# IT outsourcing:

# How can enterprises engage in feasible business relationships

# with outsourcing vendors?

**IS 3159** Information systems project

prepared by Jonathan Camilleri IADCS, [online] resume available at <http://mt.linkedin.com/in/jonathancamilleri/>.under the supervision of [Ronald Aquilina](http://mt.linkedin.com/in/ronaquilina), St. Martins Institute of Management (Malta).

UOL student number: 070404915, while reading BSc Information system and Management

**Declaration of authenticity**

I certify that this research project presents the findings sourced and referenced from my research. The relevant sources of information have been duly referenced throughout this document and are listed in the Bibliography section.



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# Abstract

# Literature review

*Outsourcing* refers the contracting out of an organizational process to a third party.

It may include selective outsourcing where particular functions of an organizational

process are outsourced based on criteria such as whether the function can be delegated

to experts in the subject matter. An organization may also operate using outsourcing.

Aquilina (2012) defines *total outsourcing* as the case when more than 80% of the

information technology budget has been allocated to a service supplier. This hypothesis

may bear its roots in the works of Vilfredo Federico Damaso Pareto, who originally outlined

the Pareto efficiency principle[[1]](#footnote-2).

For example, the author manages a private business using a cost-effective and lean business model[[2]](#footnote-3) and acts as a subcontractor, providing and promoting business and technology services to prospective clients, at times using the internal resources and business partners that are regularly engaged by the firm, and, at other times outsourcing or offshoring projects or portions of projects to subcontractors mainly based in India, depending on vendor selection criteria that are established by business policy, and, reviewed from time to time in view of external and internal sources of influence e.g. political factors, economics, pricing, cost, perceived and measurable quality, clients preferences, and, the requirements emanating or related to the technical architecture and design.

The advantages of outsourcing IT/IS projects include the availability of project management services based on a contractual relationship which is based on mutual trust and a reciprocal professional relationship, whilst using the skills of specialized human capital that give access to highly specialized talent that is co-ordinated and managed professionally to ensure that the technology projects meet or exceed the clients expectations relating to the timeframes of delivery, budgetary and financial limitations and with the expected quality levels that are adequate for the maturity, complexity, and, fitness for purpose for the end-users that implies careful change management and implementation. The disadvantages include risks relating to financial fraud through loopholes within information systems security engineering that is evidenced by the increased likelihood of computer crime and hacking, and, the risk of not meeting the clients expectations holistically, which can be limited through careful project management that is adequate for each project or operation being planned along with the clients, partners, suppliers and other stakeholders having an interest in the business, project or operation.

Statistics made available to the author by Inspector Timothy Zammit[[3]](#footnote-4), Inspector at the Criminal Investigation Department indicate an increased number of cases relating to computer misuse (hacking), fraud, forgery and misappropriation of funds, which may confirm an increased global trend in cyber crime and hacking. It is also noted that crimes related to insults, threats and private violence have increased by 32 times in 2012 when compared to the number of cases reported in 2003, which outlines that cultural management and the risk of racial hatred and their connetion with national and regional political stability may affect the decisions of executives in their preference for the location of the outsourcing provider(s), and, this highlights the need for cultural issues to be managed adequately.

Globalization and awareness of culture is becoming increasingly relevant when establishing international business, and, this is confirmed by sociologists and management consultants, including Malcolm Waters (2001), Geert Hofstede[[4]](#footnote-5), and, Fons Trompenaars[[5]](#footnote-6).

Ciborra (2004) highlights different risks, which include technical and mathematical risks, mis-management, and, other factors. Technical/mathematical risks can lead to inaccuracies in calculations and computations, risks related to mis-management such as lack of visibility on the quality criteria that are being delivered to the customer, cost-overruns or running out of budget thereby requiring additional financing vehicles frequently bearing additional cost related to the cost of time related to the repayment of the financing that includes interests and other finance-related charges, incorrect business specifications or inadequate quality standards that have been contractually or otherwise agreed upon, inadequate change management procedures or the lack of adherence to “common sense” approaches where changes are approved in view of their impact on the expected date of delivery and the financial budget or forecasts of the project.

**Management of risks** using methodologies such as Probabilistic Risk Assessment

Methodology[[6]](#footnote-7) (PRAM) can mitigate the financial, economic and other constraints that the

risk might bring about. Nevertheless risk mitigation and insurance of risks does not

guarantee the extent to which a risk can be mitigated and/or insured, although formal

project management methodologies such as PRINCE2 and underlying standards

such as ISO 10006:2003 give rise to standards of practice that determine the

implementation of quality management. Rodney Turner (1999) highlights that quality is

about delivering what is fit for the customers purpose, and that quality is about continuous

improvement, and, thereby confirms the lines of thought theorized by management theory

since the early days of their articulation by Frederick Taylor (1856 to 1915)

– one of the architects of scientific management, Frederick Herzberg (1923 to 2000) –

known for introducing concepts of job enrichment and motivational theories - and other

management consultants that have influenced the improvement of the application of

management theory in practical situations over the years.

Brown and Wilson (2005) quote a study carried out by *Information Week*, whereby 700 business-technology professionals are reviewed, and, it was concluded in a study carried out in November 2002, that the most important factors driving the relationship with an outsourcer includes the following critical success factors to be managed holistically. The factors are listed in the order of importance, with the most important and relevant factors to the respondents surveyed being listed first.

**Cost savings** gained through economies of scale and the careful and diligent exploitation of transaction cost theory, economies of scale and cost management to support the client.

Empirical evidence and research from the sources quoted in the references and bibliography section of this document indicate that firms make use of low cost of employment rates for hiring semi-qualified professionals in order to be able to provide IT services at competitive pricing within the markets that they seek to penetrate to increase their market share. Such firms compete by providing services at a lower cost than those that would be provided by highly-qualified specialists, given that it is common to differentiate salary scales according to academic qualifications, experience and level of responsibility when rewarding human resources for their efforts.

Human resources cost is then reflected as a high overhead which may be perceived as a competitive disadvantage to the firm when competing with firms that provide similar services. Nevertheless pricing and cost savings are not the only critical factors to be taken into consideration during vendor selection, and tendering processes. As a matter of fact organizations such as Malta Information Technology Agency and the European Commission have outlined their procurement policies and standards on the world wide web in order to allow entities interested in bidding on public tenders to review whether their proposals are compliant with the procurement guidelines.

Cost efficiency can be achieved through the careful analysis of business processes and re-engineering in order to ensure that products and services are delivered at competitive prices and allowing the firm to maximize its profits.

Milton Friedman (1962) states that there is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits as long as it stays within the rules of the game, which is to say engage in open and free competition, without deception or fraud.

Williamson (1975) outlines that the transaction is made the basic unit of analysis and is thereafter dimensionalized with emphasis on asset specificity[[7]](#footnote-8), contractual disturbances (uncertainty) and frequency.

Nowadays, pressure is upon firms to make use of sustainable sources of renewable energy and to endorse and apply a code of ethics towards its employees, and, other stake holders and such policies are endorsed by policy makers such as the European Commission, which acts as a supervisor for national authorities and thereby having a high indirect or direct degree of influence on business policies and practices.

The instability of economies brought about by the economic recession (2008), has given rise to extensive measures of austerity and cost cutting, and, empirical evidence indicates that although corporates seem to be making profits, cost-cutting by way of lay-offs and use of contractual flexibility in engaging human resources. This may result in an increased negative public perception of the firm, and, sound management is required to provide for ethical and appropriate ways of reducing costs, making best use of technology and automation, human resources and work intensification amongst others.

Nevertheless automation and re-engineering such as shifting to paperless solutions may save costs to clients who engage in appreciating the value of investing in technologies. According to research available through online library ibiblio.org (1996), electronic filing alone were expected to save the Inland Revenue Service and state agencies from having to mail out the equivalent of 75 boxcars of forms.

**Operational expertise** in specialist technological skills that provide access to highly specialised consultancy and knowledge through a contract that may engage the specialist as they are required, since not all enterprises require a long-term and full-time employee with such specialized technical skills.

**Staffing issues** e.g. availability of human resources to work, and, the dynamics of human resources management involving personnel management, dealing with employment legislation and differerent forms of contracts of engagement – which includes subcontracting and long-term employment.

**Flexibility to increase or decrease IT capacity** e.g. IT Infrastructure, Systems and Network Administration. Human capital strategies for flexible organizations were outlined by Atkinson (1984), who outlined that due to market stagnation, risk of job loss which has been confirmed by various job cuts done by corporate entities, uncertainty, technological change, and, reduced working time, firms are looking to increase functional, numerical and financial flexibility in the way that they manage human resources, to allow an effective and efficient use of manpower through a varied use of contractual relationships with human resources, and, a careful management of functions to outsource vis-a-vis functions that are considered to be too part of its core processes to delegate effectively to vendors.

Empirical evidence and research carried out by experts quoted in the references and bibliography section of this document conclude that dilgent vendor selection and monitoring reduces the risk of vendor opportunism, facilitates communication, negotiation and performance management of the vendor.



Illustration : Atkinsons Flexible Firm (1984)

**Reliability of the vendor** which may include perception and measurable criteria.

Support for internal users including application support, availability of useful documentation, and, one-to-one assistance which is made more easily available through the use of (secure) remote connections, and, the advanced internet infrastructure, that is moving towards increasing the use of the potential number of IP addresses with the increased use of IP version 6[[8]](#footnote-9).

Brown and Wilson (2005) outline the vendor selection process as a way to organize a selection team, on through to selecting the preferred vendor, or combination of vendors. In this manner, the client diligently seeks to gather information on the potential risks relating to the potential vendors in advance of establishing a contractual relationship.

1. Convene the selection team, which involves selecting the qualified persons who are qualified to collaborate on the request for proposal. Governance policy makers, such as EU Funding policies might establish criteria on the governance and the qualifications required of persons who play an active part in decision making.

2. Gather vendor information and issue requests for information, which may include scoring vendors against pre-established criteria such as viability, client satisfaction, relationships with other parties, financial performance, asset ownership, results from independent evaluations – for example testimonials from other customers, contractual exception, penalties and rewards, perceived quality of service, exit strategy, site visits, viability of existing implementation plans. At this stage one may seek to establish the information required to evaluate the establish a business to business relationship with the potential vendor, without going into extensive research.

3. Agree on a realistic schedule for the implementation of projects, which is usually done after sufficient information is provided to the vendors through the request for information to enable them to propose solutions. One may also agree on the performance management criteria that can be used to evaluate the delivery of work, and, who bears the onus of managing the projects and programmes.

Empirical evidence shows that Malta Information Technology Agency act as administrators and project/programme managers for IT/IS projects required by the various Government Departments for the Government of Malta, evaluating vendors, and establishing the contractual framework that governs the delivery of a project within the expected criteria.

Similarly, the UK Government uses, by far and large, PRINCE2 to manage its projects, and, this pre-empts vendors in aligning themselves to the formal and bureaucratic procedures intended to monitor the progress and quality of the projects and/or programmes.

Vendors might take on the responsibility of co-ordinating the project and providing project management services of other vendors, this model is commonly in use by companies such as Cap Gemini.

4. Develop a term sheet, which summarizes the objectives and terms and conditions expected of the vendor. For example, the client might clearly specify that they request support on a 24/7 basis so as to reduce the risk against business continuity if the information systems being procured are not available for a technical reason which is not “an act of God”, and, establish that the information system needs to be replicated on an off-site server in another country, given that the country that hosts the servers has a high incidence of being subject to an earthquake. The client might also expect that the vendor takes out an insurance policy to cover the loss of business continuity incurred on the client, should there be consequential damages which are beyond the reasonable control of the vendor in question.

5. Define and evaluate the current objectives and operations, which requires an indepth analysis of the high level objectives, and, a preparation of a tender document formally outlining the expectations from the outsourcing process.

6. Define evaluation criteria and weights before issuing bid requests. Firms are commonly adapting frameworks such as the Balanced Scorecard, originally outlined by Kaplan and Norton (1990), to evaluate the performance of vendors, where they choose to monitor the vendors themselves.

7. Prepare requests for proposal, which outlines the products and services required of the vendors. The request for proposal is usually distributed within a tendering process. For example, Malta Information Technology Agency, publishes the procedures on the world wide web to allow potential vendors to evaluate their proposals and to pre-empt business development managers in aligning the proposal to the established terms and conditions.

8. Finally the selection committee would evaluate the bids received, and, select a vendor or a combination of vendor(s) with whom they seek to formalizing a business-to-business or business-to-government relationship in order to kick off the process by which the vendor works towards the implementation of the work according to the schedule.

Lacity and Rottman (2012) contend that when the maturity of an organization is not taken into consideration, the business relationship has a higher probability of failing. Therefore a vendor which has attained CMMI[[9]](#footnote-10) level 3 where the process characterized for the organization is pro-active would not collaborate successfully with a client whose organization are still rated at CMMI level 1 i.e. there are unpredictable processes, which are poorly controlled and reactive. Therefore in this hypothetical case, the client would need to avail from business consultancy in order to reach the maturity level that meets the levels provided by the vendor, in order to mitigate the risks that might imply that the client organization is not performing to its full potential effectiveness and efficiency.

**Knowledge transfer** is important to enable the users to use the implemented technology effectively, and, this implies effective use of the appropriate training methods including documentation, multimedia and classroom lead training which can also be done using virtual learning environments. Knowledge transfer needs to be managed when the client is considering switching vendor. There may be pricing and other factors that may make switching to another vendor financially unfeasible as the vendor would only be expected to be interested in concluding a business relationship that failed with the least possible exit costs.

Willcocks (2005) and other researchers indicate that knowledge management and knowledge transfer are critical issues, particularly when companies are looking to backsourcing, for example, when they have reached an organizational maturity level which makes it worth the exercise of taking on the function back in-house. For example, the organization might have carried out a cost vs benefit evaluation or an investment appraisal and decided to review the level of outsourcing or to keep the function that was previously outsourced as an in-house process. Research shows that at times companies might decide to manage a business as part of an expansion plan, although the trend seems to indicate a higher focus on specialization than on diversification. Corporates such as Oracle and Microsoft have used mergers and acquisitions to increase market share, and, this may drive other companies to seek to merge with outsourcing providers as part of strategic vertical or horizontal integration strategies, as this may bring about economies of scale. Begg, Fischer and Dornbusch (2005) state that an economic reason that drives entrepreneurs in seeking economies of scale is specialization of labour and skill. Research indicates that companies might initially outsource a function and then seek to backsource the function as they realize that there is an opportunity to turn the function into a profitable spin-off[[10]](#footnote-11).

Willcocks, Cullin and Craig (2011) contend that in order to avoid vendors from engaging in opportunistic charges such as high exit fees that may or may not have been originally stipulated within the *service level agreement[[11]](#footnote-12)*, the contract stipulating the business relationship between the vendor(s) and the client(s), may be prepared to assign the onus of responsibility for knowledge transfer onto the respective vendor(s), and thereby transfer the risk upon the vendor.

**Industry specific expertise** is accessible to customers of outsourcing providers at the prices stipulated within the service level agreement, which leaves the customer to avail from a business-to-business (B2B) service, without having to manage the resources required to train human resources, pay their salaries and oversee their performance through direct or indirect supervision amongst other management controls. From their part outsourcing firms would need to engage in recruitment processes and human resources management that motivates their qualified staff or sub-contractors into engaging in training.

Empirical evidence shows that commonly vendor-specific certification such as those endorsed by Microsoft, Oracle are highly considered as entry-level qualifications for students aiming to become experts in a particular technology, although academic and vocational qualifications are still a valid source of life-long learning to support the students skills, theoretical and practical knowledge. This has been confirmed by the success of funding originating from European Social Fund and other funding schemes utilized by the private entrepreneurs and public enttities.

**Increased volume of IT Projects** may influence the relationship with its existing outsourcers and provide opportunities to seek alternative ways of sourcing IT and other services, which puts competitive on the vendors and their agents to seek to compete by way of meeting clients expectations. This hypothesis has its foundation in economic demand and supply theory, that finds its roots in the economic theories originally hypothesized by Adam Smith (1776), and, James Denham Stuart (1713 to 1780).

The worldwide IT outsourcing (ITO) market is forecast to reach $288 billion in 2013, a 2.8 percent increase in U.S. dollars (and 5.1 percent in constant currency\*) from 2012, according to Gartner, Inc. Compared with Gartners previous forecast, nearly all ITO segments are now forecast to grow more slowly during 2013[[12]](#footnote-13). This implies that demand is expected to grow at a slower rate, which may be rationalized by the fact that economic activity is still considered to be on the recovery, by researchers who analyze global economic trends in view of the economic recession (2007).

On the other hand economists might have to be persuaded by way of providing fresh information in order to dispell negative perceptions relating to the productivity paradox and negative perceptions around the IT (outsourcing) market. Brynjolfsson (1993) had noted that whilst delivered computing-power in the US economy has increased by more than two orders of magnitude since 1970 yet productivity, especially in the service sector, seems to have stagnated.

A negative perception of the IT industry is also confirmed through information provided by executives within the Maltese insurance industry, who purport to evaluate industries based on sales forecasts.

Brynjolfsson, Hitt and Tambe (2011) have taken a pro-active approach in suggesting that In information-rich environments, firms should engage in practices that make up-to-date, accurate information available to decision-makers.

Grech and Bartolo (2013) state that (Maltese) companies are deleveraging their balance sheets and reportedly prefer to hoard cash rather than invest it[[13]](#footnote-14).

**Speed to market** or time to market refers to the time it takes from conceiving a product to the time it becomes available on the market, and, this is particularly relevant within the information systems and software industry, where bespoke development is still in demand. Not having accurate, reliable and up-to-date information delivered on time may incur business loss due to the fact that decision makers require information to be available in order to take decisions.

Empirical evidence shows that software development methodologies such as Dynamic Systems Development Method and Agile Software Development are reviewed and tuned by information systems specialists, in order to align the delivery to decrease the time to market of software and other business solutions.

Putting pressure in order to drastically reduce the time to market may require a compromise on other criteria such as increased cost or lower quality of work delivered, and, therefore sound project management practices are required to manage the delivery in a way that the delivery is acceptable, fit for purpose and meets the interests of stakeholders in the project.

**Standardization** refers to the process of developing and implementing technical standards. Standardization can help reduce the risk of dependence on vendors, and increase the technical flexibility in connection with compatibility, interoperability, safety, repeatibility or safety. Adopting de-facto standards promise to deliver increased cost savings, increased customer satisfaction, increased access to global markets, increased market share, and, benefits relating to environmentally friendly practices, such as the adoption of Green IT initiatives where environmentally sustainable practices are used within the IT industry.

Weve continued improving our power usage effectiveness (PUE) every year since we first started reporting our numbers in 2008. As of Q2 2013, the TTM energy-weighted average PUE for all Google data centers is only 1.11, making our data centers among the most efficient in the world.

Sourced from <http://www.google.com/about/datacenters/efficiency/internal/>, last accessed on 30th August 2013.

Taking advantage of established data centers ensures that client organizations are availing from technologies which are already benefiting from environmentally sustainable practices, thus make best use of available expertise on the subject matter.

**Budget restructuring** aims to align resources with objectives, and, re-align them according to the cost savings that would be availed of when solutions are implemented successfully. Technology such as business intelligence is increasingly being used to analyze financial and other productivity and performance criteria, which assists executives in re-allocating budgets for capital investment and business growth, when economies of scale are seen to have resulted in considerable cost savings.

**Innovation and cutting edge technology** is promised to be used by vendors, although this is not necessarily the case. The client needs to outline the requirements and realistic expectations made in terms of budget, quality and timeframes to enable the vendor or their representatives to propose a solution that fits their purposes. The clients outlook and openness towards innovative technologies may indicate their appetite for newer technologies.

The diffusion of innovations is a theory that seeks to explain why and at what rate new ideas and technology spread throughout cultures.

Illustration 1: Rogers (1962) - diffusion of innovation

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| --- | --- |
| Adopter category | Definition |
| Innovators | Innovators are the first individuals to adopt an innovation. Innovators are willing to take risks, youngest in age, have the highest [social class](http://en.wikipedia.org/wiki/Social_class), have great financial liquidity, are very social and have closest contact to scientific sources and interaction with other innovators. Risk tolerance has them adopting technologies which may ultimately fail. Financial resources help absorb these failures. (Rogers 1962 5th ed, p. 282) |
| [Early adopters](http://en.wikipedia.org/wiki/Early_adopters) | This is the second fastest category of individuals who adopt an innovation. These individuals have the highest degree of [opinion leadership](http://en.wikipedia.org/wiki/Opinion_leadership) among the other adopter categories. [Early adopters](http://en.wikipedia.org/wiki/Early_adopters) are typically younger in age, have a higher social status, have more financial lucidity, advanced education, and are more socially forward than late adopters. More discrete in adoption choices than innovators. Realize judicious choice of adoption will help them maintain central communication position (Rogers 1962 5th ed, p. 283). |
| Early Majority | Individuals in this category adopt an innovation after a varying degree of time. This time of adoption is significantly longer than the innovators and early adopters. Early Majority tend to be slower in the adoption process, have above average social status, contact with early adopters, and seldom hold positions of [opinion leadership](http://en.wikipedia.org/wiki/Opinion_leadership) in a system (Rogers 1962 5th ed, p. 283) |
| Late Majority | Individuals in this category will adopt an innovation after the average member of the society. These individuals approach an innovation with a high degree of skepticism and after the majority of society has adopted the innovation. Late Majority are typically skeptical about an innovation, have below average social status, very little financial lucidity, in contact with others in late majority and early majority, very little [opinion leadership](http://en.wikipedia.org/wiki/Opinion_leadership). |
| Laggards | Individuals in this category are the last to adopt an innovation. Unlike some of the previous categories, individuals in this category show little to no opinion leadership. These individuals typically have an aversion to change-agents and tend to be advanced in age. Laggards typically tend to be focused on traditions, likely to have lowest social status, lowest financial fluidity, be oldest of all other adopters, in contact with only family and close friends. |

Sourced from <http://en.wikipedia.org/wiki/Diffusion_of_innovations>, last updated on 7th August 2013.
# Research methodology

# Conceptual Framework

# Findings

# Analysis

# Conclusion and recommendations

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	1. Sher Verik and Iyanatul Islam, The Great Recession of 2008-2009: Causes, Consequences and Policy Responses, available [online] at <http://ftp.iza.org/dp4934.pdf>, published by the Institute for the Study of Labor (May 2010).
	2. Prasanne Tambe, Lorin M. Hitt and Erik Brynjolfsson, How external information practices affect innovation and productivity (June 2011).
	3. Erik Bryjolfsson, MIT School of Management, The Productivity Paradox of Information Technology: Review and Assessment (December 1993), available online at <http://ccs.mit.edu/papers/CCSWP130/ccswp130.html>.
	4. [Jonathan Camilleri IADCS](http://mt.linkedin.com/in/jonathancamilleri/) shares internet bookmarks online at <https://delicious.com/jon80>.
		1. Ibiblio, a digital archive available [online] at [www.ibiblio.org](http://www.ibiblio.org/), last accessed on 30th August 2013.

1. The **Pareto principle** (also known as the **80–20 rule**, the **law of the vital few,** and the **principle of factor sparsity**[) states that, for many events, roughly 80% of the effects come from 20% of the causes.](http://en.wikipedia.org/wiki/Pareto_principle%22%20%5Cl%20%22cite_note-NYT-1) [↑](#footnote-ref-2)
2. Further information on Six Sigma is available by reading case studies from Lockheed-Martin and other companies, in a book titled *Lean Six Sigma for Service*, written by Michael L. George, published by McGraw Hill (2003). ISBN: 0-07-141821-0. You might also wish to read a book titled The Lean Six Sigma Pocket Toolbook written by Michael L. George, David Rowlands, Mark Price and John Maxey, published by Mc Graw Hill (2005) ISBN: 0-07-144119-0.

 This literature review of these books are not considered to fall within the scope of this research by the author of this document. [↑](#footnote-ref-3)
3. Interview held with Inspector Timothy Zammit at the Criminal Investigation Department, Police of Malta, Floriana on 15th June 2013, the findings of which are used throughout this document with kind permission. [↑](#footnote-ref-4)
4. Geert Hofstede's website is available at <http://www.geerthofstede.com/>, amongst other Internet resources last accessed on 29th August 2013. Geert Hofstede is a highly recommended consultant for culture management and has been referenced within the study guide for *Business* and *Management (MN1107*), published by the London School of Economics and Political Science (2011). [↑](#footnote-ref-5)
5. Information about Fons Trompenaars, is available at <http://www2.thtconsulting.com/about/people/fons-trompenaars/>, amongst other Internet resources, last accessed on 29th August 2013. Fons Trompenaars is a highly recommended consultant for culture management, by scholars and academics including Ronald Aquilina, St. Martin's Institute of IT, Malta. [↑](#footnote-ref-6)
6. Risk in a Probabilistic Risk Assessment Methodology (PRAM) is defined as a feasible detrimental outcome of an activity or action. In a PRA, risk is characterized by two quantities:

	1. the **magnitude (severity**) of the possible adverse consequence(s), and
	2. the **likelihood (probability)** of occurrence of each consequence. Consequences are expressed numerically (e.g., the number of people potentially hurt or killed) and their likelihoods of occurrence are expressed as probabilities or frequencies (i.e., the number of occurrences or the probability of occurrence per unit time). The total risk is the [expected loss](http://en.wikipedia.org/wiki/Expected_loss): the sum of the products of the consequences multiplied by their probabilities.

 Sourced from <http://en.wikipedia.org/wiki/Probabilistic_risk_assessment>, last updated on 7th March 2013. [↑](#footnote-ref-7)
7. Asset specificity is a term related to the inter-party relationships of a transaction. It is usually defined as the extent to which the investments made to support a particular transaction have a higher value to that transaction than they would have if they were redeployed for any other purpose.

 Sourced from <http://en.wikipedia.org/wiki/Asset_specificity>, last updated on 26th September 2011. [↑](#footnote-ref-8)
8. [↑](#footnote-ref-9)
9. Further information on Capability Maturity Model Integration (CMMI) is available [online] at <http://www.sei.cmu.edu/cmmi/>, last updated on 30th August 2013. [↑](#footnote-ref-10)
10. A corporate spin-off or a starburst, refers to a corporate action where a company “splits off” sections of itself as a separate business. Sourced from <http://en.wikipedia.org/wiki/Corporate_spin-off>. [↑](#footnote-ref-11)
11. Service Level Agreements are usually part of a service contract. An example is available in the *References and Bibliography* section of this document, number 10. [↑](#footnote-ref-12)
12. Sourced from an online article available [online] at <http://www.gartner.com/newsroom/id/2550615>,

 last accessed on 30th August 2013. [↑](#footnote-ref-13)
13. Sourced from an article titled 'A question of leverage' taken from *Money* Issue 16 – December/January 2013, published by BE Communications Limited, Sliema, Malta. [↑](#footnote-ref-14)