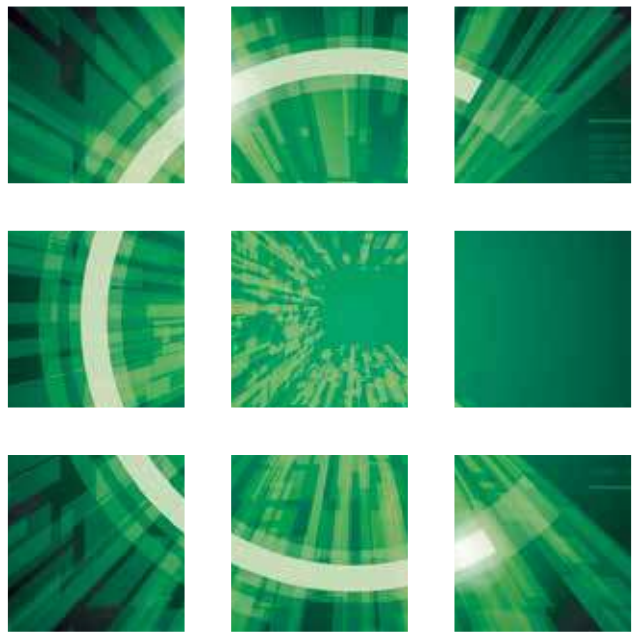

Key European IT Management Trends for 2016

Results of an international study: Issues, Investments, Concerns, and Practices of Organizations and their IT Executives

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Executive Summary

Since the mid 1990's the Global Institute for IT Management (which facilitated the annual SIM research which has been conducted since in 1980) and Business & IT Trends Institute have been conducting research on trends in IT management. This award winning research has helped IT leaders and non-IT executives around the globe better understand important IT related issues and trends. For CIONet Europe, this is the fifth annual research based upon the same research survey. This report presents the major findings from 2,650 IT executives from around the globe; 579 organizations within Europe representing 26 European countries.

This year organizations continue to have a growing investment in IT to improve operations, reduce costs, and enable/drive strategies. IT budgets, hiring and salaries are increasing modestly and IT executives are cautiously optimistic that this trend will continue into next year. This is also true for the focus of this report: Europe

The five most important IT management both globally and for Europe are:

RANK	GLOBAL	EUROPE
1	Business & IT Alignment	
2	Security & Privacy	Business Agility & Flexibility
3	Business Productivity	Business Process Management
4	Innovation	
5	Business Agility & Flexibility	Business Continuity

RANK	GLOBAL	EUROPE
1	Analytics/Business Intelligence	
2	Enterprise Resource Planning	Cloud Computing
3	Business Productivity	Business Process Management
4	Cloud Computing	Big Data
5	Customer Relationship Management	

This report focuses on Europe in comparison with the other continents especially as it pertains to the following important IT topics:

- IT spending patterns, including sourcing and the use of cloud and shared services.
- IT workforce trends, including retirement forecasts and specifics about the performance measurements used for in-house and outsourced IT, as well as to evaluate IT executives.
- To whom CIOs report, how they allocate their time, with whom they spend it, what they do with them, and what they think about the changing role of IT in strategy and innovation.
- Skills required for the success of new IT hires, mid-level IT professionals, and CIOs.
- The views of senior IT leaders about their most important and worrisome IT management issues/concerns and technologies.

Overall, the research finds IT is becoming more strategic and business-focused. It appears that organizations are becoming more digitized with their focus shifting away from tactical and organizational IT issues like efficiency, service delivery, and cost reduction to more strategic and organizational priorities like business agility, innovation, the velocity change in the organization, IT time to market, and the value of IT to the business. Time will tell if this is a widespread trend, but it is here now among global and European organizations and it is confirmed by a corresponding shift in how CIOs are spending their time.

Top IT Management Concerns

The participants were asked to select (up to three from a list of 43) their organizations most important IT management issues/concerns and up to three issues that were 'most important or worrisome' to them personally ("keep you up at night"). Capturing both the organizational and personal perspectives of the respondents provides additional insights. Some items on the selection list were modified or deleted (based on a very low selection rate the previous year), and additional ones added for this year's Study. A complete listing of these changes can be found in the Appendix. The organization's top 10 most important IT management concerns, from the perspective of the senior-most IT leader in each of the 2,650 organizations, are shown in Figure 1, together with the comparative rankings from prior BITTI/GIIM IT Trends Studies since 2003. The global top management concerns (see Table 1) tend to evolve slowly except for concerns such as IT cost reduction (ranked 23rd overall in 2014) and business cost reduction (ranked 4th in 2014), which appear to be directly related to each region's short-term economic performance. Despite the prevailing global economic conditions, management concerns such as IT-business alignment appear consistently (see Table 1) both globally and locally in the top management concerns.

Table 1.
Global
Key management concerns

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
Alignment of IT and / with the business	1	1	1	2	1	3	2	1	2	1	1	1
Security / Privacy	2	6	9	8	7	9	9	8	6	3	2	3
Business Productivity	3	5	4	1	4	1	1	7	4			
Innovation	4	10										
Business Agility	5	2	2	3	2	2	3	13	17	7		5
Business Process Management	6	13	6	4	3	3	4	18	15	11	5	10
Business Continuity / Disaster Recovery	7	7	8	6	5	3	6					
IT Time to Market	8	3										
Time-to-Market / Velocity of Change	8	8	7	3	2	2	3	13	17	7		5
IT Cost Reduction / Controls	9	16	5	5	12	8	5	7	4			
IT Value Proposition in the business	10	9										
IT Agility	11	24										
Business Cost Reduction / Controls	12	4	3	1	4	1	1	7	4			
Change Management	13	15	13	11	11	11	14	6	7	3	2	3
CIO Leadership Role	14	19	14	15	14		10	16	10			
Enterprise Architecture	15	18	15	10	8	13	11	11	33	15	15	9
Globalization of IT	16	14	16	17	13	10	15					
Integration	18	20	14									
IT Strategic Planning	19	27	12	7	6	6	8	17				
Human Resources (Training, Retention, Development)	20	26	13	19	17	12	11					

Security back in top 5!
Business cost Reduction / controls out of top 10!

Interestingly, Business Productivity (ranked 3rd in 2015) and Business Agility (ranked 5th in 2014) have started to appear in similar rankings across all geographies. Indeed the pattern is emerging where an increasing number of management concerns rank similarly across all geographies. We expect as enterprises are more assimilated in the global market, their IT management concerns will become more consistent across geographies.

Within Europe the top five for 2015 (26 countries/579 organizations) is:

1. Business & IT Alignment
2. Business Agility & Flexibility
3. Business Process Management
4. Innovation
5. Business Continuity

The top five concerns for Europe are presented in comparison with other continents below.

Five most important IT management **issues and concerns**

The top ten most important IT management issues for these geographies are displayed below.

Within Europe there is relative consensus about the top three management concerns with regards to Business & IT Alignment, Business Agility, and Business Cost Reduction. The remaining top ten rankings are quite diverse across European countries.

Table 2.
Top ten management concerns Europe compared with other continents

	Global	North America	Europe	Asia	Australia	Latin America	Africa
Alignment of IT and Business	1	1	1	1	1	1	1
Security/Privacy	2	2	9	5	5	9	4
Business Productivity	3	5	6	2	2	12	7
Innovation	4	4	4	9	9	9	5
Business Agility/Flexibility	5	7	2	3	3	4	2
Business Process Management	6	11	3	4	4	3	8
Business Continuity	7	12	5	6	6	2	3
IT Time-to-Market/Delivery	8	3	11	13	13	20	6
Cost Control/Reduction in IT	9	13	7	7	7	5	9
IT Value Proposition	10	8	16	14	14	10	10

1. Alignment of IT and the business

Following the pattern over the past 30 years, alignment of IT and business has been close to the top of the list of top concerns since 2000 (Luftman et al., 2013) (Derksen, 2013). Despite being in the spotlight for such a long time, it still remains a pervasive and persistent goal. The data shows that it remains the number one concern in North America, Europe, Asia, and Africa, but slipped to 8th position in Australia, and 35th in Latin America in 2014. Alignment of IT and business has been considered an important area right from the beginning of the trends research. Initially, it was ranked 8th in 1980, and remained in the top ten until 1994. After that, it remained in the number one position; except in 2012, 2010, 2009, and 2007 where it was either ranked second or third.

It is expected that it will continue to occupy the top spots in the coming years; hence, it is not a surprise that it has been ranked at or near the top of the list of concerns in all geographies. IT will continue to be seen as an integral enabler and driver of efficiency and effectiveness throughout the business, especially with the emergence of leveraging IT for revenue generating initiatives. Both IT and business processes are relatively mature on their own, but it is their alignment that holds the key to driving the businesses forward (Luftman et al., 2013).

While many pundits/blogs espouse that after 30+ years alignment is passé, they typically suggest using other terms (e.g., integrated, fused, harmonized (Luftman 2013, Derksen, 2013)) with concepts that are synonymous to the ideas supported by alignment advocates. Alignment (or whatever word is preferred) will remain high on the list as IT and business evolve. It is more important to continue efforts to improve the IT-business relationship, than debate what term to use, especially as IT becomes essential to every aspect of the business; and in many cases IT becomes the business.

2. Business agility

Business agility and speed to market are essential for business growth in today's competitive economy, especially as organizations continue to increase their use of IT for competitive advantage. Business agility was first introduced into the survey in 2003. It has been ranked among the top ten IT management concerns except 2007-2008 when it was ranked 17th and 13th. Business Agility was ranked 7th in 2003, 5th in 2005, and 7th in 2006. It has been ranked among the top three global management concerns since 2009; mostly at number 2. Over the years, it has maintained the 3rd position in North America, 2nd in Europe, Asia, and Africa, and 1st in Australia and Latin America. This year, it is ranked 2nd in North America and Europe, while 7th in Asia, and 5th in Latin America. As organizations leverage IT to quickly reduce business expenses and increase revenues, Business Agility will remain an important concern for management. Business agility in concert with IT time to market/velocity of change (ranked 3rd in 2014), IT value proposition to the business (9th) is also indicative of the future impact that IT will have (is having) on revenues (which has fluctuated between 2nd and 17th over the last seven years).

3. Business Productivity

There is general consensus on the importance of business productivity and cost reduction using IT, even though IT is still perceived within a majority of enterprises as an expense. While we have seen productivity slowly moving down the list, to reflect this change in business perspective, as previously noted they are both included in the survey and both are among the top management concerns this year.

Business productivity has been ranked in the top four management concerns for the past decade, except 2008 when it was ranked 7th. In 2014 it has been ranked among the top 6 management concerns across all geographies except Australia (ranked 32nd). The ranking of business productivity as a management concern shows a very erratic behavior, moving from 7th place in 2008 to 1st in 2009. Business productivity is rated among the top 4 management concerns across all geographies. We expect that it will continue to remain among the top 10 for the foreseeable future. Conversely, we anticipate IT cost reduction (ranked 23rd in 2014) to drop off the list in the coming years

"It is expected that business and IT alignment will continue to occupy the top spots in the coming years"

Largest investments and most important technologies

Participants were asked to select, from a list of 53 technologies their 'organization's largest/most significant current or near-future IT investments'; up to three that are 'most important' to their organization, and up to three that cause 'the greatest concern'. Some items on the selection list last year were deleted (based on very low selection rates over the previous years) or modified, and additional ones were added to this year's study.

Table 5 lists the top 20 technologies identified as the largest investment for the 2,650 participating organizations worldwide, along with their rankings since 2006. While the specific rankings have shifted when compared to 2013, most entries in this year's top 15 were also top 15 entries last year. Security/Cyber security (ranked 7th) remains the only technology that is also among the top management concerns (ranked 2nd). Customer/Corporate Portals and Network/Communications remain out of the top 10 for the second year.

Generally speaking, and consistent with last year, a relatively small percentage of the 2,650 respondents selected any one specific technology. This indicates that IT investments are well diversified across a broad number of options. Only the top ten were selected by more than 10% of the respondents. This is not particularly different than the IT management issues shown in Table 1, in which the top ten were selected by more than 10% of the participating organizations.

Table 5.
IT Trends, 2006-2015

	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
Analytics/Business intelligence	1	1	1	1	1	1	1	2	2	2
Enterprise resource planning (ERP)	2	5	4	3	2	3	3	14	6	
Application/Software Development (prev. Apps developments)	3	2	5	4						
Cloud Computing (SaaS, PaaS, IaaS)	4	4	2	2	3	5	17			
Customer relationship management (CRM)	5	6	3	5	5	9	13			
Data Center/Infrastructure	6	3								
Security/Cybersecurity	7	8	16	15	28	7	11	8		
Big Data	8	7	7	18						
Collaboration Tools	9	13								
Networks/Communications	10	11	10	8	11	9	10	11		
Integration (previously EAI/EAM)	11	10	11	16	9	18	5	12	32	
Data Mining	12	23	22							
Disaster Recovery	13	12								
Continuity Planning	13	21	13	11	14	4	6	3	4	
Business Process Management Systs	14	36	6							
Legacy Applications	15	17								
Customer/Corporate Portals	16	14	8	9						
Consumer Oriented Devices	17	22	36							
Enterprise Architecture	18	37	12							
Enterprise Application Management	19	26	29							
Mobile/Wireless Applications	20	31	14							

European Organization's IT Trends – Investments

The Europe country differences in the most important IT Trends and investments can be found across Europe in Table 6. Like around the globe, there is agreement looking at Analytics/Business Intelligence (A/BI) ranked first. Only Austria (7th) and Finland (4th) rank A/BI outside the top three. There are however significant differences across countries in the selected top twenty IT trends.

Big Data, ranked 2nd is a top five IT trend in Austria, the Netherlands, Spain, and UK where it is ranked outside the top five globally. Ranked 5th is CRM which is among the top five in Austria, France, Italy, and Luxembourg, but outside the top ten for the Netherlands, Poland, Switzerland, and the UK.

Cloud Computing is a top five trend within Germany, Italy, Netherlands, Poland, Spain, and the UK, but is outside the top ten in Austria, Belgium, Luxembourg, and Switzerland.

Table 6.
Top 20 IT Trends Europe In comperison with other continents

Trends in IT	Global	Africa	Asia	Europe	North America	Latin America
Analytics / Business intelligence	1	2	8	1	1	1
Enterprise resource planning (ERP)	2	9	3	7	2	5
Application/Software Development (previously Apps developments)	3	3	13	3	4	2
Cloud Computing (SaaS, PaaS, IaaS)	4	1	1	2	7	3
Customer relationship management (CRM)	5	5	11	5	5	7
Data Center / Infrastructure	6	6	12	6	6	4
Security / Cybersecurity	7	7	21	8	3	22
Big Data	8	4	2	4	11	6
Collaboration Tools	9	8	18	15	12	9
Networks/Communications	10	10	5	30	8	11

Four largest IT Trends investments

1. Analytics/Business Intelligence

Analytics/Business Intelligence (A/BI) remains in first place as the largest IT investment, a ranking it has held for six years straight. It has ranked in the top three since 2003, when it was first added to the list. A/BI was selected by 801 organizations (31.4%), as one of their three largest or most significant IT investments. However, the percentage of organizations selecting this is down from 42% last year. It is worth noting that potential synergies between A/BI systems and the data made available via 5th ranked ERP, 6th ranked CRM, and 7th ranked Big Data, as well as many of the other technologies listed in Table 5.

2. Enterprise Resource Planning (ERP)

Investments in ERP systems have held a top five position since 2009. This year it was selected as one of the three largest investments by 288 (11.3%) of the respondents. Like data centers, ERPs tend to be a large investment. However, unlike data centers, ERP systems are designed to provide a vehicle for reducing business expenses and optimizing business processes, both important management objectives. Also, ERP systems, by virtue of the comprehensive and integrated data that they provide about internal operations, as well about supply chains and customers, enable second and third-order benefits when used in combination with A/BI and other systems. Thus it is not surprising to see that ERPs continue to be large, significant investments for many organizations. Clearly the integration of technologies is an essential consideration.

3. Application and Software Development

Selected by 330, or 12.9% of the respondents, Application and Software Development is ranked 2nd this year. Interestingly, software development has been moving up in the rankings since its introduction in 2012. This high ranking may come as a surprise in the world of off-the-shelf software, Software-as-a-Service (SaaS), and Cloud Computing; and yet, custom software development is still a critical undertaking in many organizations.

Nearly 35% of the responding organizations are in industries where developing and/or using custom software is common. From an industry perspective it shows that 13.84% of the 2,552 responding organizations are in financial services; IT hardware, software, and services (8.28%); government (7.89%); and medical technology, telecommunications and electronics (6.14% combined).

4. Cloud Computing

Cloud Computing was selected by 311 organizations (12.2%) as one of their three largest IT investments. As indicated in Table 5, the first appearance of Cloud Computing was in 2009, when both "Cloud Computing" and "Software-as-a-Service (SaaS, PaaS)" appeared separately. These ratings continued in 2010 and 2011; but in 2012, Cloud Computing was redefined to include SaaS, PaaS (Platform-as-a-Service), and IaaS (Infrastructure-as-a-Service). Despite this single, expanded definition, Cloud Computing dropped to fourth place this year as the largest or most significant investment, down from second place in 2013 and 2012 and third in 2013. That does not necessarily mean, however, that fewer IT budget dollars are going to Cloud Computing, or that fewer IT services or solutions are being delivered that way; in fact, it appears quite the opposite is occurring (as discussed the "Participating Organizations and Their IT Practices" section below).

"Analytics/Business Intelligence remains in first place as the largest IT investment in Europe"

Participating Organizations and Their IT Practices

The industry breakdown of the 2,650 responding organizations are presented in Figure 1.

The average IT spending as a percent of revenue in European organizations is 5.5% which is less than the other geographies, except for North America (5.3%). The comparison is shown in Figure 2. Although more dependent on industry than country the countries (9.27%) Netherlands (7.11%), Luxembourg (9.06%) and Spain (6.92%) have above average of IT spending as a percent of revenue. Finland (4.34%), Germany (1.94%) and Portugal (3.89%) are below the average. These differences are largely the result of the kind of industries involved within the countries.

Comparing Europe to the other geographies (Figure 2), it can be seen that Europe IT spending as a percent of revenue is the only geography where this tends to be decreasing. This is consistent with the IT budget discussion below.

We do expect to see a turning point in the near future. Compared to the other geographies an indicative 'catch up' on IT investments making up for the lean 'Great Recession' years of 2008-2012, when both revenue and IT investment contracted in most organizations may be taking place, except North America. The increase in other geographies (Figure 2) is also being affected by new investments in cloud, shared services, digital marketing and analytics as well as the increasing digitization of organizations in general.

Figure 1.
Industry Representation (Global)

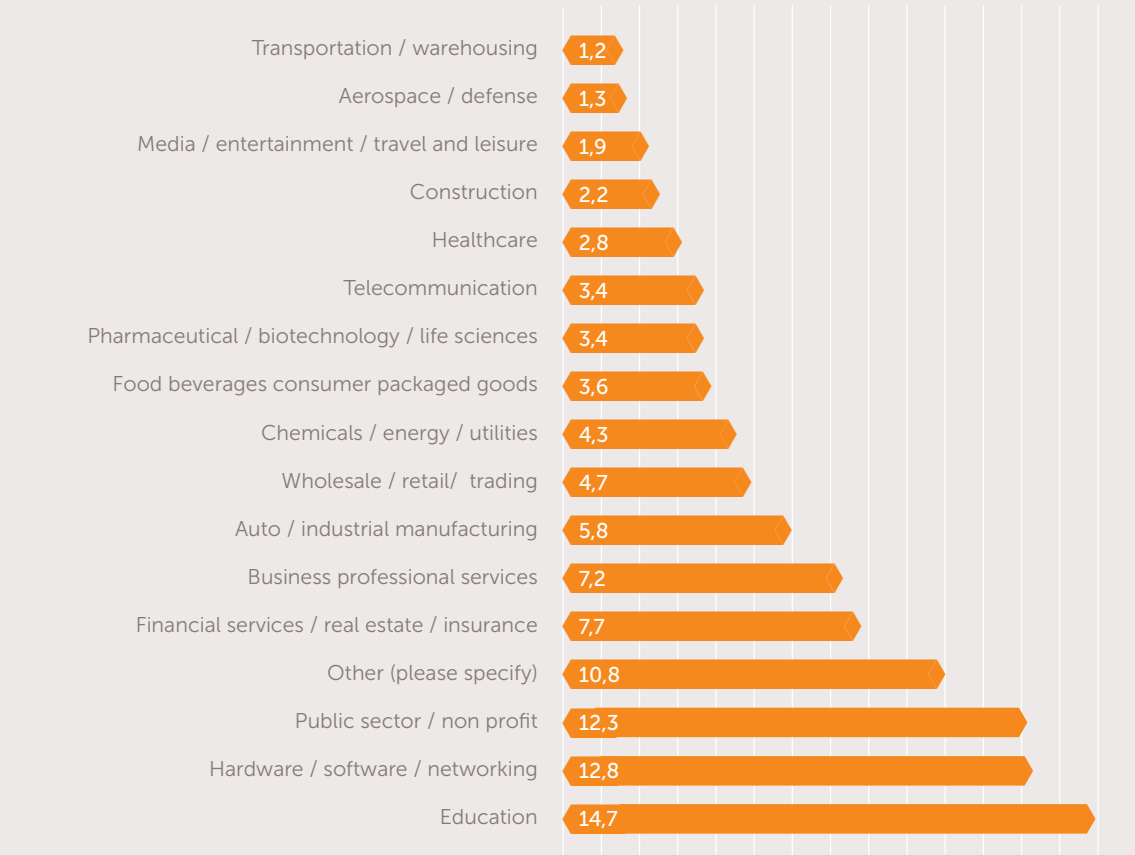
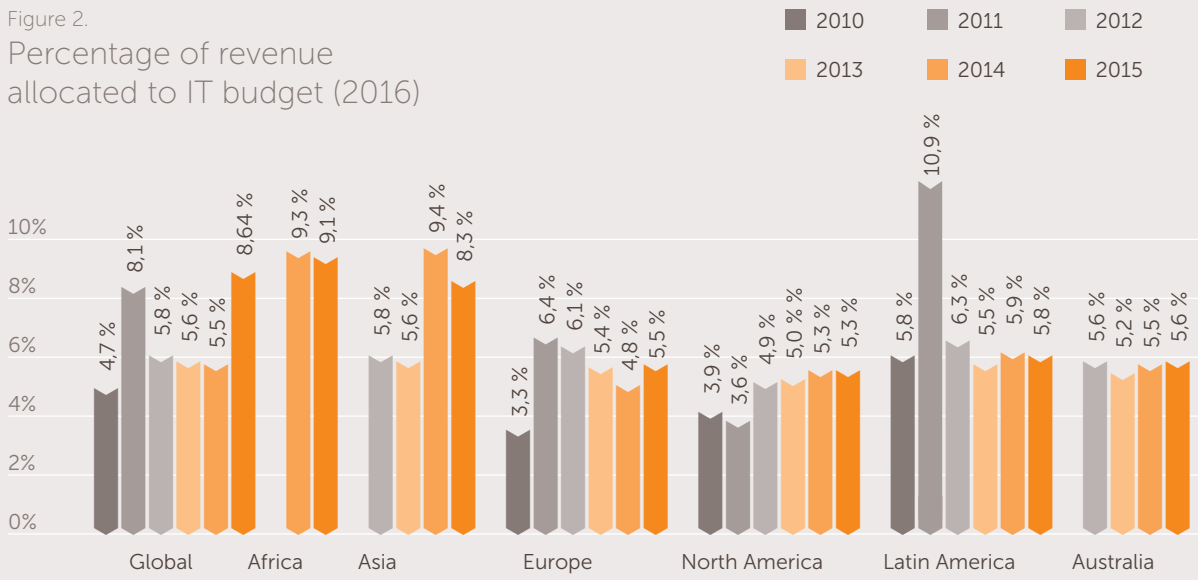


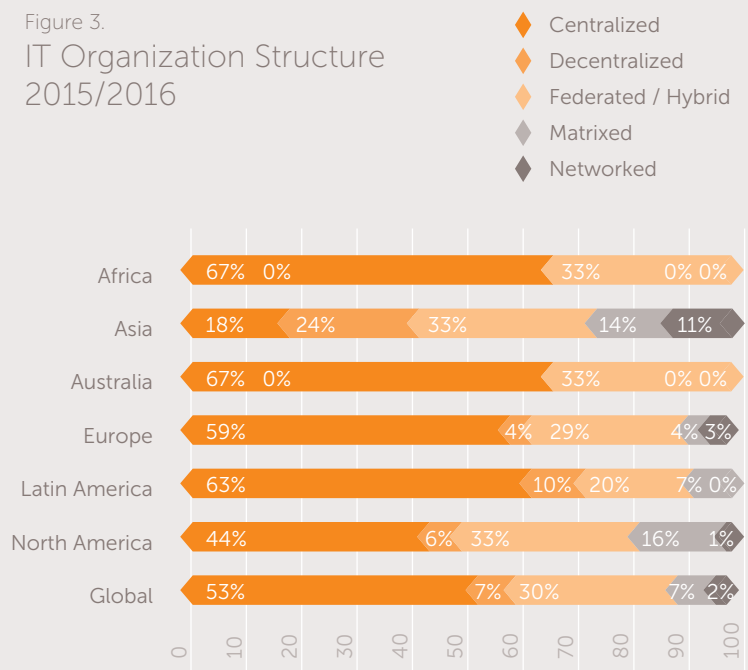
Figure 2.
Percentage of revenue allocated to IT budget (2016)



IT organization structure

Within the surveyed European countries 59% have a centralized organizational IT structure. Globally the centralized IT organizational structure is most frequently used (53%), albeit the trend is down (see Figure 4). Federated/Hybrid is on the rise. A likely explanation for this trend is the increased usage and business impact of new technologies which is driving more of the IT responsibilities within the business (non-IT) organization.

Figure 3.
IT Organization Structure 2015/2016

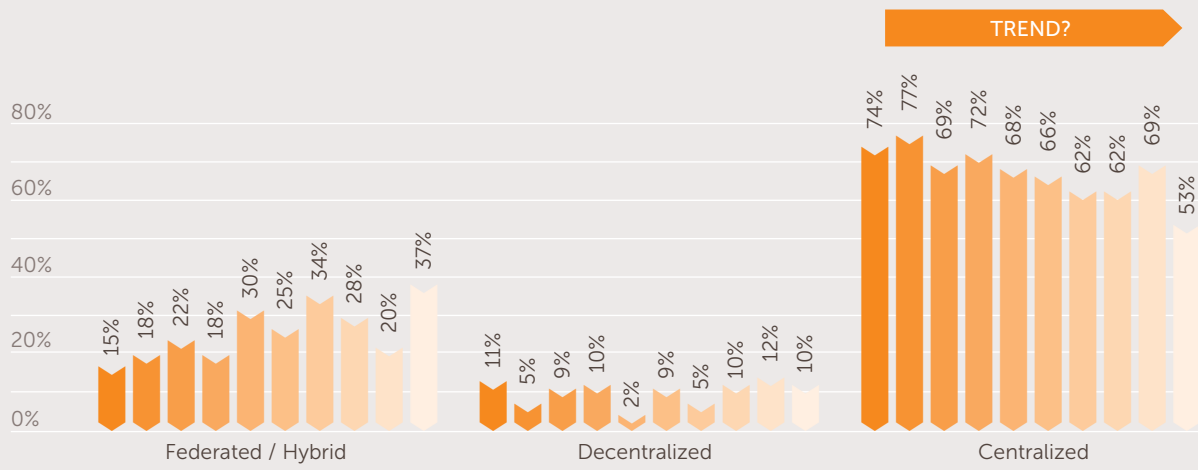


Globally both the centralized and decentralized IT organizational structure decreased whereas federated increased last year. Considering the IT structure changes over years globally a cyclical perspective is indicated, and there is some anecdotal evidence of structure 'fads,' with pendulum swings between centralization and decentralization. Often a centralized IT structure is chosen for cost reduction reasons whereas the decentralized IT structure is chosen customer focus and flexibility[1]. But changing the IT organization while certainly worthwhile, is often complex, time consuming, and costly, especially when not considering things like the governance and technology integration. Thus structure change is not something most organizations do frequently, take lightly, or do simply because it is fashionable. Plotting the global data with the averages, as shown in Figure 4, suggests that while IT is centralized in most organizations, there is a slow-moving trend toward more decentralized IT structures and fewer centralized ones. Time will tell whether that is in fact the case, or if that trend has begun to reverse. On the other hand, this distinction between centralized and decentralized/federated IT organization structures (as shown in Figure 4) may be blurring, as IT governance becomes more federated and IT delivery becomes more centralized. That is a matter to explore in future BITTI & GIIM IT Trends Studies.

1. Derksen, Business & IT Trends 2014.

"Federated/Hybrid IT organisation is on the rise in Europe"

Figure 4.
Global organization structure 2006-2015

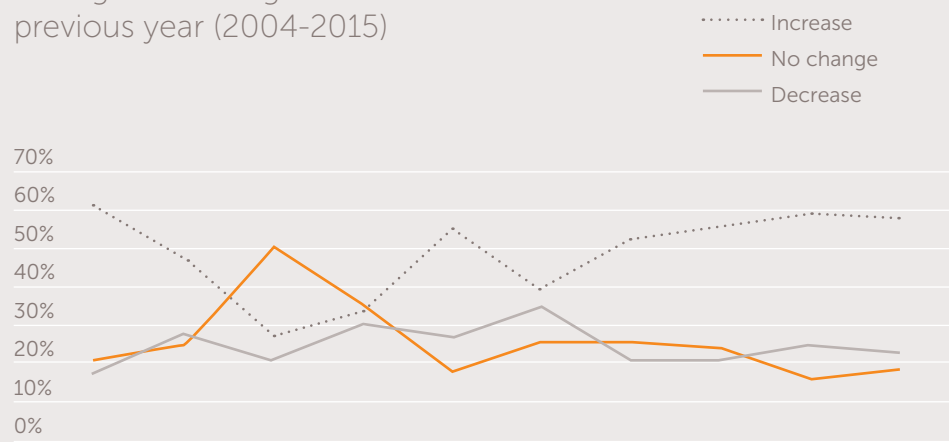


IT budgets and Staffing Trends

Economic conditions clearly have a significant impact on IT budgets. As indicated in Figure 5, prior to the 'great recession' (2004-2008), the majority of the global organizations reported increasing IT budgets. However, as the economy slowed in 2008 only 47% of respondents reported an increase in IT budgets; and in 2009 only 27% of organizations reported increases, with 73% of the respondents indicating that their IT budgets had remained flat or decreased. Things appeared to improve in 2010 with 36% reporting increases, but 64% still indicated flat or decreasing IT budgets from the prior year.

In 2011 the trend improved further with 55% of the respondents reporting increasing IT budgets, 27% flat, and only18% decreasing (a bit more than half of the 2010 rate of decreases). The percent of organizations reporting increases fell back in 2012 with nearly 40% of organizations seeing budget increases and 20% decreases. In last year's GIIM & BITTI IT Trends Study, 59% of the respondents reported increasing budgets. The respondents were asked to forecast budgetary changes for this year, which they accurately predicted a slight improvement.

Figure 5.
Change in IT budget from previous year (2004-2015)



In this year's study, the number of organizations reporting IT budget increases is 59%, a little higher to last year's 56% but still not above the pre-recessions 2007 high of 61%. Organizations with budget allocations remaining flat are bit higher with 25% and decreasing budgets are down from 20% to 16%. However, when asked to project next year's IT spending, the outlook of these senior IT leaders is more pessimistic. 58% of organizations expect to have an IT budget increase in 2016. This represents a small 1% decline in the number of organization's currently reporting budgetary increases. Moreover, 23% (2% less than this year) are projecting flat budgets and 19% anticipate a decrease in IT spending (about 3% more than in 2015). This could be a signal of increasing economic uncertainty, an anticipated overall weakening in the global economy, and might be the end of the 'catch up' period in IT investments making up for the lean investment years early in the great recession.

European IT budgets developments

Within Europe 22% of the organizations reported an IT budget decrease in the 2015 budget (see Figure 5). This percentage is second highest of all continents (Latin America 24%). Also the percentage of European organizations reporting a flat IT budget in 2015 in comparison with 2013 was highest of all continents with 42%. The number of European organizations reporting an increased IT budget was the second lowest of all continents with 40% (Australia reported 30%). This is consistent with the previously discussed IT as a percent of revenues trend.

When comparing the forecasted changes in the 2016 IT budget the European countries are slightly more negative (see Figure 7). 74% of the European organizations report an increased or flat IT budget in comparison to 78% in 2015. 26% of the European organizations reported a decreased IT budget, whereas 22% of the European organizations reported a decreased IT budget in 2015.

Figure 6.
Change in IT budget from previous year (2015 compared to 2014) europe compared to other continents.

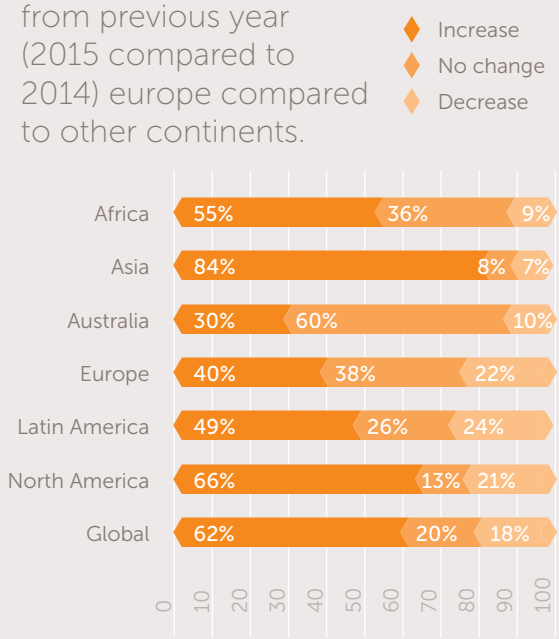
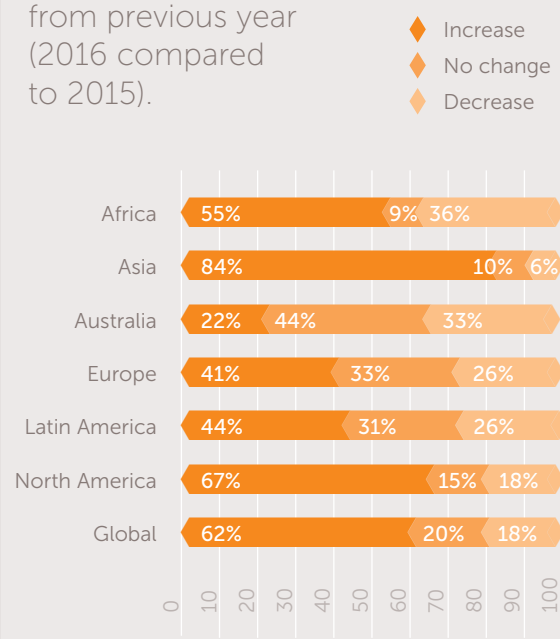


Figure 7.
Change in IT budget from previous year (2016 compared to 2015).



IT budget allocations

Since 2009 when the BITTI/GIIM Global IT Trend Study first began gathering IT budget allocation data, the survey focused on two major categories: people and things. These two categories were then further subdivided into in-house, outsourced, foreign, and domestic spending. Table 10 presents the global Figures (2009-2016).

Overall the 60:40 IT spending split for people versus things has held relatively consistent. The internal staff-domestic is 31% of the IT organizational budget this year. The surveyed organizations predict a decrease to 25% whereas the global budget allocation for offshore increases from 5% in 2015 to 6% in 2016. Considering the internal offshore staff, the trend to increase is both in Europe as on a global scale. Interestingly the trend for domestic outsourcing (within continent) shows a flat budget allocation (9%) in the years 2015 to 2016. On the people perspective the consulting services show both global and Europe with a slight increase in allocation.

Considering the spending on 'things' the trend both for global and Europe is a decreasing budget allocated for in house-domestic.

Table 10.
IT budget allocations
Global

IT Budget Area	2016	2015	2014	2013	2012	2011	2010	2009	2009	AVERAGE: PEOPLE V. THINGS
PEOPLE										
Employees / Internal Staff: Domestic	25%	**31%**	17.1%	38.2%	33.0%	38.0%	43.0%	39.0%	39,0%	
Offshore	6%	**5%**	9.9%	2.0%	6.0%	2.0%	3.0%	4.0%	4,0%	
Outsourced Services/ Contractors: Domestic	9%	**9%**	16.9%	5.7%	8.0%	3.0%	7.0%	8.0%	8,0%	
Offshore	8%	**6%**	10.5%	3.8%	3.0%	2.0%	5.0%	4.0%	4,0%	
Consulting Services	5,6%	**6,1%**	6,1%	6,6%	7,2%	10,0%	11,0%	10,0%	12,0%	
TOTAL People	59%	**61%**	61.0%	52.8%	59.0%	56.0%	68.0%	67.0%	60%	59,2%
THINGS: HARDWARE, SOFTWARE, FACILITIES										
In-house - domestic	19%	**20%**	15.9%	35.0%	24.0%	32.0%	32.0%	33.0%	33,0%	
In-house – offshore	in 'in-house		5.4%	1.8%	2.0%	0.0%	0.0%	0.0%		
Outsourced - domestic	10%	**12%**	7.3%	8.3%	14.0%	12.0%	0.0%	0.0%		
Outsourced - offshore	12%	**7%**	10.4%	1.9%	0.0%	0.0%	0.0%	0.0%		
Total Things	41%	39%	39%	47%	40%	44%	32%	33%	40%	40,8%

IT staffing and salary trends

To provide additional insights into IT personnel practices, IT staffing is another area that was refined and expanded considerably in this year's IT Trend Study.

The changes in IT staffing movement is quite interesting. The changes in previous years are displayed in Figure 8. European countries are the most conservative with 29% of the organizations experiencing an increase in IT staff; the global average is 45%. 51% of the European companies reported no change in IT hiring (compared to 39% globally) and 20% decreased their IT staff (compared to 16% globally). When comparing Figures 8 and 9, the increase in IT staff staying flat is higher in Europe (50%) when compared globally (39%). Only 33% of European organizations indicate an increase in IT staffing for this year; compared to 49% globally. 18% of European IT organizations are decreasing their IT staff; as compared to only 12% globally.

Figure 8.
Change in internal full time employees.

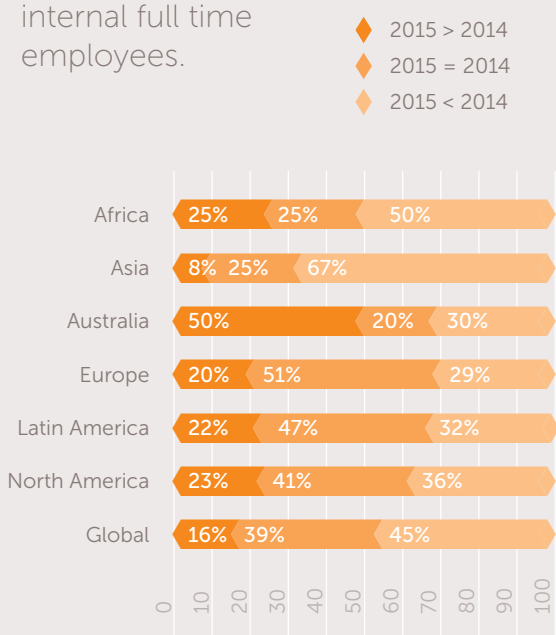
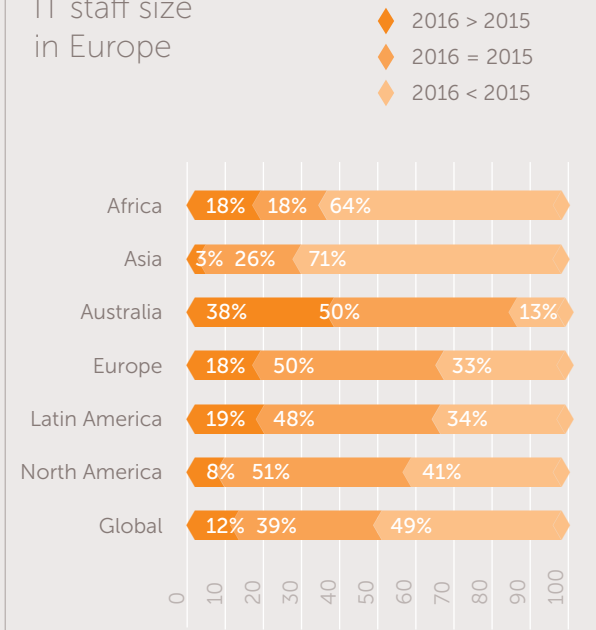


Figure 9.
Total in house IT staff size in Europe



IT employees and their salaries

To provide greater insight into IT personnel practices, IT employees and their salaries was expanded considerably in last and this year's IT Trend Study. The salary changes in 2015 compared with 2014 are displayed in Figure 10.

In Europe 63% of the organizations reported a decrease (38%) or flat (25%) total salaries for IT staff in 2014 compared to 2013. Only 38% of the organizations reported an increase in the total salaries for IT staff. The decrease in total salaries in Europe is higher than other continents (global average only 7%). In Asia IT staff received the highest increase of total salaries for IT staff

About 58% of the organizations in Europe report an expectation to have a lower or equal total salaries for IT staff in 2016 which is 10% higher the global average. At the bright site, 43% of the organizations reported to expect an increase in total salaries for IT staff; but globally the number is 56%.

Figure 10.
Total salaries for IT staff in 2015 compared to 2014

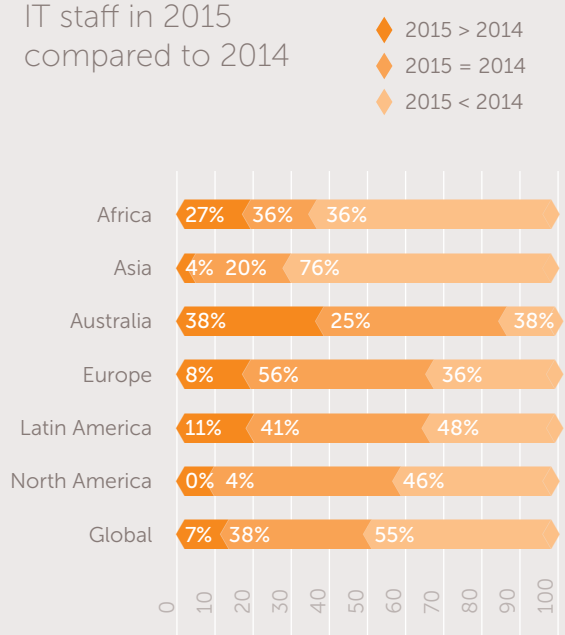
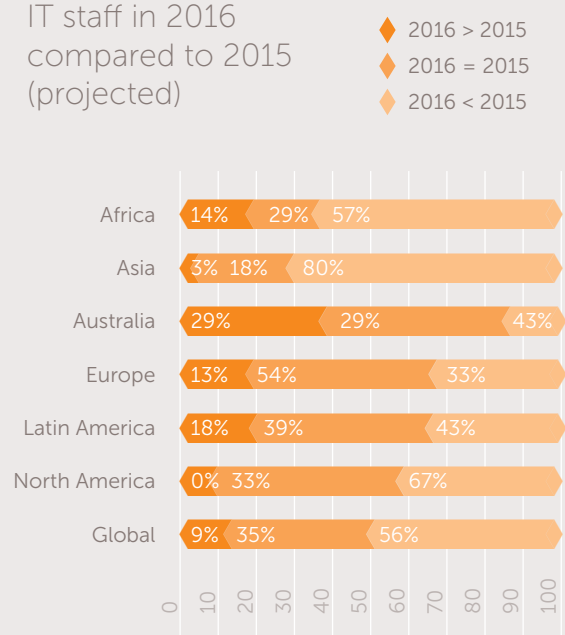


Figure 11.
Total salaries for IT staff in 2016 compared to 2015 (projected)



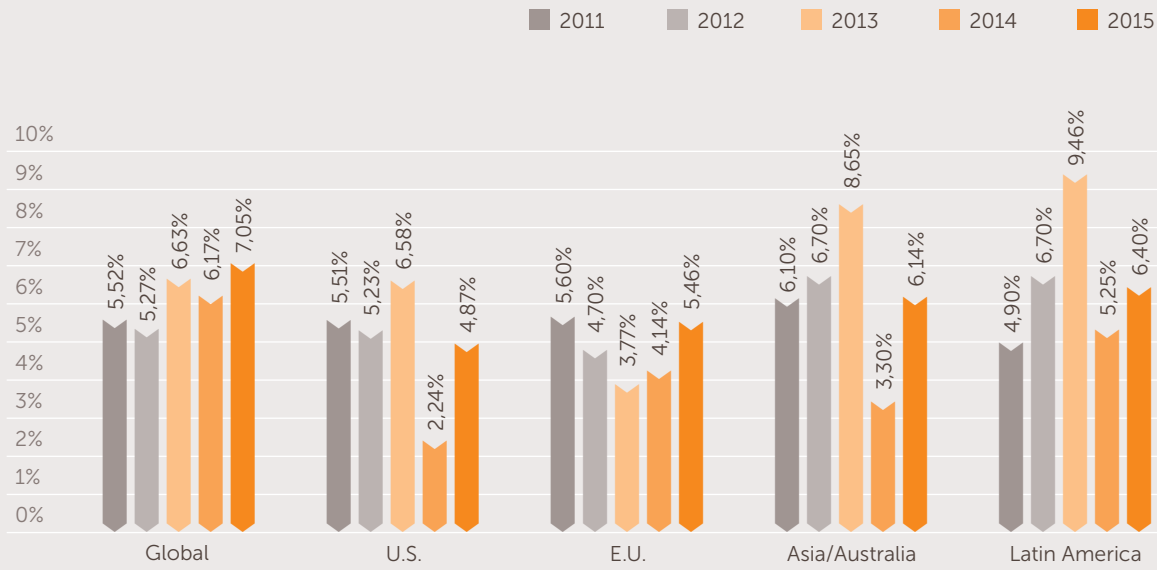
Turnover and Retirements, education and training

Earlier we reported a significant decrease in the IT hiring rate in 2014-2015 within Europe (from 4.7% to 3.8%). Globally there was an increase in the IT turnover rate. Last year (2015) the European turnover rate increased to 4.14%. This year there is a significant increase is shown in Figure 11, where the turnover rate of Europe is compared with other continents.

The European IT staff turnover rate for this year (5.46) is below the global average of 7.05%. On average in the research period 2006 through 2014 the average is 6.08% for the global IT staff turnover rate.

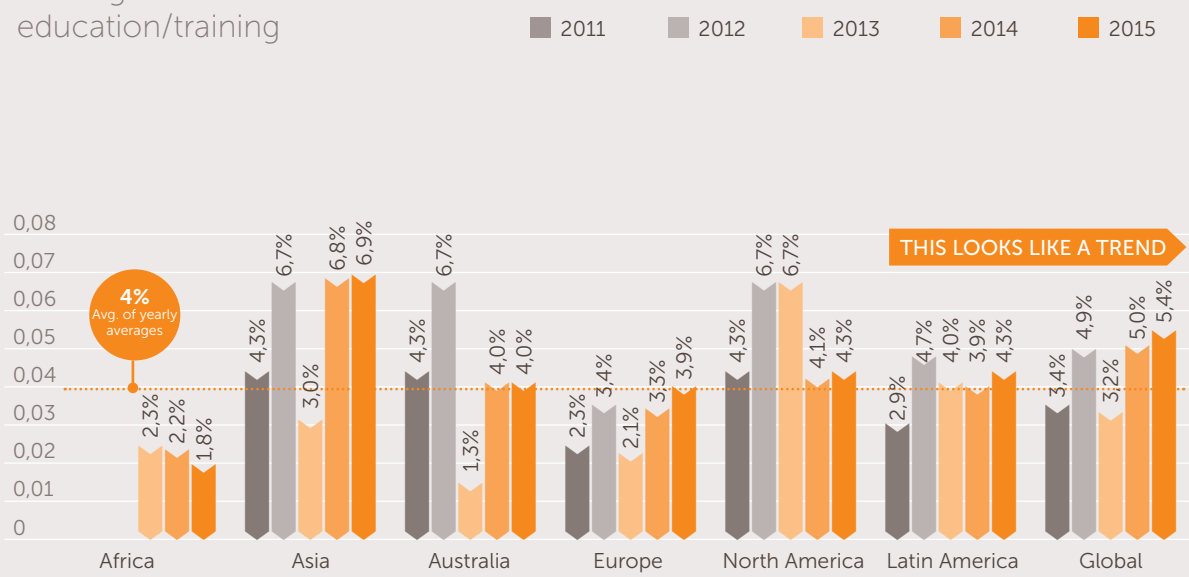
Consistently with previous years the European organizations report a lower percentage of IT budget allocated for education/training (Figure 12). But other continents (Africa and Australia) reported also a low percentage of IT budget allocated for education and training. European organizations reserved 3.9% of the total IT budget for training and education, a bit less than the global average of 4% of the total IT budget and a lot less when compared to the big training spender Asia (6.9%).

Figure 12.
IT staff turnover rate 2015



"IT budget allocated to training and eduction is increasing in Europe"

Figure 13.
IT budget allocation for education/training



CIO reporting relationships, time allocation, background, tenure and performance measurement

The organizations provided insights into what the IT organization is doing and how it is performing and interacting with the business.

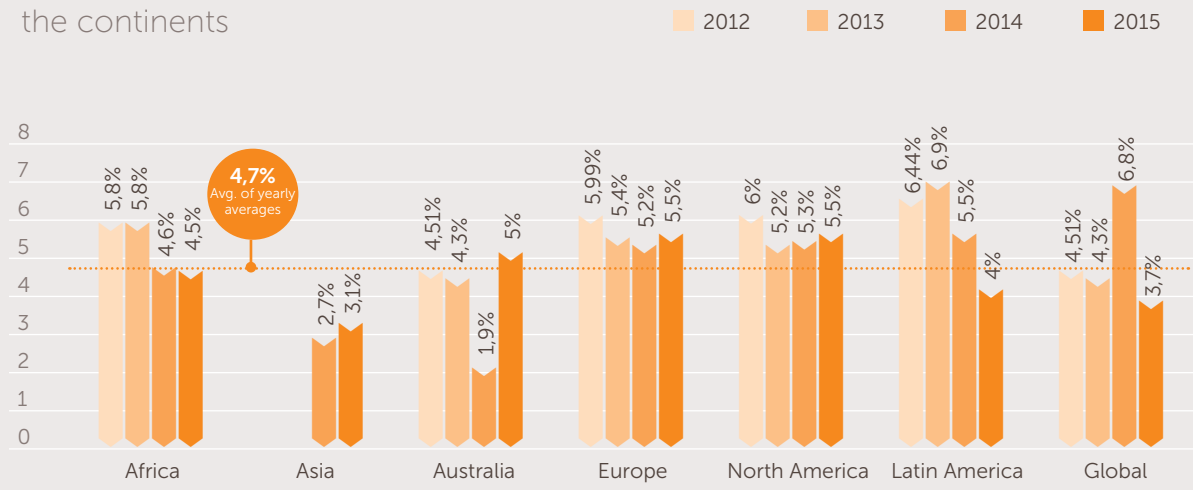
CIO Tenure

The average time the CIO's have been in their current position decreased this year globally from last year, from 4.6 to 4.5 years (see Figure 13). In Europe the CIO tenure increased by almost 6% from 5.2 to 5.5 this year. The average tenure since 2006 is 4.7 years. Overall, CIO tenure appears to be on an upward trend over the last decade with a significant breaking point in 2013. The overall trend is confirmed by other studies; although, CIO job tenure varies across studies[2]. The respondents in this year's study reported lower tenure for the CIO than in the period 2012-2013 (twice 5.8 years). The median CIO Job tenure decreased to two years, especially due to Asia. Within Europe the highest number of CIO's with over ten years in their current job can be found. The European CIO's tenure is 5.5 years.

In terms of distribution, it is worth noting that nearly half of the CIO's have been in their current position for less than three years. On the other hand over ten percent of the CIO's have been in their current position for ten years or more.

[2] As of July 2014 http://www.ejobdescription.com/IT_salary_survey.html reports CIO tenure at 4.33 years. In January 2014 CIO magazine reported it at 5.92 years http://fedscoop.comsurvey-2014-brings-challenges-wind-shift-cios/.

Figure 13.
CIO Tenure across the continents



CIO Reporting Relationship

The role of the CIO is often thought to be shaped by to whom the CIO reports; although it is unclear to what extend and in what way formal reporting relationships are related to CIO focus and job activities[3]. Within Europe, just over 50% of the responding top IT executives report directly to their CEO, a fifth (20%) report directly to their CFO and about 18% of CIOs report to their organization's COO (see Figure 15).

As with CIO tenure, the reporting relationship also differs significantly per continent. In Australia 33% of the CIOs report directly to the CEO, in Africa even 67% of the CIO's. In Asia this is only 18%. Reporting to the CEO is best for alignment. In the study's of Luftman and Derksen[4] the direct reporting line to the CEO had a significant and positive effect on the level of alignment as well as the Return on IT investments.

[3] Plante & Bain (2005), "The Changing Role of the CIO: Why IT Still Matters," IT Professional, 7(3), 45-49 and Smaltz, Sambamurthy, & Agarwal (2006), "The Antecedents of CIO Role Effectiveness in Organizations: An Empirical Study in the Healthcare Sector," IEEE Transactions on Engineering Management, 53(2), 207-222 found CIO reporting relationships to be unrelated to CIO job activities; however, Carter, Grover, & Bennett (2011), "The Emerging CIO Role of Business Technology Strategist," MIS Quarterly Executive, 10(1), 19-29 did find a relationship between to whom CIOs report and the focus and activities of CIOs.

[4] Luftman, 2011, 'European key IT & Management issues & trends for 2011-2012' & Derksen, 2013, 'Impact of IT Outsourcing on Business & IT Alignment'.

Figure 15.
Reporting line CIOs

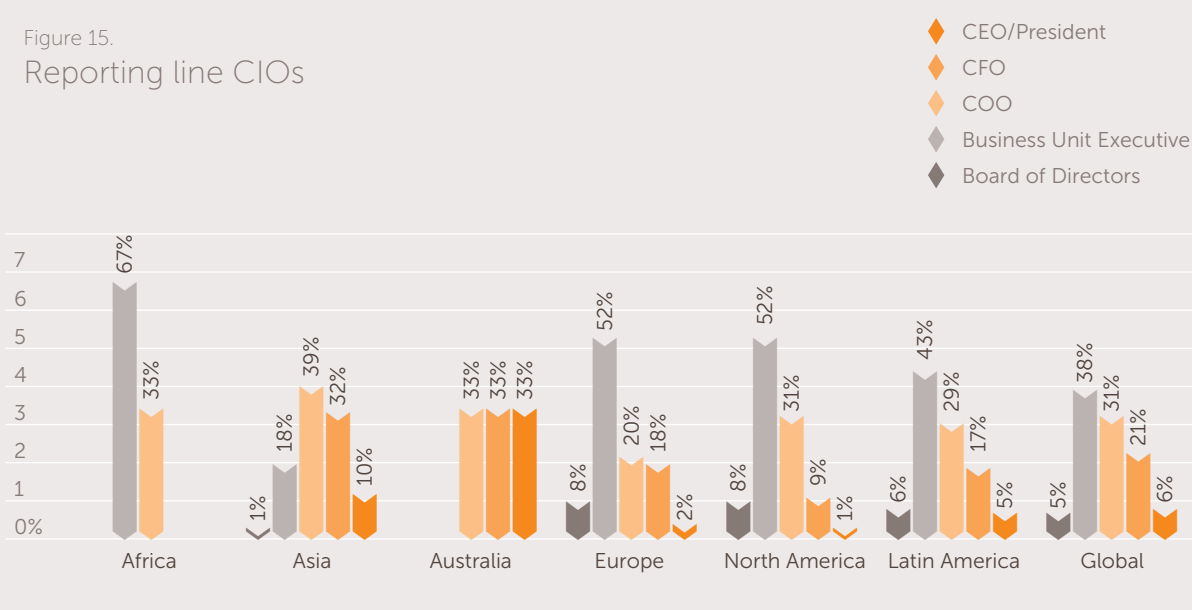
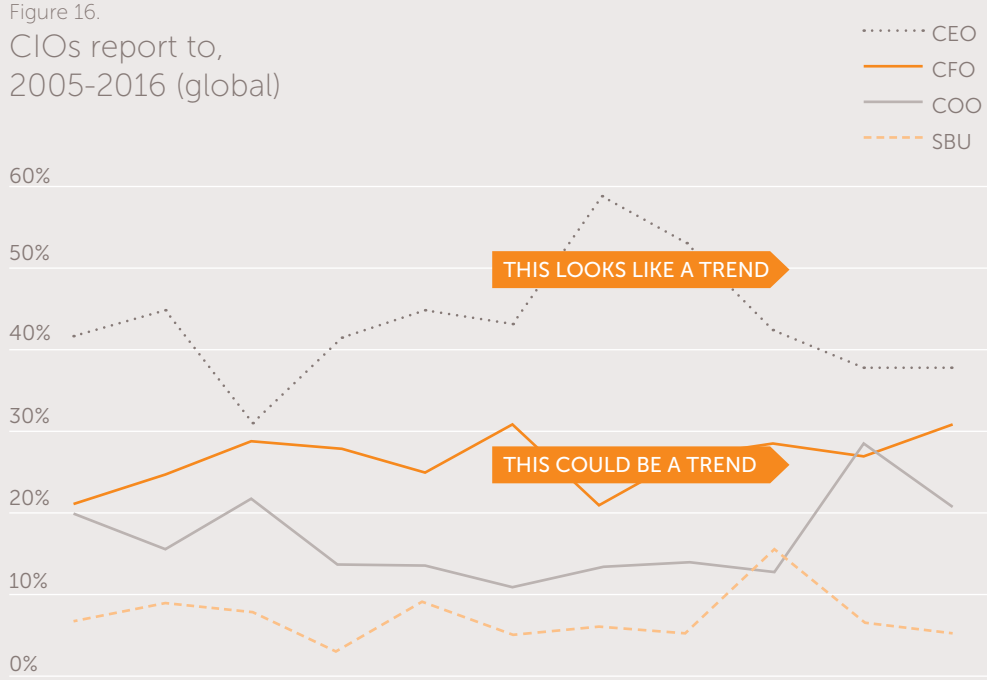


Figure 16.
CIOs report to,
2005-2016 (global)



From a global perspective a trend line as shown in Figure 16, suggests that there is a slow moving trend of an increasing percentage of CIO's not reporting to CEOs but to the COO. Other studies show increases for CIOs reporting to CEOs[5], but such trends, if present, do not appear particularly strong except for the decrease in direct reporting to the CEO. The percentage of CIOs directly reporting to the CEO decreased from nearly 60% in 2011 to below 40% in 2015/2016.

[5] CIO magazine's 'State of the CIO 2014', Kim Nash reports that '44 percent of the CIOs report to the CEO, up from 39% last year', http://www.cio.com/article/2380234/cio-role/state-of-the-cio-2014-the-great-schism.html.

CIO Previous Employment

Most CIOs still come from a prior IT position (84% in Europe, 80% globally); but this is down this year from the 92% in 2010 and 2011 to 80% in 2016.

Globally it also appears that more CIO's are being hired from prior non-IT positions, with 20% this year, a bit lower than the 21% last year and above the five-year average of 15%. Perhaps more importantly, and confirming the trend of more hiring from outside the organization, from 2011 through this year's an overwhelming increase of 467% came from a non-IT position in an outside organization (see Figure 18); it will be interesting to see if this is an anomaly or a trend.

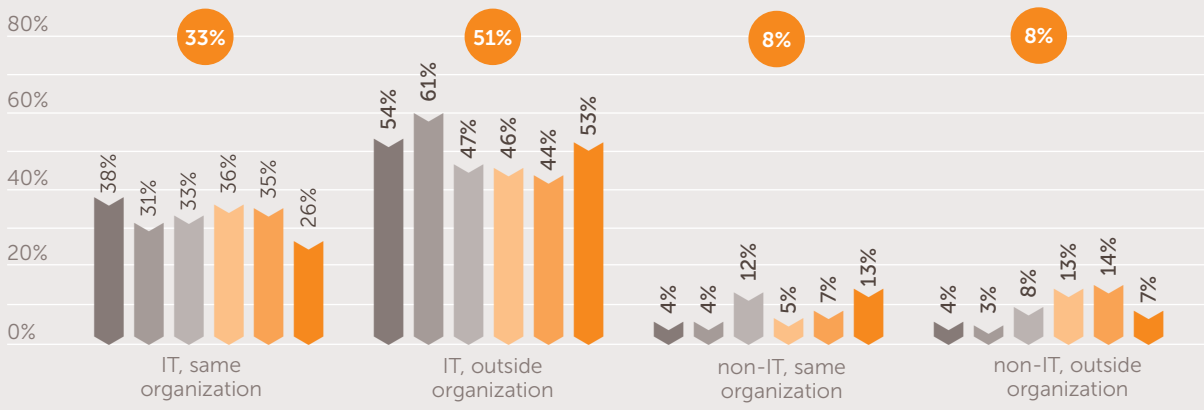
Figure 17.

CIO prior employment, Europe compared 2016

	Africa	Asia	Australia	Europe	Latin America	North America	Global
IT, same organization	67%	14%	67%	46%	63%	27%	26%
IT, outside organization	33%	47%	33%	38%	15%	65%	53%
non-IT, same organization	0%	31%	0%	9%	7%	2%	13%
non-IT, outside organization	0%	7%	0%	7%	15%	6%	7%
Outside organization	33%	54%	33%	45%	30%	71%	60%
Same Organization	67%	46%	67%	55%	70%	29%	40%
Prior IT position	100%	61%	100%	84%	78%	92%	80%
Prior non-IT position	0%	39%	0%	16%	22%	8%	20%

Overall, 60% of the CIOs came from another organization (45% in Europe), 40% were promoted from within the organization (55% in Europe), 79% came directly from a prior role in IT (84% in Europe), and 20% were hired from a prior non-IT role within (16% in Europe). As Figure 18 indicates, over the past several years there has been a significant increase in CIOs being hired from outside their current employer, and a commensurate decrease in those being promoted to CIO from within, regardless of whether they were in a prior IT position or not.

Figure 18.
Last position before CIO or equivalent (2010 to 2016)



Performance Measurements for CIOs

The investigation of IT performance metrics was added to the GIIM & BITTI IT Trends Study in 2012 to gain a better understanding of how IT is being assessed and measured. This year respondents were provided a list of 32 metrics (up from only 14 last year) and asked to separately "select up to three (3) of their organization's most important performance measures for: internal IT, outsourced IT, and their own performance." The personal performance question was added this year for the first time. In this section of the report, the focus is on CIO performance measurement.

Table 11 shows the percent selecting each metric in the category internal IT metrics per geography. The Table is sorted by the rankings of the global internal IT performance measures used most. No trend can be discerned, of course, since this is the first time these internal performance measurement data are available; nevertheless, some important findings are in evidence.

Examining the CIOs' top 10 most selected performance measures, as shown in Table 11, notice that only three focus on IT, while the other seven are business focused. Equally, if not more important, four of these top 10 are strategic, including two of the top four, as well as the top three: "Business Cost Reduction/control" (selected by over 40%). The others are: Customer satisfaction (external) (ranked 4th), Compound Annual Growth Rath (6th) and Earnings per Share (9th). Since performance measurements are tied to incentives and deliverables, this points to the current overall strategic and business focus of these CIOs, a good thing indeed.

Rounding out the top five for CIOs are first ranked "customer satisfaction", "availability (up Time)" (at second), and the fifth ranked "help-desk performance". The number three "availability," which is one of two IT-focused performance measurements to appear in the top five for CIOs, selected by the respondents. Moreover, although the performance of the IT department under a CIO's purview is still important to their overall evaluation, with five IT-centric performance measures in their top 10, it appears that the CIOs are increasingly evaluated on their overall contribution to the organization.

Nevertheless, the performance metrics for CIOs and in-house IT do have a lot in common. This too is not unexpected since "keeping the IT lights on" is "Table stakes" for an IT leader to earn that coveted "seat at the Table" of strategy and business innovation. "Innovative new ideas" (ranked 13th by the CIOs) and "value of IT to the business" (ranked 15th). Nevertheless, with two of the internal IT's top six performance measurements focused on the business, and half of their top 10 IT focused, it is clear that alignment of IT and the business is alive and well in in-house IT organizations. As might also be expected, outsourced IT is more about keeping the IT lights on than internal IT, with their top five metrics all IT focused (not in this Table). CIOs share only one performance measure in their top five with outsourced IT – "availability." They do share six of their top 10, however, which is also indicative of alignment. Similarly, internal and outsourced IT share seven measures in their top 10 lists.

Table 11.
CIO performance measures (with internal it metrics used)

	Global	Africa	Asia	Europe	North America	Latin America	Australia
Customer satisfaction (internal business unit)	1	3	5	1	2	1	2
Business cost reduction/ control	2	8	3	6	3	3	13
Availability (Up time) - internal IT	3	1	11	3	1	2	1
Customer satisfaction (external paying customer)	4	4	4	8	10	7	7
Help-desk performance	5	9	7	2	7	11	4
Compound annual growth rate (CAGR)	6	10	2	9	25	17	6
Employee attrition / retention / turnover	7	11	1	10	30	29	15
IT cost control	8	5	12	11	4	5	3
Earnings per share	9	12	6	12	24	14	9
Improved decision making	10	13	8	13	16	12	19
Increases in new products / services	11	14	10	14	13	9	22
Projects delivered on time	12	2	21	15	5	4	5
Innovative / new ideas	13	15	14	4	11	8	11
Headcount reductions	14	16	9	16	31	30	21
Value of IT to the business	15	17	19	17	6	15	7
Productivity improvement	16	18	17	5	8	10	10
IT's contribution to strategy	17	19	20	18	12	6	8
Industry-specific easurements	18	20	13	19	26	25	27
Projects delivered on budget	19	21	26	20	9	13	6
Time to market	20	22	27	21	17	16	17
Quality / defect rates in software	21	6	23	22	14	18	23
Project return on investment (ROI)	22	23	28	23	18	19	14
SLA target compliance	23	7	24	24	15	20	12
IT spending per employee	24	24	16	25	20	28	24
Lower error rates by users/ customers	25	25	18	7	19	23	29
IT cost / headcount reduction	26	26	15	26	32	32	28
IT spending as a % of revenue	27	27	22	27	21	21	9
Total cost of ownership	28	28	31	28	22	24	16
Profit / Profit growth	29	29	32	29	27	22	18
Return on equity (ROE)	30	30	29	30	28	27	30

How CIOs spend their time, with whom, and what they do with them

The job of the CIO is complex and evolving. Since 2007, the GIIM & BITTI IT Trends Study have included questions regarding how CIOs spend their time. In particular, how much of their time (the "how much") they spend with whom (the "who") doing which activities (the "what"). These questions were expanded last year, and additional questions added to assess how often CIOs meet with various other senior executives (expanding the "who" to be more specific and adding the "how often"). Questions were also added to determine to what extent CIOs believe those C-level relationships contribute to the value of IT to the organization (the "how valuable"). This year, these questions were further expanded with the "who" and "what" being separated for the first time, and both of those lists expanded significantly.

These improvements, and the inclusion of all five of these dimensions (specifically, how much, with whom, doing what, how often, and how valuable),

Table 12.
How CIOs spend their time (global)

2015 Categories	CIO or Equivalent			Previous years (global): How CIOs spend their time						2007-2012 Categories
	2015	2014	2013	2012	2011	2010	2009	2008	2007	
IT priorities/strategy	14%	10%	12.7%	10.0%	13.0%	13.0%	15.0%	17.0%	16.0%	Strategy
Business priorities/ strategy	14%	10%	10.9%							
Interacting with internal IT employees	9%	8%	11.9%	11.0%	5.0%	11.0%	12.0%	15.0%	13.0%	Relationship mgt w/ IT staff
Interacting with non-IT non C-Level	13%	13%	10.1%							
IT Operations	10%	16%	10.7%	12.0%	15.0%	13.0%	15.0%	8.0%	8.0%	Operations
Interacting with non-IT C-level	13%	13%	13.3%	15.0%	14.0%	18.0%	19.0%	26.0%	23.0%	Relationship mgt w/ business
Interacting with IT. non employees	10%	10%	7.6%	8.0%	5.0%	6.0%	0.0%	0.0%	0.0%	Relationship mgt w/ vendors
IT Governance	10%	11%	8.7%	10.0%	11.0%	9.0%	10.0%	11.0%	11.0%	IT governance
IT Human Resources	11%	12%	8.0%	9.0%	15.0%	7.0%	8.0%	7.0%	8.0%	Human resources
Software Development	8%	7%	5.3%	7.0%	4.0%	6.0%	6.0%	4.0%	6.0%	Software development
Other	10%	5%	0.9%	9.0%	9.0%	11.0%	10.0%	6.0%	7.0%	Non-IT
				9.0%	9.0%	7.0%	7.0%	6.0%	8.0%	Architecture

significantly increase our ability to understand and track changes in the multifaceted role of the CIO in these transformational change. On the other hand, we are to some extent in the early stages of learning how to best collect and analyze this rather complicated data set regarding the very complicated role of the CIO. Further questionnaire improvements are likely in the future, as we and others come to better understand this phenomena[6]. However, the data we now collect about how CIOs spend their time are so different that comparisons with past data are somewhat problematic.

All of these what, who, how often, how much, and how valuable questions came at the very end of the questionnaire this year, in the second bonus section. First came the "who" and "how much" questions, asking "what percentage of your time on your job is spent ... interacting with or developing relationships with" each of nine categories of people. The list consisted of seven people categories (i.e., C-level (non-IT); business (non-IT, non-C-level); IT employees (internal); IT contractors, vendors, and service suppliers (not employees); external customers and/or suppliers; IT personnel of external customers and/or suppliers; and IT colleagues outside my organization) plus a fill-in-the-blank "others" category. An overall total of 100% was required. The results are shown in Table 12.

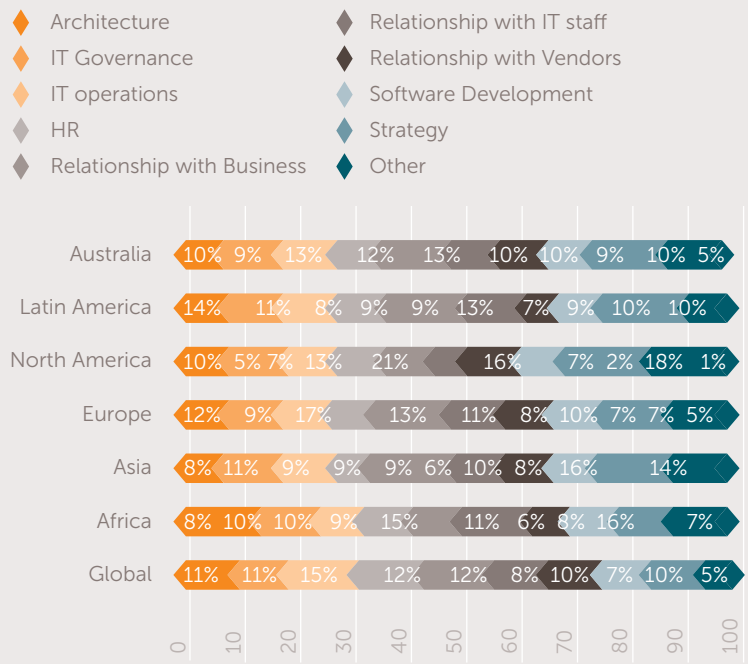
Not surprisingly the results indicate that on average they spend 9% of their time with IT employees within their organizations. But, as also indicated in Table 12, over 26% of the average CIO's time is spent interacting with business people within their organization (13% with C-level + 13% with business not IT non-C-level), indicating a significant focus on the overall business.

It is difficult making comparisons with this data to the "how they spend their time" data from prior years, since four of the eight "with whom" categories are new. Similarly, the "what" activities data from prior years only contained six of the 17 activities used this year, at least four of which were purely IT-related. Furthermore, until this year, these "who" and "what" questions, and thus their data, were combined into a single question that was required to total 100%. Although some statistical machinations could be used to generate some comparisons with previous years' data, these comparisons would be of uncertain value, and could even be misrepresentative of the actual trends.

Comparing Europe it is noTable that IT operations takes 17% of the CIOs time, the highest of all geographies whereas 'relationship with the business is almost half of the percent (11%) of the North American CIO's (21%). Considering the importance of alignment, more focus on business relationships could be recommended.

[6] For example: Weill, P., & Woerner, S. (2013). "The Future of the CIO in a Digital Economy," MIS Quarterly Executive, 12:2, 65-75; Carter, M., Grover, V, & Thatcher, J. (2011). "The Emerging CIO Role of Business Technology Strategist," MIS Quarterly Executive, 10:1, 19-29.

Figure 19.
How CIOs spend their time across geographies (2015/2016)

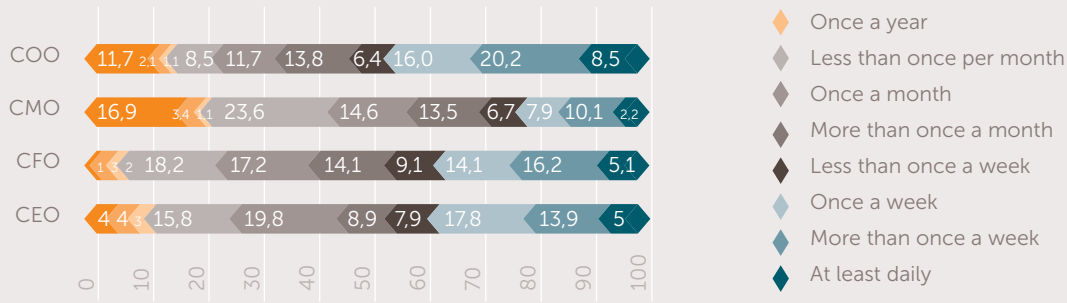


The interaction of CIOs with other c-level has also been evaluated. Almost 20% of the CIOs (19.8%) in Europe interact with the CEO on a monthly basis, 17.8% on a weekly basis and 13.9% more than once a week (see Figure 20). Over 50% of the CIOs talk to CEO at least monthly (53.5%). The interaction with the CFO in Europe is higher with 58.6% of the CIOs interacting at least monthly with the CFO. But most interaction is with the COO, almost 65% of the CIOs interact at least monthly with the COO.

Less than 50% of the CIOs (40.4%) interact more than once a month with the CMO (Chief Marketing Officer) which indicates that most of the CIO interaction is with the internal business (operations).

Figure 20.

CIO interaction with c-level (Europe)



Future of IT

In this year's research an extra series of questions was added with regard to the future of IT. The respondents were asked twelve questions with regard to IT developments and their expectations. The results are discussed in this part of the research report. In a number of questions Europe is compared with other geographies and others a comparison within Europe was made.

1. In the future companies will have an intern internal IT organization?
   83% of the responding organizations is convinced that companies will have an internal IT organization (Figure 21). Within Europe 79% of the responding organizations answered that an internal IT organization will still be in place.
   There is a global consensus that in the (near) future internal IT organizations are still needed. Only within Africa where 50% of the responding organizations are not convinced it is needed.

2. What is the most significant change to IT in the future?
   The second question with regard to the future of IT is the change needed. Both on a global level as within Europe organizations do not believe that technological change will be the most significant.
   - Luxembourg also sees 'Gaining value from Cloud' as significant change to IT in the future (23.1%);
   - Within Germany 'Human Resources/Skills/Sourcing' is selected by most responding organizations as most significant change to IT (36.4%);

   These differences are interesting. Although the open remarks do not provide the causes in the differences, assumptions can be made. For example, within Germany the car industry is large and companies, such as BMW, are attracting more IT personnel due to the complex IT elements within and around cars (see European financial newspapers of March 2nd, 2015).

3. In the future the CIO skills are?
   Globally 34% of the responding organizations predict that the future skills of the CIO will be more business, 53% stated it will be more business & technical, 6% stated it will be unchanged and 7% of the responding organizations worldwide predicted that there will be no CIO (head of IT) in the future. Within Europe these percentages are different, 43% predict that the future skills of the CIO will be more business and 43% state it will be both business and technical.
   Compared with North America the focus of European future skills of CIO's are more business focused whereas North America also focuses on the technical skills. It will be interesting to follow these opinions with regard to the future skill set of CIOs in the future and their developments.

4. In the future the most effective way to communicate for CIO is?
   Last year European countries predicted that informal discussions/meetings are the most effective way to communicate for CIO. This was stated by 51% of the European responding organizations but this year this percentage declined dramatically to 24%, see Figure 24.
   Organizations within European countries tend to see board meeting presentations more and more as an effective way to communicate for CIOs compared to previous year. This year 30% of the European organization see board meeting presentations as the most effective way to communicate which is significant higher than previous year (22%). Globally 22% of the organizations chooses board meeting presentations as the most effective way to communicate for CIOs. In North America only 8% of the organizations state that board meeting presentations is most effective way to communicate for CIOs, in Asia 17%, Latin America 29% and Africa 33% of the organizations.
   Also higher than average ratings is the usage of IT briefings as the most effective way to communicate for CIOs; 11% of the responding organizations predict this way of communication as most effective. This is above the global average of 10% of the responding organizations.

5. In the future IT application development staff will be primarily organized?
   Globally 20% of the organizations predict that IT application development staff primarily will be centralized. Within Europe this percentage is 25% (see Figure 25) against 27% last year. The centralized IT application development staff in the future is mainly predicted by continents such as Australia (55%) and Africa (33%).

6. In the future the largest increase in developing & maintaining is?
   In this area there is a significant difference between the results of the futures largest increase in developing & maintaining between Europe and the rest of the geographies when compared to previous years with regard to the expectations towards Cloud Service Providers. Last year only 10.2% of the European organizations saw Cloud Service Providers as the largest increase in developing & maintaining whereas other geographies are all above forty percent (Australia 43%, Latin America 43%, North America 44%, Asia 42% and Africa at 60%) stating that Cloud Service Providers will be the largest increase in developing and maintaining applications. This year Europe has

a much higher score with 27%, which is above the global average.
Most European countries predict that the largest increase in developing and maintaining will be in in house staff (28%).

7. Future: Given the focus on Big Data where should the Chief Executive for these initiatives report?
Big Data is worldwide hot topic (see also management concerns/Trends in IT in this report). European organizations do not tend to see applications executives as the chief executive to have Big Data initiatives report to. This is supported by 9% of the European organizations, see Figure 27 (46% in 2015). But 44% (37% in 2015) of the European organizations state the reporting should be directly to the CEO which is close to the global percentage of 44%. 27% of the European organizations believe that the Big Data initiatives should report to the CIO, which is also comparable with the global believe of 26% and much lower than the opinion of Australian companies (50%), North America (46%) and Africa (67%).

8. Future skills of Chief Technology Officer will be?
Another development is the role of the Chief Technology Officer (CTO) focusing on turning technology to business value. Globally 8% of the organizations believe there will not be a CTO in the future. Europe has the same percentage with 8% of the European organizations. This percentage is lowest in Asia with just 4% of the organizations stating that there will not be a CTO in the future.
Of those organizations in the countries where the expectation is that there is a CTO in the future, there are further differences. For example 41% of the Dutch organizations expect that the CTO will be more technical and business focused.

9. Most important skill of the CTO will be?
When considering the most important skill of the CTO, 46% of the European organizations expect the CTO to show leadership (Figure 29). This is not the main expectation on a global scale, focusing on general business knowledge with 25% of the world wide organizations.

10. In the Future, de most important skill of non-IT executive will be?
Another future oriented question was regarding the non-IT executives. The global perspective suggests that non-IT executives mainly require governance including value analytics, which is forecasted globally by 33% of the responding organizations (31% in 2015). 25% (30% in 2015) of the European companies support this statement. In Europe 13% of the organizations also forecast that the most important skill of the non-IT executives will be to identify and implement trends in leveraging IT, this forecast is a bit higher than the global average whereas 10% of the organizations forecast this skill as most important.

11. In the Future, de support of IT infrastructure is done by a Cloud Service Provider?
Globally 83% of the researched organizations believe that the support of IT infrastructure is done by a Cloud service provider. This percentage is much lower within Europe with only 59%. The differences per continent in comparison with Europe are in Figure 31.

12. Most important consideration in future service provider.
Evaluating the most consideration in future service provider there was global consensus that the service reliability/responsiveness is the most important consideration in previous year. This year the most important consideration in future service provider is more diverged (see Figure 32). Interestingly European companies tend to request more technical skills/expertise as the most important consideration in service provider. 5% of the European companies selected technical skills/expertise as the most important consideration in service provider in the future.

Concluding remarks

So what does all of this really mean? In essence:

IT is reshaping global markets while reshaping itself as it becomes the business.

With the enduring economic uncertainties prevailing, and the dramatic changes across every industry being enabled/driven by IT, organizations are continuing to focus on leveraging IT to swiftly reduce expenses and, more recently to increase revenues. SMAC (Social, Mobile, Analytics, and Cloud) technologies are clearly transforming the industry. While IT appears to be quite resilient, with IT budgets, hiring, and salaries on the rise, upon closer analysis, these increases continue to evolve cautiously. This guarded trend has brought increased attention to reducing IT budgets through IT infrastructure spending (especially Cloud) and innovative sourcing models.

Are we seeing the end of the CIO role and position as we have known it? We are clearly seeing the role of the CIO and the overall IT organization undergoing a significant transformation. It is those organizations and individuals who are best prepared that will prosper in these exciting times.

There are pundits and blogs espousing that the end of IT is near. Rather than dispute the existence of IT in the future, the important question to consider is what will CIOs or indeed IT will have in the future.

Not only is IT not going away any time soon, the role of IT is more important than ever. IT is going through a renaissance that requires the role of the CIO and IT organization, as well as how the business and IT organizations collaborate, to transform.

IT has evolved from a group supporting back office processes, to enabling front office processes, to driving business innovation. IT is moving from an organization focusing on metrics/SLAs and expenses to analyse itself, to an organization that is delivering demonstrable business value through cost reduction, to an organization that is providing distinctive revenue increases. IT has evolved from having technical initiatives motivated by pure technology or business desires to being responsive to customer/client needs. These are significant shifts from what we have experienced in the past.

These fundamental changes in technology and how they are applied by the business are shaping the future of IT. Naturally not all organizations or geographies can respond in the same way; different scenarios will enable or inhibit these changes. In general, organizations need to recognize that competitive advantage that is facilitated by IT is clearly on the rise.

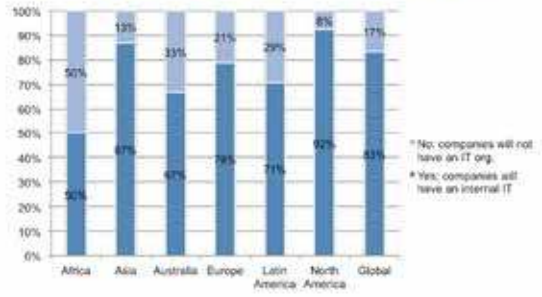
IT organizations, with effective leaders have an opportunity to position themselves at the heart of corporate strategy. The key to this positioning is the people having the appropriate balance of technical, business/management, industry, and interpersonal skills to meet the challenge that lie ahead.

Acknowledgement

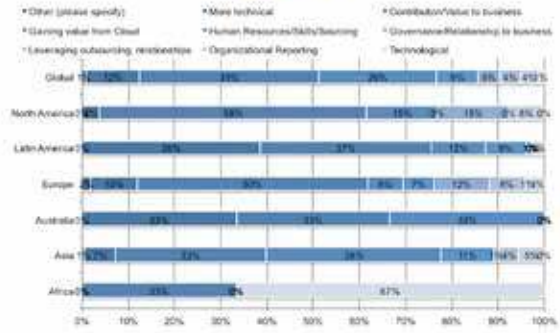
The authors wish to express their appreciation for the support of Herman van Bolhuis and Hendrik Deckers (CIONET) in obtaining the European data.

Appendix I: Future of IT Results

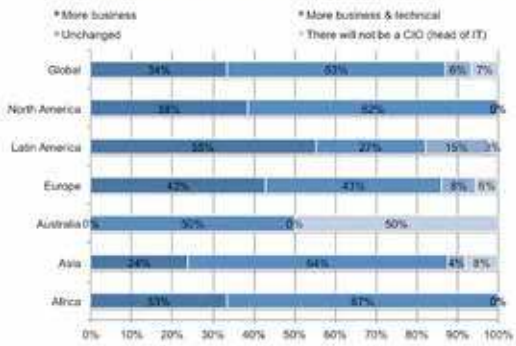
FUTURE: COMPANIES WILL HAVE AN INTERNAL IT ORGANIZATION?



FUTURE: MOST SIGNIFICANT CHANGE TO IT?

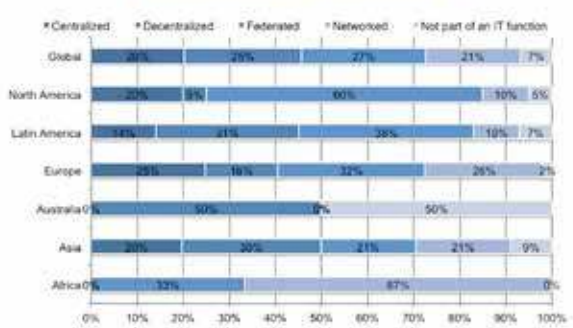


FUTURE: SKILLS OF CIO ARE...

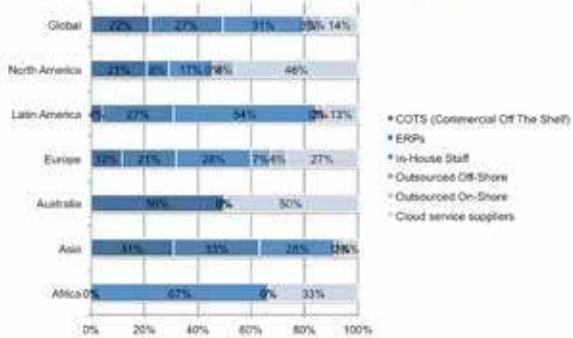


FUTURE: MOST EFFECTIVE WAY TO COMMUNICATE FOR CIO:

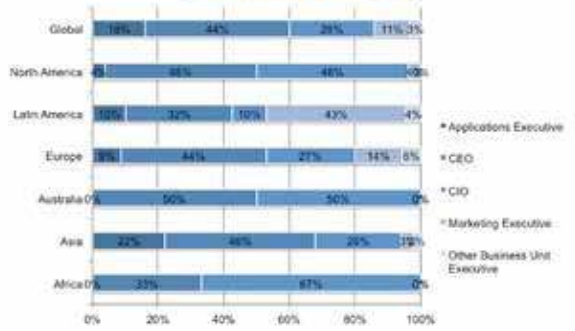
FUTURE: IT APPL. DEV. STAFF WILL BE PRIMARILY ORGANIZED



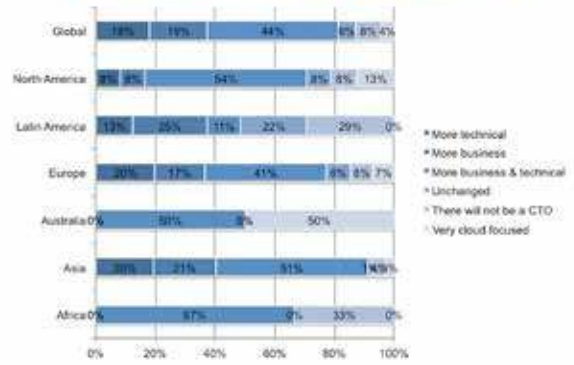
FUTURE: BIGGEST DRIVER IN DEVELOPING & MAINTAINING



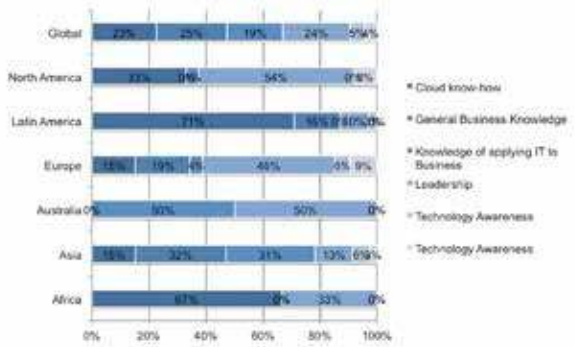
FUTURE: GIVEN THE FOCUS ON BIG DATA WHERE SHOULD THE CHIEF EXECUTIVE FOR THESE INITIATIVES REPORT



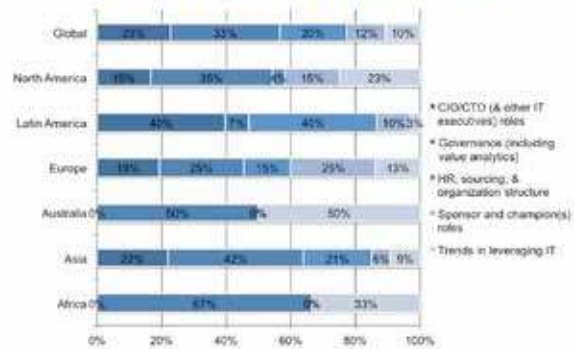
FUTURE: SKILLS OF CTO WILL BE



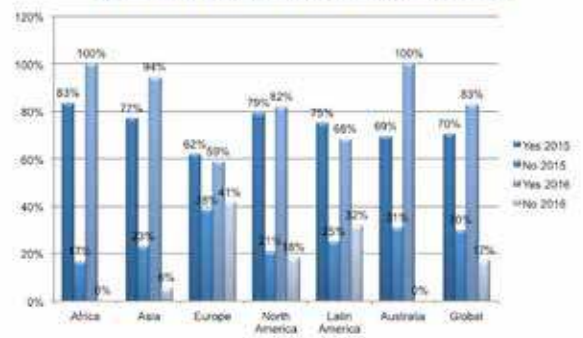
FUTURE: MOST IMPORTANT SKILL OF CTO WILL BE



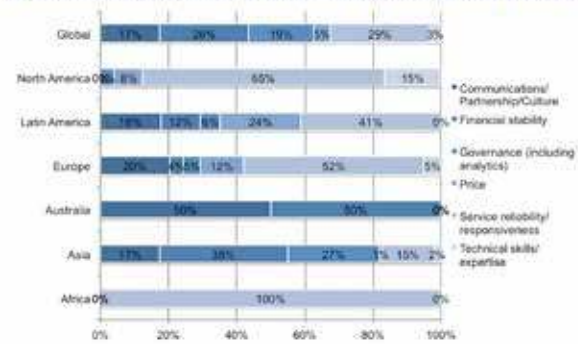
FUTURE: MOST IMPORTANT SKILL OF NON-IT EXECUTIVE WILL BE



FUTURE: SUPPORT IT INFRA DONE BY CLOUD SERVICE PROVIDER?



FUTURE: MOST IMPORTANT CONSIDERATION IN SERVICE PROVIDER

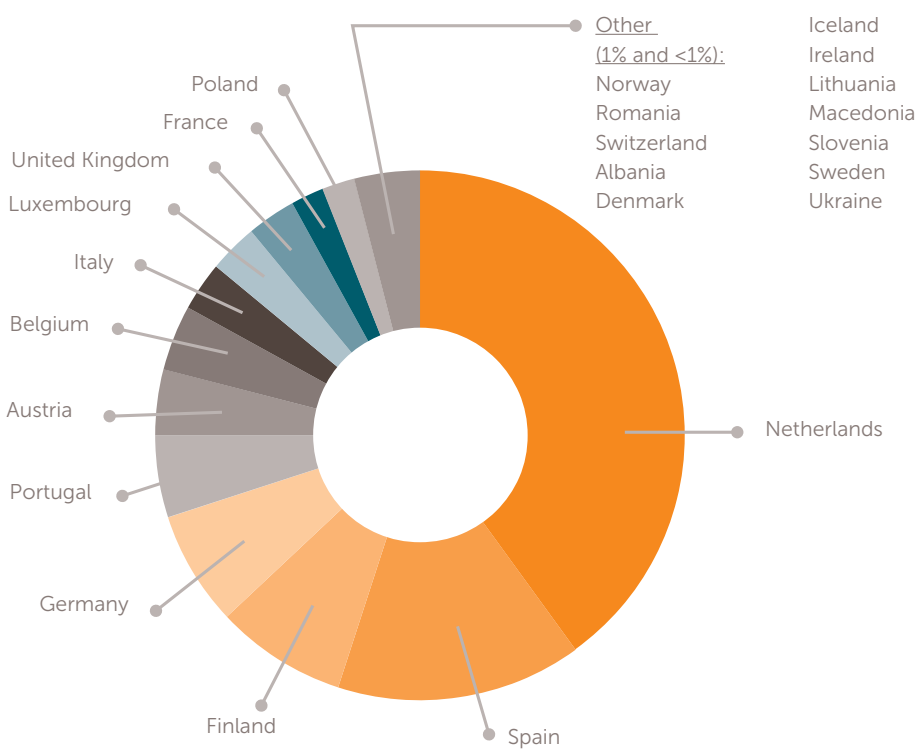


Appendix II: Research Methods, Design, and Delivery of BITTI & GIIM's IT Trends study

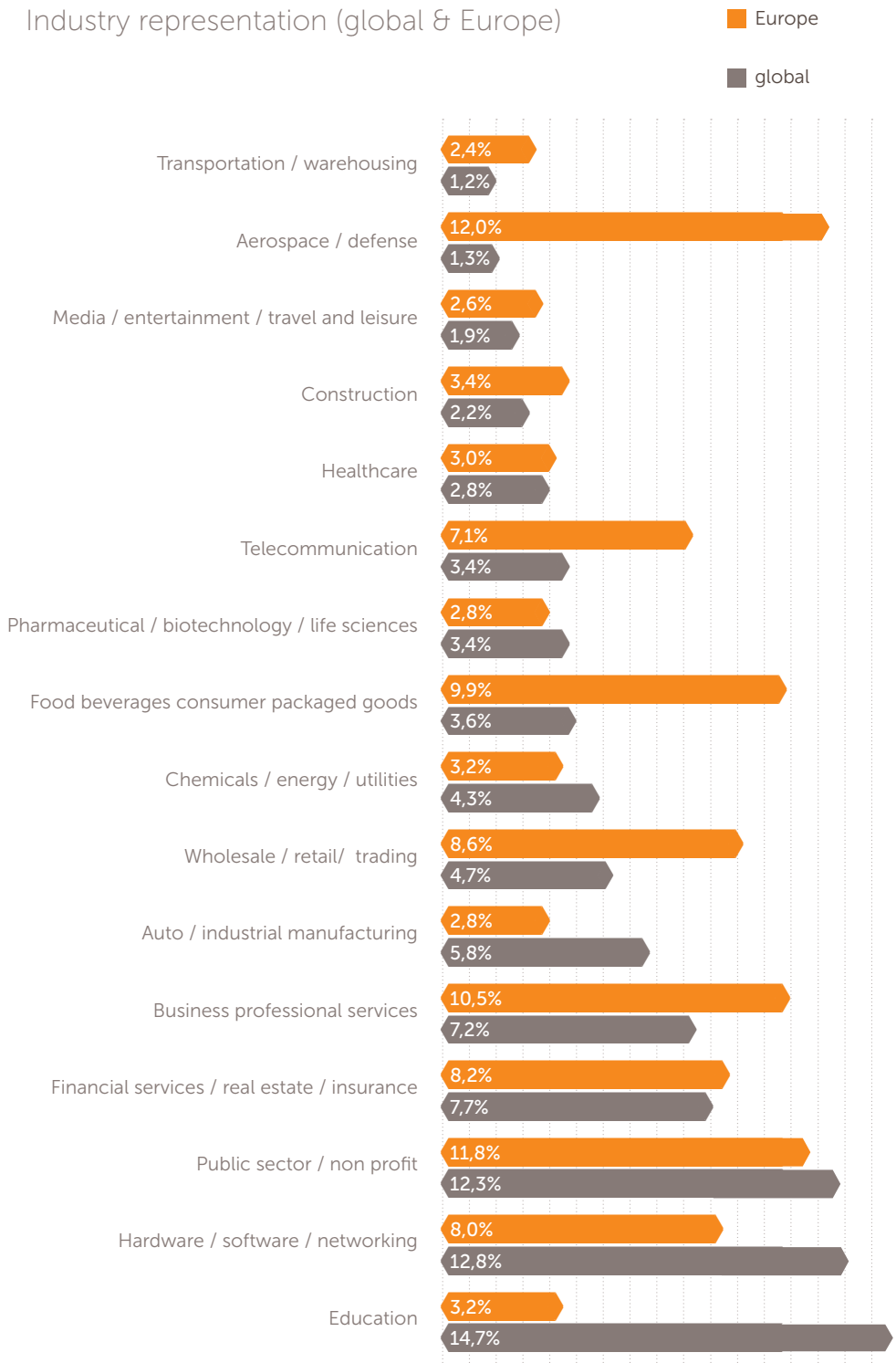
This research has evolved from the lead authors' coordination of the GIIM & BITTI IT Trends survey from the mid-1990s. The SIM survey has been conducted since 1980 in cooperation with the IT Trends research within Europe from 1995-2016 (BITTI.nl). Surveys prior to 2000 focused exclusively on the top management concerns. Since then, the survey has been extended to pursue more specific insights regarding key IT issues of the day. A significant strength of this research is in its ability to identify important trends by comparing survey data from previous years. Beginning in 2008 the survey has been extended to IT executives from around the globe. The 2015/2016 survey was similar to previous ones in methodology and process. The questions were based on previous surveys, with questions modified based on previous results and suggestions from respondents and researchers (academic and industry). Additionally, some questions were updated and new questions were added based on (1) lists from other similar research, (2) input from Board members from sponsoring organizations, and (3) the lead author's experience.

Senior IT executives were invited to take the online survey. The purpose of this paper is to provide important international insights and trends.

The authors anticipate extending the reach of this important research to a more complete set of countries and geographies, and invite leading researchers with a strong network of IT executives to contact us.



Industry representation (global & Europe)



Appendix III: About the Authors

Barry Derksen's career includes positions as research scientist, management consulting, senior management, managing director, director research, manager Architecture & Business Processes and educator.

Dr.lec. Barry Derksen MSc MMC CISA CGEIT is associate professor at the Vrije Universiteit in Amsterdam, professor at NCOI and Novi University of Applied Sciences, research director of the Business & IT Trends Institute (bitti.nl). He worked as manager on several organizations and programmes all related on realizing business value with IT. As management expert he advised several large and medium organizations on IT investments with evidence based research and consultancy (e.g. business case development / six sigma / etc.).

Barry is speaker and teacher at several Dutch universities and author of several books. The book 'Trends in IT, invest in time in the right technology' is the bestseller with over 330,000 sold copies. Barry previously worked as senior manager within KPMG Information Risk Management. With his company BITTI, he and his colleagues focus on research benchmark, assessment, audit and consultancy / project management. Barry is also manager of Architecture & Business Processes at Stedin, a Dutch energy supplier working on smart grids.

Barry's work area is an expert on Alignment, IT Strategy, IT Trends, strategic Information architecture, IT governance and IT sourcing.

Jerry Luftman's experience combines the strengths of practitioner, consultant, and academic. His proficiency in business-IT alignment and IT trends, eighteen books, published research, consulting, mentoring, and teaching/speaking engagements exemplify Dr. Luftman's expertise and leadership.

After a noTable twenty-two year career with IBM, he had an exemplary career for almost twenty years as Distinguished Professor, and Founder and Associate Dean of the Stevens Institute of Technology Information Systems Programs; one of the largest in the world. Driven by the strong demand for a global executive education program focusing on managing information technology, Dr. Luftman has leveraged his experience as a CIO, IT management consultant, and leading academic, with his strong network of IT management associations, and prominent IT practitioners and academics, to provide a valuable and innovative offering via the Global Institute for IT Management (www.globaliim.com) .

Dr Luftman's project experience ranges from senior management issues through tactical implementation. Dr. Luftman most recently pioneered the vehicle for assessing the maturity of IT-business alignment; where he has a benchmark repository of over one-third of the Global 1,000 companies. He also serves on the Executive Board of several companies, associations, and publications.

Dr. Luftman's last responsibility at IBM, after being a CIO, was a key speaker at their Customer Executive Conference Center in Palisades, N.Y. While responsible for management research, he played a significant role in defining and introducing the IT Strategy and Planning, and Business Process Re-engineering practice methods for the IBM Management Consulting Group. His framework for applying the strategic alignment model is fundamental in helping clients understand, define, and scope the appropriate strategic planning approach to pursue. Dr. Luftman's annual global IT trends research sponsored by SIM,CIOnet, and other CIO associations is recognized internationally as an industry barometer.

"IT organizations, with effective leaders have an opportunity to position themselves at the heart of corporate strategy"

About BITTI

The Business & IT Trends Institute (BITTI.nl) is a benchmark, assessment, audit and consultancy organization located in the Netherlands. IT's goal is to be an added value organization towards Business & IT questions organizations have with the instruments benchmark, assessment, audit and consultancy. These services are delivered on a wide range such as alignment, (cyber) security, value of IT and IT costs, governance and other. dr. Barry Derksen (author of this report) is founder and CEO of BITTI.

About GIIM

The objective of the Global Institute for IT Management (GIIM) is to impart a complete, flexible, and immediately actionable set of best practices by an international group of over 250 prominent academics, practitioners, and management consultants, to prepare IT thought leaders and business executives for the challenges and opportunities that lie ahead. The institute provides a comprehensive set of 32 IT management certificates, with each frequently considered as being the single most important educational experience in the attendees' professional life.

The courses within the 32 respective certificates (130 courses) are delivered face-to-face (online is available) in concert with affiliate IT management associations, individual company groups/cohorts, or universities (where Masters Degrees can also be awarded). The learning opportunities are in close proximity to the job, on a just-in-time basis, and integrated into the clients broader learning and development objectives. We partner with our clients to deliver the right solutions to meet their education objectives. See www.globaliim.com.

About CIONET

We are CIONET, the biggest community of IT executives in Europe. Bringing together over 4200 CIOs, CTO's and IT directors from wide ranging sectors, cultures, academic backgrounds and generations, CIONET's membership represents an impressive body of expertise in IT management. CIONET's mission is to feed and develop that expertise by providing top-level IT executives with the resources they need to realise their full potential.

CIONET develops, manages and moderates an integrated array of tools and services from the online CIONET platform – the world's first social network for CIOs – to a range of offline networking events, conferences, workshops and executive education programmes all tailored to top-level management. CIONET also provides exclusive access to the latest research through regular online and offline publications and a number of value adding partnerships with key players from the academic and corporate worlds.

Faced with the rapidly changing role of today's IT executive, CIONET not only helps its members keep up with the pace of change but empowers them to take an active role in shaping the future of their field, always challenging them with "What's next."