



Analysis of I.T. in the Health Care Industry

I.T. Trends and Analysis for
Decreasing Risk, Reducing Costs, and
Increasing Profits

I.T. Analytics for the Healthcare Industry

WHAT DOES THE DATA SAY?

HEALTHCARE EXPENDITURE

According to a report published by Centers for Medicare & Medicaid Services' (CMS) Office of the Actuary (OACT), healthcare expenditure in the U.S. is expected to grow at a rate of 5.6% year-on-year in from 2016-2025. The same report estimates that the share of healthcare as a percentage of GDP to increase from 17.8% in 2015 to around 20% by 2025.

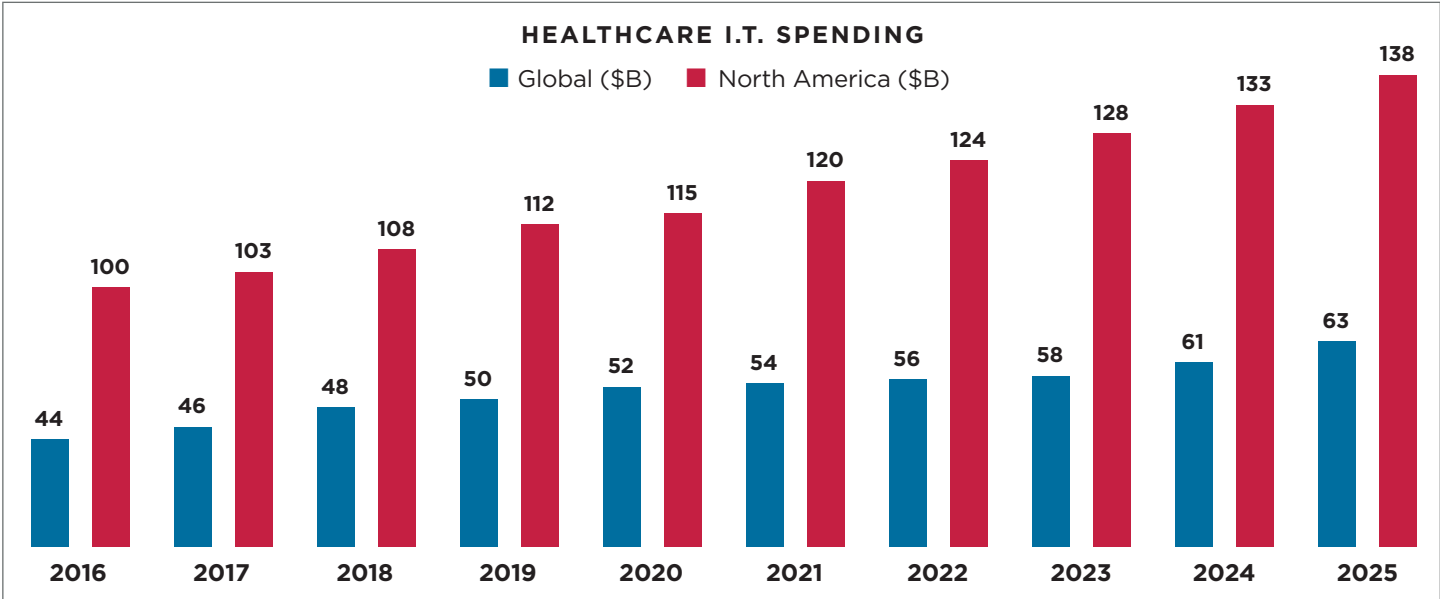
With a steady growth rate within the healthcare industry, investment in I.T. systems is also growing. Higher costs, messy and incompetent delivery systems, high medical errors rates, poor patient care coordination, lack or unavailability of information to support effective decision-making, and an urge to provide better patient care are some of the reasons for growth in I.T. spending in the healthcare sector.

Even with increased spending and technical advances within the healthcare industry, there are problem areas which require attention. According to a report by National

Health Council, around 40% of physicians mentioned that their patients had a difficult time in receiving specialized medical tests. Less than 50% of doctors could provide same-day appointments, and only 25-30% had proper information on the patient when they went to an emergency room. Healthcare organizations are increasingly using Information Technology to solve these persistent issues.

HEALTHCARE I.T. SPENDING

I.T. spending by healthcare providers is continuously rising as they move from carrying out organization-wide electronic health record (EHR) initiatives to complementing those EHR systems with I.T. analytics and patient care management facilities. To be effective with I.T. strategies, top executives are trying to use mature budgeting practices for I.T. systems so that it reflects in business transformation and revenue growth.



I.T. SPENDING BY U.S. HEALTHCARE ORGANIZATIONS

On average, Healthcare organizations in the United States spend around 2.5%- 2.8% of their total revenue on I.T. related systems, which is much below the global healthcare industry of approximately 3.5%. In North America as a whole, the average healthcare industry spending on I.T. is about 3% to 3.2%.

CURRENT AND FUTURE I.T. SPENDING

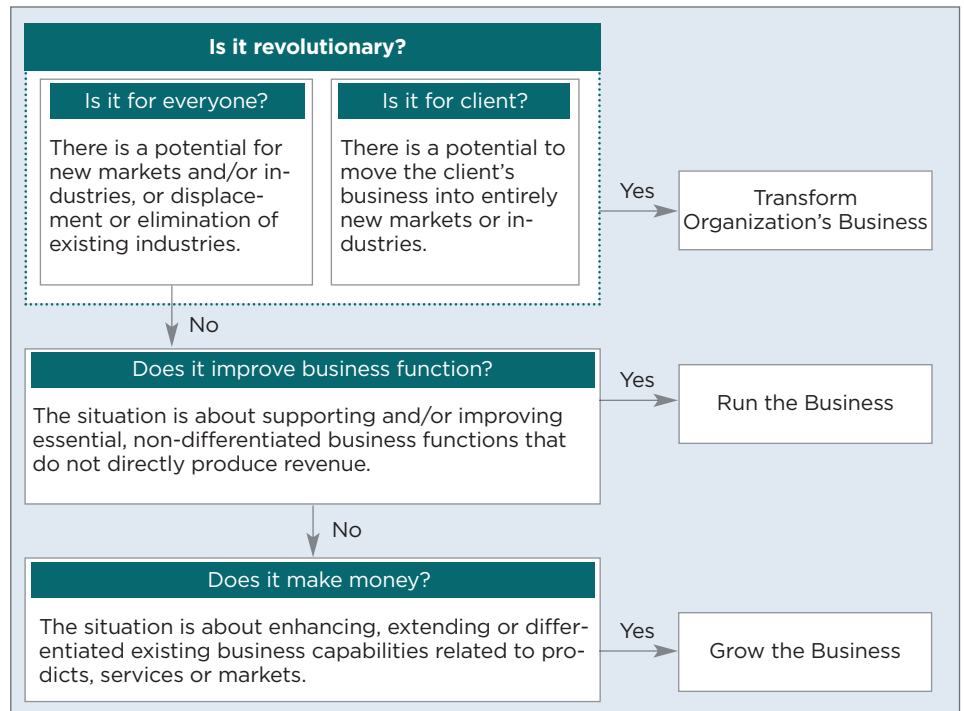
In 2018, global I.T. spending is expected to reach \$108 billion; that growth is estimated to continue at a compound annual growth rate (CAGR) of 3.65% to reach \$138 billion by 2025. In North America, healthcare organizations are expected to spend \$48 billion by the end of 2018. I.T. spending in North America is expected to grow at a CAGR of 4.12% to reach \$63 billion by the end of 2025. North America alone has a share in the range of 44% - 46% of the total I.T. spending worldwide.

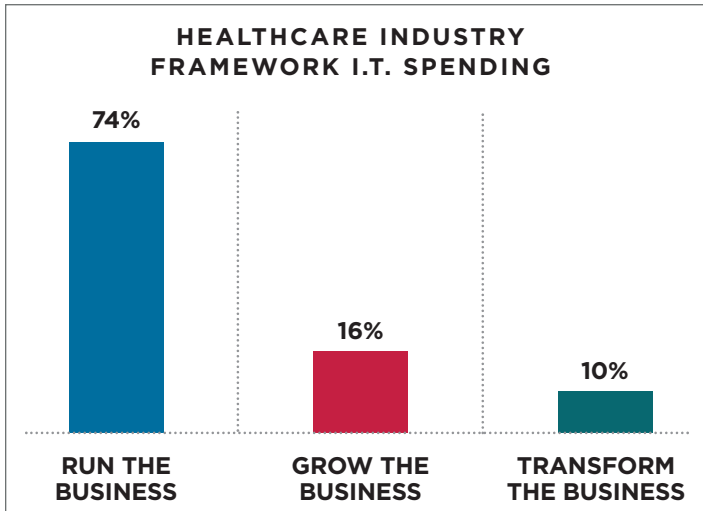
I.T. SPENDING DECISION TREE

According to Gartner, the *run, grow, and transform the business* framework is the beginning point for the overall process of calculating, predicting, and communicating I.T. value for any healthcare organization. Healthcare organizations can utilize *the run, grow, and transform* framework at a macro level, which can help organizations in

outlining their I.T. investments and its projected impact on the business operation.

Per Gartner, the early language and metrics used for an organization's value creation are essential success factors for the organization and its ability to make better decisions related to I.T. investments.





I.T. SPENDING BY THE FRAMEWORK

According to the framework created by Gartner, I.T. spending by *run the business*, *grow the business*, and *transform the business* initiatives together give an idea of the level of I.T. investment required to support business operations. It is always advisable to separate I.T. spending into business performance categories to measure the ROI and to plan appropriate future investment within the three I.T. categories mentioned below:

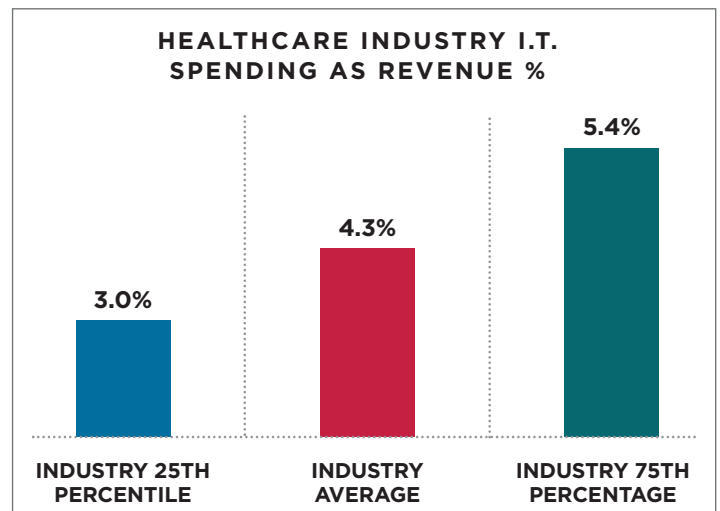
- Run the business:** *Run the business* measures total allocation of I.T. resources for the proper functioning of the business operation. It comprises of nondiscretionary expenses that are associated with the cost to run the business. Expenditures in run the business do not directly result in an increase in revenue, but instead support the smooth functioning of the system.
- Grow the business:** *Grow the business* measures the total I.T. resources allocated for developing and enhancing I.T. systems growth of the organization. Grow the business is mostly associated with the organic growth of the company.
- Transform the business:** *Transform the business* measures I.T. resources allocated for implementing I.T. systems that can help the organization in executing new and better business models based on the changing needs of the market.

As mentioned in the graph above, for healthcare providers the industry average I.T. spending to *run*, *grow*, and *transform* the business is 74%, 16%, and 10% respectively.

I.T. SPENDING AS A PERCENT OF REVENUE

“I.T. spending as a percentage of revenue” is one of the metrics most commonly used to get an idea of a healthcare organization’s I.T. spending. I.T. spending by healthcare organizations ranges from 3% to 5.4%. On an average, the industry spends 4.3% of the company’s revenue on I.T.-related activities, while the top 25% of companies (regarding I.T. spending) spend 5.4% of the total revenue in this area. I.T. spending as a percentage of revenue helps an organization in examining the competitiveness of investment levels concerning its competitors and the overall industry.

One point that must be considered here by healthcare organizations is that spending as a percentage of revenue alone does not provide a reason for why a given expense has been on the higher or lower side than the industry average, and neither does it show the contribution of I.T. to business performance. Therefore, it is advisable to use this metric in combination with others to gain a full picture.





Our business could not function properly, on a daily basis, without the ongoing support and expert I.T. advice/guidance provided by JMARK. We are incredibly thankful that they are one of our business partners.

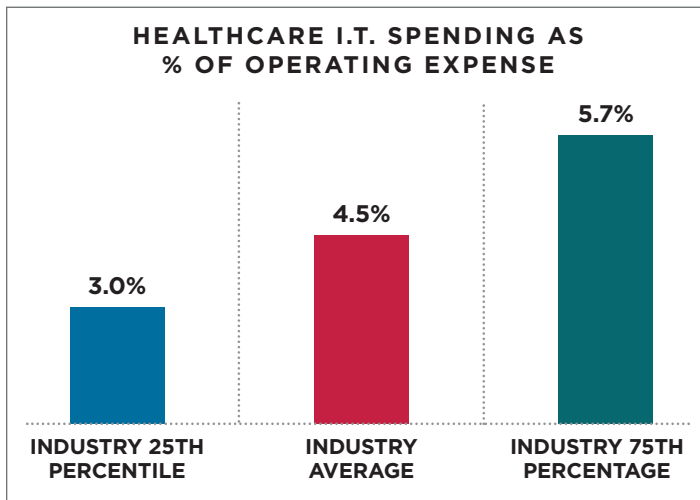
Winn Jester
Grove Pharmacy

I.T. SPENDING OVERVIEW	
Metrics	Healthcare Providers Industry Average
I.T. Investment Metrics	
I.T. Spending as a % of Revenue	4.3%
I.T. Spending as a % of Operating Expenses	4.5%
I.T. Spending per Employee (USD)	6,820
I.T. Spending by Funding Source	
Formal I.T. Budget	78%
Business Unit I.T.	15%
Shadow I.T.	7%
I.T. Spending by Accounting Category	
I.T. Capital	25%
I.T. Operational	75%
I.T. Spending by Asset Class	
Hardware	18%
Software	26%
Personnel/Occupancy	40%
Outsourcing/Third-Party I.T. Services	16%
I.T. Spending by Strategic Category	
<i>Run the Business</i> I.T. Spending	74%
<i>Grow the Business</i> I.T. Spending	16%
<i>Transform the Business</i> I.T. Spending	10%
I.T. Spending by I.T. Functional Area	
Data Center	20%
End User Computing	10%
I.T. Service Desk	5%
Network	13%
Application Development	9%
Application Support	32%
I.T. Management, Finance, and Administration	11%
I.T. Staffing	
I.T. Full Time Equivalents (FTE) as % of Total Employees	3%
I.T. Staffing by Source	
Insourced FTEs	89%
Contract FTEs	11%
I.T. Staffing by I.T. Functional Area	
Data Center	11%
End User Computing	11%
I.T. Service Desk	10%
Network	7%
Application Development	13%
Application Support	35%
I.T. Management, Finance, and Administration	13%

The above table is adapted from “Gartner I.T. Key Metrics Data” published in Gartner I.T. Budget. It gives an idea of I.T. spending by healthcare organizations (industry average); it can be used by organizations to plan their annual I.T. budget and can help in comparing the company’s I.T. budget allocation against the industry average.



HEALTHCARE I.T. SPENDING AS % OF OPERATING EXPENSE



I.T. SPENDING AS A PERCENT OF OPERATING EXPENSE

“I.T. budget expressed as a percentage of operating expense” is another valuable metric to get a view of the depth of I.T. investment and its importance in the overall business process. Though revenue is dependent on external factors, the operational expense is mostly reliant on what the organization needs in order to function. Operational expense remains predictable and consistent throughout the year. As the organization controls the operating cost, analyzing I.T. spending in regards to operating expense gives a better understanding of I.T. investment strategy.

I.T. spending as a percentage of operating expense ranges from 3% to 5.7%, with an industry average of 4.5%. Healthcare organizations with a higher percentage of I.T. investment consider I.T. as a strategic enabler, which can improve the performance and productivity of the business operation.

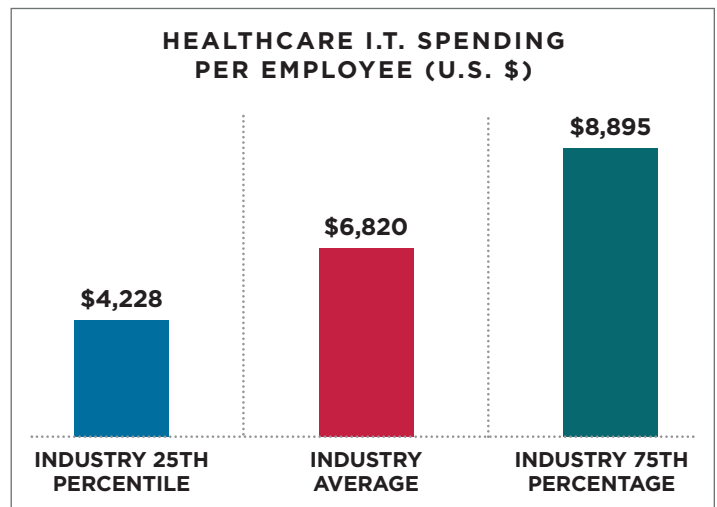
I.T. SPENDING PER EMPLOYEE

The quantity of I.T. support an organization's employees receive is often determined by I.T. spending per employee. I.T. spending per employee creates a relationship between investment in I.T. and level of automation, which helps and supports employees. Disparities in this metric can represent a very specific product or service delivery process, and hence, this metric should be considered in combination with revenue and operating income per employee.

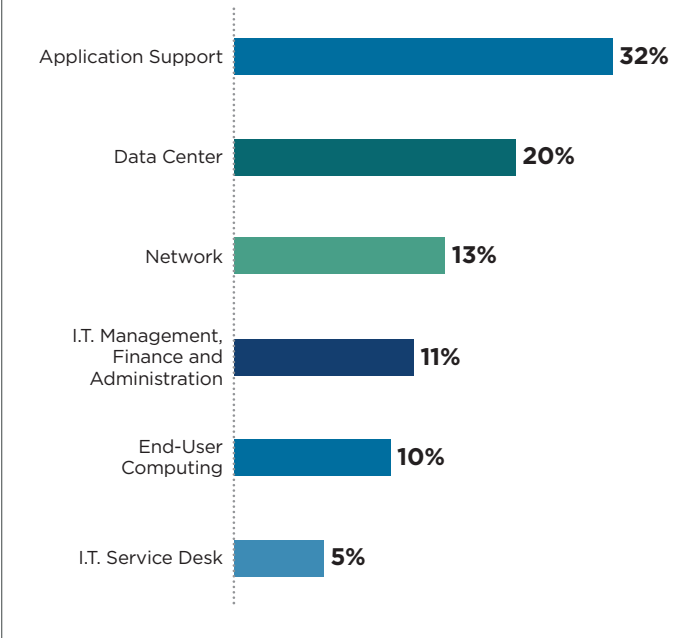
Higher I.T. spending per employee can sometimes be considered a negative trend, but this may not always be the case, as a reduction in the number of employees can also lead to an increased I.T. spending per employee.

Industry 25th percentile for healthcare I.T. spending is \$4,228; while the industry 75th percentile is \$8,895. The industry average is \$6,820.

HEALTHCARE I.T. SPENDING PER EMPLOYEE (U.S. \$)



SPENDING BY FUNCTIONAL AREA HEALTHCARE INDUSTRY AVERAGE



SPENDING WITHIN I.T. FUNCTIONAL AREA

Functional areas within I.T. include application development, application support, data centers, end-user computing, I.T. service desk, and the network. A better analysis of the I.T. spending by its functional areas helps CIOs in understanding the cost associated with each functional area, which in-turn will assist them in managing the cost and better allocation of funds to support the functional areas.

Better knowledge of I.T. expenses within these functional areas helps in allocating the appropriate number of I.T. resources required to support the I.T. system. This is mostly carried out when “implementation of I.T. resource” planning is under process. At that time, annual budgeting and employee resource allocations can be observed with respect to I.T. infrastructure investment (which includes data centers, end-user computing, I.T. service desk, and network) versus applications (application development and support) versus I.T. overhead (administration, finance, and management related to I.T.).

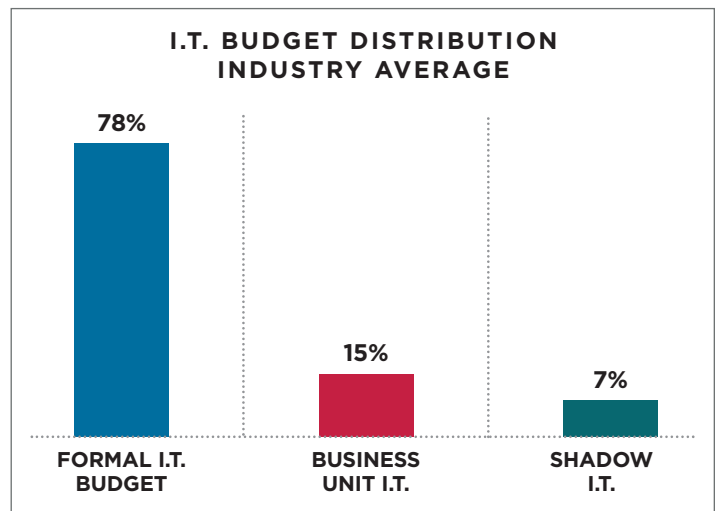
From the healthcare industry’s point of view, on average among all the functional areas, I.T. spending is highest for application support (32%). This is followed by data centers (20%); networks (13%); and I.T. management, finance, and administration (11%).

I.T. BUDGET DISTRIBUTION - OVERVIEW

Spending in I.T. can originate from several sources within the organization and is not restricted to just the formal I.T. budget. It can include expenses within the business unit and *shadow I.T.* These areas are defined as follows:

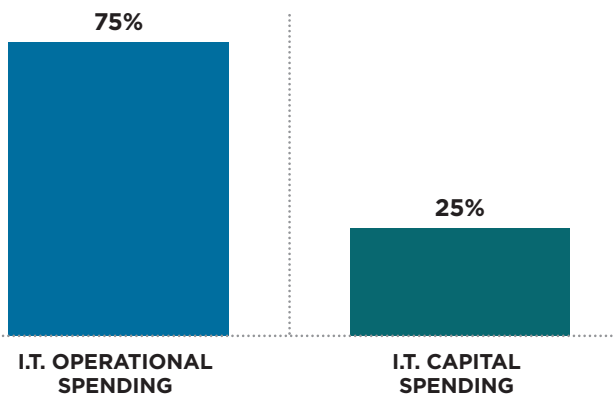
- **Formal I.T. budget:** The budget allocated to the I.T. department. The I.T. department is accountable for all the assets and services related to I.T.
- **Business unit I.T.:** Profit centers are responsible for the I.T. spending. For this group, the I.T. team is referred to as the subject matter expert, and the communication flows both the ways.
- **Shadow I.T.:** Spending on I.T. within the organization, but the I.T. department is not accountable for this outlay. I.T. team may or may not be aware of the spending, but they would not have ready access to proper information about these expenditures.

Formal I.T. budget accounts for 75% of the total I.T. spending, while business unit I.T. and *shadow I.T.* account for 15% and 7% respectively. Tracking how much is spent outside of the formal I.T. budget helps CIOs to get a clear picture of the exact amount spent on I.T. so that necessary steps can be taken if required. Creating the right mix of formal, business unit, and *shadow I.T.* budget is essential. Outlining “the right mix” is dependent on the specific needs and goals of the organization as a whole.





**HEALTHCARE PROVIDERS
INDUSTRY AVERAGE**



I.T. BUDGET DISTRIBUTION - OPERATIONAL VS. CAPITAL

From the above chart, one can see that healthcare organizations have a significant focus on operational I.T. budget rather than capital I.T. Just 20% of I.T. budget is directed towards larger capital projects while a significant 80% of the budget is spent on operational I.T. This spending pattern draws an important analysis, i.e. most healthcare organizations focus on the operational aspect of maintaining the I.T. system and are not very keen on spending money to develop something new. This is the main reason why spending on capital I.T. projects are lagging, as CIOs are happy with the current system and are not open to creating innovative or new I.T. systems. Another reason for a lesser focus on capital spending is that most healthcare organizations have limited I.T. budgets, making it difficult to spend on updated I.T. systems.

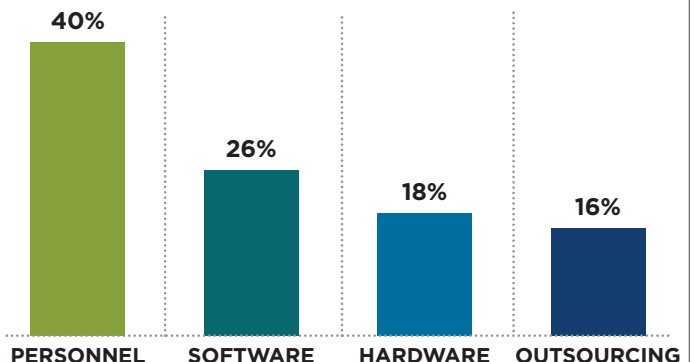
I.T. BUDGET DISTRIBUTION - HARDWARE, SOFTWARE, PERSONNEL, & OUTSOURCING

Software, hardware, personnel, and outsourcing are the four major areas of I.T. spending. A better view of the amount spent on these four areas can clarify the I.T. investment strategy concerning insourcing (which includes resources like hardware, software, and personnel and facilities costs) and service delivery by third-party vendors.

Depending on the level of money reserved for third-party outsourced services, an increase or decrease in third-party services will have an opposite effect on expenditure related to hardware, software, etc. The cyclical nature of investments in hardware and software plays a vital role in the healthcare organization's annual I.T. spending outlay.

Based on the above graph, within the healthcare organization, personnel (which includes facilities costs) gets the highest I.T. budget (40%), it is followed by software, hardware, and outsourcing with 26%, 18%, and 16% respectively.

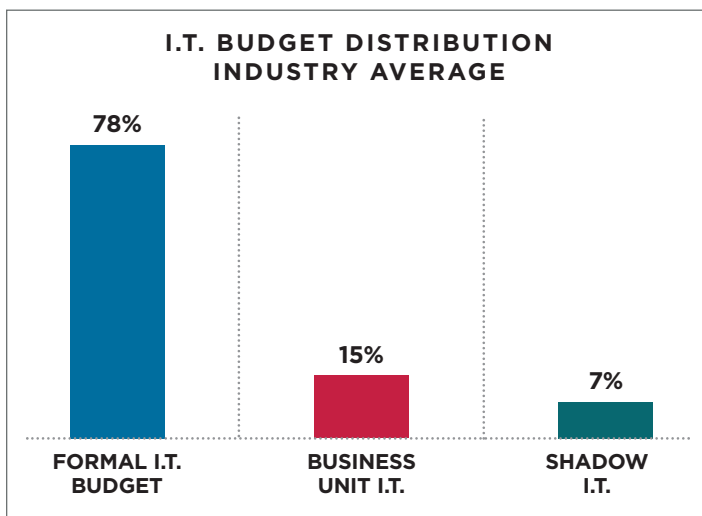
**I.T. DISTRIBUTION
INDUSTRY AVERAGE**





JMARK always delivers over and above my expectations and I would highly recommend them to anyone looking for Managed I.T. Support Provider services.

Deina Rockhill - Flint Hills Community Health Center



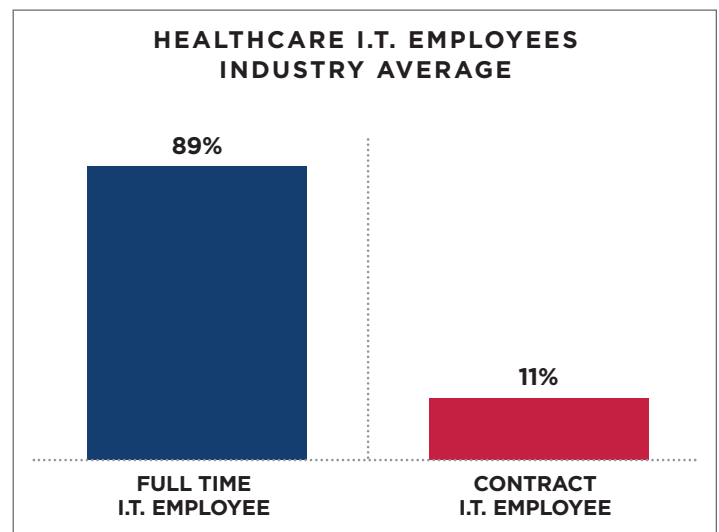
TYPE OF I.T. STAFF: FULL TIME EMPLOYEE VS. ON CONTRACT

Analyzing the percentage of the full-time I.T. employees versus the percentage of I.T. employees on contract can help in understanding the I.T. staffing strategy. Having employees on contract can be a good strategy for keeping flexibility and swiftness in an uncertain and constantly changing business environment. However, it also comes with its own expense, as having a larger number of contract employees for a longer duration of time can hamper the growth of the I.T. team, and systems may suffer because of limited adaptation to the changing environment and business needs.

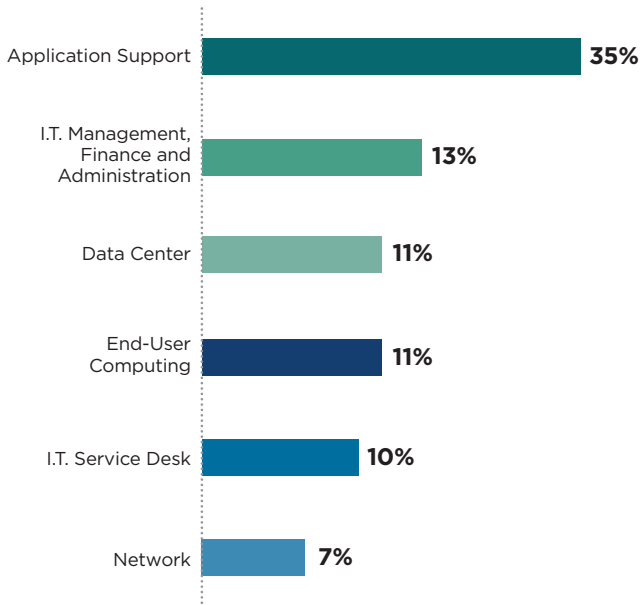
I.T. STAFF AS PERCENTAGE OF TOTAL EMPLOYEES

“I.T. staff as a percentage of overall employees” is an important metric for I.T. support investment from an HR perspective. Having a clear view of the number of employees on the I.T. team is essential in analyzing if that amount is sufficient to maintain the day-to-day functioning of the company. It must be measured within the context of the overall sourcing strategy and future goals and objectives. Other metrics that should be considered along with I.T. staff as a percentage of total employees include full time I.T. employees versus contract employees, and outsourcing of I.T. related works as a percentage of overall I.T. spending.

In the healthcare industry, the average number of I.T. employees as a percentage of overall employees is around 3%, while industry 25th percentile is 2.2% and industry 75th percentile is 3.5%.



I.T. STAFF BY FUNCTIONAL AREA HEALTHCARE INDUSTRY AVERAGE



I.T. STAFF BY FUNCTIONAL AREA

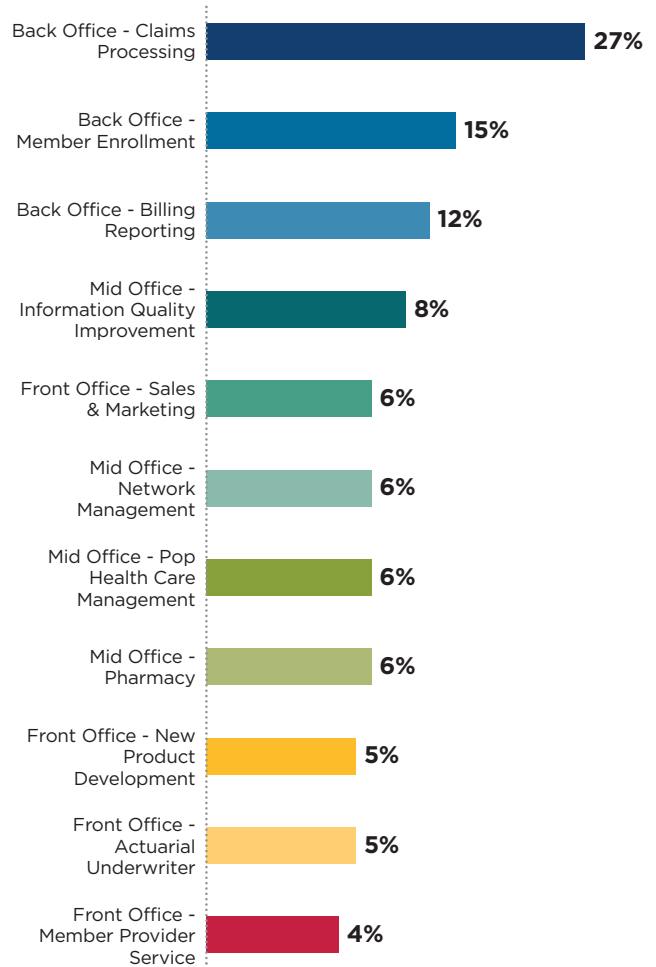
Knowledge of the number of I.T. employees by functional area within I.T. gives a clear picture of I.T. resource requirement within the broader I.T. portfolio. The “percentage of I.T. employees by functional areas” metric gives an idea of the most resource-intensive I.T. functional areas. As shown in the graph, on an average within healthcare organizations, application support (35%) requires the maximum I.T. resources. The top four resource-intensive I.T. functional areas after application support are I.T. management, finance, and administration (13%); application development (13%); data centers (11%); and end-user computing (11%). The degree to which healthcare organizations outsource I.T. services should be considered after measuring both the cost and I.T. staffing allocations.

I.T. SERVICES EXPENSE DISTRIBUTION

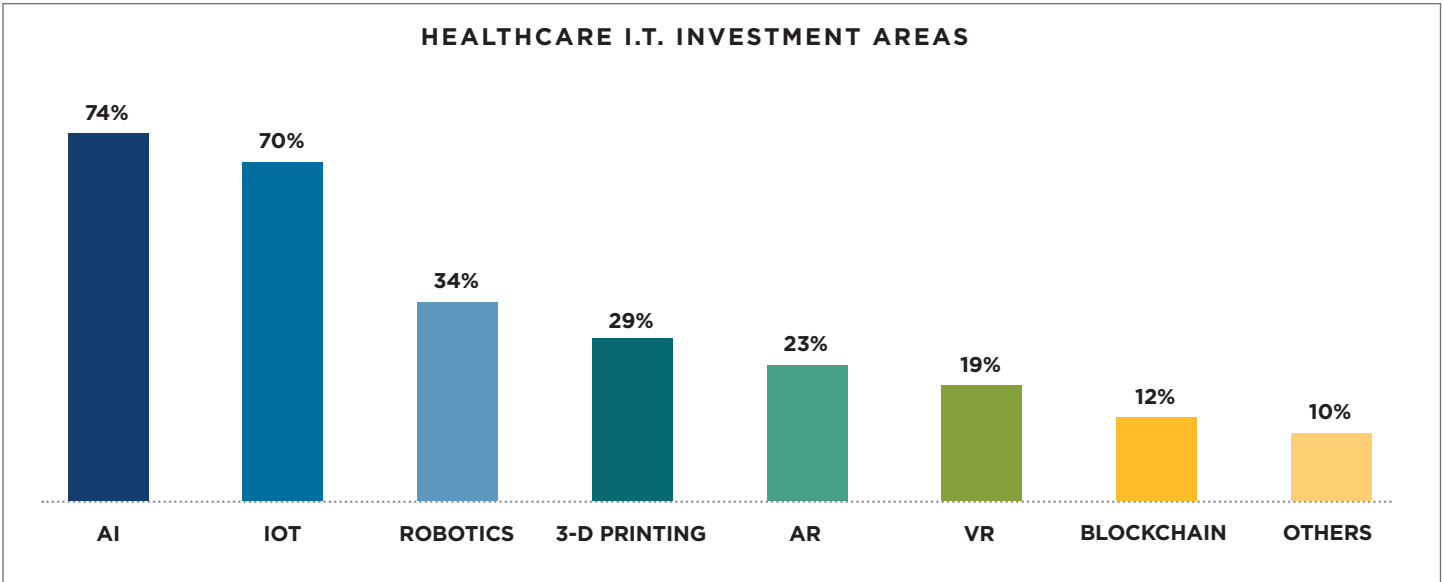
As mentioned in the below graph, back office claims processing (27%) has the highest percentage of I.T.-related expense. It is followed by back office member enrollment and back office billing reporting, with 15% and 12% respectively.

Overall, with 54%, back office has the highest I.T. expense rate followed by mid office (26%) and front office (20%). Within front office, sales and marketing (6%) has the highest I.T. expense, while in mid office, informatics quality improvement (8%) has the highest I.T. expense rate.

HEALTHCARE I.T. EXPENSE DISTRIBUTION



HEALTHCARE I.T. INVESTMENT AREAS



BUSINESS EFFICIENCY REVENUE PER EMPLOYEE

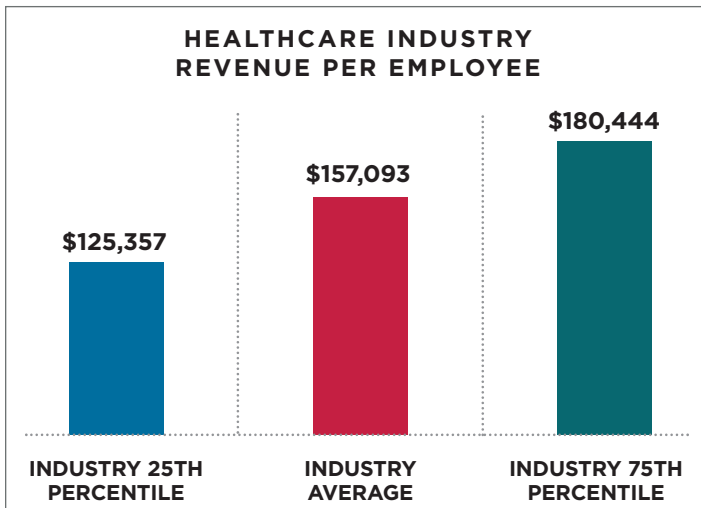
“Revenue per employee” one of the key performance indicators that will help in establishing the link between employee productivity and revenue generated by the company. Organizations with a higher number of employees will have a lower revenue per employee number, while those with fewer employees will have a higher revenue per employee turnover. This varies from organization to organization and is dependent on the nature of the business operation and staffing strategy. Effective and efficient uses of I.T. systems can automate and streamline business processes, which in turn will help in increasing employee productivity.

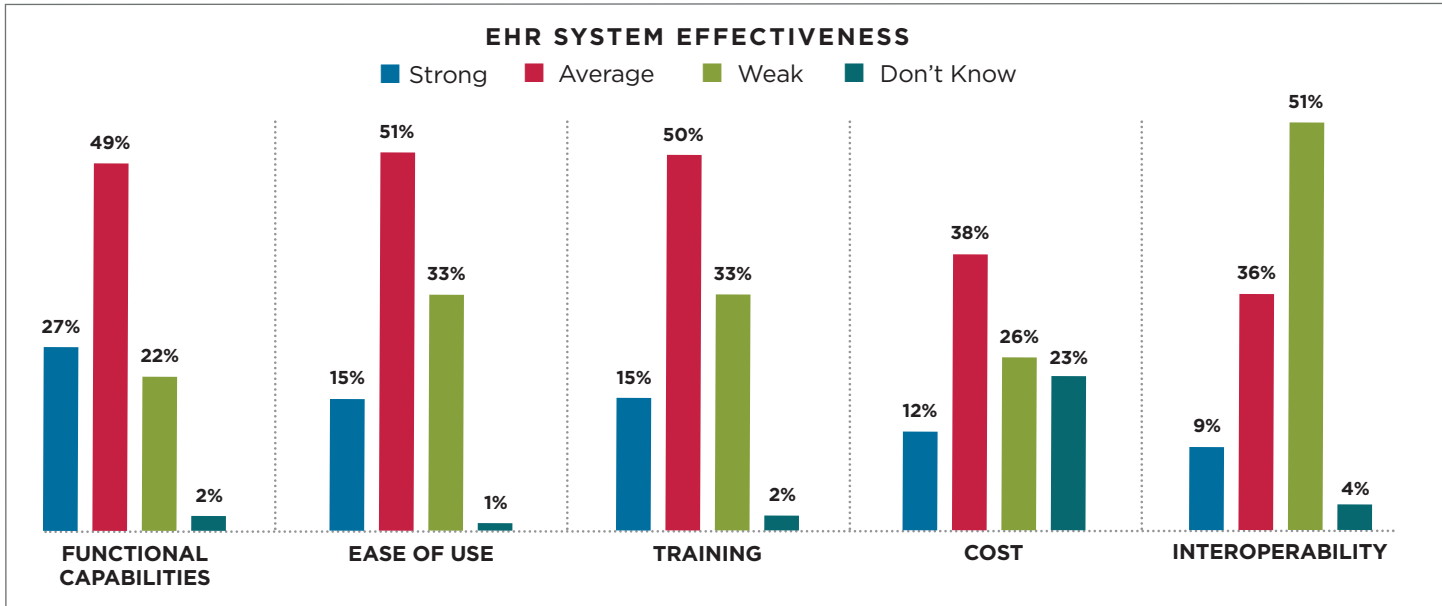
Based on the below graph, the industry average for the healthcare sector is \$157,093; while the industry 25th percentile is \$125,357 and industry 75th percentile is \$180,444.

WHERE HEALTHCARE CIOs PLAN TO INVEST IN THE NEXT 3 YEARS

According to PricewaterhouseCooper’s 2017 Global Digital IQ Survey, 74% of healthcare CIOs mentioned investing in artificial intelligence (AI) in the next three years, while 70% of them indicated they will be investing in the internet of things (IoT), followed by robotics (34%) and 3D printing (29%). Emerging technologies such as AI, virtual reality (VR), augmented reality (AR), and the IoT are gaining traction among key executives of healthcare organization who are looking for new technology solutions to improve business outcomes.

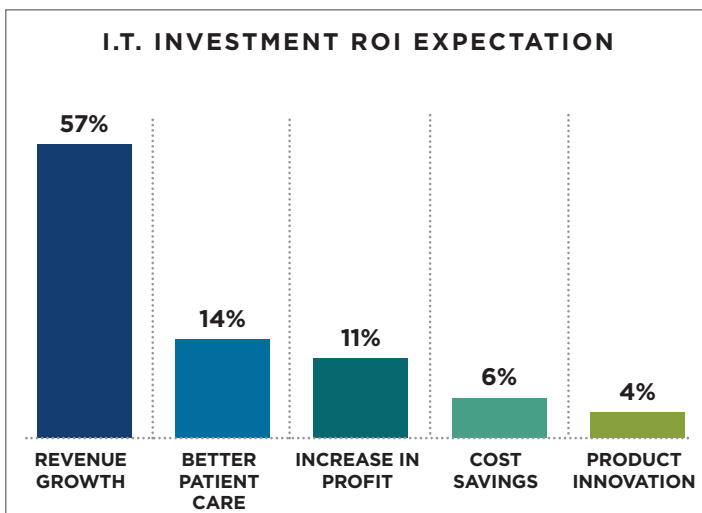
HEALTHCARE INDUSTRY REVENUE PER EMPLOYEE





DIGITAL TECHNOLOGY/I.T. INVESTMENT VALUES EXPECTED BY HEALTHCARE ORGANIZATIONS

The majority of PwC’s survey respondents from healthcare organizations expected growth in revenue from their investment in I.T. Other significant value creations that are expected by healthcare providers are better patient care, increase in profits, cost savings, and product innovation.



HOW EFFECTIVE ORGANIZATIONS ARE WITH THEIR EHR SYSTEMS

Even though electronic health record (EHR) systems are supposed to reduce the workload of healthcare professionals, many still find EHR limited in usefulness. Based on the above chart, interoperability (51%)—i.e., making use of information using software—seems to be the biggest hurdle. Ease of use, training, and cost are other aspects with a higher percentage of negative perceptions, indicating a substantial need for I.T. to make EHR systems more useful, with a focus on solving these issues.

According to a report by Healthcare I.T. Analytics, acceptance of EHR has been increasing, with many healthcare organizations improving their capabilities in health I.T. systems and approving clinical analytics. Per the same report, 76% of healthcare organizations adopted an EHR system, while 96% have decided to implement EHR technology to gain insight into data.

ARTIFICIAL INTELLIGENCE - THE NEXT BIG TECHNOLOGY DISRUPTOR

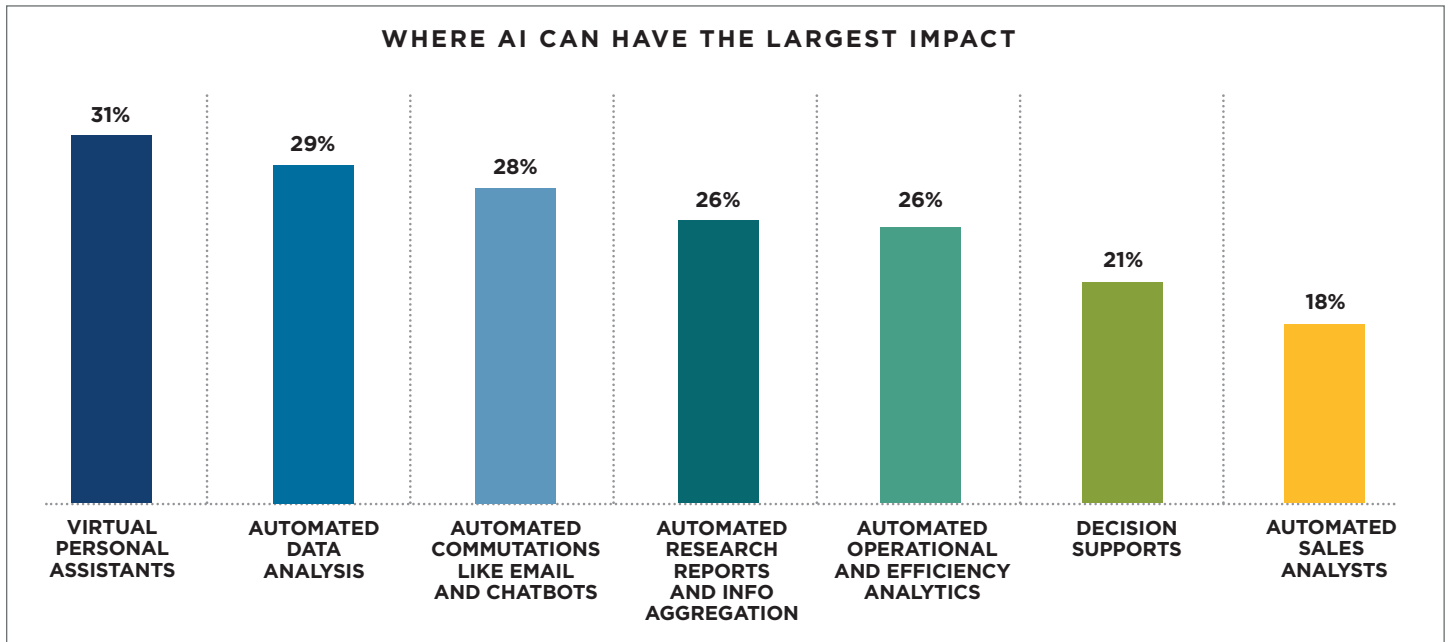
Artificial Intelligence (AI) is getting a push in healthcare and has the potential to change the healthcare delivery model significantly. It is mostly in the back office where AI is gaining momentum. Healthcare organizations have already started to use artificial intelligence to automate their decision-making process, efficiently manage financial and tax reporting, streamline regulatory compliance procedures, and efficiently manage patients' electronic data, among other uses.

AI is helping with automating repetitive works and minimizing human labor hours, thereby improving productivity. AI is also used by healthcare organizations to analyze routine diagnostic results accurately at a faster pace, which in turn helps in attending to more patients in less time. Health insurance providers are using artificial intelligence to help their staff better understand and respond to client queries, thereby making the process

smooth and efficient. With AI tools handling regular and repetitive tasks, employees can focus their time on more important projects to generate higher revenue.

According to a survey by PwC, around 39% of C-level executives mentioned that they have already started investing in artificial intelligence, machine learning, and predictive analytics within their healthcare organizations.

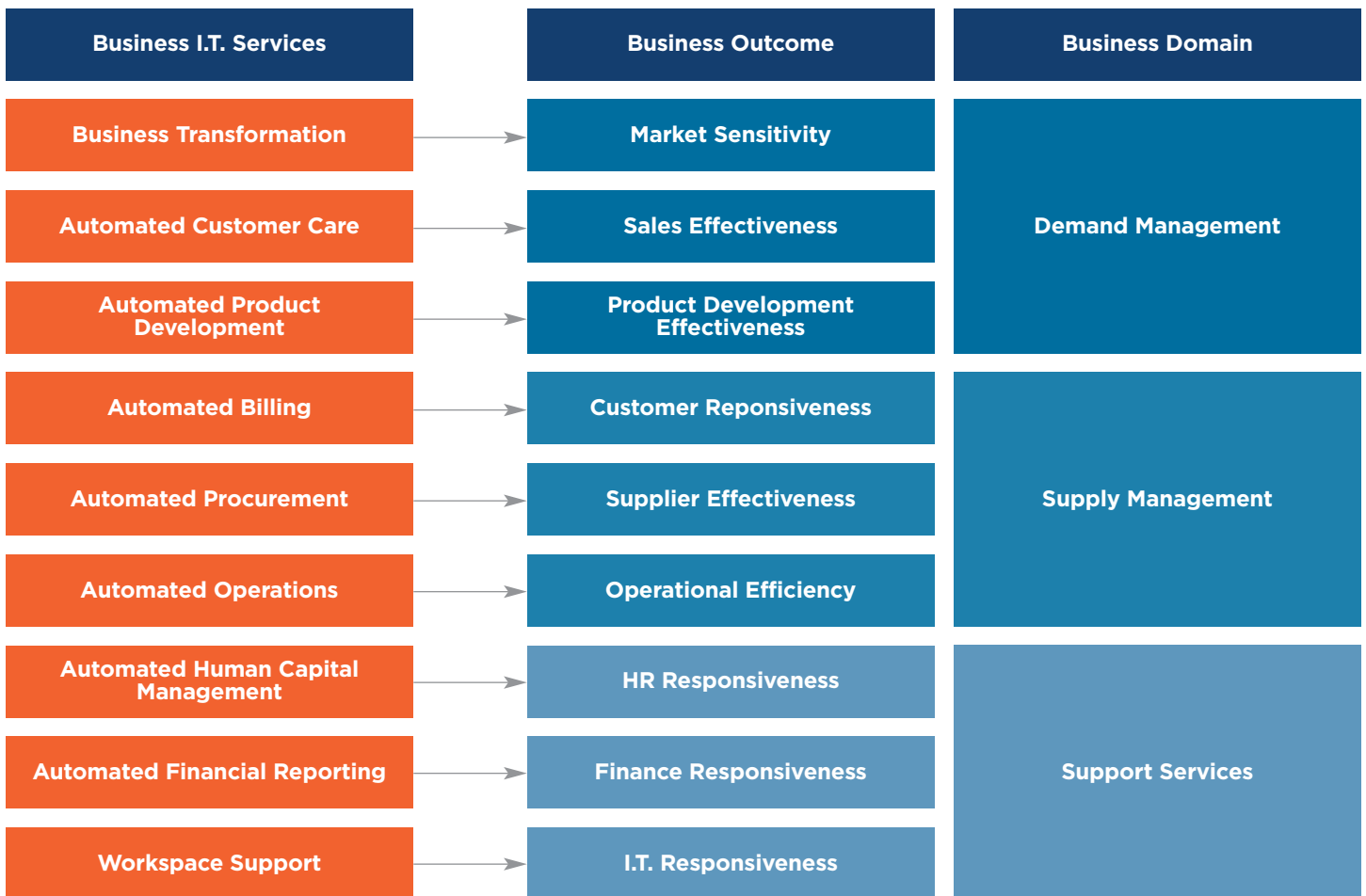
In addition, 31% of respondents (healthcare organization business leaders) consider "virtual personal assistants" to have the largest impact in their business, while 29% of respondent mentioned "automated data analytics" as having the highest impact. Automated communications, automated research reports and information aggregation, predictive analytics, decision-making, and computerized sales analytics are also predicted to impact the use of AI within the healthcare industry.



USING I.T. TO OPTIMIZE BUSINESS OUTCOMES

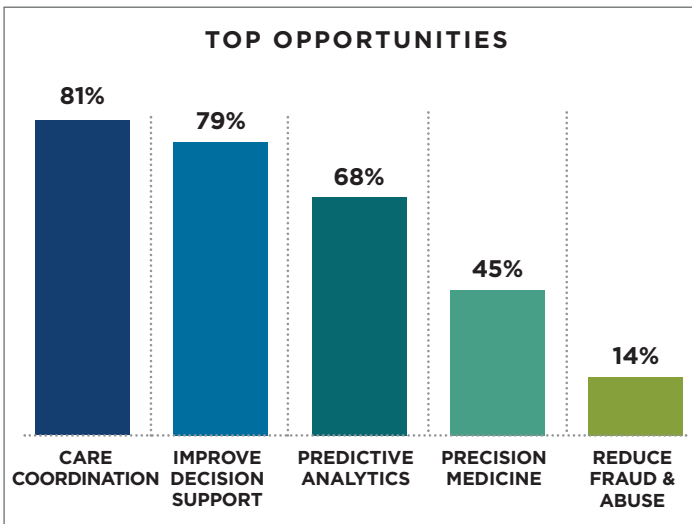
Once the I.T. service portfolio has been created, it is important to link it to business processes and measure performance to make sure Information Technology is continuously creating value for the organization. The chart below is adapted from Gartner, and shows the involvement of I.T. service towards business improvement outcomes and value creation. Healthcare organizations can use this chart as a guide to understanding how I.T. can create value for the organization. I.T. can be seen from a point of view other

than simply the expense of technology. Organizations implementing and optimizing their I.T. process have a better chance of achieving access to greater budgets across the organization as a whole. The below chart is mainly divided into two categories: I.T. services, and business outcomes. "I.T. services" includes all primary services, and has been linked to the desired business outcome expected by the organization. It can serve as the starting point for healthcare companies that are looking to implement I.T. more effectively, or to optimize their I.T. services.



TOP OPPORTUNITIES FOR USING I.T. IN HEALTHCARE SYSTEM

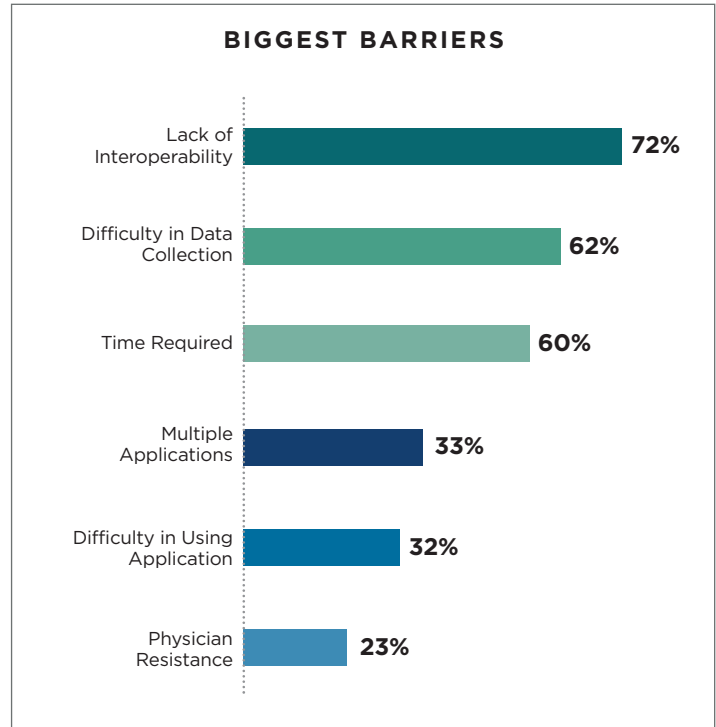
Care coordination (81%) is considered to be the most important opportunity for the use of I.T. system. Care coordination is defined differently by different organizations, but a general definition according to the National Center for Biotechnology Information is *“Deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient’s care to facilitate the appropriate delivery of health care services. Organizing care involves the marshalling of personnel and other resources needed to carry out all required patient care activities, and is often managed by the exchange of information among participants responsible for different aspects of care.”*



Improving decision support (79%) is another way in which I.T. systems are used in health care. Organizations can obtain a structured view of information using I.T. to improve their decision-making concerning patient care.

Predictive analytics (68%), precision medicine (45%), and fraud and abuse reduction (14%) are other areas where I.T. will help the healthcare industry with optimizing patient care services.

BIGGEST BARRIERS



BIGGEST BARRIERS TO BETTER USE OF I.T. SYSTEM WITHIN HEALTHCARE ORGANIZATION

The top three barriers that stand out for healthcare professionals are lack of interoperability (72%), difficulty in data collection (62%), and time required (60%). The most significant consensus barrier is the inability of systems to run apps/programs from dissimilar vendors and to interact with other systems across networks irrespective of their physical architecture and operating systems.



I have been pleasantly surprised by the consistently high quality service delivered by JMARK Business Solutions and would highly recommend their services to anyone looking for a hard working company in the Managed I.T. Support Provider sector.

Teresa Hathaway – Springfield Nephrology Associates

INCREASE IN I.T. SPENDING

In 2017-18, healthcare organizations are expected to increase their I.T. spending mainly on top-line progress and customer centricity. Significant areas of investment comprise of the next generation of clinical management which helps providers achieve higher quality by revenue cycle management applications, patient engagement, and lower costs.

ORGANIZATIONS ARE MORE WILLING TO IMPLEMENT I.T. NOW

Recent security breaches, regulatory compliance concerns, and growing technical complexity due to the increasing use of digital and mobile health services to improve patient care, access, and satisfaction has led to an urge among healthcare organization to implement I.T. systems. According to a survey by HealthData Management, 80% of CIOs mentioned that there is a rising strategic role for I.T. systems within their organizations.

MORE EMPHASIS ON IMPLEMENTATION AND OPTIMIZING EHR SYSTEMS

Implementation of EHR is increasing among healthcare organizations and doctors. According to a report by the Office of the National Coordinator for Health Information Technology, more and more healthcare providers are using EHR systems. A report by the Office of the National Coordinator for Health Information Technology states that around 190 certified I.T. vendors in the healthcare space supplied certified I.T. to approximately 4,500 non-federal acute care hospitals who joined the Medicare EHR Incentive Program.

I.T. ANALYTICS POWERING TRANSFORMATION OF HEALTHCARE

Executives in healthcare organizations are dependent on real-time information and insights for making strategic decisions. They always look for ways to create value using healthcare data. This

requires a symbiotic relationship of external and internal I.T. systems, which in turn need configuring I.T. analytics infrastructure and tools.

I.T. is the tool used by healthcare organizations to supervise and improve business and performance of the health care delivery system. In other words, by using analytics, EHR data can be transformed into meaningful information, which can then be used by the healthcare team to provide better, more personalized patient care.

GROWING DEMAND FOR SKILLED I.T. EMPLOYEES

According to a report by CyberSeek, 40,000 jobs related to I.T. go unfilled in the U.S. every year, and companies are struggling to fill another 200,000 jobs related to cybersecurity. As the I.T. world is growing, it is experiencing a dearth in the number of workers with specialized skills, especially in the healthcare field, which has complex



needs that differ from other industries. Organizations are augmenting employees with technology as new machines and diagnostic equipment become increasingly intelligent. Organizations prefer hiring employees who are not just good at technology but also have knowledge of the healthcare business model and how technology can be implemented into this arena.

CONCLUSION

The patient care delivery system is continuously evolving. As healthcare organizations try to keep up with the ever-changing technology, individual business units are becoming more responsive to keep themselves up-to-

date with changing patients' needs. As such healthcare organization I.T. departments are undergoing tremendous changes to expand their role and create more value for the business by supporting personalized patient care, better services for both patients and caregivers, and the availability of real-time information for quick decision making, among many other related aspects. In today's healthcare organizations, I.T. does not intersect with only a single business unit or department; instead, it delivers a portfolio of services to almost all divisions of the company.

Creating a set of performance indicators to measure business

outcomes as a result of the implementation of I.T. systems within the organization is essential for running a successful business. These performance indicators form the base for taking advantage of Information Technology and helping CIOs with appropriate allocation of the I.T. budget. All the metrics and performance indicators discussed in this report combine to give an integrated view of current I.T. trends within the healthcare industry.

SOURCES

1. www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2017-Press-releases-items/2017-02-15-2.html
2. www.gartner.com/doc/3698118?ref=shareSummary
3. join.catalyst.nejm.org/hubfs/Insights-Council-Monthly--Files/Insights-Council-March-2017-Report-What-Data-Can-Really-Do-for-Health-Care.pdf
4. www.pwc.com/us/en/health-industries/top-health-industry-issues/artificial-intelligence.html
5. www.pwc.com/us/en/advisory-services/digital-iq/assets/pwc-digital-iq-healthcare-pls-findings.pdf
6. www.healthdatamanagement.com/news/cios-expect-healthcare-it-spending-to-grow-in-2017
7. www.gartner.com/downloads/public/explore/metricsAndTools/I.T.Budget_Sample_2012.pdf
8. www.lumedx.com/best-of-health-it-news-week-of-042215.aspx
9. www.healthdatamanagement.com/slideshow/10-emerging-trends-from-oncs-data-on-ehr-systems



JMARK.COM | 844-44-JMARK



MISSOURI

601 North National Avenue, Suite 102
Springfield, MO 65802

ARKANSAS

4038 North Remington Drive, Suite 3
Fayetteville, AR 72703

OKLAHOMA

5800 East Skelly Drive, Suite 500
Tulsa, OK 74135

Empowering People. Innovative Technology. Amazing Results. **GUARANTEED.**