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An IT outsourcing dilemma at Sick Kids Hospital

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Abstract This teaching case is based on a true situation at the Hospital for Sick Children, in Toronto Canada. The case asks students to either assume the role of the CIO or to advise the CIO in making a decision to outsource IT at Sick Kids Hospital. The case requires students to understand three important issues: First, while health care costs continue to increase, automation of information is an important opportunity to streamline patient care and reduce costs in a hospital environment. Second, IT outsourcing, relying on external service providers to deliver complex technology services, is a fundamental business strategy across all industries and has great potential in the health care industry. Third, hospitals and health care have unique requirements for IT outsourcing, particularly the critical importance of patient data security and privacy.

Keywords IT outsourcing · Hospital information systems · Information systems security · Data privacy

Introduction

The Hospital for Sick Children (known as Sick Kids) is a premier children's hospital with a global reputation. It is a tertiary institution, offering a large variety of specialist care to children afflicted and affected by many serious medical conditions. Founded in 1875, Sick Kids has grown from a rented 11-room house to a 370-bed facility that carries out leading edge pediatric medical research. Currently at Sick Kids, the projected number of admissions per year is 16,500, treating over 100,000 patients per year and with an annual budget of over $500 million.

Sarah began her term as CIO at Sick Kids in the summer of 2015. After an initial review of the IT assets including software applications, hardware, networks and IT management, and professionals, she realized that a number of critical IT services needed to be upgraded. Her concerns were reinforced by a number of consulting studies that had been commissioned prior to her arrival, which recommended improvements in IT governance and allocation of IT resources to support the existing systems. One IT assessment report suggested that due to lack of processes, multiple platforms, and aging information technologies, "a much-needed overhaul is required in IT." Another consulting study evaluated IT risk and concluded that five out of seven areas were either medium or high risk in terms of IT governance. Executive management at Sick Kids were concerned that IT needed to be improved and made more secure, to avoid outages and system failures.[1] The executive management team were interested in the benefits and costs of outsourcing, and had recently held a discussion with an external advisor on this topic. Selected slides from the discussion document are provided in Exhibit A.

Sarah launched two important IT initiatives late in 2015. Firstly, requirements were defined in order to issue a request for proposal (RFP) to replace the core Hospital information systems (HIS). The RFP was released in

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[1] In May 2017, computer systems in most UK hospitals under the National Health Services (NHS) were shut down by a malicious software attack. The attack gained access through outdated software running in most of the NHS hospitals. For more information see https://www.theguardian.com/society/2017/may/12/hospitals-across-england-hit-by-large-scale-cyber-attack.

December 2015. By May 2016, the executive team had selected an external HIS vendor.

Secondly, a key component of the RFP was a request to operate or host the HIS outside of Sick Kids, in other words, to outsource the operation of the HIS to an external service provider. Members of the executive team were developing an appreciation for outsourcing. The PeopleSoft Financial and HR system had been installed by a global consulting firm who had then proposed an outsourced application management service (see Exhibit B for details). The HIS represents a healthcare-specific application, while the PeopleSoft application is a more general purpose system that supports organizations in many industries. Table 1 below provides an overview of the two systems.

Patient information within the HIS is governed by the Ontario Personal Health Information Protection Act, which defines the rules for collection, use, and disclosure of personal health information. Most jurisdictions have similar laws in place, such as the Health Information Portability and Accountability Act in the US and the Data Protection Act in the UK. Personal information within the HR system is also protected under government legislation such as Canada's Personal Information Protection and Electronics Document Act.

The executives at Sick Kids expected that outsourcing would reduce IT costs and improve the overall IT services; the consulting firm had certainly given the impression to the executives that IT costs could be significantly reduced. For these reasons, Sarah realized that she and her IT management team required a better understanding of the risks and benefits of outsourcing as well as outsourcing trends in the hospital and health services industry. She needed to improve IT's capability in order to continue supporting core services and to help the hospital continue its growth while maintaining its excellent global reputation as a pediatric hospital. At a time when other hospitals and large organizations were discussing Digital Transformation, Sarah needed to improve Sick Kids capability to simply provide reliable IT services and keep the lights on, and to support Sick Kids core services as it continues to grow.

Healthcare spending growth

With the rising costs and budget restrictions to healthcare, managers and CIOs of hospitals are always searching for ways to reduce their costs and find a way to make their organizations work more efficiently (Roberts 2001). According to the Canadian Institutes for Health Information (CIHI), the ratio of Health expenditures to GDP has declined from 11.6% to an estimated 10.9% in the period of

2011–2015 (CIHI 2015). Hospital spending growth rate is at 0.9% as of 2015 which is the lowest it has been since the 1990s (Canadian Institute for Health Information 2015). Hospital expenditure per capita in Canada has increased by 3.5% throughout the period of 2014–2015 which is putting a strain on managers and CIOs and forcing them to find new ways to reduce costs.

According to the Canadian Institute for Health Information (CIHI), total health expenditure was expected to reach over $219 billion in 2015. This represents over 10.9% of Canada's gross domestic product (GDP).[2] Despite this share reducing since 2009, there are still rising costs within the healthcare sector. Hospitals account for 29.5% of total health spending which is continuing to grow each year although the pace has slowed down over the past few years. In fact, hospitals account for the highest portion of Canadian healthcare expenditures with Physicians and Prescription Drugs following behind at 15.5 and 13.3%, respectively. Healthcare spending is expected to account for $1804 per person in 2015. It is believed by the Canadian government that "The possibility of technological change could create cost savings due to process efficiency or could generate cost increases due to new or expanded diagnostic services and treatments" (Canadian Institute for Health Information 2015).

The information systems support category increased from 1.8% in 1999 to 2.4% in 2008 of hospital expenditures.[3] A higher share for systems support may reflect the increasing complexity and widespread adoption of electronic systems for clinical records, monitoring, and management of hospital functions.

The above literature shows that there is a slow increase in healthcare spending and even in hospital spending itself. With information support systems rising to 2.4% in 2008 of hospital expenditures and 60% of the hospital spending being used to compensate the hospital workforce, there lies potential savings there are potential savings from labor cost reductions for hospital IS support services. One suggestion for cost savings and access to skilled information systems support is the phenomenon of outsourcing.

Why outsourcing?

Executives typically expect outsourcing of IT services to reduce costs and improve service through five enablers, described below.

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[2] See Canadian Institute for Health Information (2015) National Health Expenditure Trends, 1975 to 2015.

[3] See Canadian Institute for Health Information (2012) Hospital Cost Drivers Technical Report.

Table 1 An overview of HIS and Financial/HR systems

	Hospital information system (HIS)	Financial and HR system
Purpose	Single secure source of information for a patient's medical care history	Administration of financial and human information
Processes & information sets	Patient information system	General ledger
	Prescription history	Accounts receivable/payable
	Operation history	Expense reimbursement
	Laboratory information	Capital projects
	Radiology information	Payroll
		Benefits management
		Pension management
Principle users	Physicians	Corporate managers and supervisors in Finance, Accounting, HR
	Nursing staff	
	Clinical staff (radiology, laboratory, pharmacy, etc.)	Departmental managers and supervisors throughout the hospital

1. *Economies of scale* External service providers are expected to have sufficient size that allows them to reap the benefits of the economies of scale, for example in running telecommunication networks or data centers or software development centers. The economies of scale allow a vendor to deliver the IT service at a lower cost than an in-house IT organization.
2. *Economies of skill* Outsourcing vendors focus on a very narrow range of services and concentrate their human skill acquisition and development in those areas which are their core competencies. Their core competencies, a concept defined in 1990 by Pralahad and Hamel, will be different than those required in a hospital, or any other organization (Prahalad and Hamel 1990).
3. *Technology exploitation* Many outsourcing vendors are also technology developers and manufacturers, and are experts at exploiting ongoing technology innovation. Moore's Law typifies this innovation, which predicts that the cost of computer processing continues to decline by approximately 50% every 18 months.
4. *Labor arbitrage* Outsource providers are able to move digital activities to global locations where labor costs are lower. Thomas Friedman describes the IT labor arbitrage model in his 2005 book "The World Is Flat." (Friedman 2005)
5. *Transaction cost economics* Ronald Coase defined the concept of transaction costs in his 1937 paper on "The Nature of the Firm" where he proposed that when market transaction costs for providing services are lower than internal transaction costs, organizations will choose to buy from external firms for those services. Researchers have applied transaction cost economics (TCE) to the field of outsourcing, notably Bahli and Rivard (2003), Dibbern et al. (2004), and Ngwenyama and Bryson (1999).

Outsourcing in health care

For years, healthcare organizations have outsourced non-core departments such as food service and housekeeping. Now, managers and health professionals are attempting to reduce healthcare costs and they are turning to outsourcing in new ways to obtain high standards of care while keeping costs low (Moschuris and Kondylis 2006).

Outsourcing can provide hospitals with the ability to focus on the core competencies and customers. If the hospitals partner with industry IT leaders, they can achieve greater efficiencies (Roberts 2001). As outsourcing by healthcare organizations increases, the potential market of vendors that can provide these services will also increase (Burmahl 2001). According to Lorence and Spink (2004), it is believed that the less the healthcare organizations use outsourcing, the slower will be the development of industry-wide standards and practices across vendors (p. 132).

Outsourcing can provide lower costs and risks, while greatly expanding flexibility, innovative capabilities, and opportunities for creating value-added shareholder returns (Roberts 2001). Thouin et al. (2009) found under the transaction cost perspective that IT activities that have become commodities should be outsourced to improve a firm's financial performance. Kern and Willcocks (2000) slightly agreed that outsourcing is driven by economic action but that it is embedded within social relations and organizational strategy. While in Menachemti et al.'s (2007) findings, IT outsourcing was not a cost-lowering strategy but instead a cost-neutral way hospitals would use to implement an organizational strategy, Lorence and Spink (2004) examined over 16,000 healthcare information managers' viewpoints on outsourcing and found that the top two reasons why they purchase external information resources were to improve patient care and to save money.

Table 2 Simplified view of outsourcing levels

Level	Description	Examples
3	Business processes	Finance and accounting
		Payroll
2	Application software and data	General—office software such as email, word processing, spreadsheets
		Industry related—Finance, accounting, payroll
		Location specific—Hospital information system
1	Infrastructure	Servers
		Network
		Help desk
		Device deployment and management (PCs, laptops, phones, tablets)

Another advantage is the cost efficiency associated with outsourcing due to economies of scale and of experience. Because the outsource provider specializes in IT management, it can provide good service levels at lower cost than the internal IT department (Thouin et al. 2009).

A simplified view of different outsourcing layers or levels is provided below in Table 2.

The experience of other hospital CIOs

Sarah had the results of an environmental scan which was conducted in mid-2016 by a team of external consultants, to understand current IT outsourcing trends in health care. Semi-structured interviews were conducted with CIOs at seven local hospitals. There was mixed reaction regarding outsourcing of applications such as the HIS, which is the core application at every hospital. Some hospitals maintain and operate the HIS in-house and had retained staff who were skilled at maintaining and operating the systems. Others had outsourced the HIS and were convinced that retaining current knowledge of the complex technology, applications, and interfaces was beyond the ability of the in-house staff.

CIO experiences: motivation for outsourcing

Across all seven interviews, the CIOs commented that reduced operating cost was not the primary motivation for outsourcing. The CIOS consistently identified three benefits of outsourcing: (1) quality and speed of service, (2) access to skilled resources, and (3) focus human resources on strategic activities. Each benefit is described in more detail below.

1. Quality of service and speed of delivery were the reasons most cited for outsourcing. One CIO mentioned that IT infrastructure, which was the most often outsourced, is a commodity service that vendors have focused on delivering with a high degree of reliability: "we plug-in and expect it to light up," "we don't worry about it, it's a generic resource."

2. Access to skilled resources. One CIO commented regarding software outsourcing that it would be "impossible for my staff to support an immensely complex software application of six million lines of code."

3. By outsourcing generic services, the CIOs are able to focus their resources on strategic activities within the hospital: "we didn't want to be in that [IT] business… We focus on strategy and architecture, and how to improve the customer experience"; "focus on developing relationships with the clinicians" and "new and innovative use of technologies that are relevant to the business"; infrastructure "is not my role, my role is to help the business transform and change."

CIO experiences: challenges of outsourcing

However, managing an outsourced service does have some challenges: (1) outsourcing may cost more than in-house services, (2) external service providers may not be strategic, and (3) additional time is required to manage and govern the external relationship. These challenges are described below.

1. Although a few CIOs mentioned that outsourcing will avoid future costs, for new staff or additional IT infrastructure, every CIO mentioned that outsourcing typically costs more than delivering the same service with in-house resources. One CIO cited a 30% cost increase for outsourcing. A few CIOs have chosen selective outsourcing for highly specialized services, where the financial case can be demonstrated to the hospital board or when in-house skills cannot be readily hired.

2. Outsource providers may not be innovative or strategic, although they are very good at delivering a well-defined service such as IT infrastructure. "I have to tell them what I want" said one CIO, suggesting that the external service providers are unable to anticipate future innovation in the hospital sector.

3. Approximately 30% of management time was identified for ongoing management and governance of the external providers. One CIO mentioned an outsourcing contract where the vendor has 16% of total revenue at risk if it fails to perform. To manage this contract, the CIO stated: "You have to hold the vendor's feet to the fire."

CIO experiences: lessons learned from outsourcing

In terms of lessons learned, three stand out. First, managing outsourcing, both internally and externally, takes time and improves after several generations of contract experience. Second, the governance of outsourcing is important, and it requires involvement of the hospital senior executives and potentially board members. Third, IT Infrastructure is the most common service to outsource because the services are more industry generic (e.g. help desk, PC support, network monitoring) and less specific to a hospital.

What to do?

Sick Kids Hospital is at a turning point. It has recently decided to acquire and install a sophisticated Health Information System. It is seriously considering opportunities to rely on external vendors and outsource some or major portions of the IT infrastructure operations. The senior executives are searching for opportunities to reduce cost and improve IT services, which may be realized through outsourcing.

Sarah considered her options. Although she knew the HIS vendor would install and start up the new system, she had concerns about the long-term support costs, for example the costs of servers and network within the hospital as well as the costs of the failsafe mechanisms for uninterrupted power supply and data redundancy that are required in the hospital IT environment. She was concerned about the ability of her staff to become knowledgeable and capable of supporting and enhancing the software into the future. This would become increasingly important as doctors relied more heavily on the HIS for patient information, and as the HIS became the central repository for all electronic patient data. As well, patient health data were extremely sensitive, and many laws and regulations were in place to protect the privacy and security of that data. Sarah was a doctor herself and understood completely the importance of the accurate and available electronic patient information. Her decisions as CIO would have a significant impact on the ability of her colleagues to deliver the best care to patients at Sick Kids, as well as protecting Sick Kids Hospital from significant risk and legal liability.

Apart from HIS, Sarah needed to address software maintenance requirements for the PeopleSoft Finance and HR systems: should the IT organization continue to support these applications or should they outsource to an external services firm? (Exhibit B provides more details) Finally, Sarah needed to address the issues identified in the consulting reports particularly about the multiple hardware platforms, aging technology, data privacy concerns regarding patient information, and security concerns regarding reliable availability of the HIS. Could this be outsourced to a single vendor and then consolidated to a more manageable technology infrastructure? She also had to consider the perspectives of her internal IT Managers; see Exhibit C for an overview of their concerns regarding outsourcing.

The CEO had planned an executive retreat later in the year. One of the agenda items would be the strategy and direction for the IT department, and the potential to engage external service providers for more IT work. Sarah began to prepare a discussion document to answer key questions for the CEO at the executive retreat. Her presentation had to set a clear direction for IT outsourcing at Sick Kids hospital and had to address three topics:
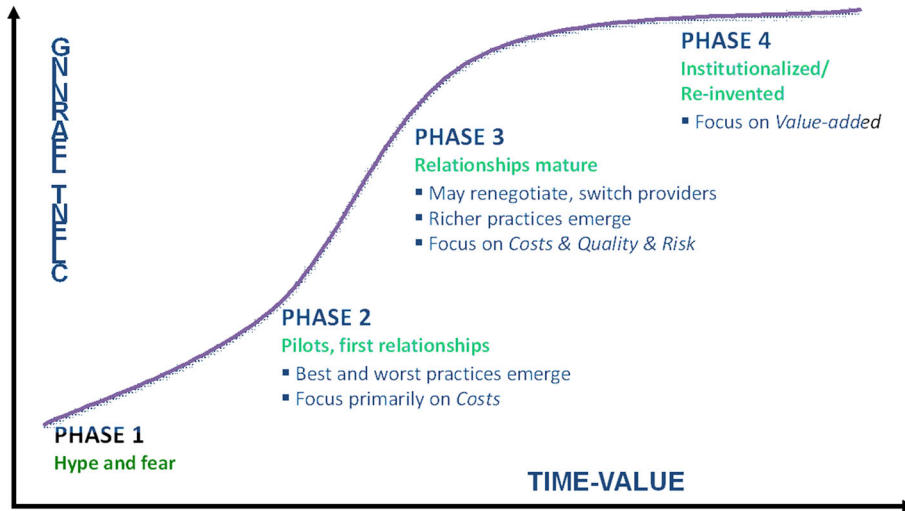
A. Why would outsourcing of IT services within a hospital be treated differently than similar IT services in other organizations, such as a bank, a retail enterprise, or a government organization? What effect does this have on the decision to outsource IT services or retain in-house at Sick Kids Hospital?

B. Assuming all data regulatory requirements can be met, what are the issues that should be examined by Sarah and the executive team when deciding to outsource IT services or retain in-house?

C. What are the risks and opportunities for application maintenance outsourcing regarding both the HIS and the PeopleSoft finance and HR systems?

Appendices

**Exhibit A: selected slides from executive discussion
on IT outsourcing**

The Outsourcing Learning Curve

(Source: Rottman, J., and Lacity, M. (2006), "Proven Practices for Effectively Offshoring IT Work," Sloan Management Review, Vol. 47, 3, pp. 56-63.)


GENERAL CONTEXT

PHASE 4
Institutionalized/
Re-invented
- Focus on *Value-added*

PHASE 3
Relationships mature
- May renegotiate, switch providers
- Richer practices emerge
- Focus on *Costs & Quality & Risk*

PHASE 2
Pilots, first relationships
- Best and worst practices emerge
- Focus primarily on *Costs*

PHASE 1
Hype and fear

TIME-VALUE

Sourcing - What to Outsource

	Primary Focus	**Secondary Focus**
Core Processes	• Things that differentiate your organization in the marketplace • The reasons your customers come to you	• Things that need to be done but are not visible to the customer
Non-core Processes	• Things that if not done well can have a negative impact on your customer relationships	• Things that need to be done but do not have a significant impact on the success of the business

Source: James A Tompkins, "The Business Imperative of Outsourcing", Industrial Management, Nov./Dec. 2005
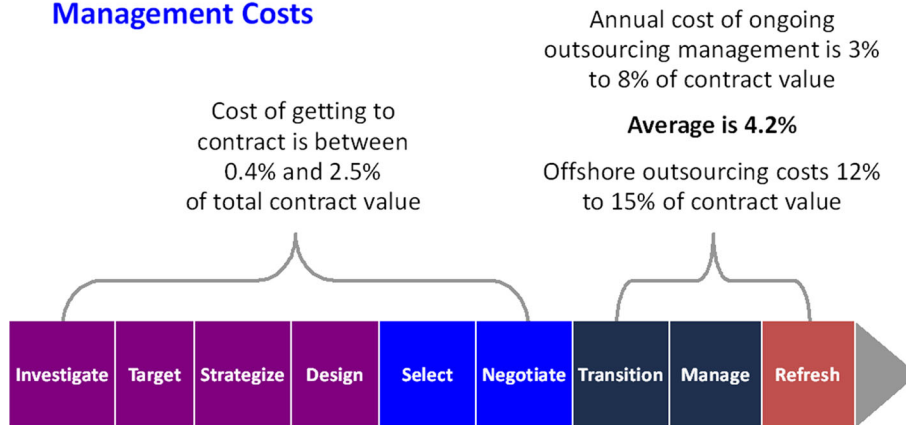
The Outsourcing Lifecycle

A consistent, repeatable approach to managing a transaction from beginning to end
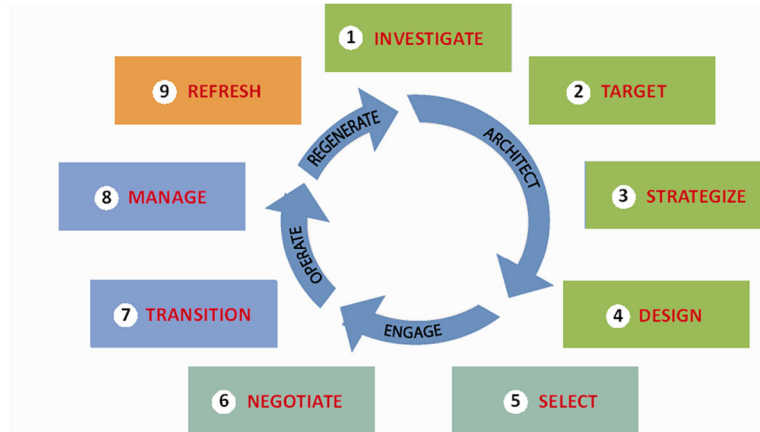
The Outsourcing Enterprise: From Cost Management to Collaborative Innovation", by Leslie P. Willcocks, Sara Cullen and Andrew Craig. Palgrave Macmillan, London. 2011.

Financial Metrics...the Cost of a Transaction

Management Costs

Cost of getting to contract is between 0.4% and 2.5% of total contract value

Annual cost of ongoing outsourcing management is 3% to 8% of contract value

Average is 4.2%

Offshore outsourcing costs 12% to 15% of contract value

Source: Cullen, Seddon, Willcocks, "Managing Outsourcing: The Lifecycle Imperative, MIS Quarterly Executive, March 2005

Exhibit B

A recent internal analysis that examined options for PeopleSoft Application Management Services (AMS) had found the following. An AMS proposal had identified costs of about $1.8 million per year, which would be approximately three times the current spending on in-house support for PeopleSoft. The proposal identified staffing levels from a high of 14.4 FTEs to a steady-state level of 11.5 FTEs, approximately double the current Sick Kids support staff of 6.8. The proposed AMS would be delivered by a mix of onshore and offshore personnel based in India.

Table 3 below provides a comparison between the external benchmark and internal costs. As the table shows, the external per-FTE costs may range from 1.6 to 1.8 times the cost of internal AMS.

Table 3 Comparison of internal costs to market costs for PeopleSoft AMS

	Sick Kids internal	Proposal—high	Proposal—low
Staff (FTE)	6.8	14.4	11.5
Total staff cost	$636,000	$2,433,000	$1,717,000
Cost per FTE	$93,500	$169,000	$149,300
Market cost above Sick Kids		1.8	1.6

Exhibit C: a workshop with IT staff at Sick Kids

A workshop was conducted with 12 senior managers of the Sick Kids (SK) IT organization. The workshop was a facilitated discussion to capture the perceived risks, challenges, and obstacles of outsourcing as well as the opportunities and benefits. Table 4 below presents the summary comments from the workshop.

A few other interesting points surfaced during the workshop. Sick Kids IT managers would not like to be at the 'bleeding edge' of technology, but would like to be abreast of current working technology. Consequently, they were interested in refresh cycles, how often should equipment and software be replaced and upgraded. For Sick Kids, HIS may not yet be a commodity, and the area of pediatric research, which is ever changing as new developments and discoveries are made, may not be suitable for a one-size-fits-all kind of software commodity.

Table 4 Outsourcing challenges and opportunities from the Sick Kids management workshop

Risks, challenges, obstacles	Opportunities, benefits
Quality will be compromised as there is no supervisory oversight of resources applied to tasks	Speed of delivery of services
Relationship with client (Clinicians) will not be there in an outsourced environment	Would help to proactively make underlying infrastructure better and closer to leading edge as opposed to having outdated technology
Loss of control	Easier to scale and expand
SK is very early in the OS learning curve, consequently capacity is not there to properly manage outsourced contracts	Development of dynamic capacity
RFP for any outsourced item may be deficient as there is not the capacity in-house to ensure that all considerations are taken into account: may result in many changes and hence cost increases	Economies of savings
	Short-term increase in capacity
	Allows in-house resources to focus on value added
Outsourcing would necessarily mean a change in the financial structure	Allows in-house resources to interface more with clinicians/front-end interaction with clients
Change management—managing user expectations of what the outsourced environment will eventually become	Allows for resources to engage in requirements gathering/education
The biggest risk is the culture change that would be needed as culture of silos changes to standardized	Standardization
	More availability of resources
OS company may not be fully aware of infrastructure at time of proposal and even during implementation	Better equipped for disaster recovery
	Less stress—would be able to sleep at night
Fear of not being able to design a successful governance structure that is appropriate	Would be able to stay abreast of technology and data security

References

Bahli, B., and S. Rivard. 2003. The information technology outsourcing risk: a transaction cost and agency theory based perspective. *Journal of Information Technology* 18 (3): 211–221. doi:10.1080/0268396032000130214.

Burmahl, B. 2001. Making the choice. The pros and cons of outsourcing. *Health Facilities Management* 14 (6): 16–22.

Canadian Institute for Health Information. 2012. Hospital Cost Drivers Technical Report. Retrieved from https://www.cihi.ca/en/health_costdriver_phys_tech_en.pdf.

Canadian Institute for Health Information. 2015. National Health Expenditure Trends, 1975 to 2015. Retrieved from https://secure.cihi.ca/free_products/nhex_trends_narrative_report_2015_en.pdf.

Coase, R.H. 1937. The nature of the firm. *Economica* 4 (16): 386–405. doi:10.1111/j.1468-0335.1937.tb00002.x.

Dibbern, J., T. Goles, R. Hirschheim, and B. Jayatilaka. 2004. Information systems outsourcing: a survey and analysis of the literature. *SIGMIS Database* 35 (4): 6–102. doi:10.1145/1035233.1035236.

Friedman, T. 2005. *The World is Flat*. New York: Farrar, Straus and Giroux.

Kern, T., and L. Willcocks. 2000. Exploring information technology outsourcing relationships: theory and practice. *The Journal of Strategic Information Systems* 9 (4): 321–350. doi:10.1016/S0963-8687(00)00048-2.

Lorence, D.P., and A. Spink. 2004. Healthcare information systems outsourcing. *International Journal of Information Management* 24 (2): 131–145. doi:10.1016/j.ijinfomgt.2003.12.011.

Menachemi, N., J. Burkhardt, R. Shewchuk, D. Burke, and R.G. Brooks. 2007. To outsource or not to outsource: examining the effects of outsourcing IT functions on financial performance in hospitals. *Health Care Management Review* 32 (1): 46–54.

Moschuris, S.J., and M.N. Kondylis. 2006. Outsourcing in public hospitals: a Greek perspective. *Journal of Health Organization and Management* 20 (1): 4–14. doi:10.1108/14777260610656534.

Ngwenyama, O.K., and N. Bryson. 1999. Making the information systems outsourcing decision: a transaction cost approach to analyzing outsourcing decision problems. *European Journal of Operational Research* 115 (2): 351–367. doi:10.1016/S0377-2217(97)00171-9.

Prahalad, C.K., and G. Hamel. 1990. The core competence of the corporation. *Harvard Business Review* 68 (3): 79–91.

Roberts, V. 2001. Managing strategic outsourcing in the healthcare industry. *Journal of Healthcare Management* 46 (4): 239–249.

Thouin, M.F., J.J. Hoffman, and E.W. Ford. 2009. IT outsourcing and firm-level performance: a transaction cost perspective. *Information & Management* 46 (8): 463–469. doi:10.1016/j.im.2009.08.006.