

Dan Murdough
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The Risks and Pitfalls of Information Technology Lifecycle Management

In today's world it is more relevant than ever that organizations whether public or private maintain access to the best possible information technology resources in order to ensure their success. The best end to end definition of information technology (IT) lifecycle management can be defined as "the beginning to end process of acquiring, installing, maintaining, tracking, and the retirement of an assetⁱ." The value of ready, relevant, and operational information technology assets can not be understated as ultimately the goal of any disciplined information technology department must be to 'use information technology to realize business change, transformation and growthⁱⁱⁱ'. Information technology at the end of the day must provide value for the end customer as simply any other means or method does not suffice the end goal of any organization.

This paper will analyze the risks associated with lifecycle management of information technology and systems and how these risks can ultimately be approached and mitigated to ensure the benefits can be realized by any organization that engages in long term IT lifecycle contracts. There are five areas of emphasis that this paper will encompass that organizations must consider: Technology Selection, Financial Planning, IT Services, Deployment Scheduling, and Secure Asset Disposal. Naturally there are slight differences between entities that execute IT lifecycle management such as government and private enterprise. However, the principles behind the contract management of technology lifecycles largely remains the same as those charged with the execution of these contracts must ensure that the respective program leads to major improvements in flexibility, efficiency, performance, and cost management.

Technology Selection

Firstly, Technology Selection often sits as the major player in the overall information technology strategy of an organization. In many cases, there are many stakeholders that have input toward the types of systems, hardware, and software that are purchased and it is essential that there exists a proper vetting process for this. Furthermore, proper information technology selection is critical to any organization in order to obtain competitive advantage. Information technology selection may contain many pitfalls as the stakeholders involved often have different priorities such as budgeting versus proper capabilities. Additionally, forecasting is another issue as many stakeholders would want to ensure long term contracts that secure technology for an extended amount of time at a reasonable cost. Such intangible criteria may cause great difficulty in obtaining a proper sight picture for information technology.

Decision criteria is very important for the organization's considerations and a model proposed by Basar Oztaysi in his publication "*A Decision Model for Information Technology Selection Using AHP Integrated TOPSIS-Grey: The Case of Content Management Systems*" offers us a model for proper technology selectionⁱⁱⁱ. In section four of Oztaysi's article, he proposes a clear and concise set of technology decision based criteria that avoids the need for advanced calculation within any organization. This decision model is composed of seven factors to consider: Technological Infrastructure, Project Duration, Budget, After Sales Support, Usability, Capabilities, and Service Provider. This model offers a fair balance of tradeoffs that can harmonize compromise between various work units to include but not limited to: procurement, information technology, executive leadership, human resources, etc. Thus, I believe that the ability to properly outline these seven factors in the technology selection process is an integral factor in the proper implementation of information technology lifecycle

management. Managers and stakeholders who employ these factors in the decision making process stand to garner the most benefit and avoid the various pitfalls that the contracting process can promulgate.

Financial Planning

Financial Planning in any regard requires a great deal of attention and engagement from stakeholders to ensure that proper steps are taken to avoid unforeseen losses. This is no exception with regards to the implementation of IT lifecycle contracts, key stakeholders must have a carefully laid out negotiation strategy that ensures the organization gets the right amount of IT value without fleecing the budget. Additionally, there must be a forward thinking strategy that focus less on the here and now and conversely more on strategy that will benefit the organization in the long run. Information technology is a field that is constantly changing and thus the financial plans that accompany it need to be as flexible as the technology itself. Managers and stakeholders must also work to ensure that assumptions do not dominate the landscape rather a carefully laid out plan with regards to funding is key.

As stated, information technology is constantly evolving and the financial strategy associated with the lifecycle management of IT must evolve as well. In her 1999 article *"Financial Planning for Information Technology: Conventional Approaches Need Not Apply"*, Ellen Falduto addresses some salient points toward a more modern approach to planning for IT financial planning^{iv}. Although nearly two decades old, many of the considerations can still apply today when it comes to IT lifecycle management. Falduto argues that an older notion from the 1980s existed whereby IT should always be purchased instead of leased. Clearly by 1999

Falduto has realized the fact that IT often outdates itself long before equipment has met its' traditional depreciation lifecycle.

Furthermore, Falduto is very astute to note that in the past, organizations would automatically assume that a premium needed to be paid for information technology based on the assumption that it would greatly improve the productivity of the organization which is not always the case. This is another classic example of how assumptions can hurt organizations financially. Additionally, Falduto argues for a closer relationship and communication between CIOs and CFOs and that CIOs need to do a better job of understanding budgeting through this communication channel. Although Falduto's experience derives directly from experience in the management of an institution of higher education, the lessons in communication and overcoming old assumptions can pay dividends for any organization's financial planning in their information technology lifecycle.

IT Services

The planning for the IT lifecycle would be quite devoid without the consideration of technical support and associated services. Many organizations focus too much on the physical hardware that comes with any new implementation of information technology. However, it must be expected that the quality of the associated support packages that comes with IT implementation must be heavily considered before financial commitments are made. In this instance, it is worth noting that simplicity is often a major consideration of any IT product service or platform in order to ensure that user error is kept to a minimum which can prevent needed support and unscheduled downtime.

In the article "*Service Lifecycle Management*", authors: Fischbach, Puschmann, and Alt provide a model based approach that does an efficient job of combining technical IT based standards such as ITIL and COBIT with business oriented approaches^v. The authors highlight the importance of standards such as ITIL and how they apply to optimal IT service management in any organization. However, they align these industry-based standards with business oriented activities such as: business requirement management, operational service design, service costing, and process improvements. Ideally, this model provides an efficient look as how service lifecycle management can directly align with business. In many organizations, communication and priorities are often disjointed between information technology departments and higher management. Thus it is key for the communication channels to be clearer in order to obtain optimal service. Additionally, aligning the priorities of business with the tenets of IT service management ensures better approaches to contracting IT lifecycle programs. This alignment ensures confidence both within corporate leadership as well as organic IT departments to ensure that the best deals are secured for a given organization. Although, there are ample complexities that exist whenever a technical service support package is considered, the alignment of IT service strategy with business priorities is the most practical approach to undertake.

Deployment Scheduling

The process of deploying a new lifecycle if IT systems and services is undoubtedly daunting, however careful planning and the involvement of all key stakeholders can ensure the most resilient results for any organization. Planning is key in order to ensure that there is minimal downtime and that there is accountability for both old systems and services as well as

new ones. Scheduling, expectation management, and information flow all promote the best possible outcome and the more time the better to ensure that all affected personnel.

In the article, "*Information Technology and Communication and Best Practices in IT Lifecycle Management*", the authors Francisco Carlos Paletta and Nilson Dias Vieira Jr. lay out a myriad of ways to look at the overall information technology lifecycle^{vi}. However, if terms of value they provide some salient point in regards to the strategy that should accompany IT deployment of systems and services. The authors highlight the importance of considering multiple evaluations for any tool or system that drives IT lifecycle management and one of the major factors is the consideration of a 'modular structure with flexible deployment'. They further discuss the importance of delivering and deploying new systems within the lifecycle with strong considerations toward the development of packages that incorporate enterprise resource planning (ERP). The use of ERP during the lifecycle management process is important because it not only factors in the planning of deployment but also other financial and business implications such as associated expenses and practicality. Furthermore, the article finally draws a conclusion that draws similar parallels to the consideration of aligning service lifecycle management. Thus, it is important for IT managers to further ensure that they align the priorities of information technology deployment with those of the organizations that they support.

Secure Asset Disposal

In today's world, one cannot understate the importance of secure asset disposal as although many assume cybersecurity issues always start and end with the actions of hackers, the damage that can be done through improper disposal of systems is critical. The degaussing process must be dealt with in accordance with appropriate standards to ensure that any bit of

classified or sensitive data in cleansed properly. Data breaches are seemingly becoming more and more of a daily occurrence in business and thus it is the responsibility of not just the respective information technology department but rather every member of the parent organization. IT lifecycle management even when implemented properly and efficiently can still run into pitfalls as old systems are phased out and disposed of properly rather than sitting in storage where the longer that they are present the longer they run the risk of creating an issue. In many cases, employees of an organization may be unfamiliar with the right procedures to ensure that information systems are properly cleansed. Equipment such as industrial shredders and degaussing machines may or may not meet corporate or industrial standards for information destruction whether the information is classified and or sensitive. In the U.S Federal Government several information laws govern the proper destruction of information so respective organizations must comply not only to avoid organizational issues but also legal ones.

Naturally, risk may be no more evidently present than in the risks that are carried through ensuring secure IT asset disposal. However, organizations would be best served to form relationships with third party contractors that can contractually serve the needs of the organization. Third party organizations such as Lifecycle Partners LLC^{vii} offer companies a secure and professional option to ensure that IT assets and information are disposed ethically, legally, and environmentally. The solutions that these third parties offer to include: disk overwriting, degaussing, disk shredding, and asset removal services ensure that organizations have an effective control to implement at the conclusion to their respective IT lifecycle. In the end, the third party solution through proper contracting and oversight can provide the best possible risk mitigation to an organization's secure asset disposal issues.

Conclusion

In conclusion, the implementation of an efficient and high value information technology lifecycle requires a great deal of coordination, communication, and proper risk mitigation. The five major areas of risk described in this paper manifest the variety of issues that both IT departments and organizational leadership must consider to ensure they get the most benefit and minimal risk out of their IT lifecycle management program. The implementation of proper communication channels as well as the alignment of information technology assets and service strategy with organizational and business objectives remains the crux of any good lifecycle management program. When these principles are in place and properly overseen by organizational leadership it will ultimately lead to an environment where IT can do what it is designed to do, provide value to the customer while also mitigating risk and ensuring an efficient model through the respective organization.

ⁱ JW Affinity IT. (2018, January 15). IT Lifecycle - Infrastructure & Operations. Retrieved from <http://www.jwaffinityit.com/our-services/it-lifecycle-infrastructure-operations>

ⁱⁱ AXELOS, Global Best Practice. (2018, January 1). ITIL IT Service Management ITSM AXELOS. Retrieved from <https://www.axelos.com/best-practice-solutions/itil>

ⁱⁱⁱ Oztaysi, B. (2014). A Decision Model for Information Technology Selection Using AHP Integrated TOPSIS-Grey: The Case of Content Management Systems. *Knowledge-Based Systems*, 70(4), 44–54. Retrieved from https://www.sciencedirect-com.prox.lib.ncsu.edu/science/article/pii/S0950705114000598?_rdoc=1&_fmt=high&_origin=gateway&_docanchor=&md5=b8429449ccfc9c30159a5f9aeea92ffb&ccp=y#b0210

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^v Fischbach, M., Puschmann, T., & Alt, R. (2013). Service Lifecycle Management. *Business & Information Systems Engineering*, 5(1), 45–49. Retrieved from <https://search-proquest-com.prox.lib.ncsu.edu/docview/1284264178?pq-origsite=summon>

^{vi} Paletta, F. C., & Vieira, N. D. (2008). Information Technology and Communication and Best Practices in IT Lifecycle Management. *Journal of Technology Management and Innovation*, 3(4), 80–94. Retrieved from https://scielo.conicyt.cl/scielo.php?script=sci_arttext&pid=S0718-27242008000200007

^{vii} Stone, T. (2007, July). Firm Has “Unique Partnership” with Customers, Community. *New Hampshire Business Review*. Retrieved from

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