

# ICT versus Business Investment

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## **Executive Summary**

*Organisational ICT and business investments may involve significant sums of money and display various similarities allowing them to be managed in the same way. Technology like the Internet and mobile computing functionality advances at a rapid rate, increasing the level of investment is required to keep business models running smoothly. The complexity of ICT infrastructure can be a daunting one with business people struggling to understand the language of ICT and why it is all necessary even though many business enhancement projects heavily involve ICT.*

*Different organisations and industries evaluate their ICT investment based upon the value they can generate from the outcomes. Comparisons of technical-reliant organisations highly value ICT investment and have positioned themselves to deliver advantage continually through new innovative technology; while the non-technical-reliant, service orientated organisations use ICT as a supporting arm in providing increased customer experience.*

*Investment in business and ICT factors can bring considerable risk that should be managed and categorised together and may come in the form of operational, strategic and project perspectives. By following these principles, process forms and can quantify a basis of justifying ICT investment projects and how they are classed and evaluated. These managerial guidelines can in turn improve implementation success rate and provide a strong basis for decision-making as they are delivered with sponsorship from senior management.*

*For firms to derive tangible value from investments in ICT, other actors must be considered including the external environment, business support and human resource expertise. With these assets aligned, ICT can enable businesses to expand into new industries, different market segments, develop new products or services and reach a global customer-base in any marketplace in the world.*

## **Introduction**

The Information and Communication Technology (ICT) sector is rapidly becoming known as the critical enabler for businesses to achieve a competitive advantage through superior technology and innovation. In this techno-driven age, businesses look to the ICT department for opportunity and invention. As ICT departments carry greater value, their strategic planning encapsulates the broader business goals and assists in enabling it to reach set goals.

In defining the relationship between ICT investment and profit to businesses largely depends upon the degree that the firm relies on ICT in its business model and the value they place on their ICT division.

This report explores the diversity of ICT infrastructure investments and the drivers and decision-making behind them. Measuring value from ICT infrastructure investment can be difficult to quantify therefore making it hard to justify to the business as a necessity. This is explored through a number of examples in the telecommunications industry and government organisations sighting vary different approaches.

Also a case study is presented on the benefit of a mobile computing system in a Melbourne restaurant that has streamlined customer meal orders and brought positive exposure to the business.

## **Formulae for Business Growth**

ICT infrastructure can be broken down into items such as computer software applications, servers, laptop and desktop computers, monitors, technical equipment, communications devices and other digital accessories. In this era all companies will have some sort of ICT infrastructure supporting their business. The level of complexity is dependant on the businesses needs to use ICT in their day to day operations.

There are various figures around quoting the level of capital expenditure spent on ICT. Some quotes include 30 percent (Sriram et al 1997), 50 percent (Marshall et al 2005) and 58 percent (Broadbent & Weill 1997). In a McKinsey empirical study (2000), it was also quoted that ICT investment will grow to 20.2 percent by the year 2000. Strassmann and Shu (2005) have since reported that while ICT investment has increased to 25 times what it was 30 years ago, labour productivity growth declined. This became known as the 'ICT productivity

paradox'. Regardless of these abstract figures the formulae for accurately defining the level of ICT investment that equates to increased business performance is unclear.

Part of the reason why there is no set formulae is due to the different level of human resources who are driving the technology. The sixth principle of the Australian Standard for Corporate Governance of ICT (2005) mentions the 'people in the process' be considered in the evolution of ICT investment. Strassmann and Shu (2005) also state that it is the productivity of the people behind ICT, not ICT itself that brings value. This fact should be considered when considering ICT investment as it is the users who will ultimately make or break the system. This is also supported by Marshall et al (2005) by stating that ICT investments alone not creating business value.

So to derive formulae for business growth organisations need to look to their staff and existing resources to first define their productivity in their current technical environment as a benchmark. In leverage off this quantitative analysis, potential and incremental advantages in workflow can be measured giving the ability to justify expenditure through formal financial metrics like payback period and return on investment. This normally would be delivered through a business case of ICT investment. Smith (2005) encourages ICT investments to be treated like financial investment portfolios. This could turn the investment initiative request into a strategic and tactical plan, in building ICT infrastructure in line with business objectives.

### **Value in Alignment**

With the rise in importance of governance frameworks and collaborative functions, the notion of business units existing as silos is reducing. Corporate entities are realising that in creating overall firm value, all divisions must be working together in realising defined objectives. ICT investment desires must also operate firmly under this directive in obtaining useful advances in technology. In a study by Byrd et al (2005), results indicated that there is a synergistic coupling between strategic alignment and ICT investment with firm performance. Therefore closer alignment of ICT investments should improve the relationship with the business, leading to more effective holistic systems and procedures. Involving business decision-makers in ICT investment can develop communications and instil a common understanding of ICT language and its scope within the organisation. This understanding and adoption of the common direction is one critical aspect in working towards a goal that Weill et al (2002) state of long-term enterprise-wide strategies while being responsive to the demands of business unit strategies.

In developing a case of ICT investment, firms must first articulate their corporate intent and then link ICT strategic and tactical plans to them as shown in Fig. 1 normal through a business case. ICT projects may be to implement ICT investments or may act visa-versa but all must be in alignment in realising defined corporate goals. Those investment or projects that fall outside these criteria should be discarded. Broadbent and Weill (1997) suggest that by first defining business and ICT 'maxims' or future direction, decision-making ability for infrastructure funding is given context. This can assist in distilling organisational effort to reach objectives.

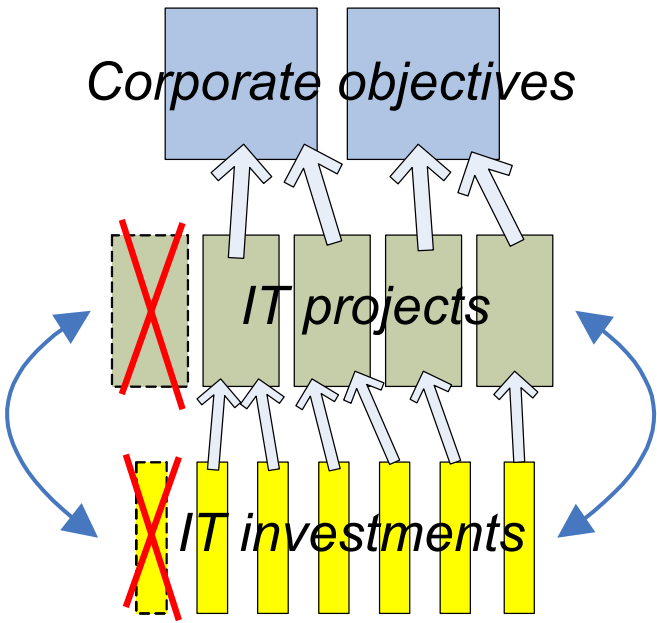


Figure 1: IT Investment Loop

Alignment must come from directives set by and involved with senior management. The CIO must be senior enough and possess the knowledge and ability in explaining ICT investment opportunities to business managers. Accurately articulating business value through business English is critical in obtaining executive buy-in.

Therefore the value possible from ICT investment is realised through alignment of corporate strategy together with human resources in delivering intent through low-level technology.

**Cases Driving Investment in ICT Infrastructure**

It is clear that technical-dependant organisations drive for rapid and higher investment in ICT infrastructure with far greater intensity than service orientated departments of government (McTaggart 2006). In one example, technology investment is mandatory in facilitating new innovative projects in the telecommunications industry and a significant amount of the budget is pre-allocated for investment in infrastructure to support the initiative. In this case the organisation derives its worth from being the first to market with value-adding tools for the consumer. It is interesting to note that while much focus is on staying ahead of the market, by comparison, little attention is placed on operational efficiency and resource requirements. In one particular case, a low-level technical infrastructure implementation project was run with the latest equipment however without the required human resources to install it. This

highlights again the point by Strassmann and Shu (2005) in the importance of the collaboration between ICT and organisation staff to realise the true value of investment.

In an opposing example at a state government customer service department, focus is on operations and ICT investment is secondary to the core business therefore making choices in further ICT initiatives reduced and minimal to provide only ongoing support to staff and customers. Nonetheless ICT is most definitely an enabler in the implementation of customer databases and case management tools. In this service orientated environment, market competition is non-existent with the key stakeholder being the state government who spend a considerable amount on ICT investment that provides a better customer experience and more fluid workflow practices for staff. For 2005, ICT investment had increased from the previous year to \$5 Billion, with between 15 and 20 percent making up new investments, states federal government special Minister of State Senator Eric Abetz (Bajkowski 2005). This equates up to \$1 Billion for the year in new investments in ICT, sending a message to Australian businesses of its importance.

In the ICT Governance Global Survey 2006, it is stated that the reason for this shift in a vastly differing approach to ICT infrastructure is due to the differing strategic importance of ICT. Companies at the forefront of technical / digital innovation and invention must keep their level of spending on multiple protects high to achieve premium results with the latest equipment. Here focus is on strategy and technical project management to reach goals, rather than operational requirements. Investment is driven hard as these organisations look to capture the early adopter market in selling their wares.

The drive for ICT infrastructure in other organisations that do not derive their worth from selling the latest product or service, focus more on ICT as a support arm in the day to day operations of the business. As technology is not the driver here, it is reduced to simply maintaining the status quo of the business with minimal flair.

In a third example, a local Melbourne Japanese '*donburi*' style restaurant recently implemented a significant feature through investment in ICT in the area of mobile computing. They installed a wireless system for receiving and sending customer orders directly from the table to the kitchen. The system consists of waiters and waitresses utilising Palm Pilot PDAs (Personal Digital Assistants) uploaded with menu selection software. Orders are inputted onto the Palm Pilot devices and send wirelessly via the roof mounted LAN (Local Area Network) hotspots installed around the restaurant directly to terminals in the kitchen. This greatly reduces customer waiting time for meals, has removed the antiquated paper system

and synchronised flow and efficiency through the restaurant. Billing is also streamlined as digital menu dockets are also sent to a centralised server quoting the table number, order and price. Normal payment systems take over from here. The other benefit of having a centralised server is that it allows staff to quickly update menu descriptions and prices at one workstation then send out the new data directly to the Palm Pilots over the wireless LAN. Everything is done once and units are populated automatically, securely and wirelessly.

These three different industry examples represent the drivers from where ICT investment is justified and the value the business expects from the return on investment of ICT infrastructure. Internet and mobile computer feature heavily in advancements in customer service delivery and competitive advantage. In each of these cases, business benefit has been realised through the implementation of ICT infrastructure in alignment with corporate intent. For each industry, different drivers propel businesses to experiment with new technology at a level of spending for comparative and acceptable to the degree of risk to the business.

### **Measuring Perspectives of Business Risk in ICT Investment**

Organisational, strategic and enhancement project investments in ICT can involve significant sums of money therefore significant business risk. ICT investments are similar to many other types of business investments and should be managed through both a corporate and project perspective. For example, in the same way risks of a company merger or acquisition are managed and mitigated, ICT investment should also carry the same weight and criticality.

#### *Operational ICT Investment*

This occurs particularly in service orientated organisations where ICT takes on a support role to business processes. Investment would typically include new software, firmware, middleware applications and hardware installations that improve workflow procedures and methodologies such as ICTIL (Information Technology Infrastructure Library) and in-house standardised practices. ICT Investments service the purpose of defining and enabling internal efficiencies through better operations offered by new technology. Business risk can be high but also directly related to the dollar figure of the investment and the degree of the change as core business operations are compromised with the implementation of technological change. One example made public was the failed ERP system implementation by Hershey Foods Corp, where the operational project blew out to \$112 million and stagnated their ordering, processing and delivery system. This resulted in increased inventory costs, a 12 percent decline in sales and a \$19.9 million drop in third quarter profits

from the previous year (ERPwire 2006). Typical operational ICT investment risks include factors such as:

- Compromised normal daily work processes and practices
- Potential impact to NPV through technology implementation delays
- Staff resources not performing current role due to re-allocation onto implementation tasks

### *Strategic ICT Investment*

Strategic investment in ICT involves corporate decisions from researching the market and like competition and leveraging off core competencies in developing creative solutions for business advancement. Strategy does not only mean external change and can incorporate collaboration between the operational face of the business in aligning current process with the wider organisational goals. However typically ICT strategic planning involves leveraging off in-house competencies to develop new market offerings, to attack new market segments and act as the vehicle in assisting the firm to spread or crystallise its position. Henderson and Venkatraman (1999) state ICT Strategy and business strategy must be integrated. Like business strategic investment risk is administered, so to ICT investments must be measured with the same rigour as it is the ICT component of the strategy that is pivotal in accomplishing the outcome. Strategic risk can have a medium impact on the business but again be dependant on the level of investment. Core processes are not normally touched as the strategy can typically involve new products or services or a new or modified market entry. Some risks for consideration could include:

- Continual scope changing with market fluctuation
- Delivery of business case benefits compromised if ICT tactical plan delayed
- Increased exposure to competitor attack and new and unexperienced market forces

### *Enhancement Project ICT Investment*

ICT investment projects are derived from organisational goals and strategic plans. Any investment initiative outcomes that do not align with strategic intent should not be undertaken (fig,1). Once this intent has been established, proven project management methodology should be employed in delivering the expected benefit. This can come in the form of industry practices such as Prince2, PMBoK (Project Management Body of Knowledge) and PPM (Project Portfolio Management). All these systems incorporate risk administration recommendations. Risk should be managed here individually by project and also from a program-wide perspective also that encapsulated business factors. Complexities between business projects and ICT investment projects are similar as they cross over each other in like areas such as benefit realisation, budget and planning techniques. The business must however remain central to the ICT project and risk should be managed by categorisation,

firstly as a potential impact to the firm and secondly, low-level technical risks within the ICT project itself. Some typical ICT project risks may include:

- Continual evolution of technology provides only a limited window for implementation
- Resources must be maintained by technical expertise throughout the project life cycle
- Budget and time blow-outs due to the inherent risks in running technical projects

### **Closing Thoughts**

Financial investment in ICT is continually reported as increasing with the pace of technological change. This is directly proportional in the increased awareness in the value of ICT. Businesses may look toward ICT to provide and facilitate new strategies based on business objectives. The external environment is moving through an era where many companies understand that the opportunity cost of not maintaining a steady investment in ICT greatly reduces firm wealth and market competitiveness.

In measuring business value through ICT investment, corporations should consider other factors such as human resources and the external environment to determine formulae for success. These factors become the culmination of aspects defined through collaboration between business and ICT decision-making stakeholders, alignment with business objectives and factors stated in business case documents for ICT investment. This holistic affiliation in concert with all concerned can not only deliver strategic intent but also forms a mechanism for distilling resources and defining only the essential ICT investments required to enable the desired change.

As businesses continue to strive forward in reaching their goals through the application of ICT, standards are continually raised in pursuit of better products and services and improved customer loyalty through experience. This can only be good news for the consumer.



## References

- Bajkowski J 2005, *Government ICT spend swells to \$5 billion*, Computerworld 2006, viewed April 2006, <http://www.computerworld.com.au/index.php/id;67551102;fp;16;fpid;0>
- Byrd et al 2005, *The leveraging influence of strategic alignment on ICT investment: An empirical examination*, Information and Management 43 (2006) 308-321
- ERPwire 2006, *Analysing ERP failures in Hershey*, ERPwire.com, viewed October 2006, <http://www.erpwire.com/erp-articles/failure-story-in-erp-process.htm>
- Henderson C and Venkatraman N 1999, *Strategic Alignment: Leveraging information technology and transforming organizations*, IBM Systems Journal, Vol 38, Nos 2 & 3
- ICT Governance Institute / PriceWaterhouse Coopers (PwC) (2006), *ICT Governance Global Status Report 2006*, IL, USA
- Marshall P et al 2005, *Business value creation from ICT investments towards a process theory of ICT governance*, AJIS, Vol 12 No.2 May 2005
- McKinsey & Company 2002, *How ICT enables productivity growth*, McKinsey Global Institute, San Francisco, USA
- McTaggart G 2006, *IS/ICT Governance is a potential source for dynamic capability*, Swinburne University of Technology, Hawthorn
- Office of Government Commerce (OGC) 2002, *Prince2 Manual, Third Edition*, HMSO, Norwich, UK
- Project Management Institute (PMI) 2004, *A Guide to the Project Management Body of Knowledge (PMBok), 3<sup>rd</sup> Edition*, Project Management Institute, Pennsylvania, USA
- Smith F 2005, *Get the ducks in a row, please*, Manufacturing Business Technology, January 2005
- Sriram V et al 1997, *Information Technology in Purchasing: An empirical study and dimensions and antecedents*, Information and Management 33 (1997) 59-72
- Standards Australia 2005, *Corporate Governance of information and communications technology*, (AS8015-2005), Standards Australia, Sydney, NSW
- Stassmann P, Shu W 2005, *Does information technology provide banks with profit?* Information and Management 42 (2005) 781-787
- Weill & Broadbent 1997, *Management by maxim: How business and ICT Managers can create ICT infrastructures*, Sloan Management Review Spring 1997; 38, 3
- Weill et al 2002, *Building ICT Infrastructure for Strategic Agility*, MICT Sloan Management Review, Fall 2002

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