An Exploration of Information Systems (IS) and IT Project Failures

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Among a range of possible definitions of IS/IT project failure, Chung et al. (2015) take a very broad view of what constitutes failure: 'a system implemented for an organisation is considered a failure whenever it does not meet the expectations of its stakeholders'. Given the very different expectations of different stakeholders, this implies that perceptions of project failure or success will also differ. Project failure is likely to include projects that fundamentally fail to meet the objectives set – for example, where new supply chain management (SCM) software is implemented with the objective to reduce process times and costs, and over time proves to lengthen process times and/or increase costs. It may also refer to catastrophic failure – where a new system fails to the extent that it must be abandoned and the old system re-instated. However, another aspect of project failure may relate not to the change introduced but to project management of that change. Continuing the previous example, where new SCM software meets its objectives in terms of reducing process times and running costs, but the project to develop, test, install the software and implement system changes takes much longer and is much more costly than anticipated at the outset of the process, may be considered by some as project failure.

Quantifying the effect of IT project failure

Attempting to quantify the effect of IT project failure on businesses, Flyvberg and Budzier (2013) analysed 1,471 IT projects, identifying an average cost overrun of 27%. However, the authors flagged a more alarming risk - one in six of the projects sampled was categorised by the authors as a 'Black Swan', with the average cost overrun in this subgroup of 200% and an average schedule overrun of almost 70%. This, the authors argued, highlights the major risk in IT projects, and one that is often ignored - not simply that they're particularly prone to high cost overruns on average, but that there are an unusually large proportion that incur massive cost overruns, and that these are so significant that they threaten organisational existence. Household name examples were cited by the authors, including Levi Strauss: a 2003, $5m global IT upgrade led to major issues in fulfilling orders and closed distribution centres – by 2008 the cost of the upgrade, remedial work and losses was estimated at $193m. The authors conclude by warning that these dangers must be appreciated by those charged with decision making on IS – 'IT projects are now so big, and they touch so many aspects of an organisation, that they pose a singular new risk… they have sunk whole corporations. Even cities and nations are in peril.'

Risk factors and IT project failure

Laudon and Laudon (2015) highlighted that given that systems can differ dramatically in size, scope, components and level of complexity, so some IS implementation projects will also carry a much higher level of risk than others. They argue that this risk is influenced by 3 factors:

- **Project size:** Larger projects (in terms of spend, staff resource, duration, and size and number of affected business units) have greater risk because of increasing organisational and system complexity and difficulties in estimating time and cost for larger projects. Laudon and Laudon cite the statistic that very large projects have a failure rate that is 50-75% higher than other projects because they are more complex and more difficult to control. An example of this is that

enterprise applications that affect all or a range of business units have a higher risk than applications that affect one or few business units.

- **Project structure:** Highly structured projects – those with clear, set user requirements, identifiable outputs and processes are lower risk than projects where user requirements are less clear, are changing, and where process and outputs are less defined or are contested.
- **Experience with technology:** Risks are increased if the project staff and IS staff lack technical expertise, or are unfamiliar with hardware, system software, application software or database management systems. The risk of technical problems increases, plus time overruns as additional time is required to learn new skills.

Reasons for IT project failure/predictors of IT project failure

The study by Flyvberg and Budzier (2013) is just one of many which have explored IT project failures, either through surveys of a number of organisations and project types or through case studies. The focus of many of these studies has been on identifying reasons for project failure and/or indicators of potential project failure to be considered in project implementation. A recent literature review of this area by Dwivedi et al. (2015) argued that 'the reasons for a successful or failed IS implementation are complex and contested, as different stakeholders and perspectives are involved' and that reasons for failure are as divergent as the projects themselves. Some of the reasons for IS implementation failure identified in the literature are discussed below.

Nelson (2007) identified 36 classic mistakes in project management which determined the likelihood that an IS project will fail, summarised into 4 categories:

- **Process:** focussing on IT project management factors, including both the management process and technical factors. Example mistakes included poor estimation/scheduling, insufficient risk management, insufficient resources allocated.
- **People:** factors relating to the people involved in the project, with example mistakes including ineffective stakeholder management, inattention to politics and lack of user involvement.
- **Product:** characteristics of the project itself, including its size, urgency and objectives. Example mistakes included scope creep and developer gold-plating (the addition of functionalities beyond the initial requirements).
- **Technology:** factors relating to the use and misuse of technology with example mistakes including silver bullet syndrome (the belief that the new technology can fix all issues with the system) and overestimated savings.

Related to Nelson's (2007) 'people' issues, a specific strand of the literature on project failure focusses on user resistance. An example is Klaus and Blanton's (2010) categorisation of four issues of user resistance causing IS failure in organisations, with user resistance affected by individual issues (user uncertainty, competence, control); system issues (such as complexity or technical problems); organisational issues (effectiveness of training, communication, internal politics); and process issues (changes in skills or workload).

Aside from these factors, Strong and Volkoff (2010) highlighted the particular issue of technology. Focussing on the implementation of enterprise systems, they proposed the concept of 'organisation-enterprise systems misfit' to explain IS failure. They argued that misfit between the enterprise system being introduced and the requirements/characteristics of the organisation across a number of factors could lead to IS failure. These factors included functionality, data, usability, role, control and organisational culture.

A case study of IT project failure

As indicated previously, many studies include the use of case studies to explore and explain the reasons for IS failure. Laudon and Laudon (2015) have used the example of the US healthcare.gov website to explore this. In this major (and very public) IT project, the creation of a website was a mainstay of the US Affordable Care Act (often referred to as Obamacare). This website was to perform a number of functions including allowing users to: compare prices on health insurance plans; enrol in health insurance plans; and to identify if they qualify for government health subsidies. Shortly after launch (October 2013), technical problems became apparent including inability to log in to create accounts; cryptic error messages; users receiving incorrect quotes or being refused coverage; and insurers receiving incorrect and incomplete information. Issues were initially ascribed to higher than expected usage – the website had been designed to cope with 50-60,000 simultaneous users, but had to handle 250,000 simultaneous users over its first few weeks. However, it was later identified that software and system design issues were also a factor – stress tests before launch had revealed that the website slowed substantially with only 1,100 users. Almost 600 other software and hardware defects were identified.

Given the very public and politicised launch of the website, a range of public examinations of this website and its implementation have been carried out. These have identified a range of problems in implementation which resonate with the findings of the literature described. These include, but are not limited to:

- Issues in communication between large numbers of sub-contractors working on different aspects of the project and changing sub-contractors during the project
- Lack of leadership (at no time did the project have one responsible Project Leader)
- The choice of unusual database software with which many were project and IS staff were unfamiliar
- Lack of testing
- Going live with all parts of the system at the same time
- Changing regulatory environments, meaning that the user requirements were in flux throughout the project
- Lack of backup provision and testing of this
- Warnings that the website would not be ready/required more testing/required further work went unheeded due to pressure to meet the publicly announced launch date

In conclusion, this article has explored IT/IS project failure, defining project failure and possible risk factors. It has engaged with previous studies which have quantified the potential losses resulting from project failure and identified reasons for project failure/indicators of potential failure. Finally this article has discussed a high profile case of IT project failure and the identified reasons for failure in this case.

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