

The 2016 Core Facility Benchmarking Study

Conducted by iLab Solutions, part of Agilent Technologies

September 22, 2016

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Introduction

iLab Solutions, part of Agilent Technologies conducted its 6th annual Core Facility Benchmarking study in the first half of 2016. There were 282 responses representing over 50 different core types from 156 institutions. The surveyed individuals directly manage cores, service centers, shared facilities, and recharge centers at hospitals, universities, and research institutions. For this report, “cores” is the general term used when referring to all of these facility types.

This study is conducted annually in an effort to provide a better understanding of how core facilities operate, focusing on core growth and utilization, as well as the common challenges core managers face today.

- Of those surveyed, 54% of cores experienced growth in the number of customers in 2015; this is a 3% higher growth rate than in 2014.
- In 2015, 52% of core income came from customer revenue, the same as the past two years; revenue from institutional support was 30%, 1% higher than 2014. This is the second year showing evidence of growth in institutional support.
- In 2015, core managers said they spent approximately 46 hours per month serving the customer, a 3 hour increase from 2014, whereas they only spent about 12 hours per month on independent research. This continues last year’s trend, though to a lesser degree; core managers reported spending 15 hours per month on independent research in 2014, and 25 in 2013.
- In 2015, managers who used electronic systems for administrative tasks spent an average of seven hours fewer per month on these activities compared to those who use other means, such as manual entry and spreadsheets.
- 84% of cores charge different pricing for varying customer types (e.g., internal, external, corporate); this is a 5% decrease compared to last year’s survey.
- As with previous years, in 2015 most services performed by cores were for internal customers (73%); this number has increased by about 5% from the previous year. The numbers for external academic remained nearly the same this year (12%), whereas work for those with special academic relationships and external corporate customers fell, breaking the trend (14% to 9% and 7% to 5%, respectively).
- Of cores surveyed, 66% said they adjust their rates annually, 26% adjust their rates at other time increments, and 8% said they have never adjusted their rates.

- 56% of cores said there was no tenure for core personnel at their institution, 27% said core directors have tenure, 7% said core managers have tenure, 6% of cores surveyed said technicians have tenure, and another 3% reported having other personnel eligible for tenure.
- The average number of PIs or customer labs served in 2015 is 11.67 per core FTE, up from 7.62 in 2014.
- The following were cited as the top challenges for core managers:
 - Acquiring funding & managing the budget
 - Managing workload and having enough time to get the work done
 - The administrative duties of managing the core

These top challenges are the same as last year's.

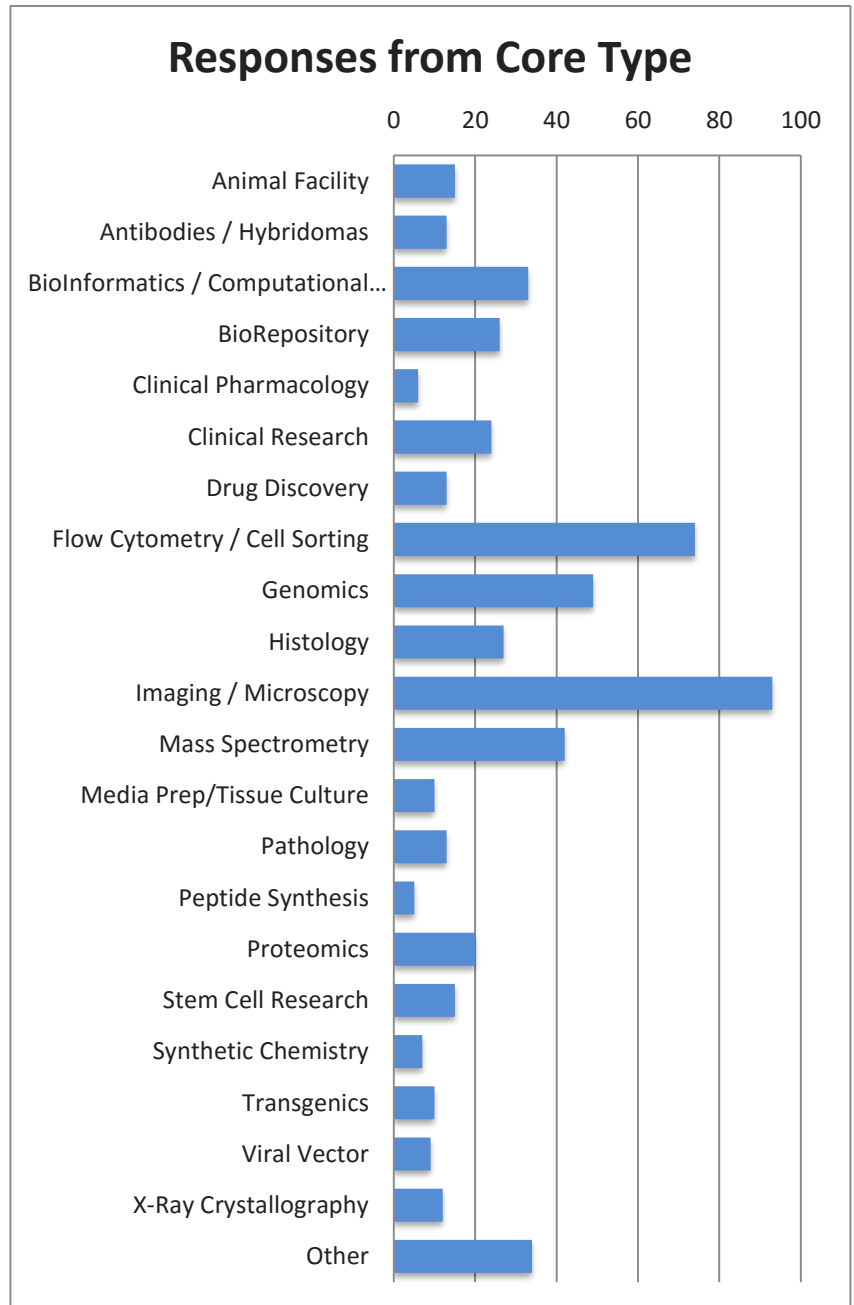
Additional challenges mentioned involve dealing with administration, sustainability, customer management, equipment management, institutional support, personnel management, customer recruitment, proper resources, increasing usage, and staying relevant.

The following pages provide an analysis of the data collected.

Distribution

iLab distributed the survey in early February, 2015 to core managers and directors at hospitals, universities and research institutes. During this time, iLab also distributed the survey through press release listing sites, social media sites, and its corporate website. Furthermore, institution administrators who became aware of the survey sent the survey to their institution core managers. The survey was open for 15 weeks. All data was compiled and the averages are presented in the following pages. The conclusions presented here may not represent any single core.

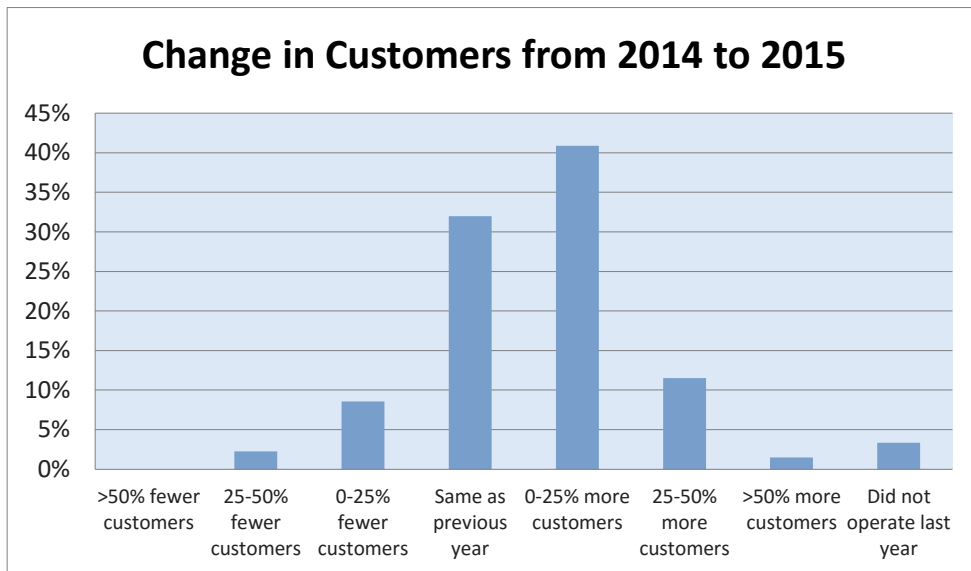
In total, 282 core managers and directors responded to the survey. These individuals come from 156 different institutions throughout the North American, European, and Asia Pacific regions and represent over 50 core types¹. **40% of respondents said they manage cores with multiple foci or manage multiple cores.** In these cases, the responses were only counted once for the overall survey analysis.



¹ "Other" includes cores such as Biochemistry, Biocontainment, Carbon 14 Isotopes, Central Purchasing Agent, CGMP Therapeutic Drug Manufacturing, Chemistry, Drug discovery, Hematology and Chemistry Analyzer, High, Human Embryonic and Induced Pluripotent Stem Cells, Labware processing, Machine Shop, Metabolic Studies, Micro&nano Fabrication, Molecular Biology, Necropsy, Neurobiology, Cellbiology, Nuclear Magnetic Resonance Spectroscopy, Optical Spectroscopy and Separations, PET Nuclear Pharmacy & Cyclotron Facility, RNA Interface, Robotics/Automation, Throughput and Spectroscopy, Transgenics and ES Cell technology, Translational Research, and Virus propagation.

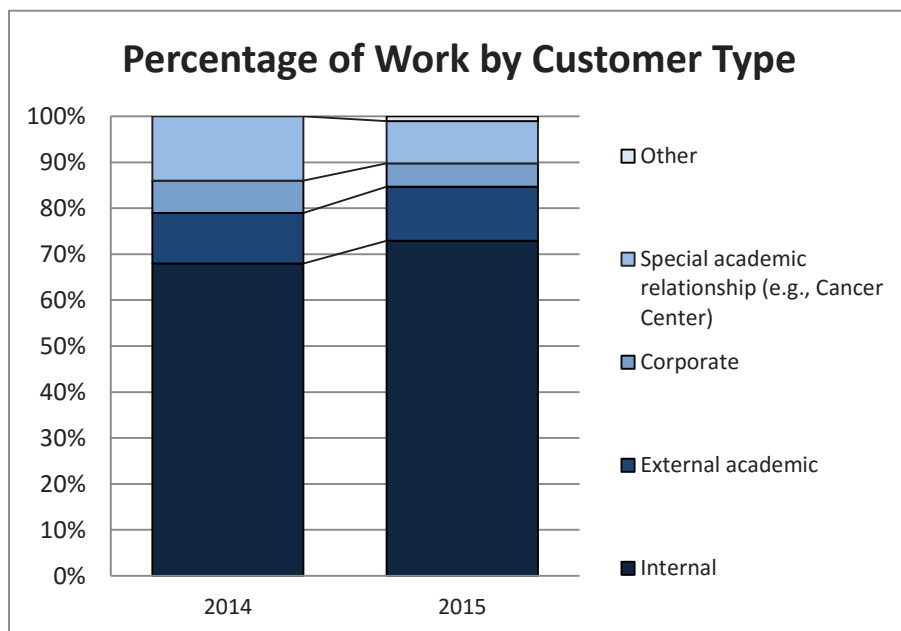
Results of Multiple Choice and Quantitative Questions

CUSTOMER GROWTH

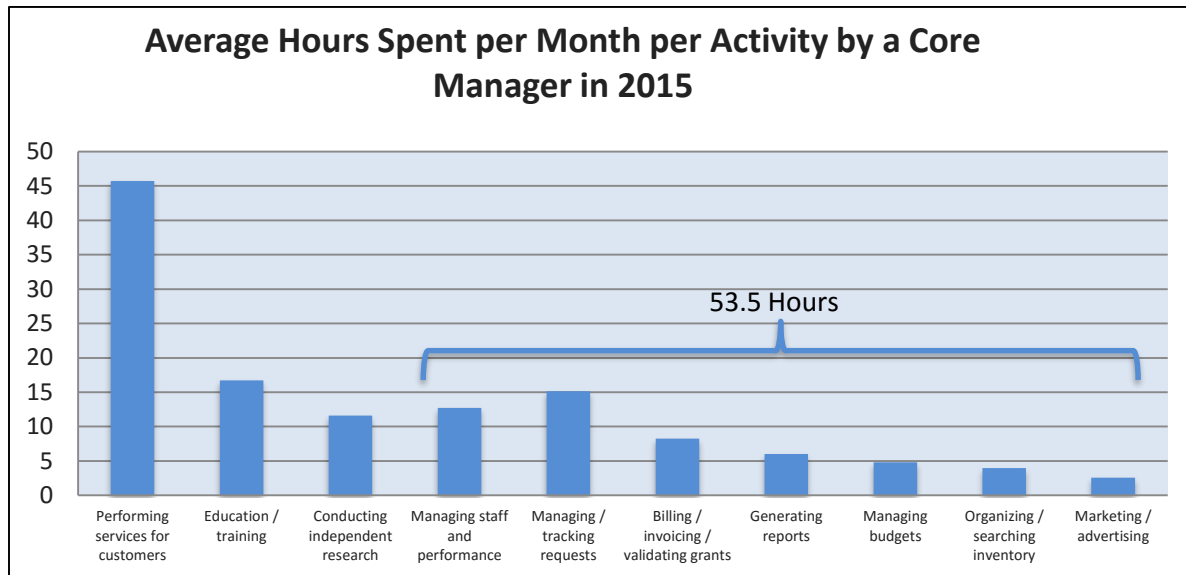


Customers: 54% of cores experienced growth in the number of customers in 2015; this is 3% higher than in last year's study, and the same level of growth seen in 2013.

CHARGING & CORE ACTIVITIES



Customer Type: Cores most commonly serve customers internal to their institution. **On average, internal customers represented 73% of the work performed in 2015; this is 5% higher than the previous year.** The numbers for external academic grew from 11% to 12%, whereas work for those with special academic relationships and external corporate customers have decreased (14% to 9% and 7% to 5%, respectively).

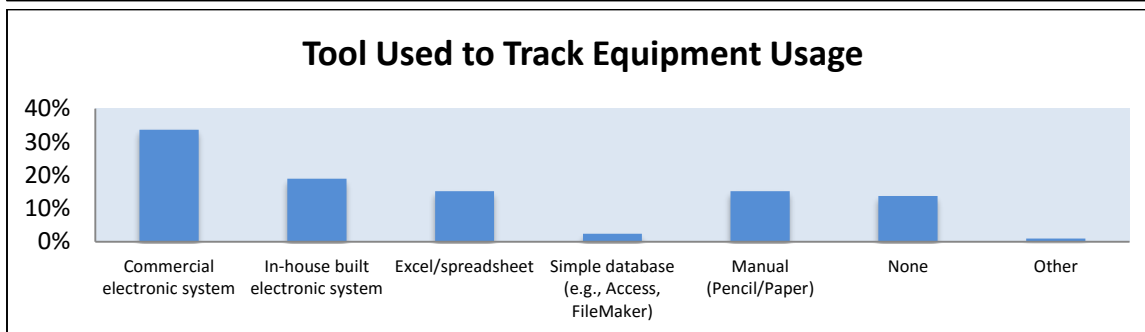
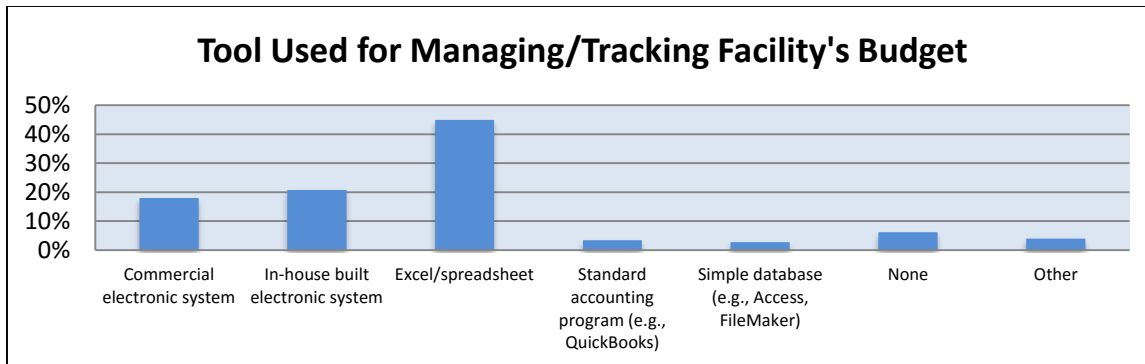
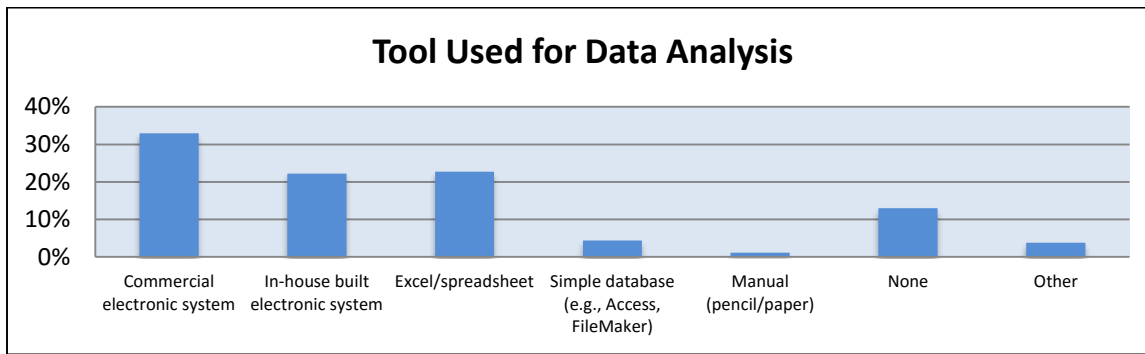
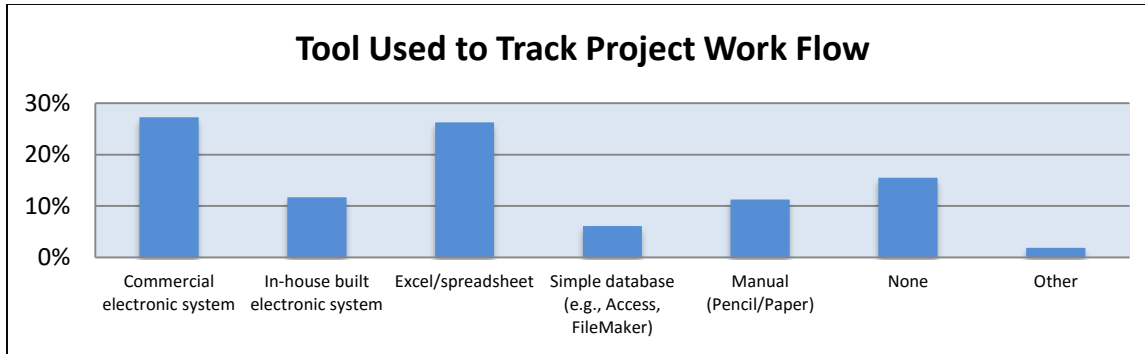


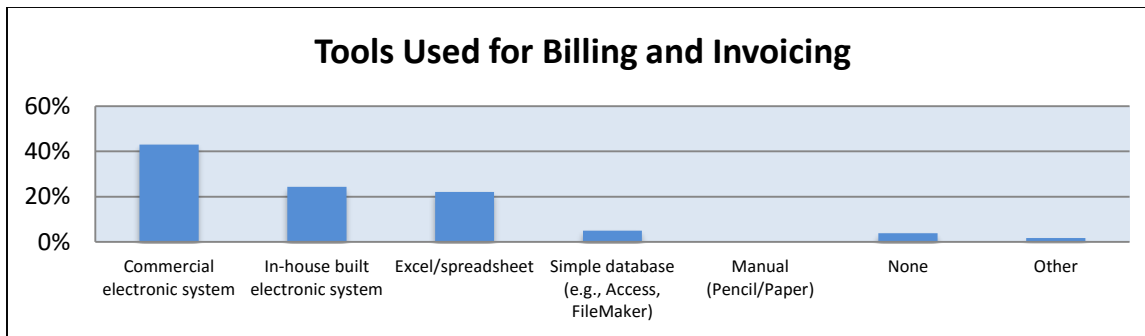
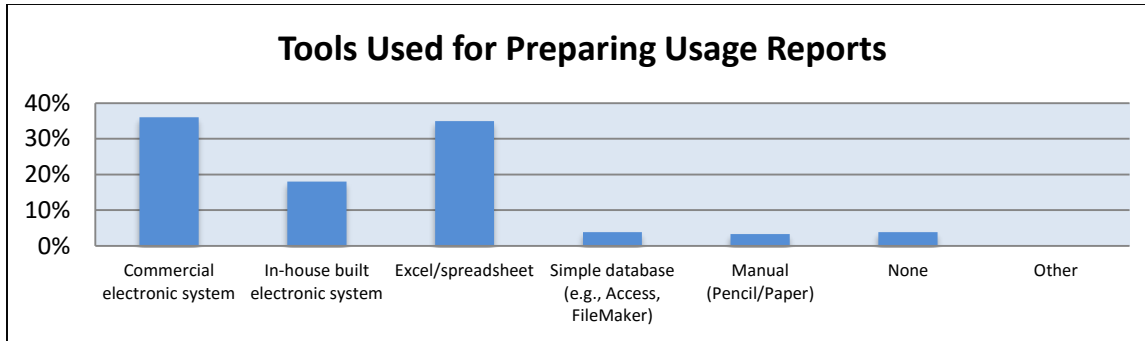
Time Spent: Core managers reported that in 2015 the majority of their time was spent on conducting services for customers (46 hours per month). This is an increase from 43 hours in 2014. Although the majority of time continues to be on research related activities, cores reported spending 53.5 hours per month on managing the core business. This number is equal to 42% of a core manager’s monthly time; a similar result compared to last year’s survey.

OPERATIONAL TOOLS & UTILIZATION

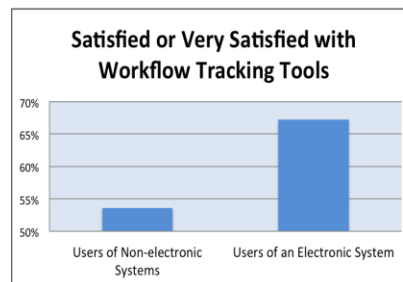
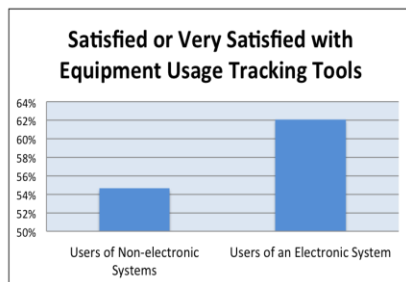
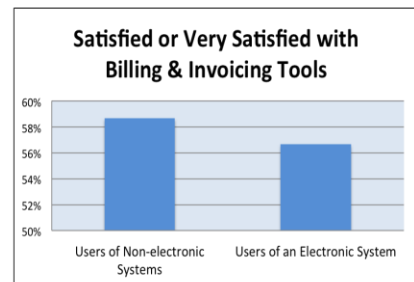
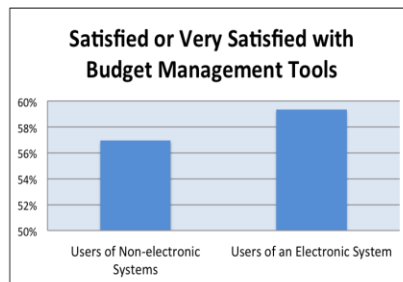
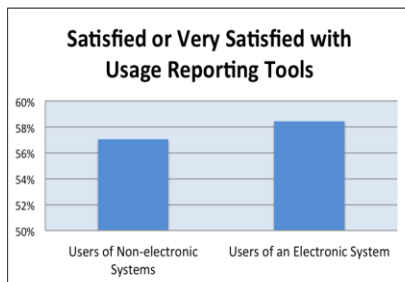
Business Tools: An electronic system is the most common tool used for tracking equipment usage, data analysis, and billing and invoicing. Spreadsheets are most commonly used for managing budgets, and both electronic systems and spreadsheets are frequently used for tracking work flow and preparing usage reports within the core facility.

Time Spent Running the Core with Electronic Systems: The average time spent on the administrative tasks of running a core was 53.5 hours per month for the full data set. When isolating responses from those who use an electronic system, the average time dropped to 50.6 hours per month, as compared to over 57 for those who do not use an electronic system for administrative tasks.

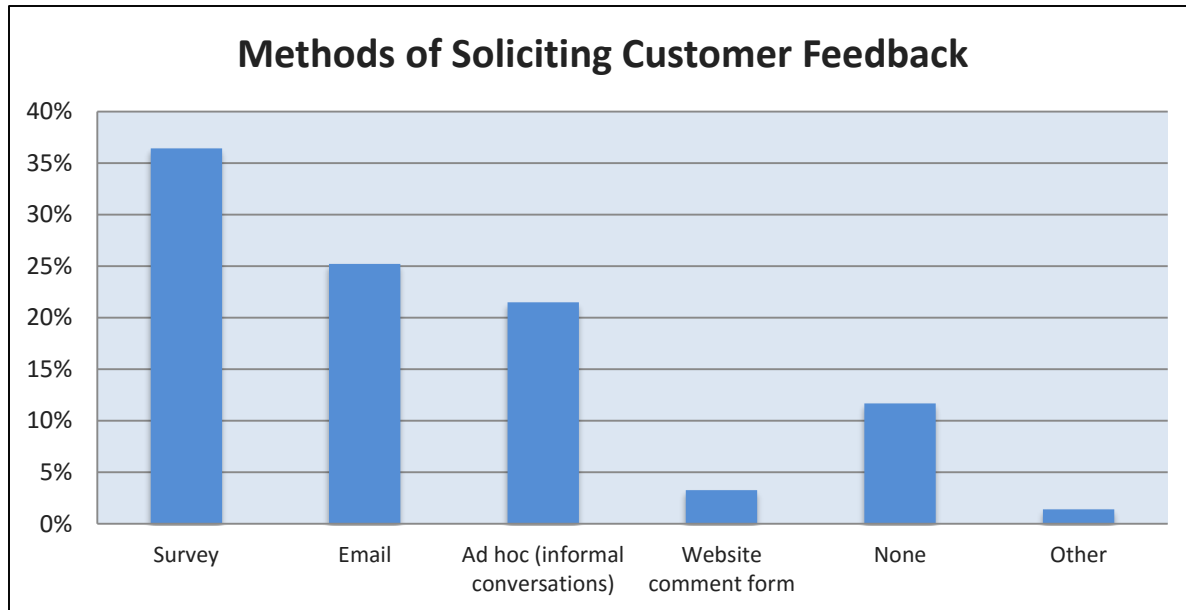




When Isolating responses of those who use an electronic system¹ for tracking equipment usage, billing and invoicing, creating usage reports, managing budgets, and tracking workflow, the overall satisfaction rate increased by 4%.

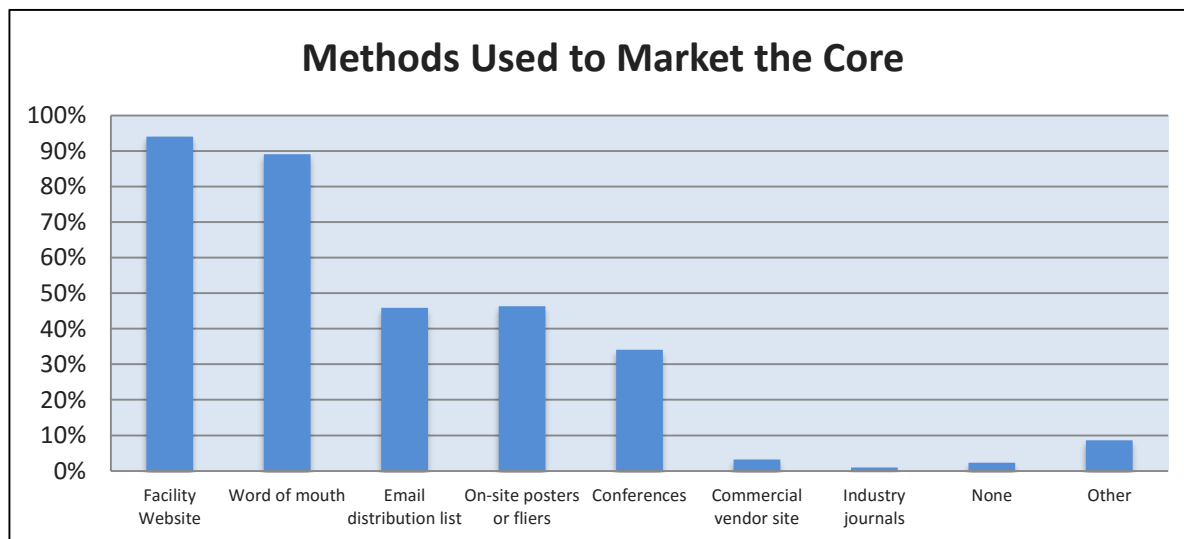


¹ The term “electronic system(s)” includes both commercial software as well as home-built solutions

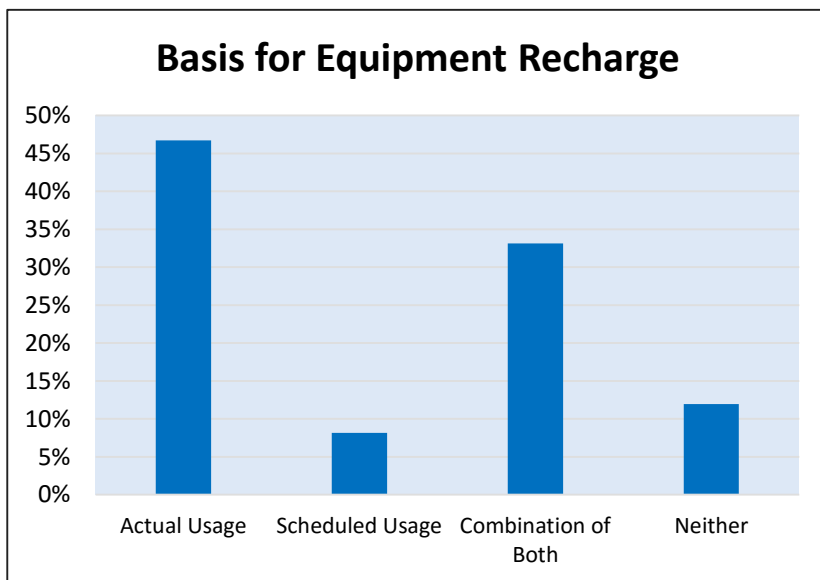
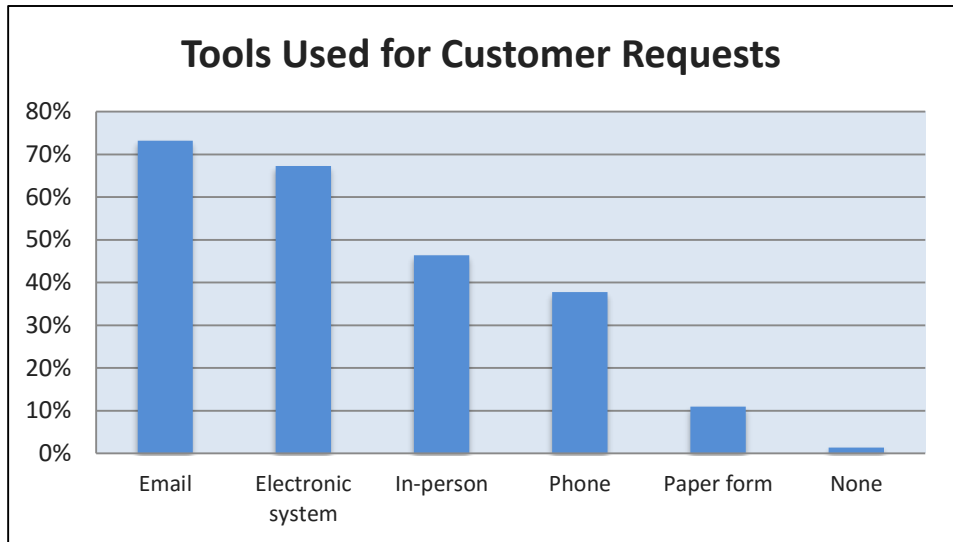


Customer Feedback: For 2015, the pencil and paper method of soliciting feedback has finally disappeared. Additionally, ad hoc fell from the second most common method in 2014 at 26% to the third most common in 2015, at 21%. Survey remains the top method for soliciting customer feedback at 36%.

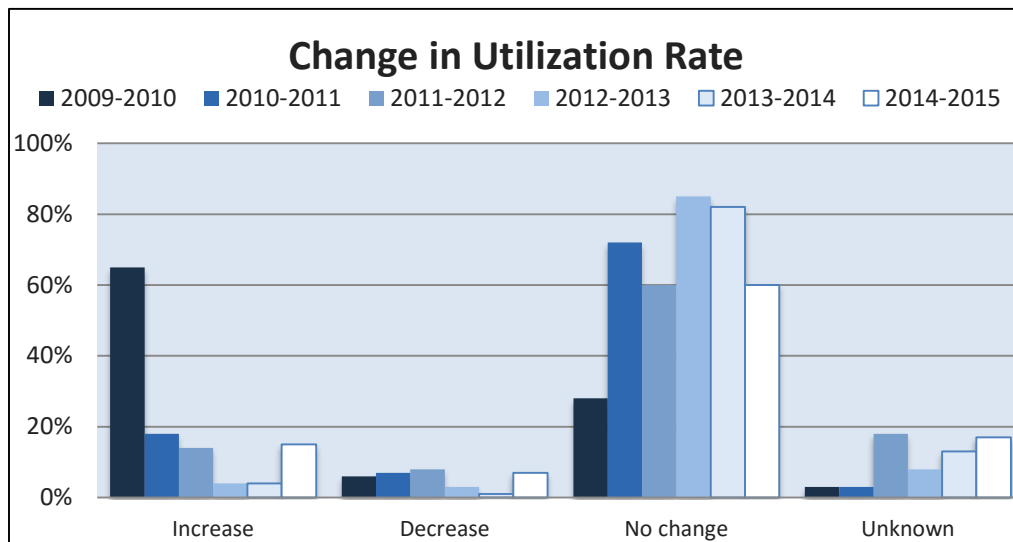
Marketing the Core: Cores tend to market their facility in numerous ways, the most common methods being the facility’s website (94%) and word of mouth (89%). Other ways cores market their services include email distribution (46%), on-site posters (46%), conferences (34%), and other (9%), which includes seminars and workshops, facility tours, on-line databases, and referrals.



Receiving Customer Requests: On average, **73% of cores received their service requests or reservations by email.** Other important methods include an electronic system (67%), in-person conversations (46%), phone (38%), and in paper form (11%).

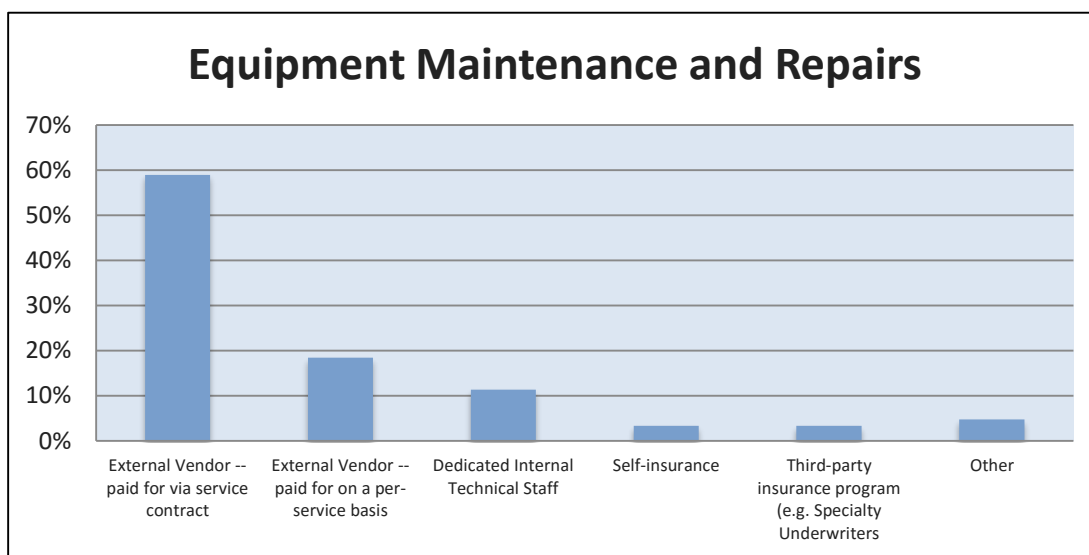


Equipment Recharge: For equipment-based cores, **47% said they base recharge on actual equipment usage.** 8% said they charge for only scheduled time, and 33% said recharge is based on a combination of actual and scheduled usage. This number is up 5% from the previous year. 12% of cores surveyed said they did not charge for actual usage or reserved time, down from last year's figure of 13%. "Neither" included cores that do not charge for services, as well as those that do not allow scheduling.

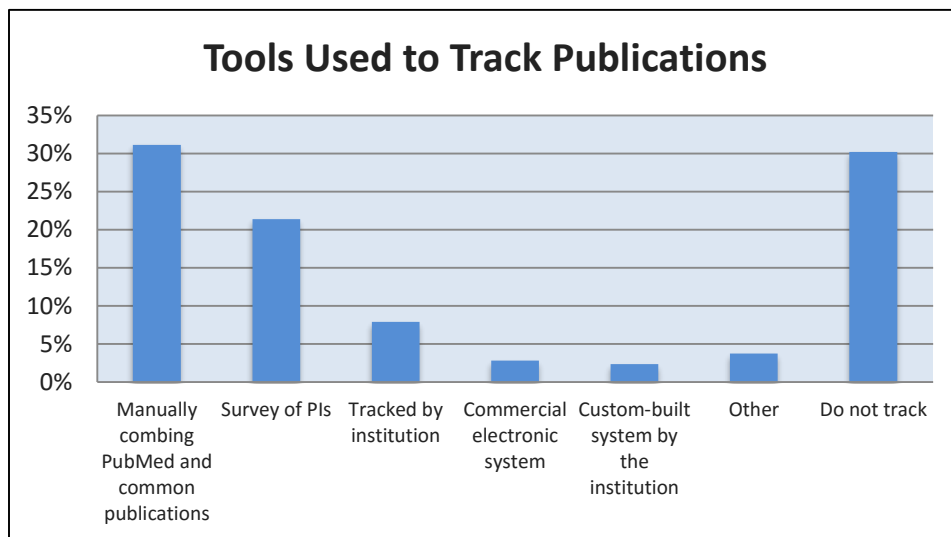


Utilization Rate:
 A majority of respondents (60%) reported no change in utilization from 2014 to 2015. **15%** of respondents reported an increase of change in utilization rate, up from 4% from

2013 to 2014. Positive change this high hasn't been recorded since 2010-2011, in which 18% of cores saw an increase in utilization.



Equipment Repairs: 59% of cores surveyed use external vendors, paid via a service contract, for maintenance and repairs. 18% said they use an external vendor, paid on a per service basis. 11% said they have dedicated technical staff, and 5% said they use "other" means for maintenance, which mainly included a combination of both external vendors and internal technical staff, dependent upon the equipment type.

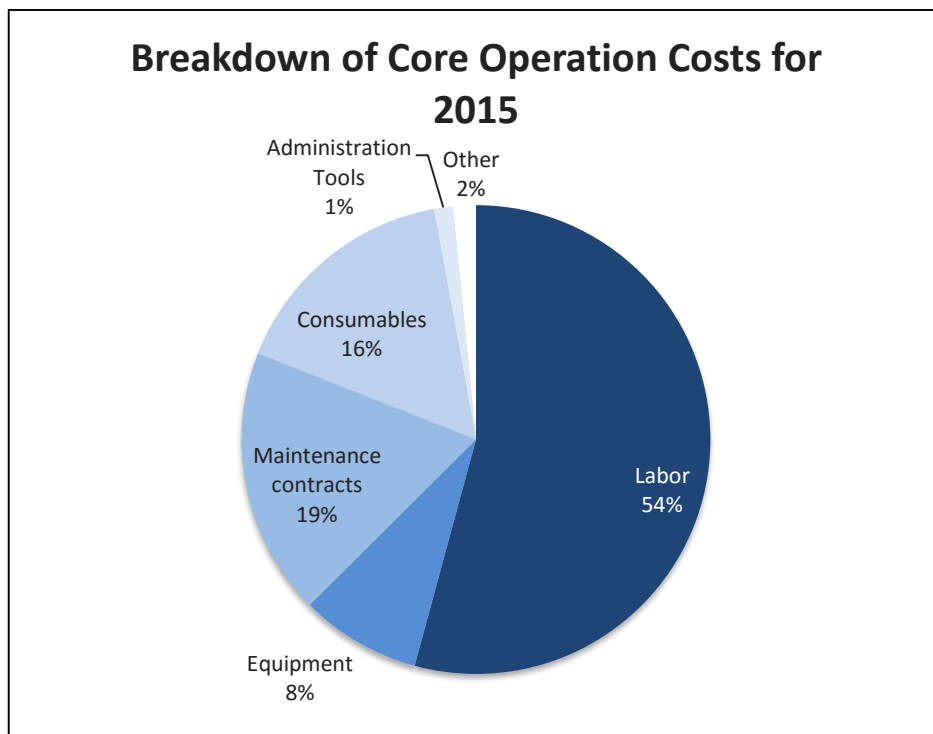


Tracking Published Research: The most commonly reported methods of tracking publications are manually combing PubMed and other common publications (31%) and surveying PI's (21%). 8% said their institution tracks publications for them, and 2% said they use a custom built system

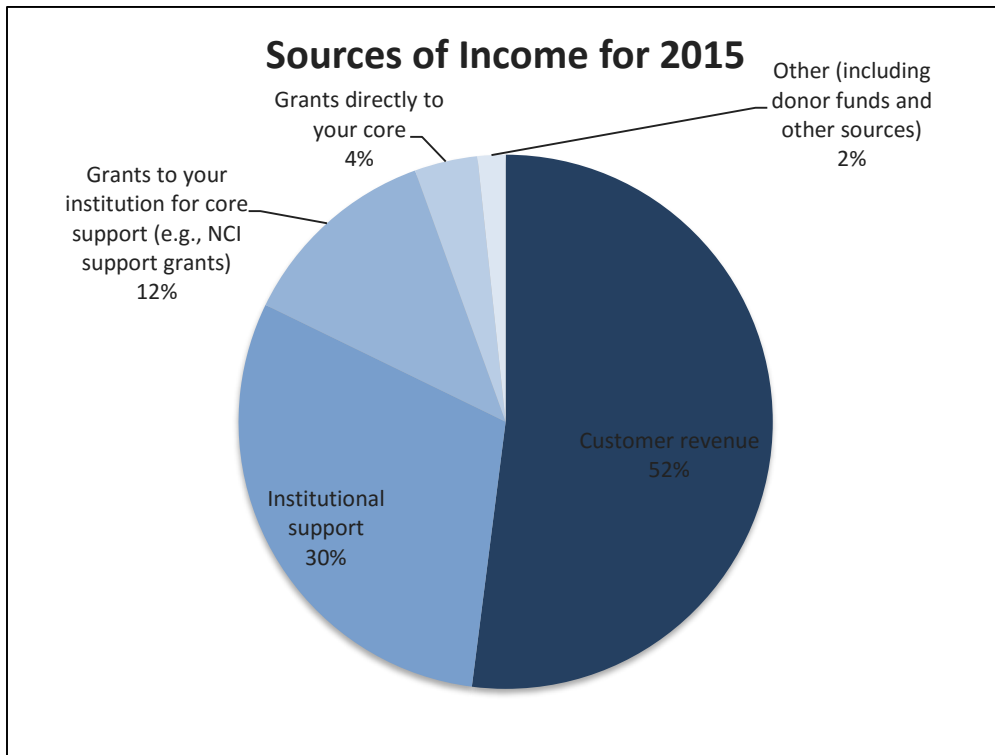
to track publications. As in the previous year, **30% of respondents said they do not track research publications at this time.**

FUNDING & EXPENSES

Costs: When considering total expenses² in 2015, labor was reported as the highest cost to cores, averaging 54%. This is slightly up from 53% in 2014. In 2015, the average cost of maintenance contracts was 19%, consumables was 16%, the cost of equipment was reported as 8%, and administration tools accounted for 1% of operational costs. This number is down from 2% in 2014.

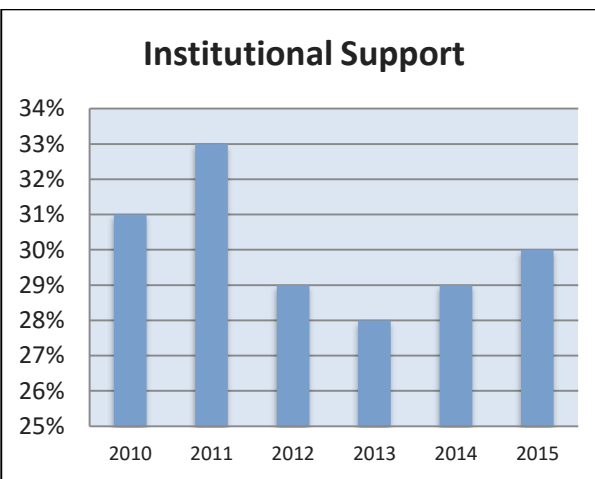
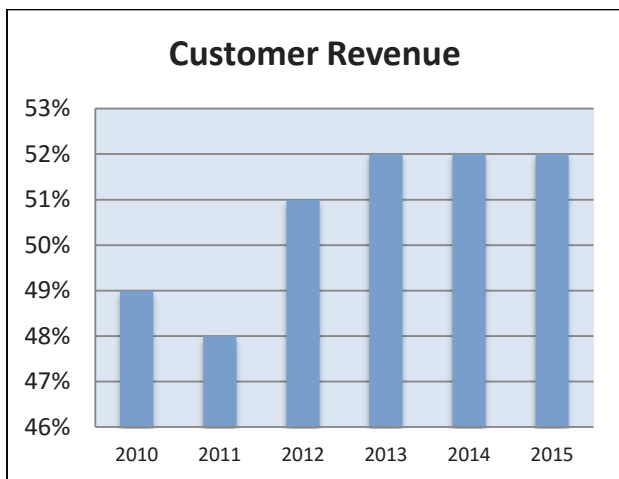


² Capital expenses are not included in this data.



Income: In 2015 the bulk of core income came from customer revenue averaging at 52%. The secondary prominent revenue source is institutional support (such as subsidies) averaging at 30%. The remaining 18% of income came from grants and other funding sources.

From 2011 to 2013, the reported percentage of cores' annual income that comes from customer revenue increased, whereas the percentage of institutional support declined. However, 2014 and 2015 saw customer revenue plateau, while institutional support increased to 30%, the highest since 2011. However, despite its growth, institutional support continues to make up far less of the typical core's revenue compared to what core customers bring in.



FACILITY GOALS



Goals: Cores' top goals for their facility in 2016 are to increase utilization (72%) and grow their internal customer base (71%). Other goals reported are offering new services (61%), increasing revenue (59%), growing the external customer base (44%), and increasing center subsidies (16%). 6% of responses cited "other" goals, which included increasing grant funding, publishing more papers, adding new pieces of equipment, and enhancing educational offerings.

Summary of Results

When asked, “What are your biggest challenges as a core manager,” generating revenue was cited as the top challenge. More specifically, core managers are concerned with “finding funds” and “keeping up with the cost of new technology.”

“How do you get your core to be sustainable?” wrote one core manager. “How do you provide the best service for the lowest cost and still keep the customer happy?” Many managers feel pushed by customers and competition to provide the lowest rates, but this leaves them short on the funds necessary for the latest technology. That very technology, of course, is the backbone of generating core utilization.

Unfortunately, the struggle to attract the very limited dollars of research funding is nothing new. Last year’s survey recorded many of the same complaints, with acquiring funding being the most common challenge for 2014 as well. As discussed last year, the lack of funding starts and perpetuates a downward spiral.

However, the data also suggests some encouraging trends. For example, FTEs are serving, on average, over 4 PIs or labs more than last year (7.62 to 11.67), indicating an overall growth in efficiency. Furthermore, this year’s study revealed the highest percentage of core facilities reporting an increase in usage from the previous year (2014) since 2010-2011. Since customer revenue comprises an average of 52% of a core’s revenue, these statistics are extremely important. Additionally, institutional support has risen for the third year in a row, another promising trend. Institutional support averages 30% of a core’s income. Combine that with the 52% from customer revenue, and that gives a total of 82%. This means that on average, at least 82% of a core facility’s income is increasing. This is certainly a desirable result, given the difficulties faced on a daily basis.

Two other common issues which tied for the second most popular challenge core managers face are “managing the workload and having time to get work done,” and “administrative duties of managing the core.” Core managers are balancing running a core, maintaining up-to-date technology, managing volume requests, conducting research, and running individual labs to name a few. According to this year’s survey an average of 43% of a core manager’s time is spent on administrative tasks, which diverts attention from research. However, this year’s study indicates that an electronic system, be it commercial or homegrown, may very well have a positive influence on a core’s performance. In all tasks observed (data analysis, tracking equipment usage, billing & invoicing, creating usage reports, managing budgets, and tracking workflow) there were around 10% more users of electronic systems than non-electronic, meaning electronic systems are gaining popularity for tackling a range of tasks. Furthermore, overall satisfaction was higher for those with electronic systems in place. While these trends may be new, the combined rise

in popularity of electronic management systems, efficiency, and overall satisfaction bears investigation over the coming years.

About iLab Solutions, a part of Agilent Technologies

iLab Solutions, now part of Agilent Technologies, is the leader in providing web-based management services to academic research institutions with customers that include leading NIH-funded universities, research hospitals, and independent institutes.

iLab offers a suite of web-based tools for academic research management. The functionality includes core facility service request management, enhanced sample management functionality, equipment reservation and usage tracking, billing and invoicing, reporting, and lab requisitioning and spend tracking tools. The system also allows each user a consolidated view of their recent activity in the system as well as the ability to search across all equipment, services and cores in the system.

iLab serves over 160 research institutions across 16 countries, including 34 of the top 50 recipients of NIH funding. iLab has extensive experience providing enterprise-level solutions at major research institutions. These solutions include integrations with institutional financial systems (e.g., SAP, Oracle, PeopleSoft, Lawson, Banner, IFAS, etc.) and identity management systems (e.g., Active Directory, Shibboleth, etc.). iLab's dedicated implementation team and established implementation processes result in high adoption and fully trained personnel for effective use of the system.

In August 2016, iLab was purchased by Agilent Technologies, a leader in life sciences, diagnostics and applied chemical markets. Agilent provides laboratories worldwide with instruments, services, consumables, applications and expertise, enabling customers to gain the insights they seek. Now, as a part of Agilent, iLab adds to Agilent's robust CrossLab laboratory enterprise management capabilities.

Appendix A (*Details of Open-Ended Survey Responses*)³

Q1. What are your biggest challenges?

1. Funding & Budget: (33% of responses)

Annual Funding, competitive funding for staff positions
Anticipating what kinds of service will be most useful for my customers and getting institutional support to get those services in place in time to be useful for most of them.
Balancing budget
Balancing budget while maintaining low prices.
Balancing the need to increase revenues while continuing to offer good value for our users.
Breakeven
Bringing in business and funding
Budget issues

Covering costs of depreciation of high-end instruments, maintenance and service on them and personnel costs. Getting all members of the core to work equally and be efficient. Getting new high impact projects and generating revenue.
Covering the operating costs, most significantly labor
Decreased funding for PI's and PI loss to the institution
Finances Departmental politics
Finding funding to upgrade equipment; Finding funds to have maintenance contracts Finding more internal/external users

Funding staff and equipment
Funding, keeping samples coming in
Get the budget to hire the staff needed to run the core facility; training and development of staff
Getting institutional support to hire more staff
Hourly rate
How do you get your core to be sustainable. How do you provide the best service for the lowest cost and still keeping the customer happy.
Income vs expenses balancing managing personnel
Increasing revenue in climate of decreased institutional support.
Keeping revenue up
Keeping service costs down; Training new users
Keeping the core financially viable
Keeping up with the cost of new technology
Knowing the financial situation; growing the number of users increasing revenue
Lack of budget support.

³ A majority of open-ended responses are included in Appendix A. Some responses were combined to eliminate repetition.

Lack of support

Maintaining the ratio of income to expenses

Making budget

Managing budgets and keeping costs low while generating enough revenue to operate the core.

Managing the budget; Changing institutional demands; Core directors who don't understand the business side of the operations; Demanding PI's who don't know what it takes to run a core Limited budget to acquire personnel and other resources to achieve efficiency and embark on growth Commercial core administration tools that cannot fully be customized to meet our workflows and processes and move us away from the spreadsheet

Meeting budgeted dollars for charge-backs

Obtaining funding for capital equipment.

Obtaining instruments through extramural funding. If I fail my job is at risk. Internal instrument grants have been discontinued.

Raising funds for new equipment and to pay for the service contracts of that new equipment.

Recovering costs within institutional limits; matching personnel resources to dynamically changing projects; tracking data electronically.

Renew equipment, create enough revenue

Revenue and business growth

Salaries for employees, career track for employees

The finances and the user education is all ad hock

To get funding

To maintain level of excellence with vanishing financial and personnel support.

Time and Workload: (14% of responses)

Balancing core management and independent research

Balancing my time between service for the core and running my research lab. Ensuring, instrumentation is up-to-date and accessible to everyone.

Finding time to do independent research

Having enough time.

Having time to integrate new systems.

I am the only employee, so time is a concern.

Managing core workload and my independent research

Managing massive swings in the volume of requests over time. We are either significantly over capacity for months at a time or more under capacity than I would like for weeks to months.

Meeting customer requests in their needed timeframe

Prioritizing the work requests and getting work done in a timely manner.

Time

Time for clients and wet-lab work...stretched too thin.

Time management

Time managing as a manager and grad student.

Time to deal with clients and their inability to easily use ilabs.
Too many grant requests all at the same time and not enough time.
Work load is large and institution will not hire assistant.
Workload

Administrative Duties: (14% of responses)

Advertising & billing
Balancing the use fee accounts
Customer management
Fast response to requests, streamlining data workflow, revenue, keeping instruments running
Increasing administrative duties, reports
Keeping track of usage and making sure data are as good as can be
Keeping up with billing

Keeping workflow even; keeping everyone satisfied with time to data
Manage billing errors.
Management of users and resources
Managing project timelines and expectations; Keeping abreast of best practices
Personnel management
Properly recovering money from outside customers, billing, tracking externals
Reporting
Setting pricing to cover costs exactly in a fluctuating usage model
Tracking projects, invoicing
Tracking publications, equipment funding, getting investigators to use newly purchased equipment
Tracking publications, rate calculations
Training & Education
Training of users or conversely, internal customer support.
Training users and staff to follow procedures.

Maintaining/obtaining technology: (8% of responses)

Acquiring new technology or replacement technology is a difficult. There is no transparent mechanism for replacement of equipment or acquisition of new equipment.
Aligning core technologies with the needs of the researcher.
Bringing on new technology
Equipment maintenance
Having a lemon of a sorter for 2 years, losing client confidence, and having sorting at another institution be subsidized by a donor from my own institution.
Having such a variety of users, aging equipment/instruments,
Keep the instrumentation in excellent working condition.
Keeping current with equipment, software and education without institute support

Keeping equipment maintained (not asked for in time % question, grouped with performing client services). Finding time on equipment from other cores to complete projects
Keeping mass spectrometry instruments running while not being able to afford maintenance contracts.
Keeping on top of new technologies.
Keeping up with technology and keeping it affordable with a "lean" staff.
To purchase new equipment when the existing equipment becomes too old or is no longer supported for maintenance

Increasing Utilization: (8% of responses)

- to maintain existing instrumentation - to maintain and expand user base - to meet administration requests for increasing the income
Attracting new customers
Expanding usage of the facility
Finding external business to keep internal business cost low, in turn, that would increase internal business
Getting enough users at reasonable cost so that we can pay for maintenance and acquiring new equipment
Getting people to use the core.
Having routine usage, not spurts
Increasing utilization of equipment
Keep looking for new customers to replace those who have left or have found a different focus.
Keeping some equipment busy enough to pay for the service contract and core staffing coverage.
Maintaining or increasing usage (this equates to maintaining or increasing revenues)
Outreach to potential customers

Dealing with Administration: (7% of responses)

Convincing Administration of the cores value and that it doesn't "lose money"
Convincing central University administration that dedicated technical staff are required
Dealing with idiotic asshole administrators. The arrogant pis I can cope with, but the stupid budget analysts leave me speechless.
Dealing with non-science bean counters and others that are clueless as to what a core does.
Developing/maintaining relationships with administrators and faculty to balance serving existing customers with future needs.
Lack of administrative support. Lack of funding for new equipment. Lack of resources for educational opportunities for users.
Lack of institution based planning and predictable fixed commitment. Lack of timely budgeting process
Of course managing a facility on a recharge basis isn't any fun. For any given year I have no idea how much income will come in, but that's just the landscape. I have to say, the institution

seems to do everything possible to make it harder though. Almost every interaction is unproductive, rarely does the institution seem to want to help. Really, it seems like the institution would rather we just shut down.

People and upper management that don't follow the rules of the core or make new ones on the fly for special interest groups or Pis

Upper management interference

Staffing: (6% of responses)

Employing staff who already have good experience and will stay for a decent length of time.

Enough personnel to perform all tasks requested

Generally resulting in understaffing which makes it very difficult to meet the demands of the customers.

Finding and keeping good staff

Finding dedicated personnel and cope with request e.g. lowering waiting times

Finding employees that care.

Having a central person to assist with core processing. This has recently changed.

Staff management; finding staff with needed skill set

Staff management/holidays, management of equipment that requires staff to be present

Staff tenure

Staffing to meet user needs. Changes in discipline areas.

Miscellaneous: (10% of responses)

Finding software that fits what we do - since we are not a biological core but a user fabrication and user facility.

Getting individual core directors to write SIG grants

Getting the reporting data we need out of ilab. At minimum, need all existing fields to be exportable. More user-defined fields, e.g. Labels on rates, would be super helpful.

Having users respecting the schedule

Integrating new users into workflow

Interacting with other facilities and capturing data to share amongst the facilities

Keeping customers happy

Maintaining sample load

Managing hospital users attempting to use ecores/ilabs when they don't have access and also getting prints done on time.

Managing scheduling.....ilabs is complicated and slow. Many entries require 2 and 3 repetitive attempts for completion

Managing the access to user tools

Sorter scheduling, user training in advanced multicolor panels, instrument repair

Spending more time to generate billing in ilabs than to generate billing in previous system.

Spending more time to explain to users how to use ilabs. Users are confused by ilabs and its lack of flexibility in describing the production of unique, custom, animal models that are never the same as any other model produced before.

Start up

Substantial income for self support of all expenses along with labor.