

The Arcati Mainframe User Survey 2006

**An analysis of the profile, plans and
priorities of mainframe users**

**Extracted from the Arcati Mainframe Yearbook 2006
(www.arcati.com/yearbook)**



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 Many thanks to all those who took part.

The IBM mainframe remains a platform of contrasts. On one hand, it offers unprecedented performance and availability and continues to reinforce its position as the most capable corporate data server and transaction management engine on the market. On the other hand, it wrestles constantly with an image of excessive cost and complexity, of isolation and exclusivity while distributed platforms appear to share applications and resources with relative ease.

In the average enterprise data center, these two sides of the mainframe's image jostle for position. Our annual mainframe user survey is intended to provide a snapshot of customers' plans and priorities, issues and concerns for the zSeries platform, and to establish whether customers are committed to implementing new workloads on the mainframe or whether they believe their large systems will play more of a background support role in future.

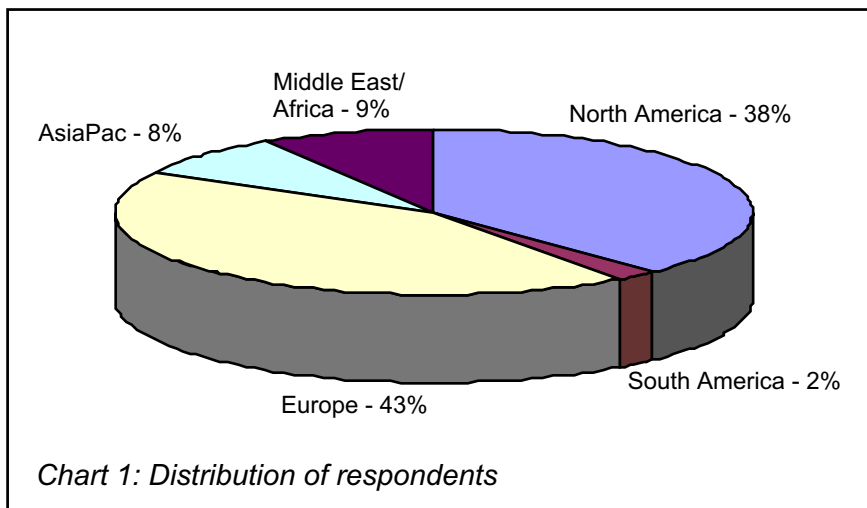
In this year's research, we explore the use of the mainframe within web services and other areas of new development, and we also ask respondents about their views on outsourcing and their relationships with independent software vendors. The conclusions, we hope, will offer some indication of the role that the mainframe plays in today's enterprise data centers.

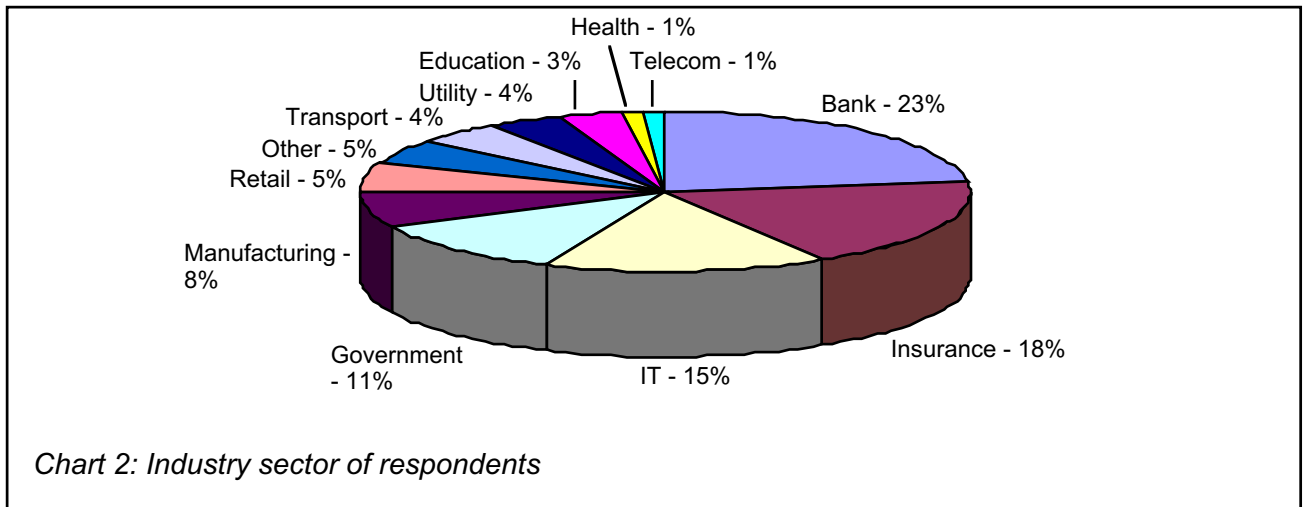
Note: With most questions in our survey, a small number of respondents replied "Don't know" or declined to answer. In the charts that follow, these non-responders have been omitted.

Profile of respondents

This year's survey is based on a worldwide sample of 92 users of IBM (and compatible) mainframe systems, contacted via email and the web during January and February 2006. Though the individual respondents are not identical to those in last year's survey, the geographical breakdown is very similar (Chart 1). The majority of respondents were from North America (38%) and Europe (43%), and there were smaller numbers from Middle East/Africa (9%), Asia Pacific (8%) and South America (2%).

A broad range of industry sectors were represented in the survey (Chart 2), with Banking, Insurance and IT accounting for more than half the respondents. The strong financial services element reflects the composition of the Arcati customer base and also, to a large extent, the composition of today's mainframe environment. IT was well represented with 15% of the sample – companies ranging from software vendors to outsourcing service providers – while Government and Manufacturing accounted for 11% and 8% of the sample respectively.





As a third indicator of the business composition of the survey, we asked respondents how many people were employed worldwide by their companies. As can be seen in Chart 3, the sample includes both physically large companies (37% registering more than 10,000 employees) and more modest-sized organizations. Those below the 1000-employee mark belong mostly to the IT sector.

Installed MIPS and capacity growth

Establishing the size of mainframe installations is never easy but installed MIPS (millions of instructions per second) is as good a measure as any, particular when comparing similar hardware. Since the introduction of the z9 range last year, we now have to contend with both hardware and software MSUs as well as Value Units; by comparison, MIPS are at least universally understood, even if they are often disputed.

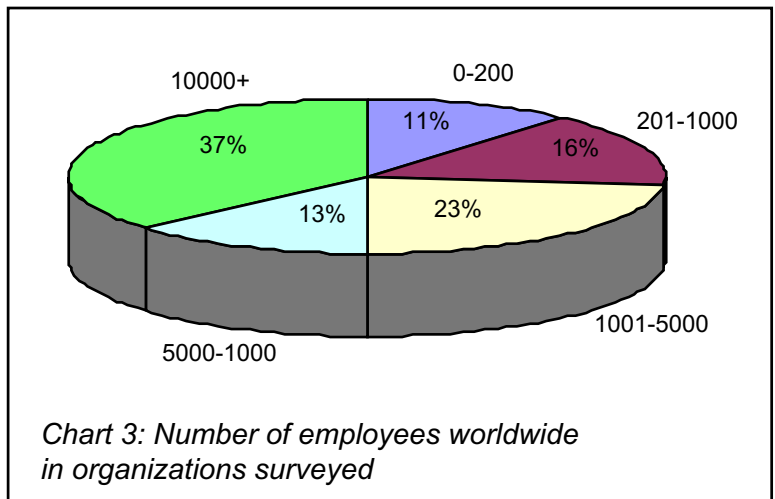
We asked respondents to indicate how many MIPS they had installed (Chart 4), choosing from the following bands:

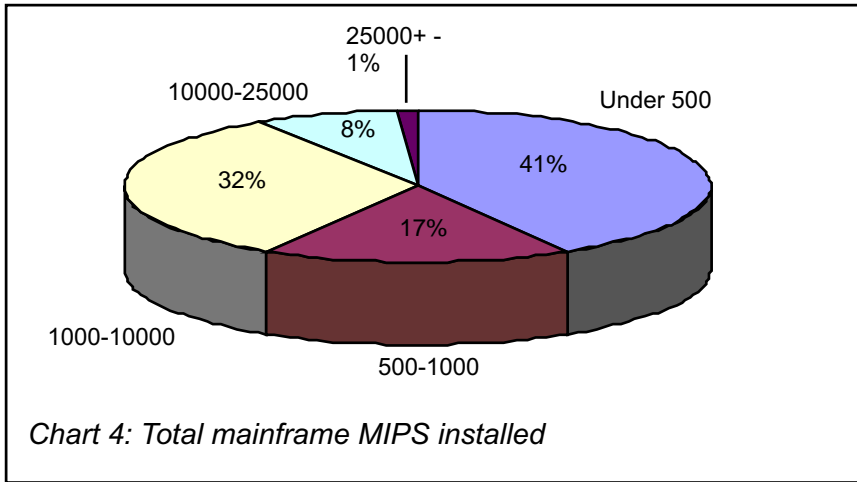
- * Under 500
- * 500-1000
- * 1000-10,000
- * 10,000-25,000
- * Over 25,000

Though a little uneven, these bands help to break down our group of respondents into **smaller** (sub-1000), mid-sized (1000-10,000) and **large** (above 10,000) sites.

57% of our sample came into the sub-1000 MIPS category, almost one third were mid-sized, and 9% large. Later in the survey, we will compare responses from these three bands to see whether size itself has a significant impact on user priorities and their level of long-term commitment to the mainframe platform.

As for capacity growth (Chart 5), three quarters of respondents reported a modest increase (33% growing at less than 10 per cent per year and 42% achieving a more dynamic 10 to 25 per cent). 8%





increasingly polarized, with larger users showing no sign of abandoning the platform (in many cases, the task would be almost impossible) and investing in integration and new development. At the other extreme, smaller sites are more ambivalent about their mainframe systems: most continue to support their legacy applications on the zSeries, but some are clearly moving new development to other platforms that offer more favorable price/performance or packaged applications that are not available on the mainframe platform. It's at this lower end of the scale that attention must be paid to pricing and to encouraging new ISVs, to stem the trickle of disaffected users and to start to attract new customers who would not typically consider the zSeries as an option.

of our sample reported faster capacity growth and a significant 18% said that their mainframe capacity was either static or in decline.

There is no clear geographical pattern to the rate of capacity growth, and the most resource-hungry sites are distributed across the regions. Similarly, each industry sectors displays a range of slow- and fast-growing sites.

However, if we compare installed MIPS with growth (Chart 6), a very clear pattern emerges. Most of the fast growth (and none of the MIPS decline) are taking place in our mid-size category, among sites with between 1000 and 10,000 MIPS. The larger installations in our survey – typically mature data centers with a heavy investment in mainframe resources and a broad mix of new and legacy applications – are growing at a modest but steady rate, as might be expected.

The smaller sites, though, present a very mixed picture. Although the majority are growing – a few of them very fast – this group also includes a considerable number of respondents who reported negative or zero growth.

These findings reflect a trend that we have detected in recent years: that the mainframe market is becoming

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One very positive sign for IBM, though, is the strong rate of growth at the mid-size level. These companies are much more numerous than the very largest sites and, even if they invest less overall in IT than the super-users, they often pay the highest price per MIPS (the largest and smallest users tend to get the best deals for different reasons). A strong mid-range business

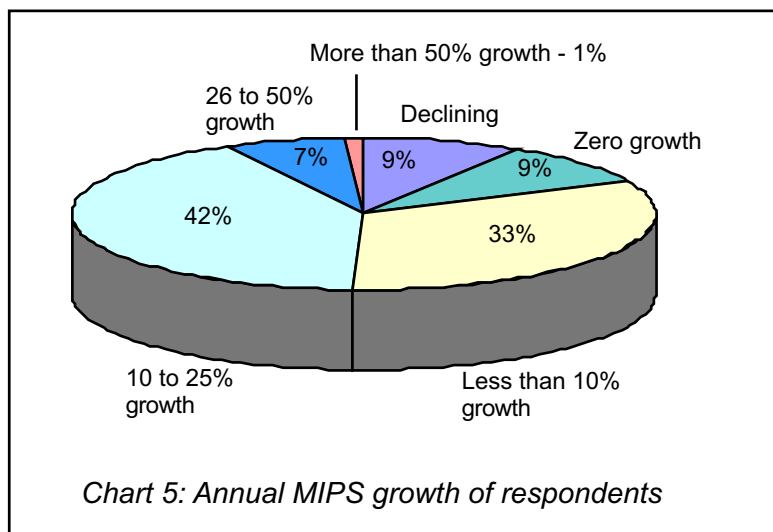
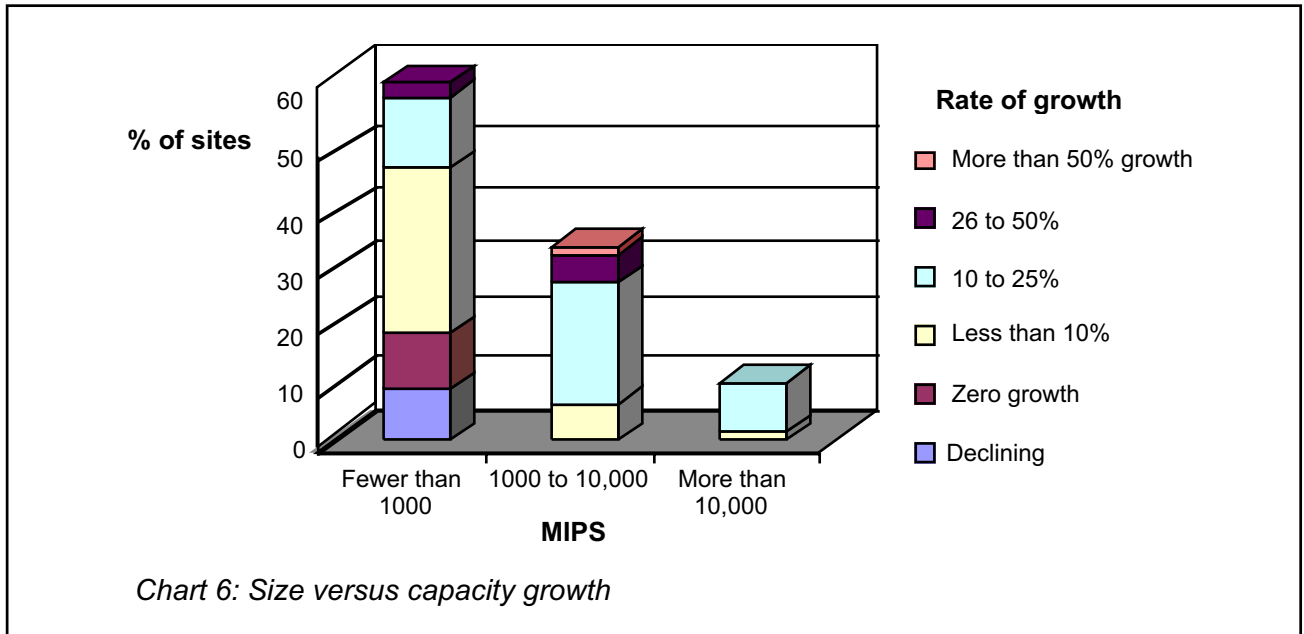


Chart 5: Annual MIPS growth of respondents

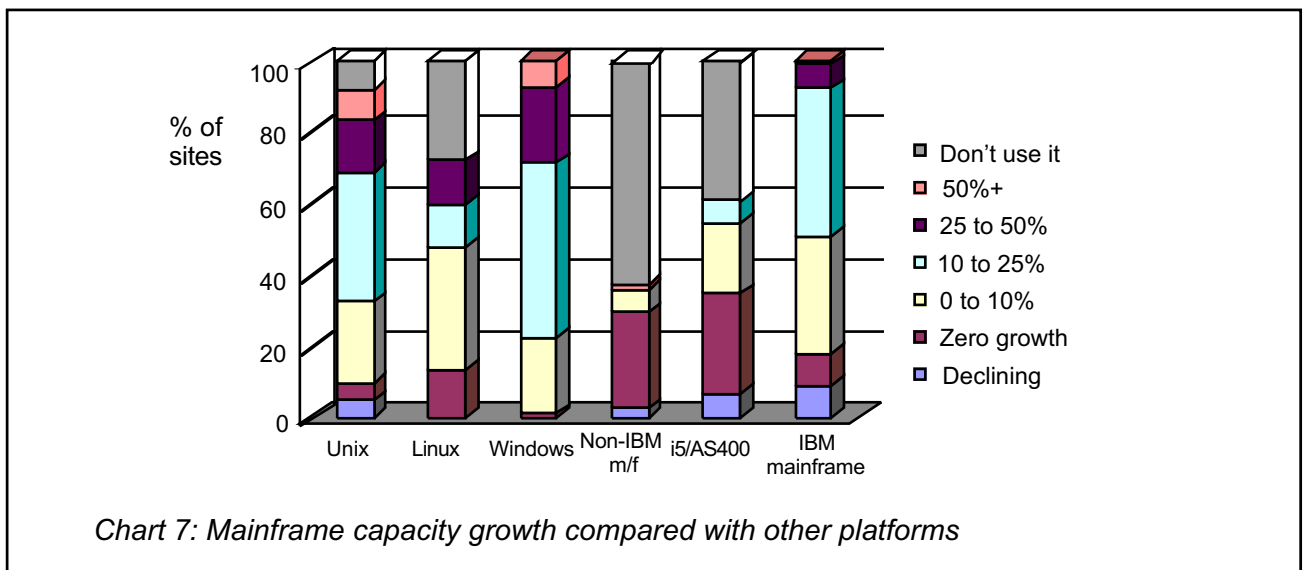


is essential to the long-term growth and prosperity of the mainframe platform.

sites with non-IBM mainframes and i5 mid-range machines are tending not to invest heavily in these platforms.

We also asked respondents to indicate how fast their capacity was growing on other platforms, and we compared these figures with their large systems MIPS growth (Chart 7). There are few surprises here: mainframe users are by their nature heterogeneous, and the majority are investing heavily in Windows and other distributed platforms. Unix growth is looking strong, but those

One interesting observation is that over a quarter of respondents claim not to be using Linux. This seems a very high proportion: one possible explanation is that Linux servers are being used in a peripheral role and are not under the control of (or even visible to) the data center; but this is not clear from our results.



Hardware and software currency

There is a popular (if misguided) perception of mainframes as outdated legacy systems, sitting in a back office and slowly decaying. Anyone who shares this view should take a look at Chart 8, which shows that a substantial majority of our respondents are on the latest hardware. Over 60% of the sites in our sample said they had a z990 or newer system installed, and 14% actually had a z9 (which had been available for only six months at the time of the research). The plug-compatible manufacturers (PCMs) are now disappearing from the picture, leaving the mainframe hardware market to IBM alone.

However, there is growing interest in Intel-based systems that emulate mainframe software; these are not specifically covered in this survey, but will be tracked in future research.

Software currency is a more mixed picture. Migrating to the latest z/OS release is no trivial undertaking, and many users delay the cost and complexity of an upgrade until it becomes a necessity. As can be seen in Chart 9, z/OS release 1.4 is the most common release in use, found in

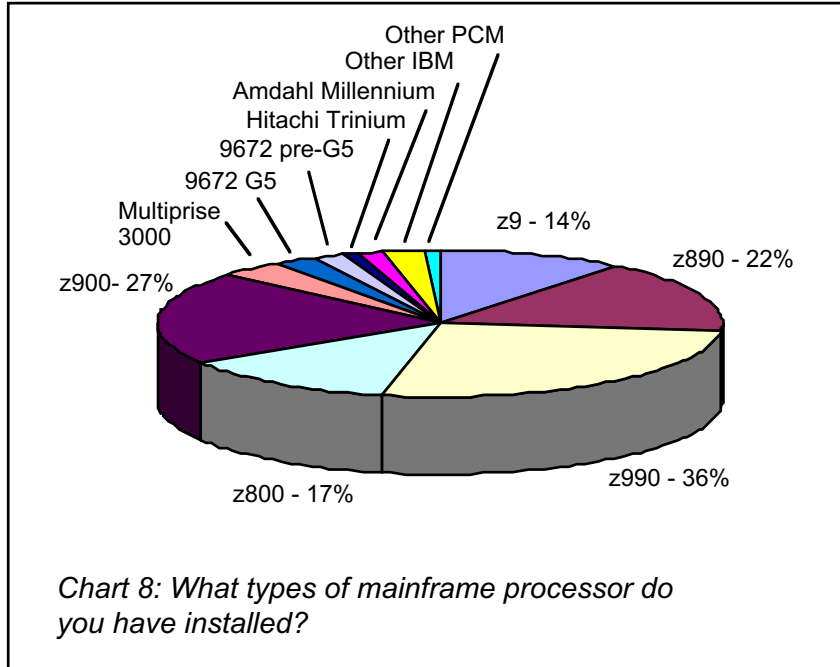


Chart 8: What types of mainframe processor do you have installed?

nearly a half of the sites we surveyed. z/OS 1.4 was virtually unavoidable for organizations moving to the zSeries 900 from the year 2000 onwards, as it accompanied the 64-bit hardware re-design. Many users have clearly been reluctant to undertake further upgrades, despite the additional performance and functionality that the later releases can provide. Nevertheless, the number of users on z/OS 1.6, the next major version, has climbed noticeably since our last survey (from 3% to 33%!). Furthermore, 8% have moved on to the latest production release, z/OS 1.7 (delivered last September) which allows a single system image to span up to 32 processors and also brings some important enhancements for VSAM record-level sharing and TCP/IP v6 support.

Another noticeable difference from last year is that fewer users are now relying on z/OS releases pre-1.4. 6% are still on OS/390 2.10 and 3% state that they are primarily VM/VSE users; but otherwise our respondents are all on the 64-bit version of z/OS.

Overall, then, mainframe OS software

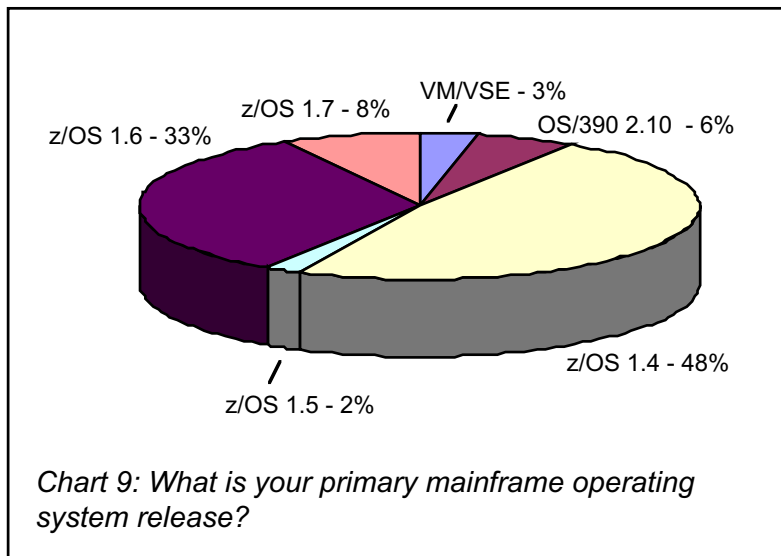


Chart 9: What is your primary mainframe operating system release?

is reasonably current in our survey. But it is striking how many users are still unable to access some of the features that really differentiate the zSeries from other platforms because they are not yet on the appropriate level of system software.

Mainframe costs

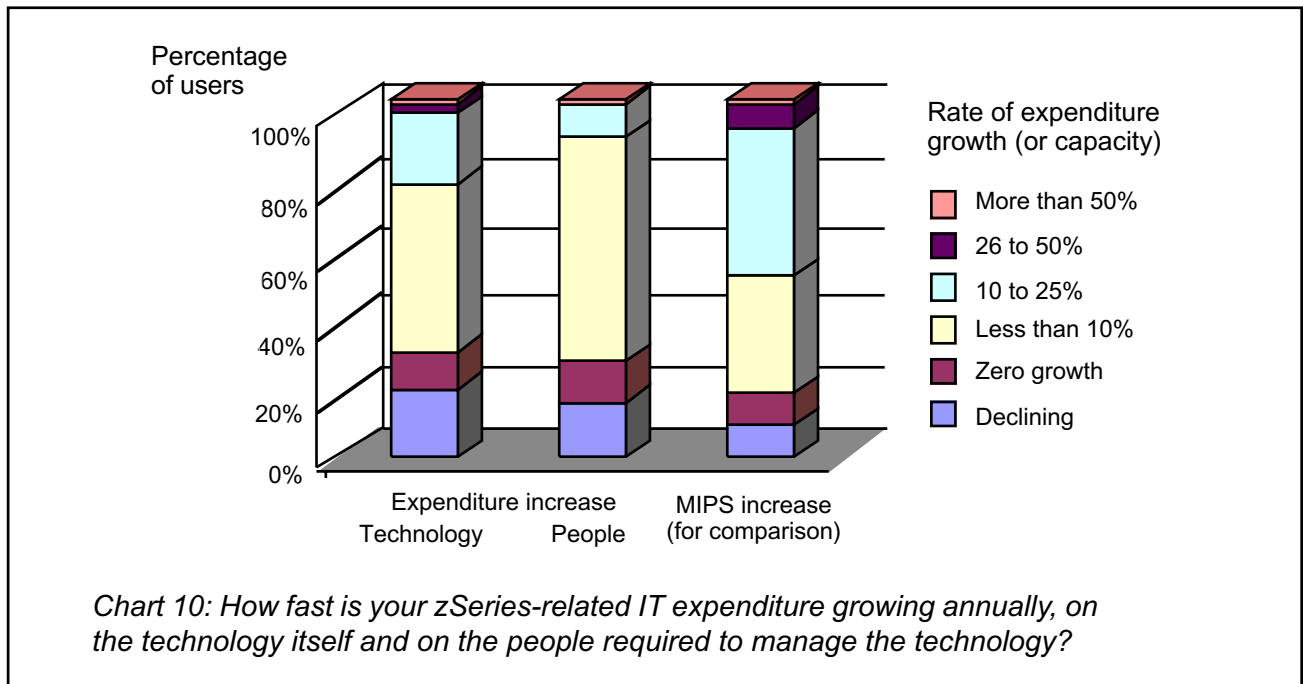
Cost looms large in any discussion concerning IT in general and mainframe technology in particular. We have always maintained that the price/performance and overall cost of ownership of the zSeries are superior to those of other platforms when users are taking advantage of the large system's higher utilization levels and mixed workload management capabilities. But in view of the complexity of mainframe pricing schemes and the relative visibility of data center costs (compared with those on distributed servers) the subject continues to be hotly debated.

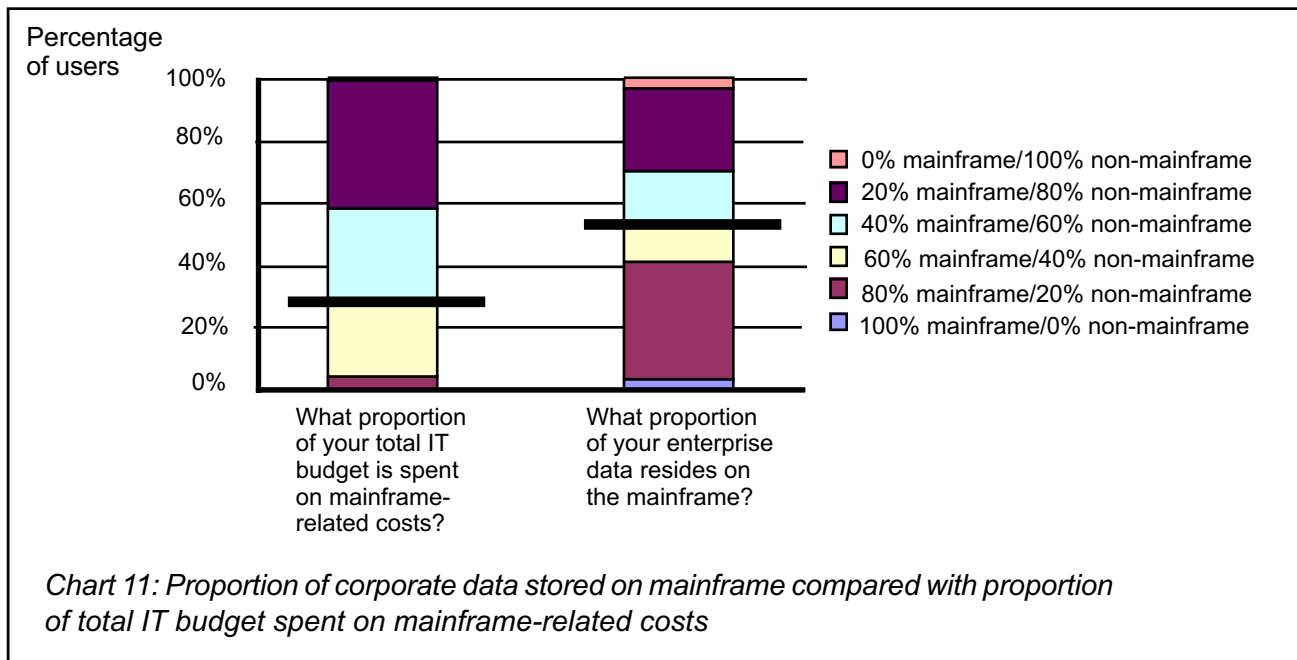
We asked respondents how fast their zSeries-related expenditure is growing, on the technology itself and on the people who support the technology. In Chart 10, we compared these results with the MIPS growth figures discussed earlier. As can be seen, while half our respondents

are experiencing mainframe capacity growth of more than 10% per year, a far smaller percentage are experiencing technology or manpower cost growth of this order. At the other end of the scale, nearly one third of respondents reported stable or declining technology/people costs.

Chart 11 compares the zSeries with other corporate platforms in two respects: the proportion of total IT expenditure consumed by mainframe resources and the proportion of corporate data residing on the zSeries. The thick black line divides those who spend more or store more on the mainframe (towards the bottom of the graph) from those who spend/store more on distributed systems. Without reading too much into the chart, it's clear that Windows and Unix-based technology is absorbing the lion's share of the budget, while the mainframe still guards more than half of the corporate data in an average site.

One initiative that appears to be making a significant difference to mainframe costs is the introduction of 'specialty' engines. The new processors – which include the Integrated Facility for Linux (IFL), Application Assist Processor (zAAP) for Java, and the recently announced





Integrated Information Processor (zIIP) for data-intensive applications such as BI and CRM – are aimed primarily at offloading cycles for new applications and lowering the cost of development for new workloads. One customer recently told us that it expects to save over \$3 million over two years by implementing two zAAPs, not just through lower workload costs but because the offloaded code allows it to delay a major upgrade. In the survey, 85% of our respondents said that they thought the IBM co-processors would make the mainframe more attractive in terms of reduced costs and cost-justifying new development (Chart 12).

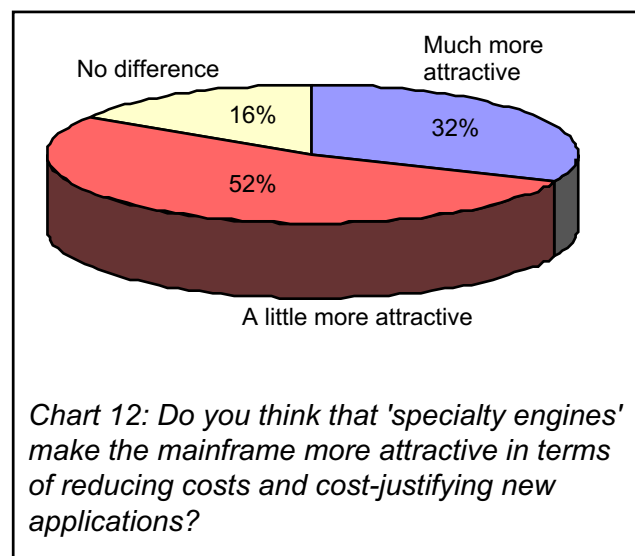
Mainframe strategy

While it is clear that mainframes are here to stay, running mission-critical back-end applications, a less clear picture emerges when it comes to future investment for strategic growth. Do customers see the zSeries as the best place to implement new applications and services, and to what extent is it being integrated with other platforms?

We asked whether the mainframe was viewed within the organization as a strategic platform for

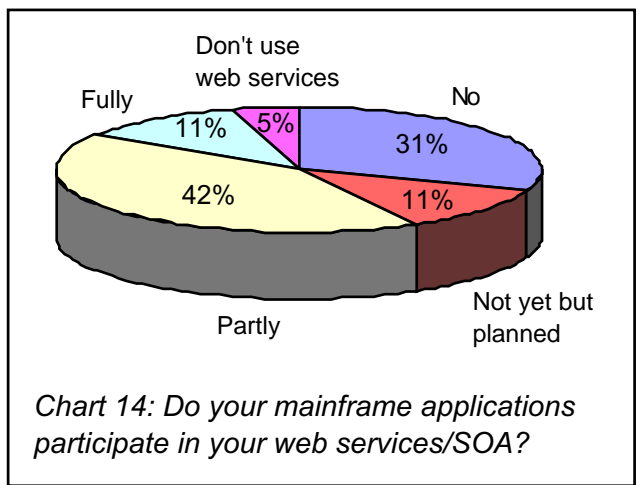
new applications or as a legacy system. Most mainframes and indeed most Unix and PC servers) will be running some legacy applications, but this question is really about overall perception within the enterprise. As shown in Chart 13, nearly half say that the mainframe is tarred with the 'legacy' brush within the business, but a substantial 44% of respondents say that the zSeries enjoys a strategic role, in full or in part.

When it comes to new development work, 53% of

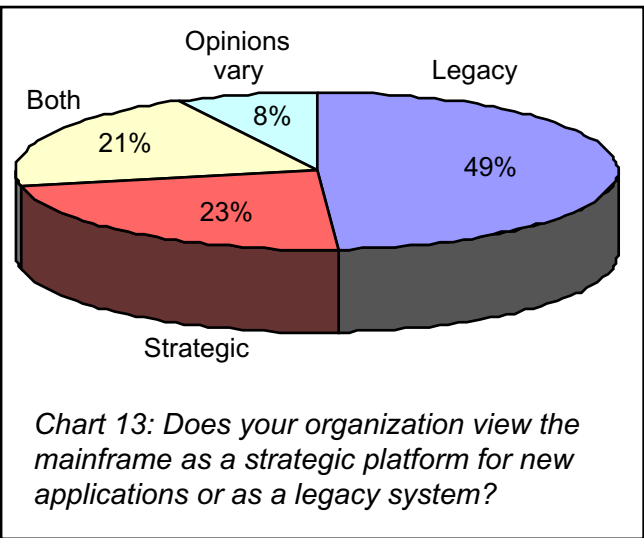


respondents said that their mainframe participates partly or fully in web services (Chart 14), and a further 11% have web services planned for the zSeries. 59% reported that their core CICS-based transactional systems had been web-service-enabled (29% for DB2 and 20% for IMS).

Despite the widespread enthusiasm for consolidating Linux server applications on the zSeries (with or without VM), only 17% of our respondents were running Linux on the mainframe, though a further 9% were planning to do so. The figure for mainframe-based Java applications is a little higher, boosted perhaps by the economic advantages of the zAAP. 23% said they were running Java-based apps, with another 13% at the planning stage.



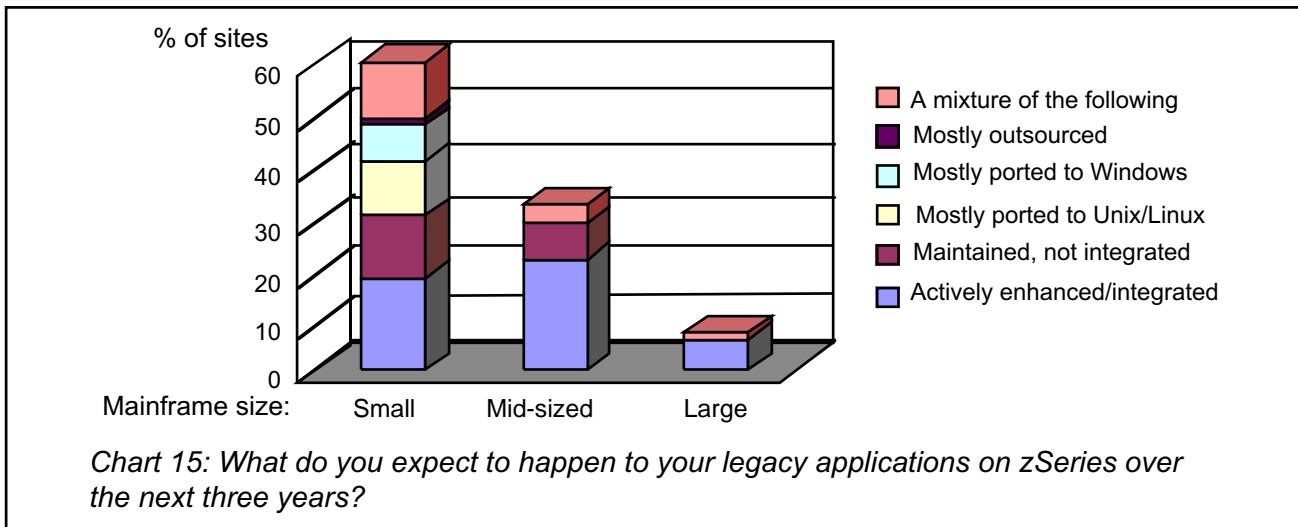
Taking a slightly longer-term view, we asked what respondents expected to happen to their legacy mainframe applications over the next three years. The results, displayed in Chart 15, have been broken down into the three mainframe size categories discussed earlier. We can see that the large sites (over 10,000 MIPS) are secure and confident in the future growth of their systems, and this also applies to two-thirds of the medium-sized installations (1000-10,000 MIPS). By contrast, less than one-third of the sub-1000 MIPS users believe that their legacy mainframe apps will be enhanced, and significant numbers anticipate migration to Unix or Windows. As in Chart 6, where capacity



growth was analysed according to installation size, it is clear from Chart 15 that smaller mainframe users are far less stable than their larger counterparts, and considerably more vulnerable to competitive pressure.

To round off our Strategy section, we asked respondents what they considered to be the main benefits to the business of the mainframe over other platforms, and also what were the principal inhibitors to mainframe acceptance. The results are shown in Chart 16. There were no surprises among the benefits: availability is the most highly prized characteristic, although security and manageability are not far behind.

Cost issues dominated the list of obstacles, which again is no surprise despite the relative cost-effectiveness of large systems. The second greatest concern (reported by 46% of respondents, ahead of complexity and uncertainty about future skills/support) is the cultural barrier between mainframers and other IT professionals. Clearly a 'them and us' attitude still pervades many IT departments, which is particularly disturbing at a time when mainframe resources need to be integrated more closely with those on other platforms. 13% of respondents said that there were no obstacles to mainframe acceptance within their organizations – an optimistic sign even if this number is a little on the low side!



Outsourcing the mainframe

For users who viewed their mainframe primarily as a 'legacy' platform or who didn't wish to carry the overhead of mainframe support in-house, outsourcing has sometimes been seen as a practical alternative in recent years. Concerns over unforeseen financial penalties and restrictive contracts have had to be balanced against economies of scale and the freedom that outsourcing offered businesses to concentrate on their core IT projects rather than routine maintenance. In this year's research, 78% of our respondents represent internal IT departments, 10% are outsourced, 8% partly outsourced, and 4% are outsourcing service providers.

Going forward, though, it appears that outsourcing is no longer a popular option for mainframe users. In Chart 15, only one suggested that his legacy systems might be outsourced in future. We asked our respondents for their views on the main advantages and drawbacks of outsourcing, and these are shown in Chart 17. Clearly the

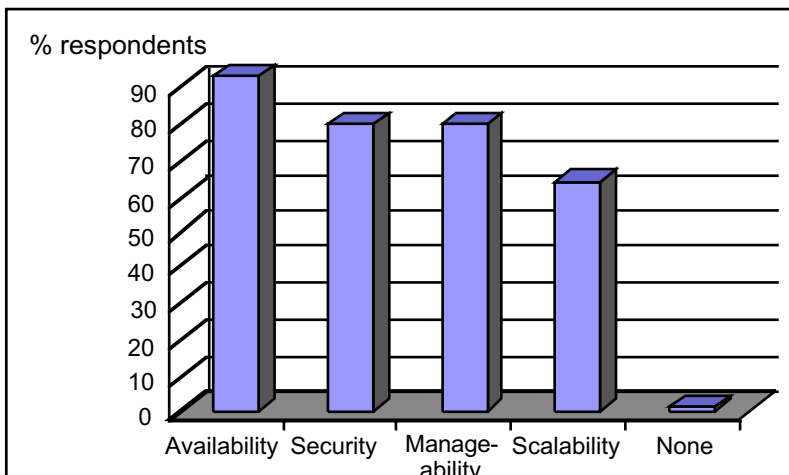


Chart 16a: What are the main benefits of the mainframe to your organization?

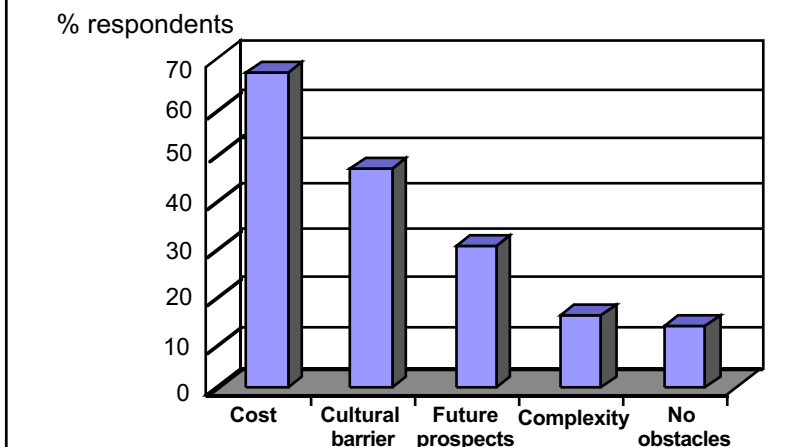


Chart 16b: What are the main obstacles to acceptance of the mainframe?

balance of opinion is in favour of the keeping mainframe systems in-house, and one in three suggested that there were no benefits at all. Of those that did list advantages, the most popular was the provision of relevant technical skills which some installations are now struggling to provide.

When it came to disadvantages, over half of our respondents cited loss of control and hidden costs (problems that have led to many cases of contract renegotiation), while flexibility in contracts, staff transfers and relationships all rate highly among users' concerns. To be fair, outsourcing decisions are usually made at the highest management levels, often against the wishes of internal IT, so it is quite common to detect a negative attitude; even so, the level of opposition to outsourcing in this survey is quite striking.

The mainframe and ISVs

The final area that we explored in this year's research was the relationship between customers and vendors, and the reasons for changing from one ISV (or product) to another. So many of the packages, tools and utilities in place in mainframe data centers have been doing their job very successfully (and earning their suppliers handsome maintenance revenues) for a considerable number of years, and the decision to replace them is not one to be taken lightly. Nevertheless, users do need to examine their software portfolio regularly as the benefits of migrating to a more cost-effective or functionally superior toolset can be very considerable.

We asked our survey respondents whether they periodically considered replacing their software packages and tools and, if so, what were the main reasons for replacement. As shown in Chart 18,

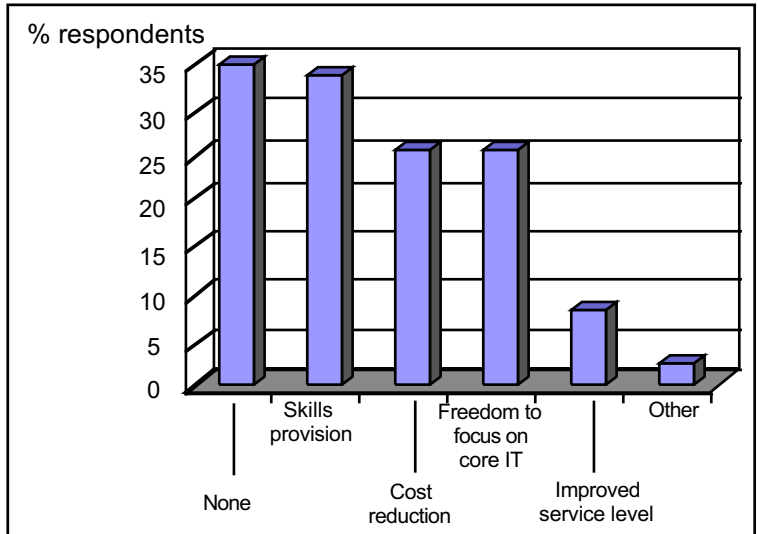


Chart 17a: In your experience, what are the main advantages (if any) of outsourcing mainframe systems?

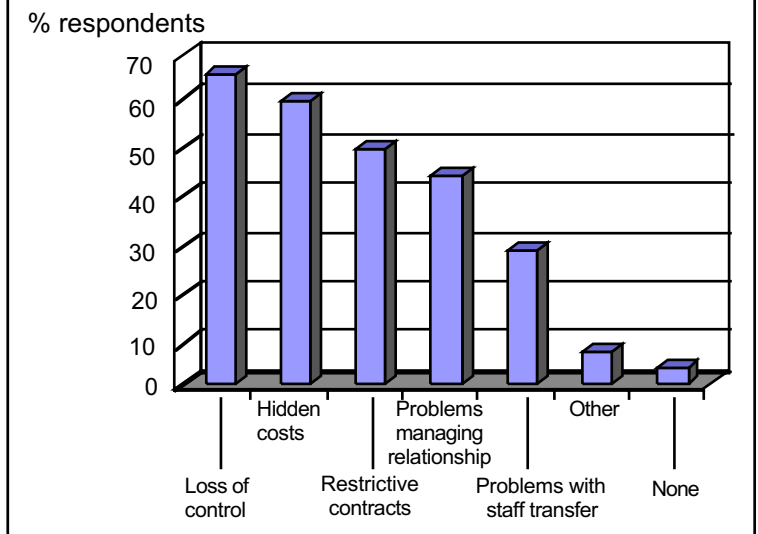


Chart 17b: What are the main drawbacks (if any) of outsourcing mainframe systems?

cost reduction was the main issue (reported by 75% of respondents) followed by new function (33%). A surprising 15% of users said they rarely if ever replaced mainframe software.

We also asked about the proportion of the mainframe software budget that is absorbed by

IBM. As shown in Chart 19, the lion's share of the budget goes to IBM and Tivoli in most sites, with around one third of users (those above the black line) reporting that they spend more on ISV software.

Conclusions

As a snapshot of mainframe usage across 92 sites worldwide, IBM's 41-year-old large systems family is looking as strong and healthy as ever. Capacity growth compares well with other platforms, costs are generally under control (even if they continue to cause internal debate), and a large proportion of sites are integrating legacy mainframe applications with other platforms and positioning the zSeries to exploit new technologies and workloads.

However, when we break down the respondents into small, mid-sized and large sites, it becomes clear that the lower end of the user base is more vulnerable to erosion. Larger organizations benefit from economies of scale and a highly mature application environment – and most would be very hard pressed to find another IT platform that could deliver a similar level of price/performance. Equally the medium-sized users (between 1000 and 10,000 MIPS) appear to be investing strongly in the mainframe platform, and are actually growing

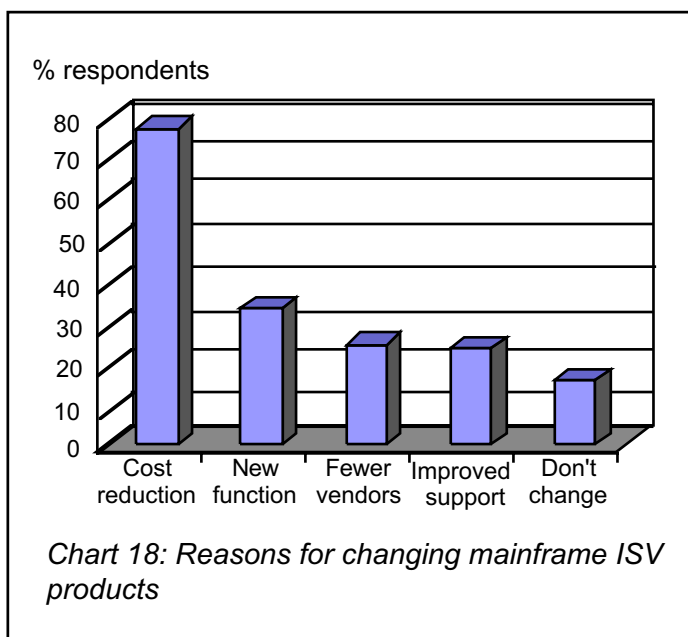


Chart 18: Reasons for changing mainframe ISV products

faster than the largest sites. Businesses at the sub-1000 MIPS level have a broader range of options open to them, from the Intel-based z/OS engines (such as Fundamental FLEXES and PSI mentioned elsewhere in the 2006 Yearbook) to full-scale migration onto other platforms. In general they are also less 'locked in' by long-term investments in mission-critical applications. Migration from the mainframe is a costly and complex undertaking at any level, but is clearly more viable at the lower end of the hardware scale.

The challenge that lies ahead for IBM and the ISVs is to make the zSeries attractive enough (in technical and cultural terms) to deter migrations, while winning over a regular stream of new customers from other platforms. The pieces of the puzzle are undoubtedly in place, and billions of dollars have been invested in re-establishing the zSeries as a highly cost-effective central data server and transaction management system for new-generation web-oriented applications. However, there is still a lot of work to be done to win over the 'floating voters'.

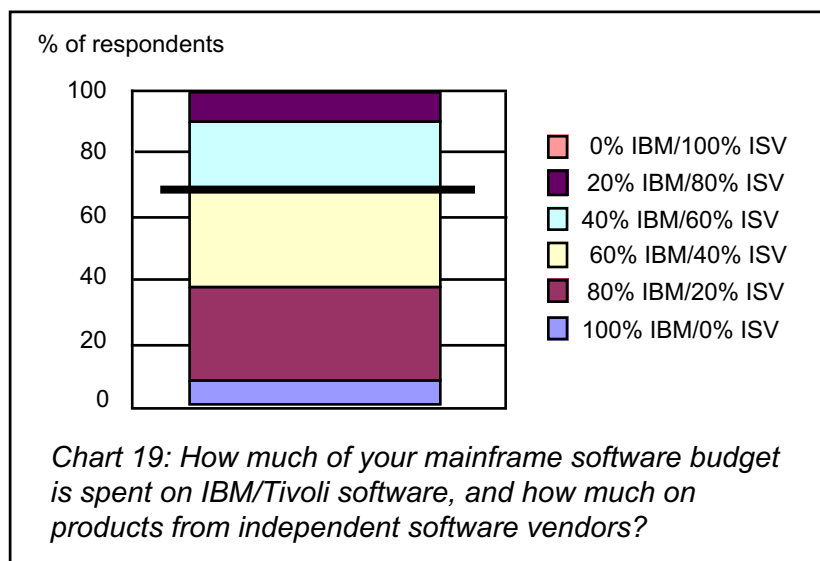


Chart 19: How much of your mainframe software budget is spent on IBM/Tivoli software, and how much on products from independent software vendors?