS as server OS most popular (15.7%)

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10.   The same applies to cross-country generalisations. For example, it is sometimes argued that the (license-fee-free) Open Source software can help poorer countries in setting up their IT infrastructure. However the IOSC shows commercial software to have been the most popular host operating system in many poor countries in 1999. Only in some countries was Linux on position one.

	UK		Sweden		Germany		Total
	small	large	small	large	small	large	
OSS as server operating system	8.1%	3.7%	9.8%	11.0%	30.7%	30.6%	15.7%
		6.4%		10.1%		30.7%	
OSS for databases	13.3%	4.6%	7.5%	8.2%	14.1%	20.8%	11.1%
		9.9%		7.6%		15.7%	
OSS on the desktop	7.6%	2.0%	3.4%	3.2%	13.7%	6.5%	6.9%
		5.4%		3.3%		12.0%	
OSS for websites	7.9%	4.3%	7.5%	8.7%	15.8%	17.3%	10.1%
		6.5%		7.8%		16.2%	

Source: Survey results (n=395).

Next are OSS databases (11.1%) ...

Next in popularity is the use of OSS for databases. MySQL, PostgreSQL, Interbase or SAP-DB are examples of such Open Source software. On average 11.1% of the establishments employ OSS for databases. In this area, the differences are less pronounced. The OSS usage rate in Germany (15.7%) is slightly more than twice as high as in Sweden, where it is lowest with 7.6%.

... and then OSS for creating and operating websites (10.1%)

On average 10.1% of the establishments use OSS in connection with creating or operating websites. There is a large variety of applications that are used in this area, e.g. Apache, PHP, Perl, Python, Squid or Open Source content management systems. Again the usage rate is highest in Germany (16,2%) and lowest in the UK (6.5%).[11]

OSS on desktops is not very widespread (6.9%)

Finally, Open Source software can also be used on desktop computers. Examples are Linux as a desktop computer operating system, desktop extensions like KDE or Gnome but also application programs like Mozilla or StarOffice/OpenOffice. However, OSS is not used very frequently on desktops. On average only 6.9% of the establishments in the three countries investigated use OSS on desktops – and this does not mean that they use OSS on all their desktops. Again, the usage is highest in Germany (12%) and very low in Sweden, where only 3.3% of establishments use OSS on some of their desktop computers.

OSS use on desktops more frequent in smaller establishments

In all usage areas except the use of OSS on desktops there is no clear indication across countries of a higher Open Source software usage rate by smaller or by larger establishments. Only the use of OSS on desktops is more frequent in smaller than in larger establishments (in Sweden not significantly).

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11. These numbers seem to be rather low when taking into account the huge popularity of Apache as a web server. This might be due to many establishments not hosting their websites themselves.

4   Attitude to and importance of Open Source software in general

4.1   Attitude to Open Source software

An enterprise's decision to use OSS can be driven by two sorts of motives. The first sort of motives is application specific, e.g. an expected greater stability or lower costs for that specific application in comparison to its commercial alternatives (cf. chapter 5). The second sort of motives is more general, like the wish to support the Open Source community by using Open Source software or by letting one's IT personnel work on OS projects on company time.

General attitudes to OSS vs. specific buying decisions

To find out how important these motives are, we gave the surveyed establishments seven statements concerning general Open Source policies and usage motives and asked them, to what extend they agreed to these statements. One of these questions was concerned with the possibility for software developers to work on Open Source projects within their working time. The answers to these questions not only provide information about the establishments' position to Open Source software but also about the amount of (indirect) support that OS projects obtain from companies and public institutions.

Seven statements about establishments' attitude to OSS

The following statements were provided:

❑ We use Open Source Software because we want to be more independent from the pricing and licensing policies of the big software companies.
❑ By using Open Source Software we want to support the Open Source community.
❑ We use Open Source Software because IT specialists for this kind of software are more easily available on the labour market than specialists for proprietary software.
❑ We prefer using Open Source Software – that's part of our company policy.
❑ Our software developers are free to work on Open Source projects within their time at work.
❑ We are deliberately working together with Open Source service companies in order to support the development of Open Source software.

To find out whether there are specific characteristics of an establishment that influence the attitude towards Open Source, regression analyses have been conducted. We have tested for the explanatory power of the country, the size class, the industry, the share of IT personnel in total employees as well as the number of PCs per employee. While the detailed statistical results are provided upon request, this section discusses those effects that have been found to be statistically significant.

Regression analysis for each question

Independence from pricing and licensing policies of big software companies

Microsoft's licensing changes might intensify wish for independence

One argument in favour of using OSS is to become (more) independent from the pricing and licensing policies of big software companies. This is a major point emphasised by the proponents of OSS in public administration as, for example, the recent discussion in Germany has shown. With budgets tight, previous software versions (e.g. Windows NT) becoming unsupported and new licensing schemes coming up, which are considered to lead to higher software expenditures, establishments might wish to become less dependent from pricing and licensing policies of big software companies.

*Figure 4–1
Independence from big software companies as motivation*

"We use Open Source Software because we want to be more independent from the pricing and licensing policies of big software companies."

no answer/ don't know (4%)

totally disagree (19%)

totally agree (30%)

somewhat disagree (10%)

neither nor (12%)

somewhat agree (26%)

n=395

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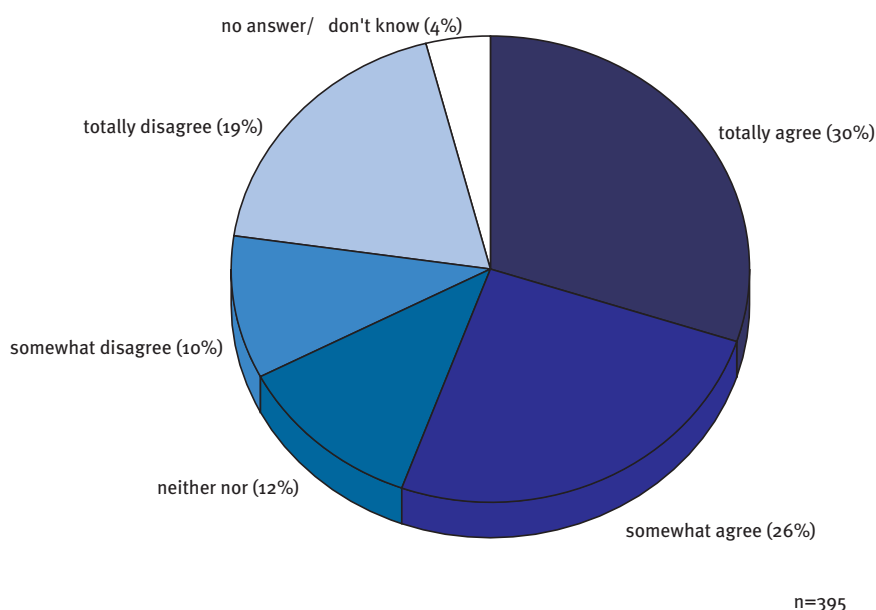
Almost 56% agree to statement

As figure 4–1 shows, independence from the pricing and licensing policies of big software companies is a major motivation for those establishments that already use OSS. On average over the three countries, almost 56% of those establishments that use OS software either agree totally or somewhat to this statement. On average, the respondents answered between "somewhat agree" and "neither nor".[12] However, there is also a strong group of almost 29% who disagreed with this statement. Thus, most establishments have a clear position on this issue.

Outcome of regression analysis

The regression analysis shows the following statistically significant relationships between basic characteristics of an establishment and the level of agreement to the statement:

❏ Small establishments agree significantly less to this statement than large establishments.

❏ German establishments agree significantly less to this statement than UK establishments.

❏ There is no evidence for differences in answering this question between private and public sector nor is there among the different private sectors.

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12. The answers are coded from 1 = totally agree to 5 = totally disagree. The mean for this question is 2.8.

"We use Open Source Software because we want to be more independent from the pricing and licensing policies of big software companies."

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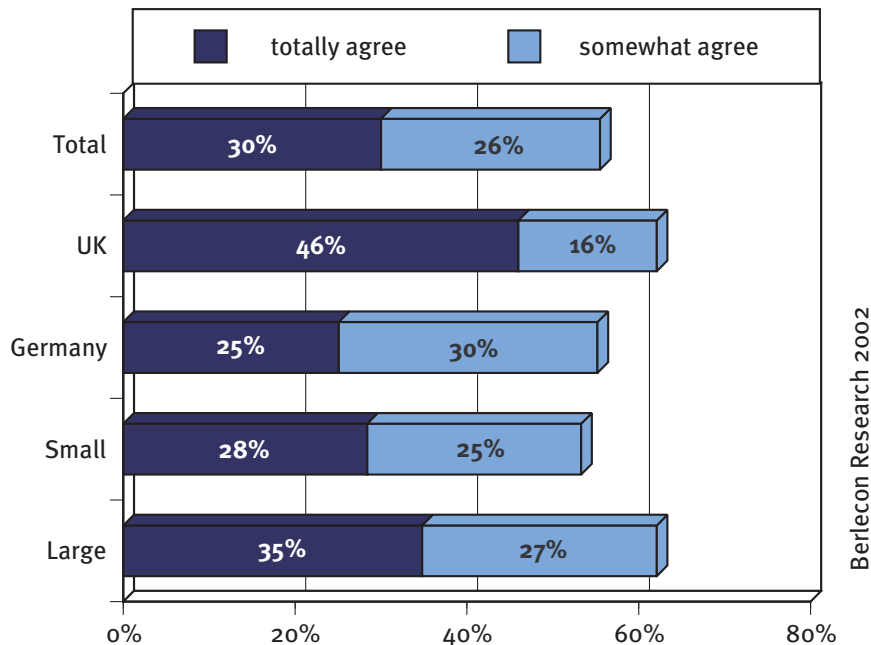
As figure 4–2 shows, support was strongest in the UK, where 46% of OS software users totally agreed to this statement and 62% agreed at least to some extent. In contrast, only 55% of the German respondents agreed either totally or somewhat to the statement. What is more important, is that Germany also shows the strongest disagreement with more than 22% of respondents who totally disagree. For the UK, this value is only slightly above 13%.

Strong disagreement in German establishments

Considering the establishment size, the larger entities in the survey show a higher share of respondents that totally agree to this statement as well as a lower share of those that totally disagree. A reason for this outcome might be that larger establishments typically spend more on software. Therefore the savings from lower prices or more favourable licenses can be substantial in these companies.

For larger establishments, independence was more often important for OSS use

Support of the OSS community

Some establishments might use Open Source software to support the Open Source community. While one would consider such an effect to be more important with private OSS users than with professional users one cannot exclude a priori that it plays a role. As figure 4–3 shows, this attitude towards OSS is not very wide spread but exists. On average almost 14% totally agree that by using OSS they want to support the Open Source community, and almost 21% agree at least somewhat. Taking into account that this survey is about professional users, these values are astonishingly high. They are, however, lower than for the previous statement, as the average answer is slightly more negative than "neither nor".

About one third wants to support OS community by using OSS

Figure 4–3
Wish to support the OS
community as motivation

"By using Open Source Software we want to support the Open Source community."
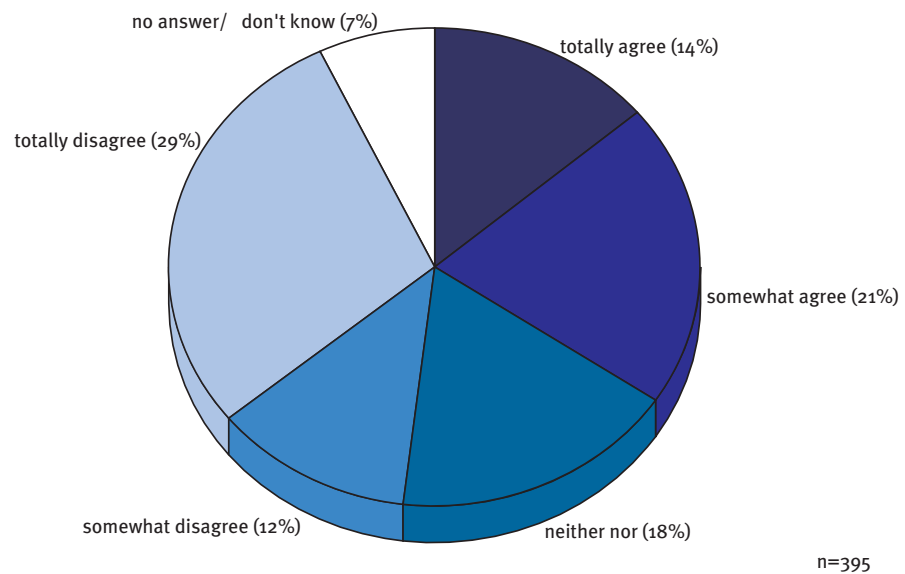
no answer/ don't know (7%)

totally agree (14%)

totally disagree (29%)

somewhat agree (21%)

somewhat disagree (12%)

neither nor (18%)

n=395

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Outcome of regression
analysis

The regression analysis shows the following relationships between basic characteristics of an establishment and the level of agreement to the statement:

❑ While UK and Sweden do not differ significantly, German establishments agree significantly less to this statement than UK as well as Swedish establishments do.
❑ There are no significant differences between size classes.
❑ There is no evidence for differences in answering this question between private and public sector nor among the different private sectors.

Figure 4–4
Differences in importance
of wish to support the OS
community

"By using Open Source Software we want to support the Open Source community."

	totally agree	somewhat agree
Total	14%	21%
UK	26%	18%
Sweden	14%	22%
Germany	9%	20%

0%   20%   40%   60%   80%

Berlecon Research 2002

The wish to support the Open Source community is a rather strong driver for the use of OS software in the UK. 44% of the surveyed establishments agreed to this second statement at least somewhat. In Sweden (36%) and Germany (29%) the degree of agreement was considerably lower. Also disagreement with the statement was rather strong in Germany.

UK establishments have strong wish to support OSS community

More easily available IT specialists

Especially during the heyday of the New Economy, availability of computer specialists was a serious problem in many companies and institutions. As some Open Source software is by now relatively widespread (especially Linux) and as students often get familiar with Open Source software during their university education, specialists for OS software might be more easily available than specialists for commercial software – so far the hypothesis. To test it, the respondents where asked whether they use OSS because IT specialists for this kind of software are more easily available on the labour market than specialists for proprietary software.

Do widespread use of Linux and OSS at universities lead to many OSS specialists?

The answers to this statement show that the hypothesis has to be rejected. The mean response was less negative than "somewhat disagree". On average only 21% of the respondents agreed at least somewhat to this statement. At the same time 45% totally disagreed, meaning that either the better availability of OSS specialists does not play a role for their decision towards using OSS or that they do not think that there exists such an advantage. As only OSS users were surveyed in detail, we cannot answer the question whether maybe even a perceived shortage of OSS specialists exists that keeps establishments from employing Open Source software. The results suggest, though, that this question might well be worth investigating as it also bears consequences for policy that wants to support the use of Open Source software.

No evidence for better availability of IT experts being a strong motivation for OSS use
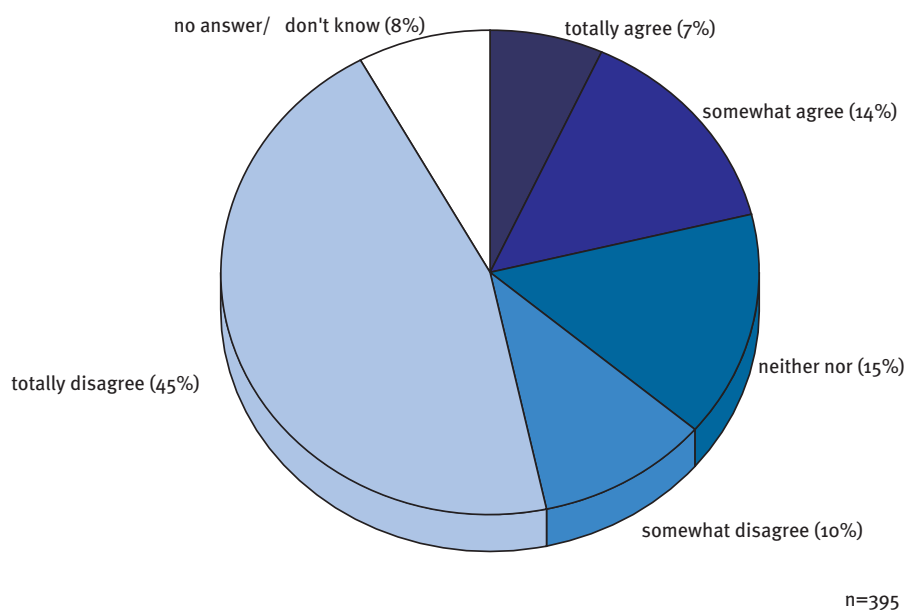
*Figure 4–5
Availability of IT specialists as motivation*

"We use Open Source Software because IT specialists for this kind of software are more easily available on the labour market than specialists for proprietary software."

no answer/ don't know (8%)
totally agree (7%)
somewhat agree (14%)
neither nor (15%)
somewhat disagree (10%)
totally disagree (45%)

n=395

Berlecon Research 2002

"We use Open Source Software because IT specialists for this kind of software are more easily available on the labour market than specialists for proprietary software."
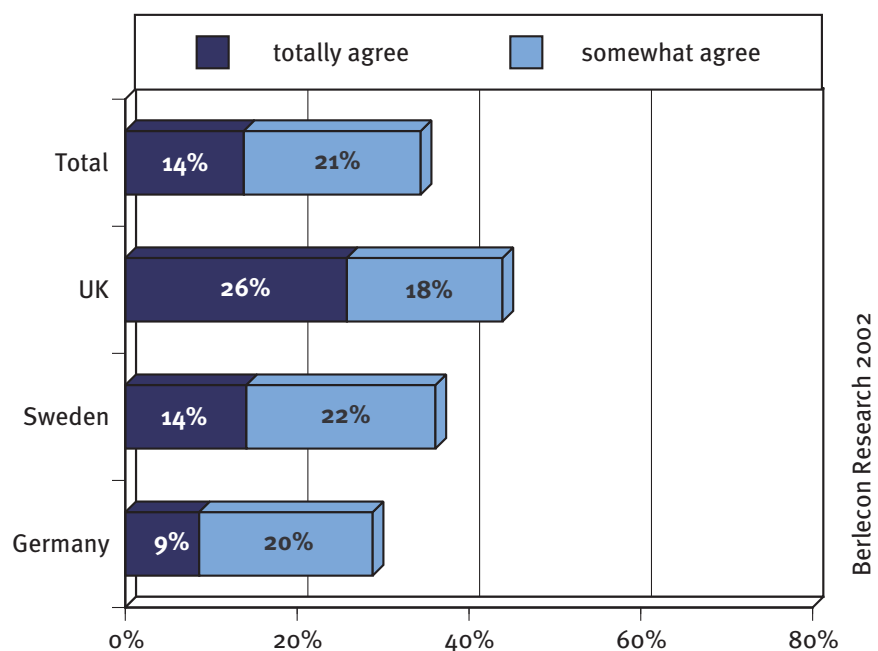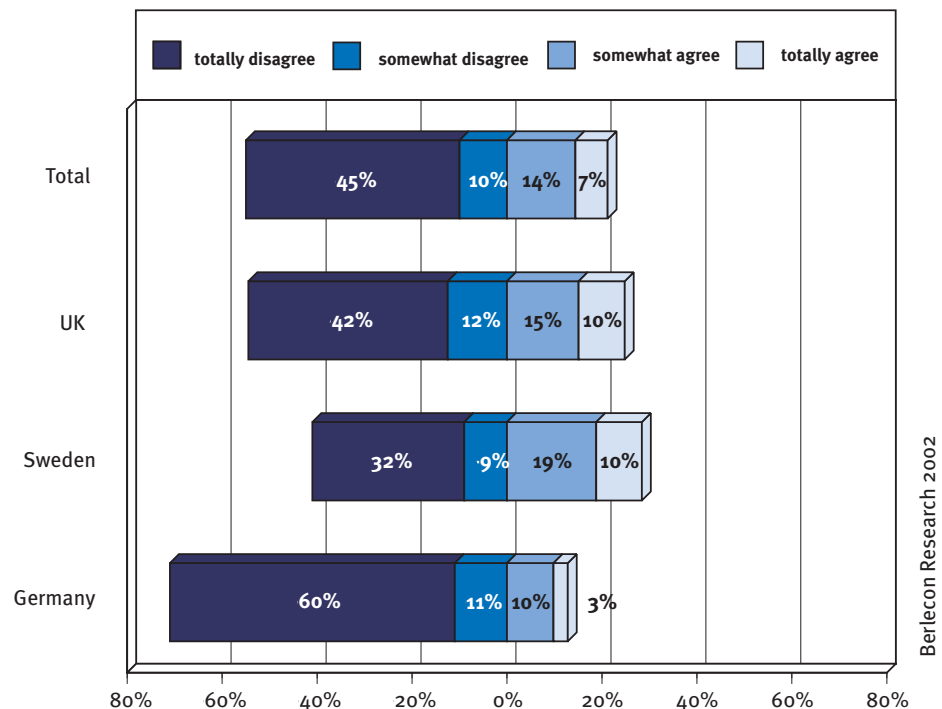

Outcome of regression analysis

The regression analysis shows the following relationships between basic characteristics of an establishment and the level of agreement to the statement:

❏ There is weak evidence for a higher share of IT workers in employees leading to less agreement with the statement. This might point to available knowledge in-house and therefore no greater need to consider the availability of specific knowledge on the labour market.

❏ There are clear country differences. German establishments tend to disagree more with the statement than Swedish as well as UK establishments. There is no significant difference between the latter two, though.

❏ There are no significant differences between small and large establishments as well as between the different sectors.

Strongest disagreement with statement to be found in Germany

As figure 4–6 shows, in Germany 71% of respondents disagreed at least somewhat to this statement, most of them even totally. In Sweden, where a large part neither agreed nor disagreed, disagreement was still 41%. At the same time about 29% of Swedish establishments agreed to this statement at least to some extent. Again this might be due to differences in the availability of OSS specialists on the different countries' labour markets or to differences in the importance such availability has for the establishments in the different countries.

OSS as company policy

As the German discussion about the use of OSS in public administration shows, companies and institutions might develop internal policies about which software to use. Such policies help in keeping the IT infrastructure homogeneous and thereby reduce costs. But they can also be motivated by other, strategic reasons. For example, an establishment might have the policy to use mostly OSS to save software license fees. Or it might have the policy to use OSS due to a perceived better overall security or because it wants to be able to modify the source code eventually. Thus, there are several possible motivations for such a company policy in favour of Open Source software.

Company policies keep IT infrastructure homogeneous and help to achieve company goals

"We prefer using Open Source Software – that's part of our company policy."

Figure 4–7
OSS use as company policy

no answer/ don't know (6%)
totally agree (8%)
somewhat agree (11%)
neither nor (15%)
totally disagree (48%)
somewhat disagree (13%)
Berlecon Research 2002
n=395
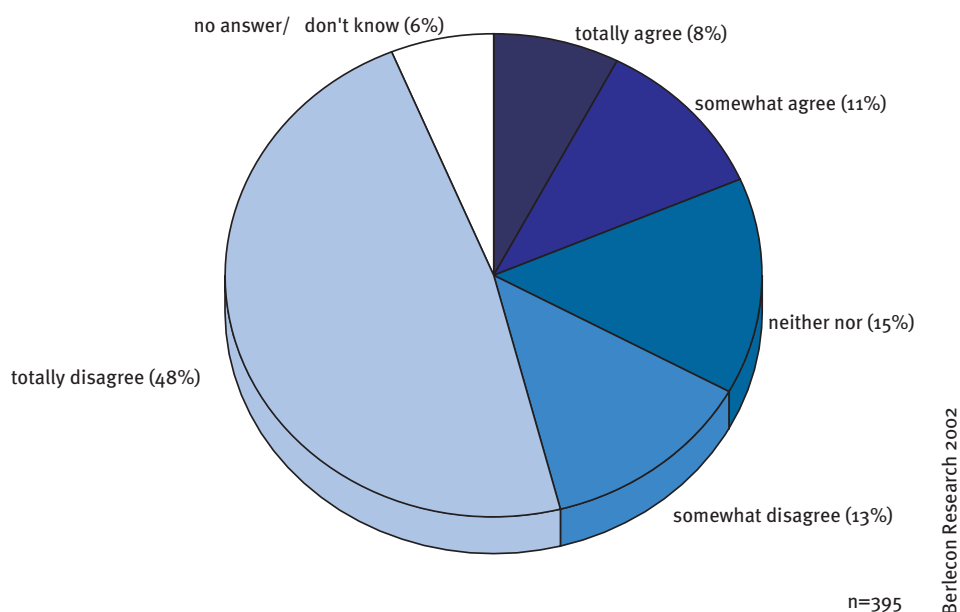
A dedicated company policy to prefer using Open Source software is only in very few establishments a motivation for using OSS. On average only 19% of establishments agreed to this statement at least somewhat while 48% totally disagreed. The mean is slightly less negative than "somewhat disagree". It is, however, even less affirmative than the answer to using Open Source software as company policy.

Open Source company policy not of large relevance

The regression analysis shows the following relationships between basic characteristics of an establishment and the level of agreement to the statement:

Outcome of regression analysis

❑ Companies from sectors with typically low IT intensity tend to agree more to the statement than public institutions. Their assessment does, however, not differ significantly from that in other private sectors, nor do the other private sectors differ from the public sector.
❑ Again Germany is different. German establishments tend to disagree more strongly with this statement than Swedish or UK establishments.
❑ There is no significant influence of a company's size or its IT infrastructure.

Figure 4–8
Difference in relevance of
OSS use as company policy

"We prefer using Open Source Software – that's part of our company policy."
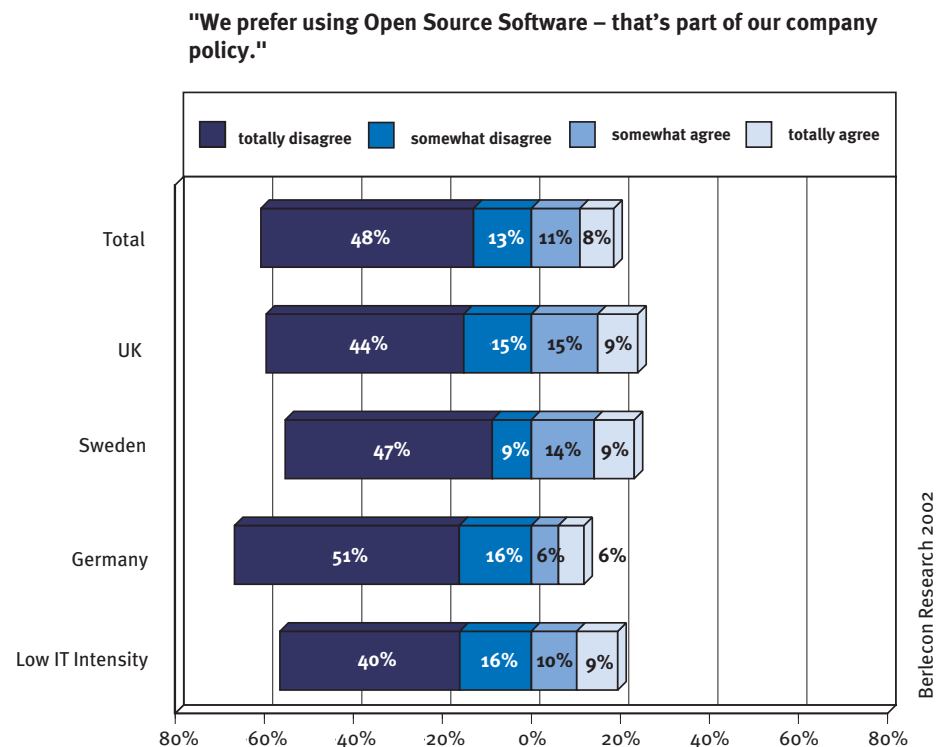
OSS as company policy most strongly in the UK – strong disagreement in Germany

Support to this statement is strongest in the UK – 24% agree at least to some extent – followed by Sweden (23%). In Germany only 12% agreed at least to some extent to the statement that they use OSS because it is company policy. At the same time the fraction of those totally disagreeing is highest in Germany (51%). A further 16% of German establishments disagree at least to some extent. As figure 4–8 also shows, the significant difference of answers by companies from sectors with low IT use is due to their low fraction of disagreement with this statement – 40% vs. 48% on average totally disagree – not due to their strong agreement.

OSS development during work time allowed

FLOSS developer survey points at OSS development during work time to be important

It is often said that much of Open Source software is being developed during work time, as developers are allowed to (or simply do) work on OSS projects during their work time. To some extent this is supported by the FLOSS developer survey, which indicated that 29% of OS programmers are paid for developing Open Source or free software while 24% are not paid but can develop OS/FS at work.[13] One would assume especially the latter to be the case more often at public institutions (e.g. universities). While we do not have an answer for the relevance of OSS development during work time that is not allowed, we asked the responsible persons whether their software developers are free to work on Open Source projects within their time at work.

Bimodal distribution with 36% allowing OS development at work

Figure 4–9 shows this freedom to be indeed of importance. On average 36% of respondents agreed at least somewhat to this statement, 19% of them totally. As expected, the distribution is quite bimodal – either working on OSS is allowed or not. So 45% of respondents disagree at least somewhat, most of them totally. The mean is slightly more negative than "neither nor".

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13. Ghosh, Rishab Aiyer; Ruediger Glott; Bernhard Krieger; Gregorio Robles (2002): FLOSS Developer Level Analysis, working paper, mimeo.

"Our software developers are free to work on Open Source projects within their time at work."

The regression analysis shows the following relationships between basic characteristics of an establishment and the level of agreement to the statement:

Outcome of regression analysis

❑ Companies from the sector with on average high IT intensity tend to agree more with the statement than companies with on average medium IT intensity. This probably reflects software development being part of the high IT intensity sector. There is also weak evidence for a similar relationship of high IT intensity companies and low IT intensity companies.

❑ German establishments tend to disagree more with this statement than Swedish companies.

"Our software developers are free to work on Open Source projects within their time at work."

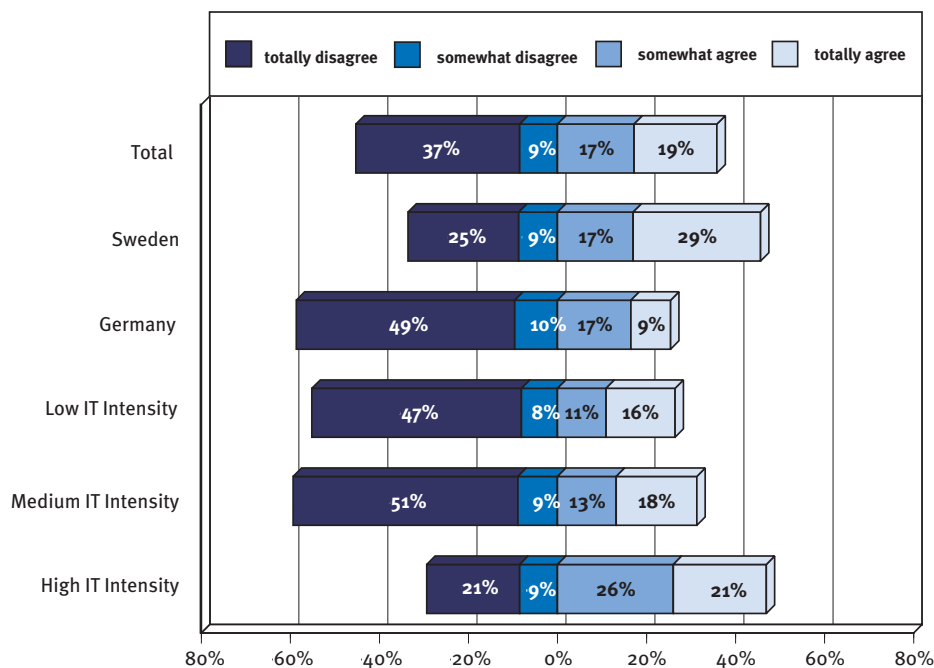*Swedish OS-using companies are more liberal than German ones*

While on average 36% of respondents agreed to this statement, the corresponding percentage in Germany was only 26%. At the same time many more establishments – 59% vs. 46% on average – disagreed at least somewhat to the statement. In comparison to the Germans, Swedish establishments that use OSS are much more liberal with respect to letting employees work on OS projects on company time.

Large fraction of high IT intensity companies supports OS development at work

Figure 4–10 shows also a rather strong support of OSS development by companies from sectors with on average high IT intensity. 47% agree at least somewhat to the statement. In the low IT-intensity sector, this share is lowest with 27%. At the same time, total disagreement is only at 21% in the high IT intensity sector – much less than the average of 37% – but rather high (51%) in the medium IT intensity sector.

Using OS service companies to support OS development

During the late 1990s, many Open-Source-oriented start-ups were founded that tried to further the development of Open Source software and at the same time to make money from selling services. These ranged from installation support to development of complex enterprise solutions on the basis of Open Source software. Since then, many of these companies have failed. Nevertheless, it seemed to be of interest to ask those companies using Open Source software about whether they are deliberately working together with Open Source service companies in order to support the development of Open Source software.

Strong disagreement

As figure 4–11 shows, this seems to be the case only to a very limited extent. On average only 15% of the OS using companies in the three countries agree to this statement at least somewhat. With a mean of statements around "somewhat disagree", this statement received the strongest disagreement of all.

No significant differences due to establishment characteristics

The regression analysis shows no significant differences in answering this question. Neither size nor industry, country, share of IT users, or PC intensity imply a different assessment of this issue. OS service companies simply cannot count on any particular bonus by anyone for supporting OS development in some way or another. That is something the dotcoms in this field had to experience, too, during the last two years.

*Figure 4–11
Using OS service companies to support OS development*

" We are deliberately working together with Open Source service companies in order to support the development of Open Source software."
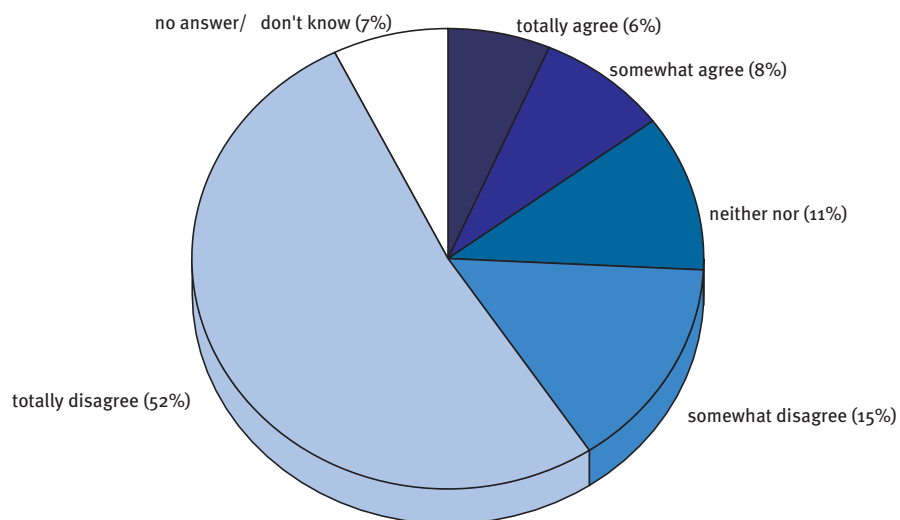

no answer/ don't know (7%)
totally agree (6%)
somewhat agree (8%)
neither nor (11%)
somewhat disagree (15%)
totally disagree (52%)
n=395

Berlecon Research 2002

Summary

Figure 4–12 shows the weighted mean of answers to the different statements. As the figure shows, agreement is strongest with the statement that establishments use OSS to become more independent from the pricing and licensing policies of large software companies. The average answer is between "agree somewhat" and "neither nor".
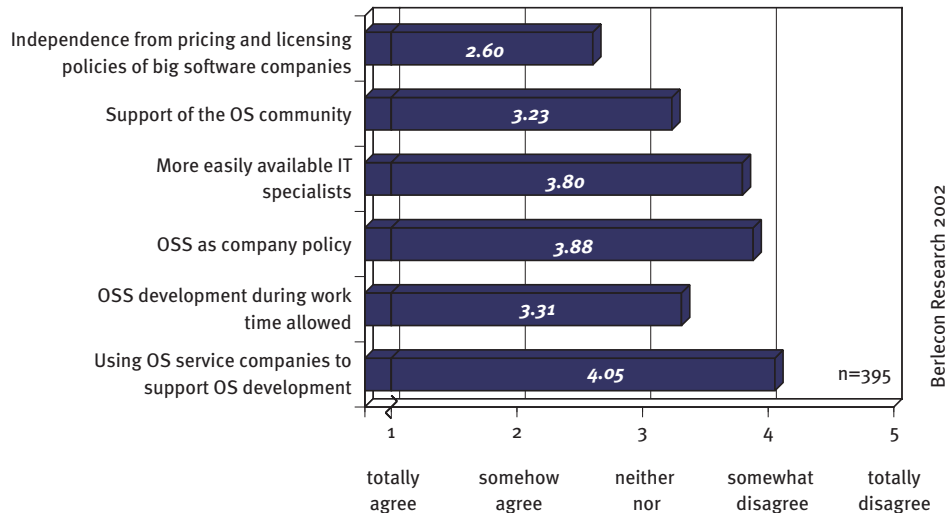
Establishments agree most strongly to wish to become independent from large software companies

Figure 4–12
Attitude to Open Source software in general

Next in order are different ways to support the OS community, either indirectly by using OSS or directly by letting one's developers work on OSS development on company time. Nevertheless, these assessments are already more on the negative side, which shows that individual gains for the establishments are a much more important reason for using OSS than the altruistic wish to further OSS development or to support the OS community.

Altruistic motives are of lesser importance ...

The least agreement was on average found with the statement that companies might use OSS because IT specialists are more easily available, with the statement that OSS use might be company policy as well as with the statement that establishments might work together with OSS service companies to support OSS development.

... as are labour market considerations, company policy or cooperation with OSS service companies
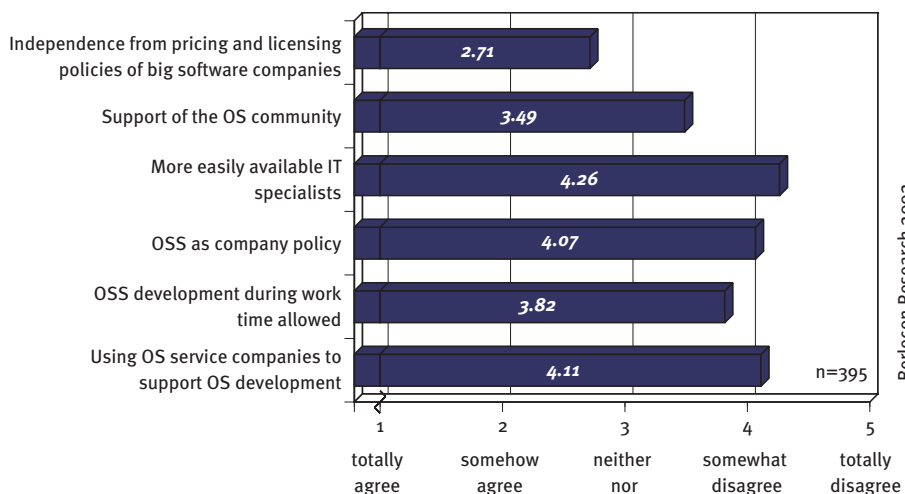
Figure 4–13
Attitude to Open Source software in German establishments in general

German establishments tend to disagree more strongly than the average to all statements, as a comparison of figures 4–12 and 4–13 shows. This does not mean, however, that German companies per se are less supportive of Open Source software. One has to keep in mind that OSS use is far more common in Germany than in the other

Strong disagreement of German companies due to different composition of German OSS users

two countries investigated. Thus this observed difference in attitude towards OSS might simply be due to the fact that a larger share of OSS users in Sweden and the UK are still highly emotional early OSS users, whereas many German OSS using establishments are doing so for more pragmatic reasons.

4.2   Importance of OSS within the IT infrastructure

Importance of OSS within IT infrastructure points to value of OSS for establishment

Somewhat related to the previous section on the general attitude towards OS software is the question discussed in this section. Establishments might use OSS in different intensities. For some companies or public institutions, the usage of OSS is an important element in their IT strategy, and they have made a deliberate decision to use OSS. Others experiment with OSS on certain occasions or use this sort of software only on some machines or for unimportant tasks. To find out which value OSS has in the establishments surveyed, we asked them how important from their point of view Open Source Software was for their establishment's IT infrastructure. Again the answers to this question refer to those establishments that either use OSS already or plan to do so within the next year.

For most establishments using OSS, it is an important part of their IT infrastructure. As figure 4–14 shows, for 10% of the OSS using establishments it constitutes a very important part of their IT infrastructure and for additional 23% it is of high importance. 44% consider it to be of low or very low importance. On average, the respondents consider OSS to be slightly less than medium important for their IT infrastructure.

Regression with additional variables

To obtain information about the relevance of firm characteristics for this question, we have conducted again a regression analysis with the same variables as for the attitude towards OSS. In addition, we added dummies for the current or planned regular use of OSS as server operating system, for databases, on the desktop and in connection with creating or operating websites to the estimation.

Figure 4–14
Importance of OSS within IT infrastructure

From your point of view, what is the <u>importance</u> of Open Source Software for your company's IT infrastructure? Is the importance ...

don´t know (1%)
very high (10%)
very low (18%)
high (23%)
low (26%)
medium (21%)
n=395

Berlecon Research 2002
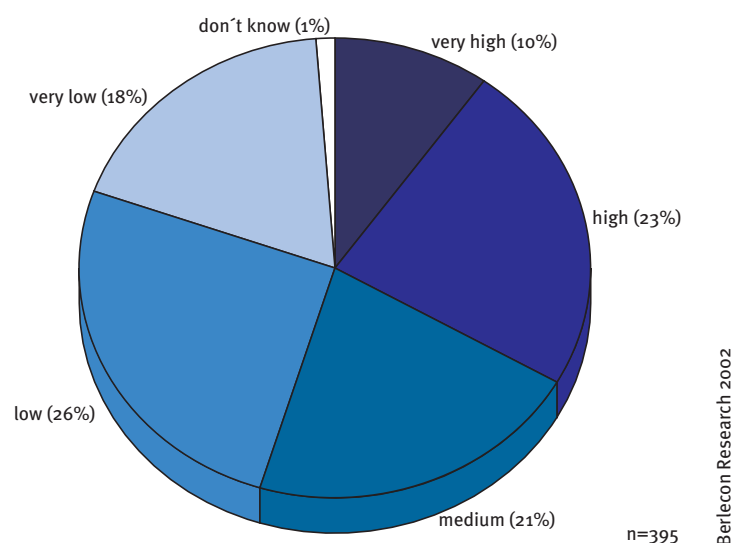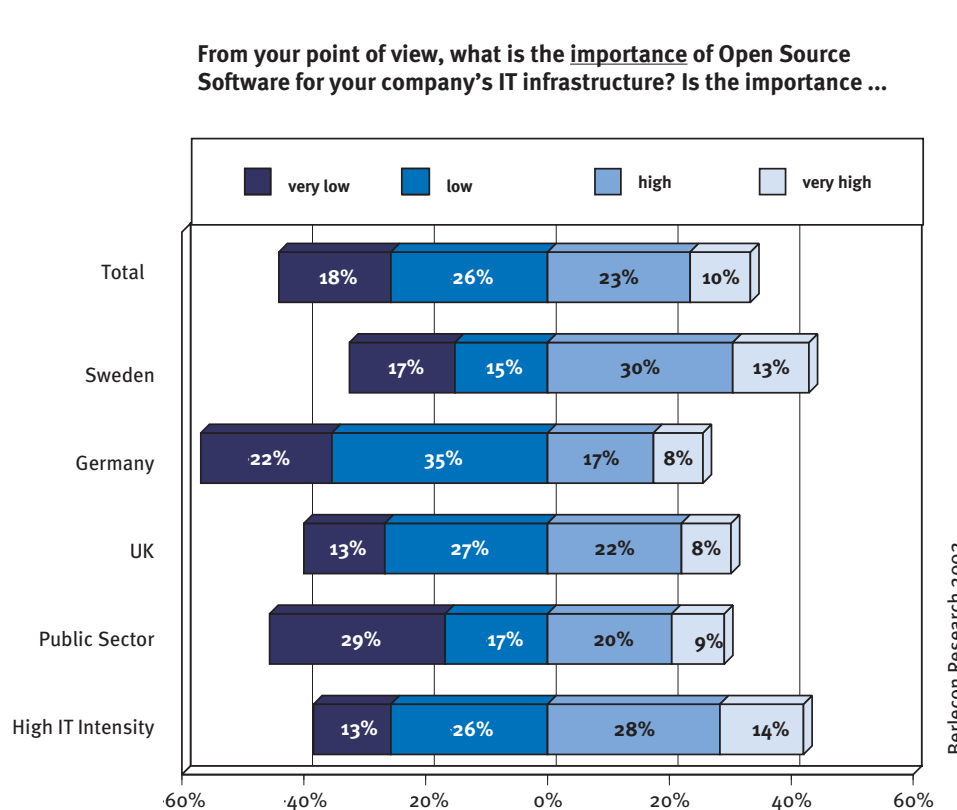
From your point of view, what is the <u>importance</u> of Open Source Software for your company's IT infrastructure? Is the importance ...

The regression produced the following statistically reliable results:

❑ There exist again country differences. For German establishments OSS is a less important part of their IT infrastructure then for UK or Swedish establishments. The latter, however, do not differ in a statistically significant way.

❑ There is no significant difference between the assessment of OSS importance between smaller and larger companies.

❑ Companies from the high IT intensity sector consider their OSS to be more important than establishments from the public sector do. There are, however, no further distinctions across sectors.

❑ Establishments that currently use OSS in one of the four areas in regular IT operations or plan to do so within the next year consider their OSS to be a more important part of their IT infrastructure than those that use it only occasionally or in important cases. While this was to be expected given the question, it comes as a slight surprise that there is no statistically significant difference between the IT areas. Thus the answer to the question does not differ between those establishments, e.g., that use OSS on client computers and those that are running OSS server operating systems.

No difference according to area of OSS use

As figure 4–15 shows, OSS is especially in Sweden an important component of the respondents' IT infrastructure. 43% consider it to be of high or very high importance. In comparison, the corresponding value for Germany (25%) is significantly lower. The importance of OSS for the IT infrastructure of German establishments is also significantly lower than in the UK, where 30% consider it to be at least of high importance. Compared to both other countries the percentage of German establishments attaching a low or even very low importance to this aspect is high with 57%. Again the caveat applies that due to the comparatively high OSS penetration in Germany the composition of OSS users is simply different from that in Sweden and the UK.

German establishments consider OSS to be less important than UK or Swedish ones

For companies from the high IT intensity sector, OSS is more important than for public institutions

Evaluating the outcomes by sector shows a significant difference between the high IT intensity and the public sector. While in the high IT intensity sector 42% consider their OSS to be important, in the public sector only 29% do so. At the same time 29% of the public sector establishments consider OSS to be of very low importance for their IT infrastructure whilst only 13% of the companies from the high IT intensity sector give a similar assessment.

5   Benefits from using Open Source software

A major aim of this survey was to generate hard data on the benefits companies and public institutions derive from using OS software. This chapter goes into detail and presents those survey results that contribute towards this target.

Hard data on the benefits from using OSS

While it would have been wishful to obtain information on the direct monetary value of using OSS, it turned out in the pre-test for this survey that this was not a realistic target. Those companies that were interviewed during that phase were generally unable to provide even rough estimates about the monetary value derived from using Open Source software. Unfortunately this inability was not confined to complicated estimations, e.g. potential monetary savings from a greater stability of OSS, but also to more simple questions like license fee savings or hardware cost savings.

Companies unable to state direct or indirect monetary benefits

We decided therefore to ask the surveyed establishments for an indication of how important each item in a list of potential criteria was for their last decisions to use OS software instead of commercial software. While the answers to this question do not directly translate into monetary value, they do give an indication about the importance of each specific feature of OS software (e.g. no license fees, modifiable source code). The criteria investigated are the following:

Importance of different criteria for usage decisions asked

- ❏ Open and/or modifiable source code
- ❏ Lower or no licence fees
- ❏ Better price-to-performance ratio
- ❏ Higher performance
- ❏ Higher stability
- ❏ Better protection against unauthorised access
- ❏ Better functionality
- ❏ Higher number of potential applications
- ❏ Open Source software was already integrated in another product the establishment had acquired
- ❏ Hardware cost savings
- ❏ Cost savings regarding installation, integration and customisation to company needs
- ❏ Cost savings regarding daily operations, administration and support
- ❏ Cost savings regarding training and introduction of users
- ❏ Recommendation of the establishment's IT service provider
- ❏ Existing solutions, know-how and/or experiences in the establishment regarding the use of Open Source software for the specific purpose.

This list of criteria was derived from an extensive review of the literature about OSS use and its potential advantages. In addition common concepts for the evaluation of IT investments, especially the concept of "Total Cost of Ownership" went into the creation of this list. This concept boils down to the idea that not only direct software license cost are to be taken into account for a decision but also indirect costs like those

List of criteria derived from OSS literature and TCO model

for educating users, for support, for integration into the IT infrastructure, etc. Taking all these aspects into account might lead to the result that a software with low license cost suddenly becomes expensive and vice versa.

Criteria tested on four usage areas of OSS

We tested the importance of these criteria for the following four usage areas for OSS:

- ❑ Open Source software as server operating system (e.g. Linux or Free/Open BSD),
- ❑ Open Source software for databases (e.g. MySQL, PostgreSQL, Interbase, SAP-DB),
- ❑ Open Source software on desktop or client computers (e.g. Linux, KDE, Gnome, Mozilla, StarOffice/OpenOffice), as well as
- ❑ Open Source software in connection with creating or operating websites (e.g., Apache, PHP, Perl, Python, Squid or Open Source content management systems).

Distinction between areas because of different software as well as different investment calculations

Distinguishing between these aspects seemed important as different software comes to use in all these areas. Therefore, even if the same software decision is considered (e.g. Linux vs. Windows), a total cost of ownership calculation (e.g. for server vs. client use) might come to different results.

Unweighted results relate to those establishments using OSS software in area

Contrary to the results reported in the previous chapter, the numbers reported here are unweighted. I.e., all numbers relate to the sum of those entities in the sample that indicated they were using OSS within this area or were planning to do so within the next year.

5.1   Benefits by usage area

5.1.1   OSS used for server operating systems

56% of OSS users employ OSS as server operating system

Of those 395 establishments surveyed, 220 indicated that they are either using Open Source software for server operating systems or are planning to do so. That corresponds to an unweighted share of almost 56% of all OSS users.

Importance of different server operating systems

Apart from Linux, the best-known Open Source operating system, also some other operating systems exist that are Open Source. Free/Open BSD is probably the second best in popularity. Those people surveyed that indicated they were using another OS server operating system, often gave Linux distribution brand names, e.g. Redhat, Suse or Mandrake.

Linux by far the most important server operating system

As figure 5–1 indicates, Linux is indeed "the" Open Source server operating system. Overall 172 establishments or 78% of those that already use OSS on their servers or plan to do so employ Linux. Another 12% are planning to do so within the next year. Taking into account that some of those surveyed did not know that Redhat etc. are Linux distributions, the real percentage of Linux users is even slightly higher. Compared to all establishments using any kind of OS software, the share of Linux on servers is remarkable 44%.
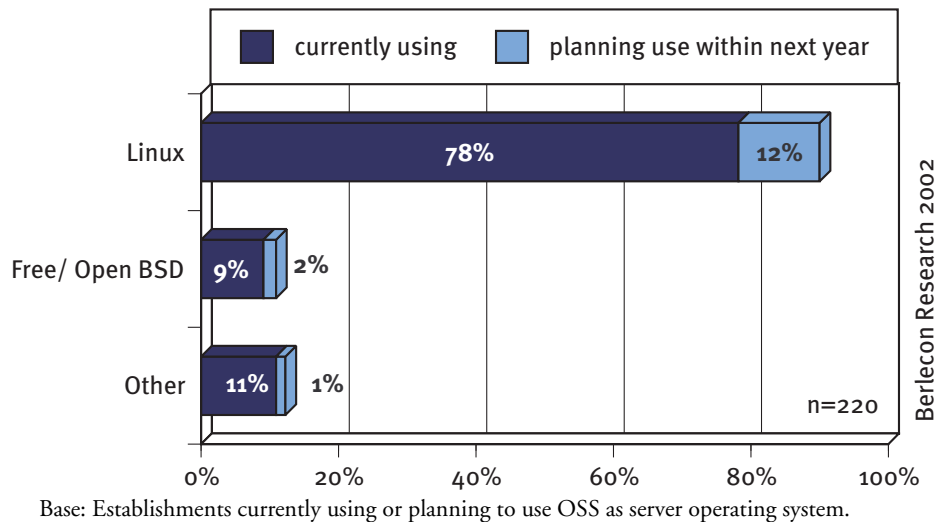
Base: Establishments currently using or planning to use OSS as server operating system.

Criteria for the decision in favour of Open Source software

Figure 5–2 summarises the importance of criteria for the server operating system decisions. Quite clearly, product characteristics that are indispensable for a server operating system come highest in importance. Higher stability and better access protection than proprietary solutions are the most important decision factors in favour of an Open Source server operating system. Stability is the most important part of any server operating system and Unix-based operating systems have a better stability record than most others. As Linux and BSD are Unix variants, it is not surprising that almost 83% considered this to have been an important or very important factor influencing their decision in favour of OSS.

Product characteristics are most important decision criteria: OSS is perceived to have better stability...

...and better protection to unauthorised access

But also protection against unauthorised access is an important feature of any server operating system. Obviously the security features of Linux and BSD are convincing for most decision makers. Almost 75% indicated that better protection against unauthorised access than in proprietary software has been an important or very important factor for their last decisions in favour of an Open Source server operating system.

70% value license cost savings and better price-to-performance ratio

Next comes the low or not existing direct license fee. 71% indicated that on average these have been an important or very important criterion for their decision in favour of OSS (mostly Linux). Closely related is the price-to-performance ratio. Also 71% indicated that a better price-to-performance ratio has been at least an important reason for choosing OSS on their servers in the past.

Higher performance and better functionality important, but less often very important

Closely following in importance are again product characteristics. 73% had the feeling that their OS server operating system was simply better than a commercial alternative by providing better performance. 66% considered the better functionality of their Open Source server operating system to have been an important decision criterion. However, compared to the previous two product characteristics, higher performance and better functionality were mostly rated important and much less often very important.

Indirect monetary benefits of lesser importance than direct savings

Indirect monetary benefits in the form of cost savings in daily operations, administration and support as well as in installation, integration and customisation 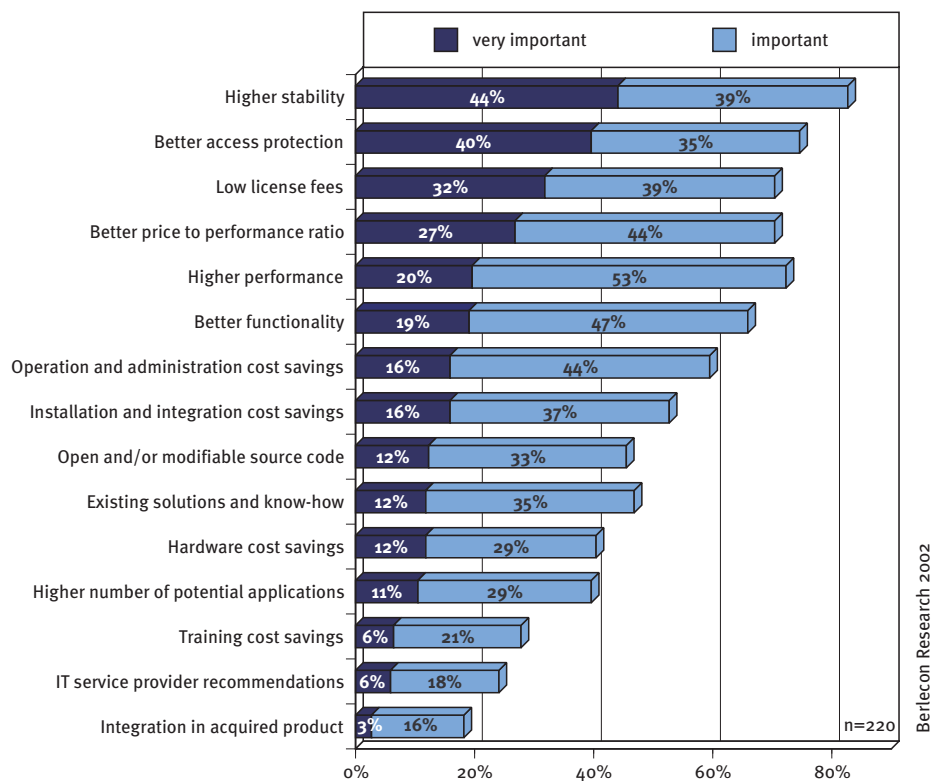to company needs were considered to have been at least important for 60% and 53%, respectively, of those that use Open Source server operating systems. Although we do not know (and probably most establishments do not either), how large these cost savings were, they have nevertheless to be considered an important aspect.

Compared to the direct license cost savings, however, these indirect monetary effects from using Open Source server operating systems seem to be of lesser size. Otherwise the establishments would have considered them to be more important. Cost savings in the installation process or in operating the servers are only considered by half as many establishments to have been very important as the direct license cost savings are. Hardware cost savings have been even less important. The fraction considering them to have been very important is less than a third of that for direct license cost savings.

Visibility and modifiability of source code not major criterion

The major characteristic of Open Source software, free access to and the possibility to modify the source code has not been a major factor influencing the decisions of our survey respondents. Only for 45% it has been an important or very important decision criterion in favour of their OS server operating system. More important have been direct and indirect cost savings from Open Source server operating systems as well as their product characteristics.

Existing solutions, know-how, and experience at least important for 47%

Existing solutions, know-how, and experience with OS server operating systems have been at least an important decision factor for 47% of Open Source server operating system users. This implies that once companies or public institutions start using OS software, there is a high probability that they will continue to use it. This corresponds quite well to the result from section 4.2 above, which showed that OSS users consider it to be a more important part of their IT infrastructure if they use it in regular operations.

Hardware cost savings of lower importance ...

While Linux and other Open Source server operating systems are often propagated with the argument that they need less expensive hardware than other variants of Unix or that existing hardware can be used, only about 40% of respondents indicated that this has been an important factor for their last decisions in favour of an Open Source operating system. This outcome might be due to Linux competing more with Windows (both are using the same hardware) than with other, larger Unix variants.

Also not very important was a higher number of potential applications. Only 40% of respondents indicated that this has been an important decision criterion for their decision in favour of an OS server operating system.

The last three criteria are training cost savings, IT service provider recommendations and the integration of OSS in another product. For each of these far less than 10% of respondents indicated that they have been very important. Integration of OSS in another product could have been an important factor, as sometimes the decision for an operating system is not made by the establishment itself that will be using the software, but by a software manufacturer that already has integrated the operating system into his product. This is the case, for example, for appliances, combinations of single-purpose hard- and software that are often offered as communication servers or firewalls, among other things. It is – what many might not know – also the case with the Macintosh operating system MacOS X, which is based on a BSD-based Open Source Unix called Darwin. For most of the respondents, though, this was not an important factor during the last one to two years. Only 19% considered it to have been important or very important.

Last in importance were training cost savings, recommendations and integration in other product

5.1.2   OSS used for databases

Databases are a very important element within the IT infrastructure of every company or public institution. While several software applications have databases included, there are many circumstances where the establishments have installed stand-alone databases hosting a significant part of its data. This is most often the case, when several applications are supposed to access the same data (e.g. customer, product or sales data). It is also the case when IT departments combine so-called best-of breed software into a software solution meeting their requirements. (Examples for such a package based on Open Source software are so-called LAMP systems consisting of Linux, Apache, MySQL and PHP.) In these cases companies and public institutions make a deliberate decision about which database product to choose.

Databases are important element in IT infrastructure

It is primarily such deliberate database usage decisions that are covered in our survey. Other decisions, where databases are part of a pre-fabricated package, are only included if the survey respondent knows about the underlying database and if the latter has influenced her decision somehow.

Primarily stand-alone databases covered

Importance of different Open Source databases

Overall 167 of the surveyed 395 establishments (42%) are using some sort of Open Source database or are at least planning to do so within the next year. As most would have expected, MySQL is the most-used Open Source database. 71% of the OS database users either currently use MySQL or are planning to do so. Second are PostgreSQL and SAP-DB with 14%. While PostgreSQL is fairly well-known as OS database, the popularity of SAP-DB is astonishing. This database product is rather complex and thus especially suited as basis for SAP and other enterprise applications.[14]

MySQL most used Open Source database

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14. We cannot state with certainty that all respondents really understood the difference between SAP, the enterprise resource management solution, and SAP-DB, the SAP database. This might have biased the outcome upwards, as SAP is quite widespread, especially among German enterprises.

Figure 5–3
Usage of different OS
databases
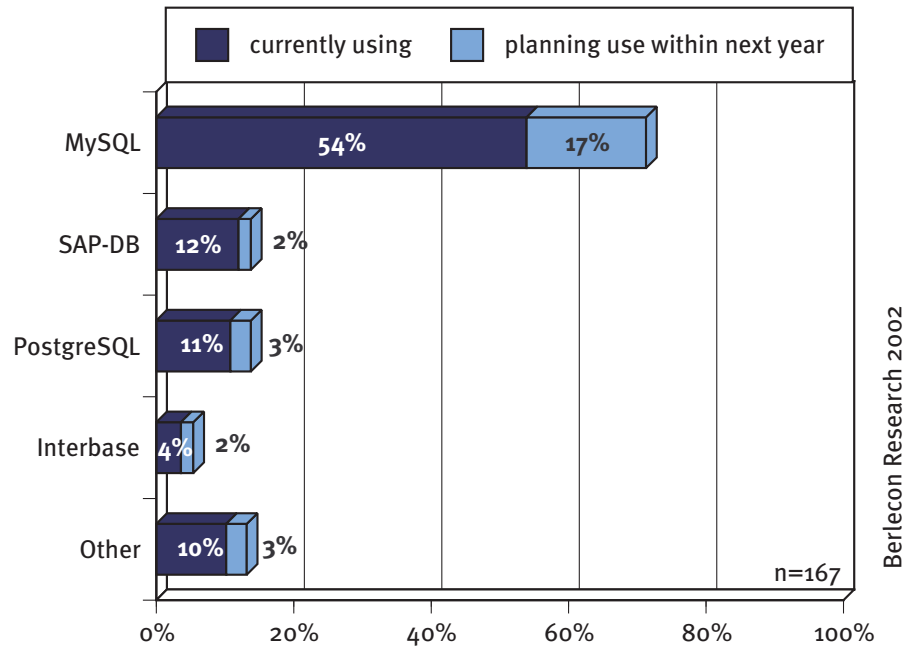
Base: Establishments currently using or planning to use OSS as database.

The category of "other" database products has to be interpreted with care. It includes Open Source databases like HyperSQL, but also database products like IBM's DB2 and Oracle, which are not Open Source software. They are, however, available in variants for Linux, which might have led some respondents to confuse the exact meaning of "Open Source database".

Criteria for the decision in favour of Open Source databases

Ranking of criteria resembles choice of OSS server operating system

Figure 5–4 shows in some aspects a rather similar picture to figure 5–2 for OSS server operating systems. Most important decision criteria in favour of OSS databases have been product features and license cost savings. Indirect cost savings and modifiability of the source code have been of lesser importance. Thus, also the database usage decision results support the hypothesis that modifiability of the source code is not a major direct benefit of Open source software for enterprises. It might be an indirect benefit though, in that an OS code makes a continuous improvement of the software more likely, most important with respect to stability and security. Companies might make decisions in favour of OSS since they know that this software went through this fireproofing process and will continue to do so.

Protection against unauthorised access of utmost importance

As databases contain crucial data of each institution, security in the sense of protection against unauthorised access is of utmost importance. Consequently, better access protection was the most important reason why establishments decided in favour of OSS databases. 34% of respondents considered it to have been very important and for further 37% it was an important factor for their decision in favour of an OSS database.

Also stability crucial feature for database

Also stability is one of the main requirements for a database system, especially if the database is a crucial part of a company's IT infrastructure. As figure 5–4 shows, stability is obviously considered to be one of the main advantages of Open Source databases, even more important than the low price. 77% of the respondents stated that a higher stability has been an important reason why they decided in favour of an Open Source database. For 31% it has even been a very important reason. While these values are absolutely high, they are lower than in the server operating system decisions.
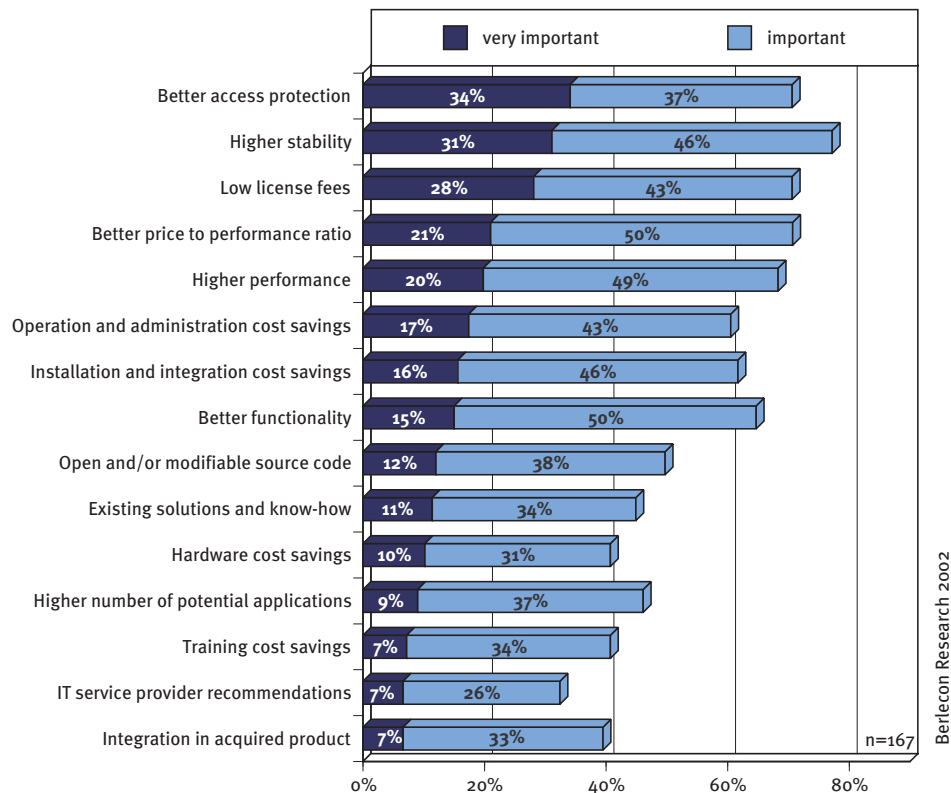
Figure 5–4
Importance of all criteria for decision in favour of OS database

Just as for the server operating system, the low or even zero license fees for the Open Source database have been a major element in the establishments' decision in favour of an Open Source database. 71% considered it to have been at least important. The influence of the price-to-performance ratio on the database decision was regarded as almost equally important. Again 71% considered a better price-to-performance-ratio to have been at least important in their decision. 21% considered it very important, which is somewhat less than the price tag alone that was considered to have been important for 28%. Just like in the server operating system decision, this can be interpreted in a way that getting the software (almost) for free was a very important decision criterion, but that the users consider proprietary software to deliver a better price-to-performance ratio at least in some cases.

License fee savings and better price-to-performance ratio equally relevant

This is supported by the relevance attached to higher performance, again an essential element of databases. In many cases, the Open Source database obviously was simply the better software, as figure 5–4 shows. 69% of the respondents stated that a higher performance has been at least important for their last decisions in favour of Open Source database software.

Higher performance has been relevant for 68%

Indirect cost savings are next in relevance. 62% considered installation and integration cost savings to have been important for their decision in favour of Open Source databases. This value is also considerably higher than for server operating systems. Obviously, much of proprietary database software is considered to be much more difficult to install and to integrate than the available Open Source databases. Almost equally important have been expected savings regarding daily operations, administration and support. 60% considered them to have been an important or very important criterion for their decision. This fraction is about as large as for Open Source server operating systems.

Indirect cost savings due to easier installation and administration

While stability and security are typically perceived as the major advantages of Open Source software, opinions differ on whether Open Source software provides better

Better functionality important criterion for 65%

functionality. Also our surveyed establishments that have made decisions in favour of Open Source databases emphasise it to a lesser extent as a decision criterion than stability and security. Nevertheless, for 65% better functionality of Open Source software has been an important criterion in favour of an OSS database, for 15% even a very important one.

Openness and modifiability of lesser importance

Also for OS databases the major characteristic of all OS software – open and modifiable source code – proves to be of relatively low importance. It was considered to have been an important element in the last decisions by almost 50% of the respondents – a slightly higher percentage as with server operating systems. However, it has only been very important for 12%.

Existing know-how has been important for 45%

Existing solutions, know-how and experience have influenced the decision in favour of Open Source databases for 45% of the respondents in an important or very important way. This is about the same importance as with server operating systems.

Hardware and training cost savings of low importance

Hardware and training cost savings are also for databases of lesser importance than other forms of direct and indirect cost savings. Both are only considered by 41% of OS database users to have been an important decision criterion. Reason for the relatively low importance of the first is probably that OS databases as well as many proprietary ones are available for a large variety of hardware, so that both can be chosen independently. Reason for the low importance of training cost savings might be that all major databases use dialects of SQL, the standardised query language.

Importance of higher number of applications reflects potential use of databases as basic element within other applications

46% consider a higher number of potential applications to have been an important criterion in favour of Open Source databases in their establishments. That number is considerably higher than for server operating systems. This can either indicate that server operating systems do not need a high number of applications or that there are simply more available for Open Source databases than for Open Source server operating systems. Most likely the second is the more important argument, as the next criterion shows.

40% of the respondents stated that the existing integration in another acquired product was an important criterion in favour of an Open Source database. For server operating systems this value was only 18%. Many Internet-technology based applications (e.g., groupware applications, content management systems) have Open Source databases included, which might explain the outcome to some extent.

IT service provider recommendations least important

IT service provider recommendations are again the least important motivation behind a decision for Open Source software. Only 32% indicated that they have been an important factor influencing their decision in favour of OS database software, and only for 7% they have been very important. Nevertheless, this percentage is higher than for server operating systems.

5.1.3   OSS used on desktop computers

Desktop software related to client operating systems...

Open source software on desktop computers can come in different variants. First of all, OSS might be the client or desktop computer operating system, e.g. Linux. Secondly, it might be a certain part of software that is usually considered part of the operating system but developed by different developers than the operating system core. The KDE or Gnome desktops are examples for such software. Most often they are used in combination with Linux.

... or as standalone applications

And thirdly there are applications. Quite contrary to Linux or KDE they do not form part of the basic software on a computer, but are application programs for the end

user. The web browser Mozilla belongs into this group as does the office package OpenOffice/StarOffice. These application programs are often available for a variety of platforms. Their popularity is therefore not limited to niche operating systems.

Importance of different Open Source components for desktop computers

Altogether the use of Open Source software on client or desktop computers is not very widespread. Only about 20% of those establishment that use OSS have some form of OSS installed on their desktops. Of all four application areas asked about, this is by far the lowest value. It reconfirms the common perception that Open Source software is mostly used on servers and in other hidden parts of the IT infrastructure.

OSS on desktops not very widespread

Figure 5–5 shows the different sorts of Open Source software used on client or desktop computers. Of the 80 establishments 68% use Linux on desktop computers or plan to do so. Thus, Linux is according to our survey the most important desktop software using the Open Source model. Next in popularity is StarOffice/OpenOffice, which is currently or within the next year used by 48% of the respondents, followed by the two desktop systems KDE and Gnome. Mozilla, the web browser, will be used by 28% of the respondents if their plans materialise.

Most widespread OS desktop software is Linux

Thus, the answers to the decision criteria analysed next will be a mixture of answers for an operating system, a desktop, and application software. While these are indeed different sorts of software, they all have in common that they are installed on a client computer meaning that there are typically many people using this software (we excluded use in exceptional cases) and that these users are typically not computer experts.

Decision criteria reflect decision for operating system as well as for application

Figure 5–5
Usage of different OS desktop software

Base: Establishments currently using or planning to use OSS on client or desktop systems.
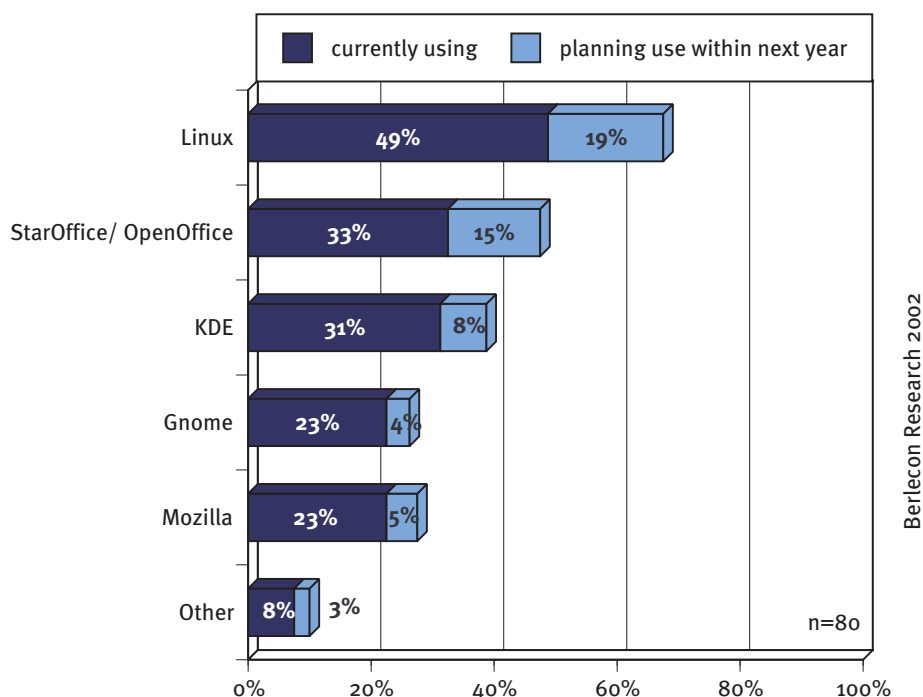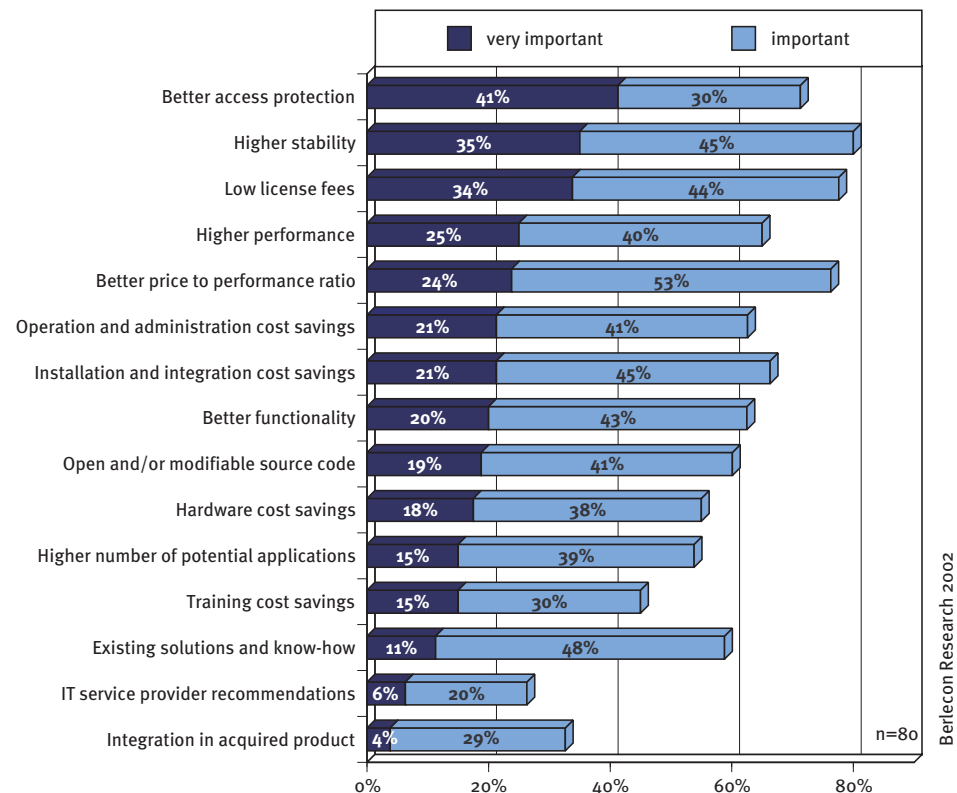
Criteria for the decision in favour of Open Source software on desktops

Figure 5–6 Importance of all criteria for decision in favour of OS desktop software (Berlecon Research 2002, n=80)

Criterion	very important	important
Better access protection	41%	30%
Higher stability	35%	45%
Low license fees	34%	44%
Higher performance	25%	40%
Better price to performance ratio	24%	53%
Operation and administration cost savings	21%	41%
Installation and integration cost savings	21%	45%
Better functionality	20%	43%
Open and/or modifiable source code	19%	41%
Hardware cost savings	18%	38%
Higher number of potential applications	15%	39%
Training cost savings	15%	30%
Existing solutions and know-how	11%	48%
IT service provider recommendations	6%	20%
Integration in acquired product	4%	29%

Results again similar to other sorts of Open Source software …

Figure 5–6 shows the importance of all criteria for acquiring Open Source desktop software. The chart shows a quite similar picture to the previous charts. The product features stability and security have been the main reasons why the establishments have decided to use OSS on their desktops, followed by direct cost savings due to low or zero license fees and subsequently followed by indirect cost savings.

… with some variations in order

Compared to the previously analysed areas, the order is only slightly changed. Having existing solutions, know-how and or experiences was a less important factor for the decision in favour of OS desktop software than it was for the decision in favour of an OS server operating system or an OS database. Also better functionality is considerably lower ranked than for server operating systems

Security most important decision criterion

Security also is the most important decision criterion for desktop software, as the survey results show. 41% considered better protection of OSS desktop software a very important criterion for their decision, altogether 71% considered it to have been at least important for their decision. Obviously most users consider these possibilities to be better for Open Source software than for proprietary alternatives.

Higher stability of relevance for 80%

Next in importance is higher stability. If the assessments as important and very important are combined, it is even the major reason why those establishments surveyed decided in favour of Open Source software on their client desktops. 80% indicated that it has at least been important, for 35% it has even been a very important criterion. These values were only higher for Open Source server operating systems. Obviously, many IT decision makers are not satisfied with the unstable client operating systems and software applications they otherwise have available.

Low license fees more important than in previous usage areas

Also the importance of low license fees is considered to have been larger than for the previous two usage areas. For 78% low or zero license fees have been at least an important reason for using Open Source software on desktop computers. This was to be

expected, as license fees can become a significant cost factor if licenses for many computers have to be bought. Typically this is more likely to be the case for clients than for servers.

Closely related is again the question for the importance of a better price-to-performance ratio. The results are very similar to those for the importance of low license fees. However, the percentage of respondents considering it to have played a very important role is lower than for the low license fee. This outcome fits with the answers about the importance of higher performance. For 65% higher performance has been at least an important reason for their acquisition of Open Source desktop software. For 25% this reason was even very important. These are both lower values than for the license fee criterion.

Higher performance not as important as direct cost savings

Indirect cost savings are given a relatively high importance from users of OS on desktops. While 66% consider savings on installation and integration costs to have been at least important for their decision, 63% come to the same conclusion regarding operating and administration cost savings. These are the highest values across all four usage areas. Obviously proprietary software is regarded as being suboptimal with respect to costs for installation and administration.

Indirect cost savings for installation and administration highest across areas

Close together are the assessments of better functionality and modifiable source code. Better functionality of OS desktop software was an important or very important reason for their decision for 63% of those establishments surveyed. As in the other areas analysed, this value is somewhat below those for the lower license fees or the higher stability and better access protection. In comparison, 60% of those using OSS on desktops considered the openness and modifiability of software to have been at least an important decision criterion and 19% even consider it to have been very important. These are larger numbers than for all other usage areas, indicating that the wish to modify software is most pronounced for desktop software.

Better functionality and open source code equally important

Expected hardware cost savings were of medium importance. For 56% of those using OS desktop software, these have been at least an important decision factor. Again, this value is higher than for all other usage areas. Being able to use smaller computers or use older computers for a longer time can lead to significant cost savings, as the savings on each single computer have to be multiplied by the number of computers in a company.

Also hardware cost savings and higher number of potential applications with highest importance across areas

Again somewhat less important was the higher number of potential applications. 54% of the users of OS software on desktops said that this influenced their decision in favour of OSS at least in an important way. This is, however, a higher value than for all other areas. Additional applications are obviously more important for desktop usage than for server operating systems or databases. The latter are often acquired for a specific purpose.

Training cost savings have only been an important reason for deciding in favour of OS desktop software for 45%. This value is lowest of all potential indirect benefits fro using OS software, as it is in the other areas. OS software obviously does not lead to substantial training cost savings.

Training cost savings with lowest importance of indirect cost savings

Existing solutions and know-how are considered by fewer respondents to have been very important but by more to have been important. Overall 59% of those actually using OSS on desktops have decided to some extent so because they had existing solutions, know-how or experience that would facilitate the use of this software in the establishment.

Existing solutions and know-how important but not very much

Service provider recommendations low on the scale

Recommendations of the IT service provider are very low on the scale of factors favouring the use of OS software on desktops. Only 26% of respondents indicated that they have been at least an important factor in their last decisions in favour of OSS software and only 6% indicated that they have been a very important factor. These values are comparable to those for server operating systems.

Integration in other products seldom the case for desktop software

Integration in another acquired product is seldom the case for desktop Open Source software. Therefore only 4% said that this has influenced their decision in a very important way. However, 33% indicate that it has influenced their decision at least in an important way. This is probably due to certain components (KDE or Gnome for example) that are typically bundled with the basic operating system.

5.1.4 OSS used for creating and operating websites

Many popular OS software applications in this field

Apart from the operating system Linux, that application field with most popular examples for Open Source applications is the creation and operation of websites. Web server projects like Apache, script languages like PHP or Perl as well as special applications like the caching software Squid are much used in this area and fairly well-known. Even more complex applications like content management systems on Open Source basis are being developed. Thus the answers to this usage area cover again a variety of different applications and application areas.

39% of the OSS using establishments employ OSS software in this area

39% of the OSS using establishments employ Open Source software in connection with the creation, maintenance and operation of websites. That is a slightly lower percentage than for the usage of OS databases but significantly more important than the use of Open Source software as desktop operating system.

Importance of different Open Source components for websites

Figure 5–7
Usage of different OS software in connection with websites

Base: Establishments currently using or planning to use OSS as server operating system.
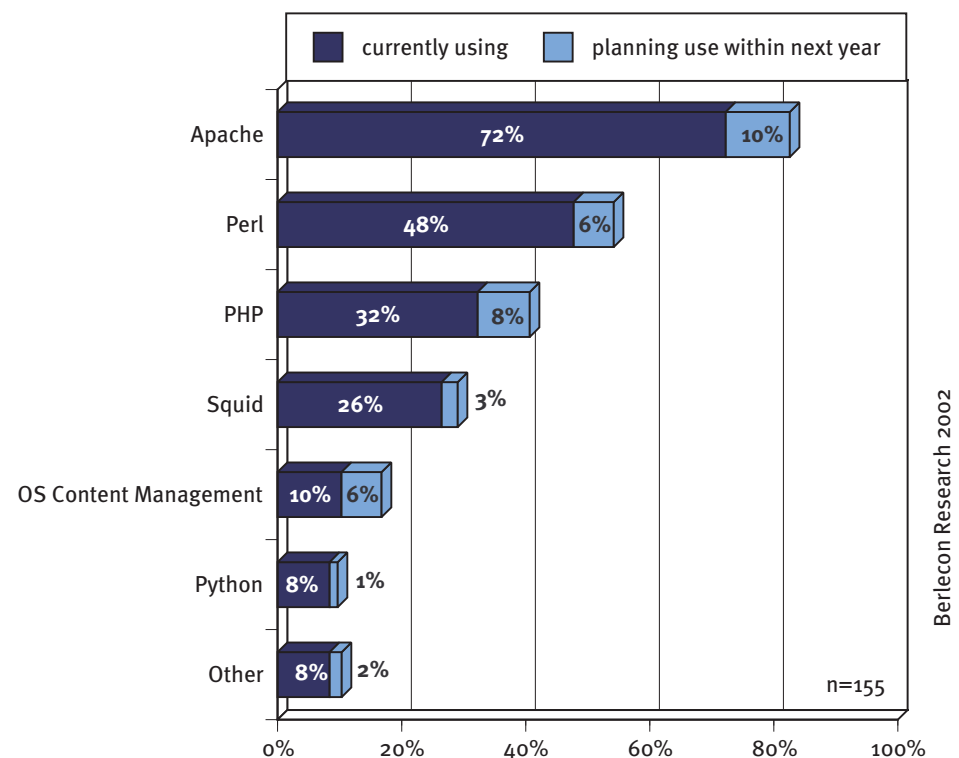
Quite many Open Source programs exist in this area, leading to a rather diverse usage of this sort of software. First of all, there is the possibility of using Open Source web servers like Apache. Indeed Apache turned out to be the most popular application in this field. 72% of those using any sort of OS software in connection with websites employ Apache. Second in popularity is Perl, used by 48% of OS users. PHP comes third with 32%.

Apache most popular in this area, second is Perl

Combining these results with the popularity of Linux as server operating system and MySQL as Open Source database, the acronym LAMP should better stand for Linux, Apache, MySQL, Perl instead of PHP at the end. Nevertheless, to a large extend both Perl and PHP can be used for the same purpose and in similar ways for the operation of websites.

Squid, the Open Source caching software, is typically used in larger Intranets to reduce the amount of traffic on an establishment's external Internet connection. It is therefore more used to manage retrieval of websites than the operation of an establishment's own websites. 26% of those respondents using any sort of OS software in connection with websites employ Squid.

Squid used by 26% of respondents in this area

The programming language Python is used by only 8% of respondents in this area. It is thus much less popular than Perl with which it has several features in common. Of similar popularity are other sorts of Open Source software. Apart from some people mentioning Linux, PHP-Nuke – an OS content management system – was mentioned a few times in the category "Others". Most often indicated was the use of Tomcat. Tomcat is the servlet container that is used in the official reference implementation for the Java Servlet and JavaServer Pages technologies and is by now part of the Apache project.

Tomcat most popular among "Others"

Open Source content management systems are used by roughly 10% of the establishments in this group.

Open Source CMSs not very widespread

Criteria for the decision in favour of Open Source software for websites

Figure 5–8 combines the importance of all decision criteria in favour of OSS in connection with websites. Despite some slight differences in the details, the basic order of importance is the same as for the other areas. The most important criteria in favour of Open Source software are software characteristics like higher stability and better access protection. Thus, OSS is perceived by most users as being simply better than commercial alternatives.

Similar picture than for other usage areas

Low or zero license fees are next in order of importance, very close to higher performance, better price-to-performance ratio and better functionality. This group consists of direct monetary benefits from using this software as well as of benefits from better quality. Indirect cost savings together with the openness and modifiability of the source code make up the next category. As in all other categories, cost savings in integration and installation as well as in daily operations are more important than hardware cost savings. The importance of an open source code is right in between these indirect benefits from choosing Open Source software.

Direct cost savings more important than indirect cost savings

Higher stability of Open Source software is the primary reason for choosing OSS in connection with websites. 83% state that it has been at least important and for 48% it has even been a very important factor. Of all criteria and all domains these values are the highest and thus show that OSS obviously fits the requirements for website-related software best.

Higher stability primary reason for choosing OSS

Figure 5–8
Importance of all criteria
for decision in favour of
OSS in connection with
websites

Legend: very important / important

Criteria	very important	important
Higher stability	48%	35%
Better access protection	44%	30%
Low license fees	32%	41%
Higher performance	32%	41%
Better price to performance ratio	30%	47%
Better functionality	30%	41%
Operation and administration cost savings	20%	35%
Open and/or modifiable source code	19%	37%
Installation and integration cost savings	16%	37%
Existing solutions and know-how	12%	38%
Hardware cost savings	11%	27%
Higher number of potential applications	10%	38%
Training cost savings	10%	23%
IT service provider recommendations	6%	21%
Integration in acquired product	6%	19%

n=155

Better access protection second most important

While access protection is also an important issue for software used in connection with websites, it was of lesser importance in choosing OSS than several other criteria (stability, price-performance ratio) were. 74% stated that the better access protection provided by OSS had been at least an important reason for choosing it. A reason for this outcome might have been the diverse nature of software discussed in this field. PHP, Perl and Python, for example, are software as well as programming languages. For programming languages protection against unauthorised access is not an important feature, though.

Low license fees, higher performance, better functionality and better price-to-performance ratio close together

Quite closely together are low license fees, higher performance, better functionality and – as consequence – a better price-to-performance ratio. For all of these criteria, between 70% and 77% indicated that they have been at least an important reason for their decision in favour of OSS. For 29-32% they have even been a very important reason. Even slightly more important than the price alone was the better price-to-performance ratio of Open Source software in this area. We would expect that this result is to some extent influenced by Apache, which is often said to provide better performance than commercially available web servers.

For 56% openness and modifiability of source code important

56% stated that the openness and modifiability of source code has been at least an important reason for their choice of Open Source software in this area. These values are of the same size as for the choice of desktop software and higher than for server operating system and databases.

Indirect cost savings

As in the other usage domains, indirect cost savings are less important than product characteristics and direct cost savings. 55% indicate that savings in daily operations and administration have been important or very important for their decision. Likewise, 53% indicate that installation and integration cost savings has been important or very important. This is also lower than in most other domains. Of slightly less importance are existing solutions, know-how and experiences. For 50% of respondents they have been at least an important reason for choosing OS software.

A group with even lower importance is made up of hardware cost savings, a higher number of potential applications and training cost savings. Only 38% stated that hardware cost savings have influenced their decision in an important or very important way favourably. For only 11% they have constituted a very important motivation. The other two criteria yield similar values.

Hardware cost savings, higher number of potential applications and training cost savings group with lower importance

Finally, IT service provider recommendations as well as the integration in acquired products are again on the last positions. Only for 27% of the respondents have recommendations by IT service provided an important incentive for choosing Open Source software. This criterion was therefore equally unimportant as the inclusion in another product. Only 25% state that this had been an important or very important factor for their decision. This value is second-lowest after server operating systems.

5.1.5 Summary of OSS benefits for companies and public institutions

The most striking result of evaluating the OSS selection criteria was their consistency over all four areas of application. No matter, whether one considers the use of OSS as server operating system, as database, as desktop software or in connection with websites, the basic picture remains the same. This basic picture is characterised by four observations:

Consistency across application areas most striking outcome

Higher stability and better protection against unauthorised access are the most important reasons why the surveyed establishments have made decisions in favour of open source software and against proprietary competitors. Higher performance is also an important reason why the respondents decided in favour of Open Source software. Thus, most beneficial to professional users of Open Source software are those specific product characteristics that are often said to be a direct consequence of the specific development process of Open Source software.

1. Higher stability and better access protection most important

Low or zero license fees come second in importance. The fact that Open Source software is typically distributed without charge or only for a nominal fee is an important further reason why companies and public institutions use Open Source software. The direct benefits in form of license fee savings are thus more important than indirect cost savings.

2. Low or zero license fees come second in importance

Indirect cost savings from using Open Source software come third in importance. But this applies mainly to two sorts of cost savings, those regarding installation, integration and customisation to company needs and those regarding daily operations, administration and support. Other forms of potential cost savings, i.e. relating to hardware or user training turned out to be of lesser importance.

3. Installation and administration cost savings come third

Only fourth comes the open and modifiable source code, the characteristic that defines Open Source software. According to the survey results, this openness is not a major reason why companies and public institutions use Open Source software. It might however, be an indirect criterion in the sense that companies believe that software developed under an OS model is better, e.g. more stable and more secure. Such a claim for Open Source software is more believable since everybody can test it, as the source code is open, even though many people do it.[15]

4. Open and modifiable source code comes only fourth for professional users

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15. There is a parallel to science, where much of the authority comes from the possibility to check results and repeat experiments, but in most disciplines this is not done for many results.

5.2   Establishment characteristics and OSS decisions

Influence of establishment characteristics on importance of decision criteria

While the importance of those aspects discussed in the previous section for the OSS usage decision speak for themselves, it would also be interesting to know whether there are certain establishment characteristics that influence these decisions. Do, for example, small establishments attach a greater importance to direct cost savings due to zero license fees? Or does the public sector consider certain aspects as significantly more important than private sector establishments?

Series of 60 regressions with 12 independent variables

To obtain answers to these questions, a series of 60 regression analyses has been conducted with the answer to each of the items in the four usage areas as dependent variables and a set of different explanatory variables:

❑ The country where the establishments is located: UK, Sweden or Germany,
❑ The sector to which it belongs: private sector with low medium or high IT intensity or the public sector,
❑ Whether the establishment is small, i.e. belongs to the size class of 100-499 employees,
❑ The share of IT personnel in the establishment,
❑ The relation of computers within the establishment to employees,
❑ The importance of OSS for the establishments' IT infrastructure,
❑ The degree to which an establishment uses OSS because it wants to be independent from the pricing and licensing policies of big software companies,
❑ The degree to which an establishment uses OSS because it wants to support the OS community by using Open Source software,
❑ The degree to which an establishment uses OSS since it regards OS specialists to be more easily availably on the labour market,
❑ The degree to which an establishments uses OSS because doing so is company policy,
❑ The degree to which an establishment lets its developers work on OSS projects on company time, and
❑ The degree to which an establishment is working together with OSS service companies in order to support the development of Open Source software.

Discussion only of most prominent effects

Tables 5–1 to 5–4 contain the outcome of these regressions in short form.[16] Those effects that were found to be statistically significant are denoted by +, - or by the direction they work. A + indicates positive correlation between the variable and the importance of a specific criterion, a − a negative correlation. A > or < states that the parameter value for establishments denoted on the left (e.g. German or High IT intensity establishments) is significantly higher or lower than that for establishments denoted on the right. Note that a higher parameter value means that establishments with this characteristic attach a lower importance to this item.

Only few consistent and stable relationships between explanatory variables and importance of different criteria

There are only very few effects consistent across the four usage areas for Open Source software. Most are only observable for one or two combinations of usage area and variable. For example, small establishments have stated more strongly than large companies that better protection against unauthorised access has influenced their decision in favour of Open Source for website related software. There is no such significant effect for the other usage areas. We will therefore discuss in the remainder of this section only those effects that have been found to be prevalent in at least three OSS usage areas. If some relationships are strong enough for statements like "For small establishments it is more important that …", than these.

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16. The full regression results are available upon request.

Most of these few relationships concern the regional affiliation of establishments. First of all, the statistical analyses show a couple of occasions, where UK establishments considered some items to have been more important than Swedish and German establishments did. This was the case for the importance of hardware cost savings as well as the importance of IT service provider recommendations.

UK establishments considered hardware cost savings and recommendations to have been more important

On the other hand German establishments considered the integration of OSS in some other acquired product to have been significantly less important than their counterparts in the UK and in Sweden did. Open Source software as part of greater software packages thus seems to be more prevalent in these countries.

Integration of OSS in other products less important in Germany

A quite strong positive relationship can also be observed between the importance attached to open and/or modifiable source code and the importance of OSS for an establishment. Thus, establishments that consider OSS to be an important part of their IT infrastructure also tend to consider the availability of its source code to have been an important criterion for their decision in favour of OSS. This applies to all usage areas except OSS on desktops, where only few effects are significant due to a low number of observations.

Availability of source code correlates positively with importance of OSS in IT infrastructure

A second positive correlation was found to exist between the importance of a better price-to-performance ratio as decision criterion and the use of OSS to become independent from licensing and pricing policies of the big software companies. This effect was to be expected as it is exactly the zero license fee that makes the software user independent from other licensing schemes. And indeed also in two usage areas a positive correlation between the importance attached to zero or low license fees and the wish to become independent could be observed.

Positive correlation between importance of better price-performance-ratio and wish to become independent from large software companies.

Finally the third clear correlation exists between the importance attached to higher performance of OSS software as decision criterion and the degree to which the usage of OSS is company policy. If establishments have such a company policy, they tend to consider higher performance to have been a major criterion for their decisions in favour of using Open Source software.

Importance of higher performance goes along with OSS company policy

To summarize these results, there are only very few clear and strong correlations between the explanatory variables and the assessment of benefits. Nevertheless, the explanatory power of the regression equations is relatively high and varies mostly between 80-90%. The remainder will have to be considered as individual peculiarities of using OSS.

Table 5–1 Establishment characteristics influencing choice of OSS as server operating system

	Country effects	Smallness	Sector effects	IT share	PC share	OSS importance in IT	Pricing and license indpendence	Support OSS community	IT spacialists better available	OSS is company policy	OSS development at work	Cooperation with OSS service comp.
Open source code		+	M<P	–		+					+	
No license fees							+	–			–	
Better price/performance	D<S, D<UK			+			+					
Higher performance			L<M, H< M	+						+		
Higher stability	D<S						+			+		
Better protection	D<S						+					
Better functionality			L<M			–				+		
More applications	D>S, D>UK											
Integrated in other prod.	D>S, D>UK				+					+		
Hardware cost savings	UK<S, UK<D				+							
Installation savings												
Operation savings										+		
Traing savings	UK<S, UK<D	+			+		–					–
Recommendation	UK<S, UK<D			+					–	+		–
Existing know-how		+				+						

A + indicates positive correlation between the variable and the assessment of importance for a specific criterion, a – a negative correlation.

A > or < states that the parameter value is significantly lower or higher. Note that a higher parameter value means a lower importance. In column 2 D, UK, and S denote the countries, in column 4 L, M, H, and P denote the three intensities of use as well as the public sector.

Table 5–2 Establishment characteristics influencing choice of OSS for databases

	Country effects	Smallness	Sector effects	IT share	PC share	OSS importance in IT	Pricing and license indpendence	Support OSS community	IT spacialists better available	OSS is company policy	OSS development at work	Cooperation with OSS service comp.
Open source code						+						
No license fees									+		+	
Better price/performance	UK<S						+					
Higher performance	L<P,L<M,L<H							+	+	+		
Higher stability				+								
Better protection											–	
Better functionality					–							
More applications	UK<D				–							
Integrated in other prod.	D>UK, D>S						–			+		–
Hardware cost savings	D>UK									+		
Installation savings	UK<S, UK<D										+	
Operation savings					–							
Traing savings				+			–					
Recommendation	UK<S		M<P,M<L,M<H				–					+
Existing know-how						+			+			

A + indicates positive correlation between the variable and the assessment of importance for a specific criterion, a – a negative correlation.

A > or < states that the parameter value is significantly lower or higher. Note that a higher parameter value means a lower importance. In column 2 D, UK, and S denote the countries, in column 4 L, M, H, and P denote the three intensities of use as well as the public sector.

Table 5–3 Establishment characteristics influencing choice of OSS on desktop computers

	Country effects	Smallness	Sector effects	IT share	PC share	OSS importance in IT	Pricing and license indpendence	Support OSS community	IT spacialists better available	OSS is company policy	OSS development at work	Cooperation with OSS service comp.
Open source code					–					+		
No license fees												
Better price/performance			L>H									–
Higher performance												
Higher stability												
Better protection												
Better functionality												
More applications												
Integrated in other prod.	D>UK, D>S	–										
Hardware cost savings												
Installation savings												
Operation savings												
Traing savings												–
Recommendation	UK<S, UK<D		L>P, L>M		+							
Existing know-how			H<L									

A + indicates positive correlation between the variable and the assessment of importance for a specific criterion, a – a negative correlation.

A > or < states that the parameter value is significantly lower or higher. Note that a higher parameter value means a lower importance. In column 2 D, UK, and S denote the countries, in column 4 L, M, H, and P denote the three intensities of use as well as the public sector.

Table 5–4 Establishment characteristics influencing choice of OSS in connection with websites

	Country effects	Smallness	Sector effects	IT share	PC share	OSS importance in IT	Pricing and license indpendence	Support OSS community	IT spacialists better available	OSS is company policy	OSS development at work	Cooperation with OSS service comp.
Open source code	UK<S		M<H			+					+	
No license fees							+					
Better price/performance							+					
Higher performance	D<S									+		
Higher stability	D<S, D<UK								+			
Better protection	D<S, D<UK	+		+	−				+	+		
Better functionality	S>UK, S<D								+			
More applications										+		
Integrated in other prod.	UK<S, UK<D									+		
Hardware cost savings	UK<S<D		L<H				+					
Installation savings		+			−					−	+	+
Operation savings	S>UK, S>D											+
Traing savings	UK<S, UK<D	+										
Recommendation	UK<S, UK<D		M<L, M<H									
Existing know-how	UK<S											−

A + indicates positive correlation between the variable and the assessment of importance for a specific criterion, a – a negative correlation.

A > or < states that the parameter value is significantly lower or higher. Note that a higher parameter value means a lower importance. In column 2 D, UK, and S denote the countries, in column 4 L, M, H, and P denote the three intensities of use as well as the public sector.

6   Survey Questionnaire

Introduction

Good morning/afternoon, my name is _ _ _ _ _ _ _ _ from the _ _ _ _ _ _ _ _ _ in _ _ _ _ _ .

We are conducting a survey on Open Source Software. Our client is Berlecon Research, a technology research company in Berlin, Germany. Berlecon Research is working on a research project regarding the professional use of Open Source Software in the European Union. The project is financed by the European Commission.

I would like to talk to the person responsible for IT decisions and administration in your company. The person should be able to answer questions about your company's IT decisions and should have a basic understanding of the technical issues.

Your answers will remain absolutely confidential and the survey results will be presented in an aggregated format only. It will not be possible to draw conclusions about your company from the research results. May I ask you for about 15 minutes of your time to answer a few questions?

Question 1-1: Filter

Is your company using Open Source Software, e.g. Linux, Apache, mySQL, or planning to do so within the next year? We are talking about software with source code that is open, readable and changeable.

Answers: 1=yes, 2=no

If Answer=1 continue, if Answer=2 stop here.

Question 1-2: Warming up

From your point of view, what is the importance of Open Source Software for your company's IT infrastructure? Is the importance ...

Answers:

1=very high

2=high

3=medium

4=low

5=very low

8=don't know

0=no answer

Question 2: IT Areas for Use of Open Source Software

In the following, I will line out specific <u>IT areas</u> for the use of Open Source Software. Please tell me for each area whether your company is currently using Open Source Software or planning to use it within the next year. Please indicate also whether you are using Open Source Software in your regular IT operations or just in unimportant exceptional cases.

Answers:

1=currently using in regular IT operations

2=currently using only in unimportant exceptional cases

3=planning to use within the next year in regular IT operations

4=not using in regular IT operations and not planning to do so within the next year

8=don't know

0=no answer

❑ Open Source Software for <u>server operating systems</u>, e. g. Linux or Free/Open BSD

❑ Open Source Software for <u>databases</u>, e. g. MySQL, PostgreSQL or Interbase or SAP-DB

❑ Open Source Software on <u>desktop or client computers</u>, e. g. Linux, KDE, Gnome, Mozilla or StarOffice/Open Office

❑ Open Source Software in connection with creating or operating <u>web sites</u>, e. g. Apache, PHP, Perl, Python, Squid or Open Source Content Management Systems

Transition to Next Question

The following questions will further explore the use of Open Source Software within these areas.

Note: Please rotate the question blocks 3-6!

Filter for Question 3:

If the response to Question 2 on the use of Open Source Software for Server Operating Systems has been 1 or 3 go on to Question 3-1. Otherwise go to Question 4.

Transition

Let's discuss server operating systems.

Question 3-1:

Your company is currently using Open Source Software for <u>server operating systems</u> or is planning to do so.

In the following, I will name several Open Source operating systems. Please tell me for each one whether you are currently using it or planning to use it within the next year.

Answers:

1=currently using

2=planning to use within the next year

3=not using and not planning to use within the next year

8=don't know

0=no answer

- ❏ Linux
- ❏ Free/Open BSD
- ❏ Other, if yes which _ _ _ _ _ _ _ _ _ _ _ _

Question 3-2:

Now I will present to you several criteria that can influence a decision in favour of Open Source Software. For your following answers, please refer to <u>all your decisions</u> in favour of an Open Source server operating system within the last one to two years.

Please tell me, <u>how important</u> each of the following criteria was <u>on average</u> for your decision <u>in favour of Open Source</u> and <u>against any proprietary operating system</u>.

Answers: (read after the first criterion)

This criterion was . . .

1=very important

2=important

3=neither nor

4=less important

5=not important

8=don't know

0=no answer

Criteria rotation

- ❏ Open and/or modifiable source code
- ❏ Lower or no licence fees
- ❏ Better price to performance ratio
- ❏ Higher performance
- ❏ Higher stability
- ❏ Better protection against unauthorised access
- ❏ Better functionality
- ❏ Higher number of potential applications
- ❏ Open Source server operating system was already integrated in another product you have acquired
- ❏ Hardware cost savings
- ❏ Cost savings regarding installation, integration and customisation to company needs
- ❏ Cost savings regarding daily operations, administration and support
- ❏ Cost savings regarding training and introduction of users
- ❏ Recommendation of your IT service provider
- ❏ <u>Existing</u> solutions, know-how and/or experiences in your company regarding Open Source server operating systems

Transition

Thank you for your answers on Operating Systems.

Filter for Question 4:

If the response to Question 2 on the use of Open Source Software for Databases has been 1 or 3 go on to Question 4-1. Otherwise go to Question 5.

Transition

Let's discuss databases.

Question 4-1:

You are currently using Open Source Software for <u>databases</u> or you are planning to do so.

In the following, I will name several Open Source database products. Please tell me for each one whether you are currently using it or planning to use it within the next year.

Answers:

1=currently using

2=planning to use within the next year

3=not using and not planning to use within the next year

8=don't know

0=no answer

- ❑   MySQL
- ❑   PostgreSQL
- ❑   Interbase
- ❑   Other, if yes which _ _ _ _ _ _ _ _ _ _ _

Question 4-2:

Now I will present to you several criteria that can influence a decision in favour of Open Source Software. For your following answers, please refer to <u>all your decisions</u> in favour of an Open Source database product within the last one to two years.

Please tell me, <u>how important</u> each of the following criteria was <u>on average</u> for your decision <u>in favour of Open Source</u> and <u>against any proprietary database product</u>.

Answers: (read after the first criterion)

This criterion was . . .

1=very important

2=important

3=neither nor

4=less important

5=not important

8=don't know

0=no answer

Criteria rotation

- ❑ Open and/or modifiable source code
- ❑ Lower or no licence fees
- ❑ Better price to performance ratio
- ❑ Higher performance
- ❑ Higher stability
- ❑ Better protection against unauthorised access
- ❑ Better functionality
- ❑ Higher number of potential applications
- ❑ Open Source database was already integrated in another product you have acquired
- ❑ Hardware cost savings
- ❑ Cost savings regarding installation, integration and customisation to company needs
- ❑ Cost savings regarding daily operations, administration and support
- ❑ Cost savings regarding training and introduction of users
- ❑ Recommendation of your IT service provider
- ❑ <u>Existing</u> solutions, know-how and/or experiences in your company regarding Open Source databases

Transition

Thank you for your answers on databases.

Filter for Question 5:

If the response to Question 2 on the use of Open Source Software for desktop or client computers has been 1 or 3 go on to Question 5-1. Otherwise go to Question 6.

Question 5-1:

You are currently using Open Source Software on <u>desktop or client computers</u> or you are planning to do so.

In the following, I will name several kinds of Open Source Software in the desktop area. Please tell me for each one whether you are currently using it or planning to use it within the next year.

Answers:

1=currently using

2=planning to use within the next year

3=not using and not planning to use within the next year

8=don't know

0=no answer

- ❑ Linux
- ❑ KDE
- ❑ Gnome
- ❑ Mozilla
- ❑ StarOffice/OpenOffice
- ❑ Other, if yes which _ _ _ _ _ _ _ _ _ _ _ _

Question 5-2:

Now I will present to you several criteria that can influence a decision in favour of Open Source Software. For your following answers, please refer to <u>all your decisions</u> in favour of Open Source software on desktop or client computers within the last one to two years.

Please tell me, <u>how important</u> each of the following criteria was <u>on average</u> for your decision <u>in favour of Open Source</u> and <u>against any proprietary operating system</u>.

Answers: (read after the first criterion)

This criterion was . . .

1=very important

2=important

3=neither nor

4=less important

5=not important

8=don't know

0=no answer

Criteria rotation

- ❏ Open and/or modifiable source code
- ❏ Lower or no licence fees
- ❏ Better price to performance ratio
- ❏ Higher performance
- ❏ Higher stability
- ❏ Better protection against unauthorised access
- ❏ Better functionality
- ❏ Higher number of potential applications
- ❏ Open Source Software was already integrated in another product you have acquired
- ❏ Hardware cost savings
- ❏ Cost savings regarding installation, integration and customisation to company needs
- ❏ Cost savings regarding daily operations, administration and support
- ❏ Cost savings regarding training and introduction of users
- ❏ Recommendation of your IT service provider
- ❏ <u>Existing</u> solutions, know-how and/or experiences in your company regarding Open Source Software on desktop or client computers

Finish Question 5 and Intro to Next Question

Thank you for your answers on the desktop area.

Filter for Question 6:

If the response to Question 2 on the use of Open Source Software for creating or operating web sites has been 1 or 3 go on to Question 6-1. Otherwise go to Question 7.

Question 6-1:

You are currently using Open Source Software for creating or operating websites or you are planning to do so.

In the following, I will name several kinds of Open Source Software for creating or operating websites. Please tell me for each one whether you are currently using it or planning to use it within the next year.

Answers:

1=currently using

2=planning to use within the next year

3=not using and not planning to use within the next year

8=don't know

0=no answer

- ❑ Apache
- ❑ PHP
- ❑ Perl
- ❑ Python
- ❑ Squid
- ❑ Open Source Content Management Systems
- ❑ Other, if yes which _ _ _ _ _ _ _ _ _ _ _ _

Question 6-2:

Now I will present to you several criteria that can influence a decision in favour of Open Source Software. For your following answers, please refer to all your decisions in favour of Open Source software for creating or operating web sites within the last one to two years.

Please tell me, how important each of the following criteria was on average for your decision in favour of Open Source and against any proprietary operating system.

Answers: (read after the first criterion)

This criterion was . . .

1=very important

2=important

3=neither nor

4=less important

5=not important

8=don't know

0=no answer

Criteria rotation

- ❑ Open and/or modifiable source code
- ❑ Lower or no licence fees
- ❑ Better price to performance ratio
- ❑ Higher performance
- ❑ Higher stability

❑   Better protection against unauthorised access
❑   Better functionality
❑   Higher number of potential applications
❑   Open Source Software was already integrated in another product you have acquired
❑   Hardware cost savings
❑   Cost savings regarding installation, integration and customisation to company needs
❑   Cost savings regarding daily operations, administration and support
❑   Cost savings regarding training and introduction of users
❑   Recommendation of your IT service provider
❑   <u>Existing</u> solutions, know-how and/or experiences in your company regarding Open Source Software for creating or operating web sites

Transition

Thank you for your answers on Websites.

Question 7: Open Source Software in General

Now I have some questions on the general use of Open Source Software in your company. They are not related to any specific IT area.

In the following, I will present a number of statements to you. Please, tell me for each statement how much it applies to your company. For your answer, you can use the following range:

Answers:

1=totally agree

2=somewhat agree

3=neither nor

4=somewhat disagree

5=totally disagree

8=don't know

0=no answer

Criteria rotation

❑   We use Open Source Software because we want to be more independent from the pricing and licensing policies of the big software companies.
❑   By using Open Source Software we want to support the Open Source community.
❑   We use Open Source Software because IT specialists for this kind of software are more easily available on the labour market than specialists for proprietary software.
❑   We prefer using Open Source Software – that's part of our company policy.
❑   Our software developers are free to work on Open Source projects within their time at work.
❑   We are deliberately working together with Open Source service companies in order to support the development of Open Source software.

Question 8: Company and IT

Finally, I have three questions left concerning your company and your IT.

Question 8-1:

How many IT people does your company employ? (employees in the IT department or employees responsible for IT related tasks)

_ _ _ _ number

8=don't know

0=no answer

Question 8-2: How many computer users does your company have?

_ _ _ _ number

8=don't know

0=no answer

Question 8-3:

How many employees does your company have?

_ _ _ _ number

8=don't know

0=no answer

Final

Thank you very much for your time and your effort. Your evaluations have been very helpful for the project. The results of this survey will be published by the end of June 2002. They will then also be made publicly available on the web. Look for www.berlecon.de.