

# Business Intelligence ?

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**Abstract:** Business Intelligence (BI) applications are now some of the biggest software investments being made by businesses worldwide. Using the available literature and data from a survey undertaken by HES in 2007, this presentation provides a summary of what BI is, some basic deployment strategies, the BI platform marketplace, interesting trends in BI tools and platforms and looks at some of the benefits associated with implementing BI.

# Introduction

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- » A research centre setup by the University of Tasmania to research key issues in innovation performance and economic development.
- » My work is looking at ICT inputs in the context of innovation activity and performance. A major sub-set of this is software investment.
- » Business Intelligence applications are now some of the biggest software investments being made by businesses worldwide.
- » Thanks to HES for letting me borrow some of their survey data.
- » Presentation will provide a summary of:
  - What is Business Intelligence
  - Overview of Deployment Strategies
  - The Business Intelligence Marketplace
  - Business Intelligence in Australian Universities
  - Some Interesting Trends
  - Some Benefits Associated with Business Intelligence Implementations

# Definition

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## What do we mean by business intelligence ?

- » The term was first used in a 1958 IBM Journal<sup>1</sup> and popularised by Gartner in the mid 90s.
- » For the cynical it's an ambiguous term with broad marketing appeal for software vendors.
- » In more contemporary circles it is a broad category of applications and technologies for gathering, storing, analysing, and providing access to data to help enterprise users make better business decisions<sup>2</sup>
- » More often abbreviated to “**BI**”

1. Luhn, HP 1958, 'A business intelligence system', *IBM Journal of Research and Development*, vol. 2, no. 4, pp. 314-319.

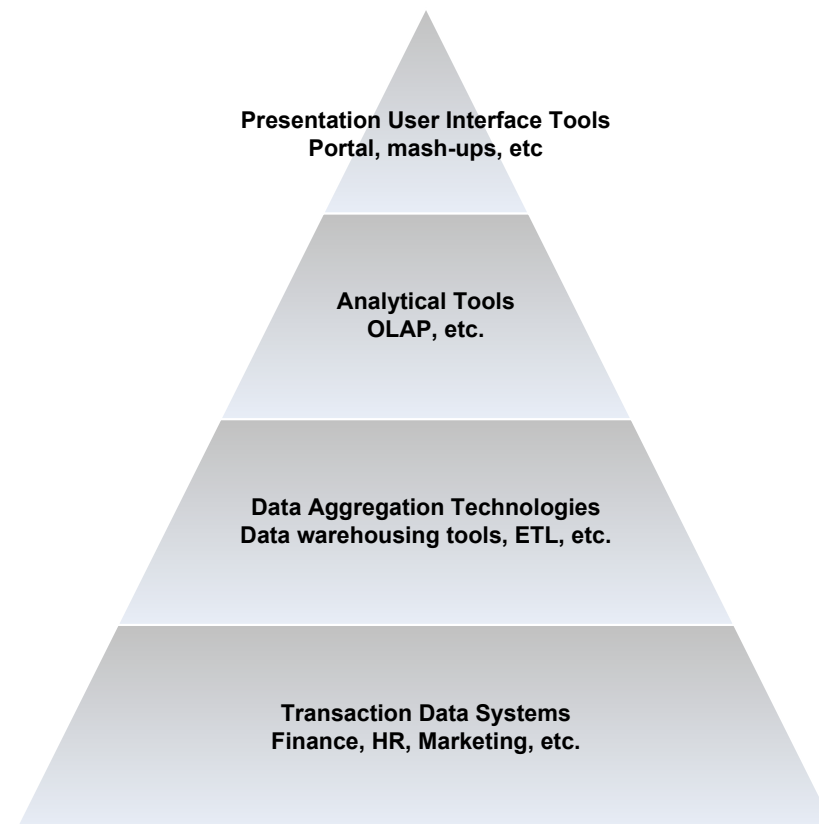
2. Rossetti, L 2006, *Business Intelligence*, TechTarget

# BI Applications and Technologies

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## What kind of applications and technologies ?

- » Includes – reporting and querying tools, dashboards, data warehouse tools, decision support systems, analytics, spreadsheets, OLAP tools, etc,
- » The BI technology stack (simplified)



# Deployment Strategies

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## An overview of three common deployment options

- » **Data-warehouse centric** – the most architecturally pure and theoretically desirable option – a single enterprise data-warehouse and BI platform designed from the “top-down”.
- » **Data-mart centric** – applications which focus on specific business functions or a specific community within an organization. Designed from the bottom-up. Various sub-patterns exist around the extent of standardisation built into the data management i.e. none vs. a lot
- » **Pre-packaged solutions** – typically your all-in-one product focusing on specific applications e.g. budgeting

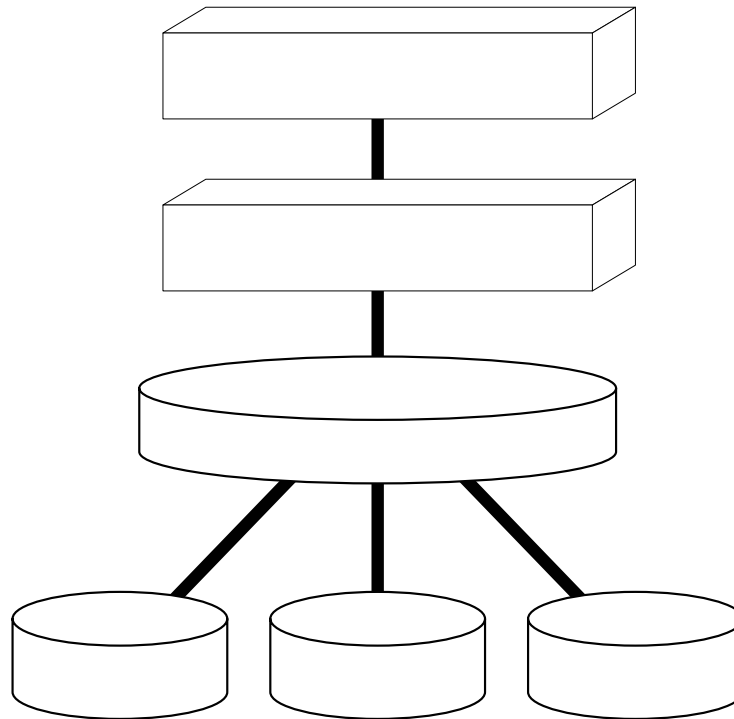
There is also not so common but emerging fourth option:

- » **Virtual BI solutions** – take advantage of web services and some of the new rich user interface developments to build interactive real-time visualisation of transaction data e.g. Google Maps mash-ups

# Deployment Strategies

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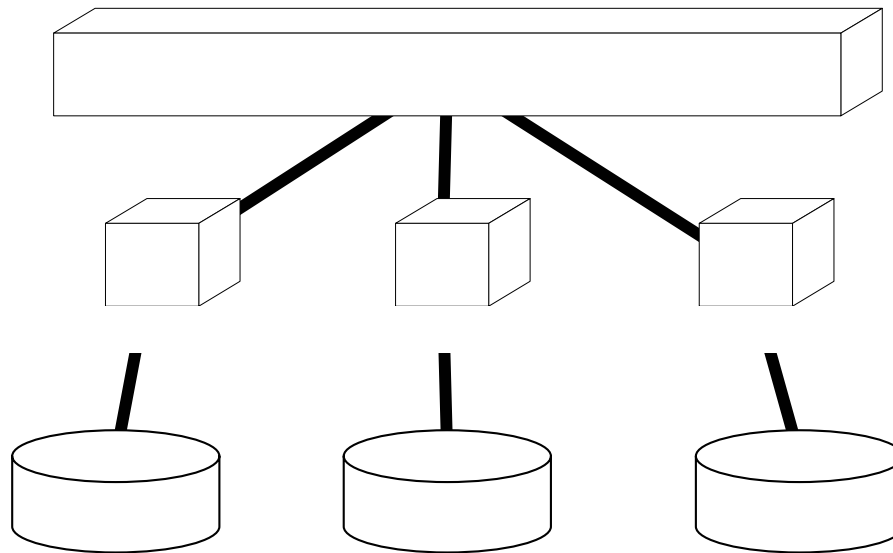
## Data-warehouse Deployment Model



Source: Zangaglia, P 2006, 'Business Intelligence Deployment Strategies: A Pragmatic Pattern-Based Approach', *Business Intelligence Journal*, vol. 11, no. 3, p. 52..

# Deployment Strategies

## Virtual Deployment Model



Source: Zangaglia, P 2006, 'Business Intelligence Deployment Strategies: A Pragmatic Pattern-Based Approach', *Business Intelligence Journal*, vol. 11, no. 3, p. 52..

# Deployment Strategies

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## Which one is best ?

- » No one size fits all
- » Data-warehouse centric – technical, political and organisational realities make it difficult. Only suited to highly centralised business and IT organisational model (is this your University ?).
- » Data-mart centric – provides for incremental BI implementations with significantly quicker implementation at lower risk than the data-warehouse centric model. Standardisation is still an issue, but not such a drain on your first project.
- » Pre-packaged solutions –varying and inconsistent strengths. Niche applications.
- » Virtual BI solutions – still relatively new technologies involved here, potential for poor query performance and tools possibly not as good as main stream BI. However watch this space for disruptive innovation.

Source: Zangaglia, P 2006, 'Business Intelligence Deployment Strategies: A Pragmatic Pattern-Based Approach', *Business Intelligence Journal*, vol. 11, no. 3, p. 52..

# The BI Marketplace

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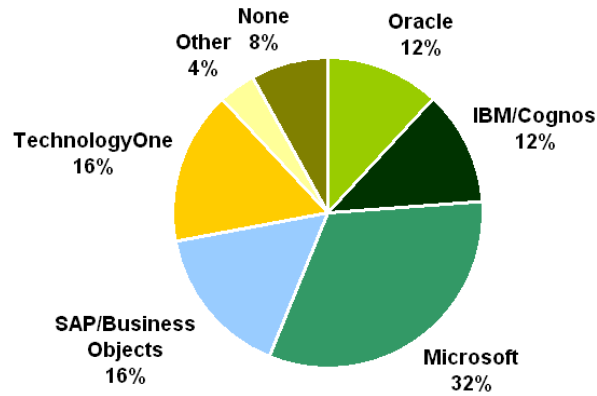
## Who are the major players and products ?

- » Gartner's 2008 Magic Quadrant for BI Platforms suggests the leaders are (in no particular order):
  - IBM/Cognos, Microsoft, Oracle, SAP/Business Objects, SAS and MicroStrategy.
  - The presence of the big 4 in this market demonstrates its significance.
  - In 2007 Cognos acquired Applix and then shortly after were themselves acquired by IBM . SAP acquired Business Objects and Oracle completed its acquisition of Hyperion.
- » There are also a number of open source options and a number of on-demand service providers (see later slides).

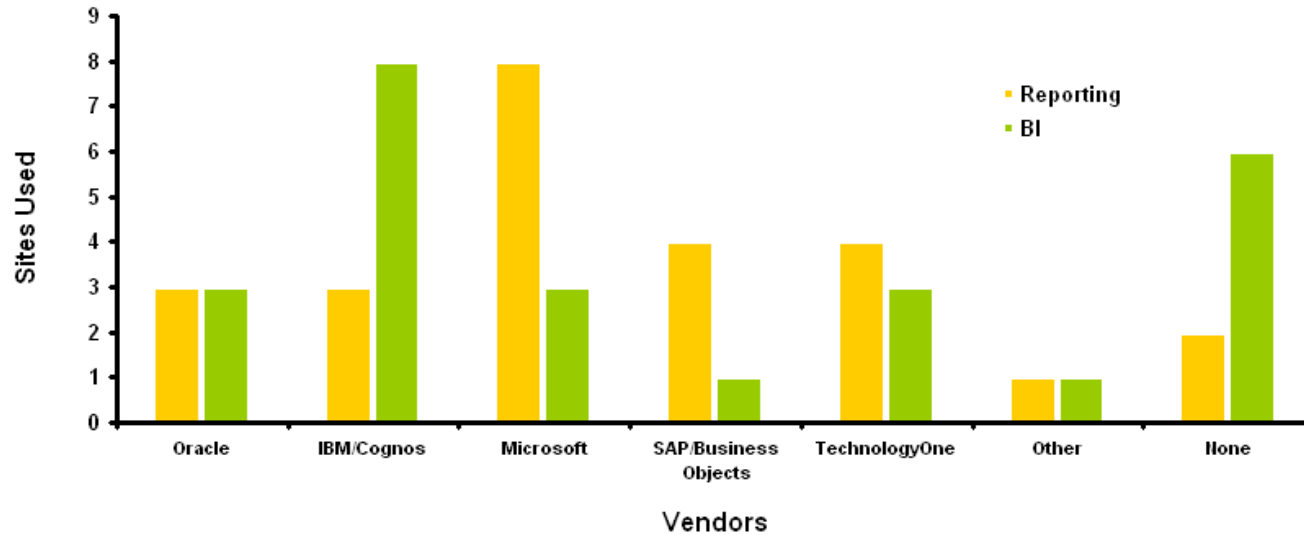
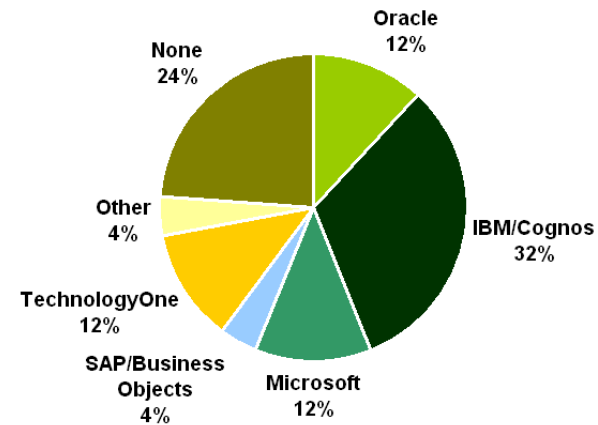
# BI in Australian Universities

## 2007 HES Survey – Which Vendors ?

Reporting Vendors

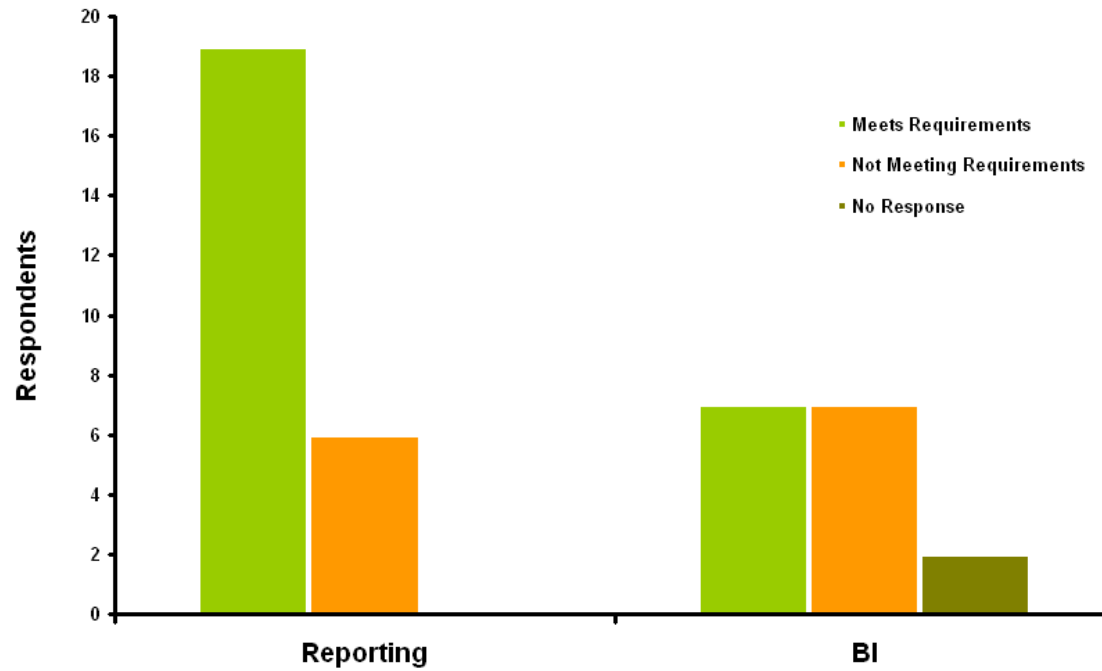


BI Vendors



# BI in Australian Universities

## 2007 HES Survey – Meeting Requirements ?



# Trends: Open-Source BI

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## How is open-source positioned in the BI space ?

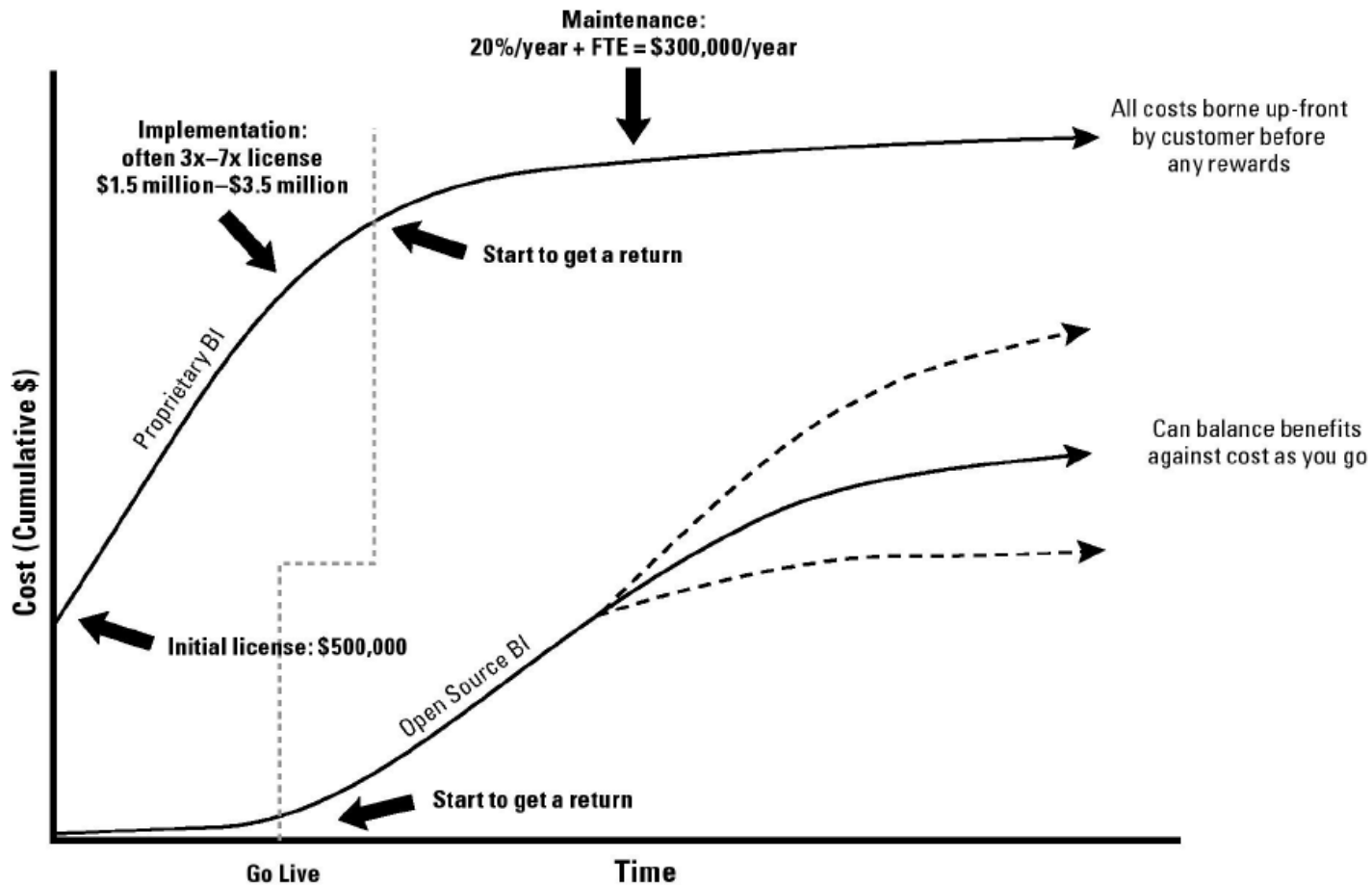
- » There are a few relatively mature open-source options operating in the BI space – Pentaho, SpagoBI, Jaspersoft to name a few.
- » The main argument for considering open-source BI is that it can potentially provide you with an earlier ROI because there are no initial licence costs. Hence you can balance the benefits against costs as you go; as opposed to incurring high upfront costs<sup>3</sup>.
- » There are however a number of risks which include:
  - access to the required development and implementation skills;
  - the risk that the project might be abandoned and/or suffer from poor product support; and
  - limitations in relation to the management of large data sets (>1Tb).
- » Gartner<sup>4</sup> suggests open-source BI is here to stay and that it is just emerging from the earlier adopter appeal, being taken up by SMEs and set to become “just another aspect of sourcing” by 2012.

3. Klawans, B 2006, 'Saving Time and Money-Why Open-Source BI Makes Sense', *Business Intelligence Journal*, vol. 11, no. 4, p. 18.

4. Bitterer, A 2008, “Who's who in open-source business intelligence, *Gartner*, G00156326

# Trends: Open Source BI

## Open Source's Perceived ROI Advantage



Source: Klawans, B 2006, 'Saving Time and Money-Why Open-Source BI Makes Sense', *Business Intelligence Journal*, vol. 11, no. 4, p. 18.

# Trends: On-Demand BI

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## Software as a service (SaaS) options for BI

- » The number of hosted BI solutions grown significantly in recent times. Its one area where you may have doubted BI would be particularly successful.
- » Such systems are being driven by increased network capacity, the availability of analytics type web services and BI customers looking to reduce the cost and complexity of operating BI environments.
- » The hosted or on-demand services range from:
  - Report repositories such as crystalreports.com;
  - Fully hosted systems with data extraction, transformation and loading (ETL) tools such as Oco, PivotLink, LucidEra;
  - Ready to go appliances such as Cognos Now.
- » Value Proposition - *"You can build anything you want with Cognos or others, but you have to spend 10 months to build it and can't try before you buy"* LucidEra CEO<sup>5</sup>
- » Problems – sending them your data, that's a capacity, privacy and security issue which is faced by other SaaS solution providers.

5. Dignan and Steinert, 2007, LucidEra opens for business intelligence on demand, *ZDNET Blog: Between the Lines*  
<http://blogs.zdnet.com/BTL/?p=4598>

# Trends: Sustainability and BI

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## How will sustainability reporting impact BI

- » Sustainability BI will requires data from unusual sources, e.g. building management systems, transport and travel, waste, etc.
- » Seems to be a clear market for external carbon databases, expect to see them offered up as web services.
- » New analytical tools – which incorporate “green metrics” and 3BL reporting techniques (environmental, social and economic).
- » Appears to be a number of point BI solutions but the big vendors are involved as well:
  - IBM provides a Carbon Tradeoff Modeler, a tool that that “analyzes and manages the climate impact of supply chains”.
  - SAS Sustainability Management solution uses predictive analytics to “validate strategies, identify causal relationships, forecast improvement scenarios and drive innovation.”

# BI Benefits

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## Benefits associated with BI

- » OLAP Survey 2005 (Now called BI-7 Survey) 2,100 participants, 95 countries, 5,551 individual responses.
- » Identified eight discrete business benefits commonly identified by participants and created a composite index of how business performance had been impacted by the use of specific BI products.
- » Soft benefits (in order of significance):
  - faster or more accurate reporting (how do you show the ROI on this);
  - better business decision making; and
  - improved customer satisfaction.
- » Hard benefits (in order of significance):
  - saved headcount in business departments
  - increased revenue, through better sales and marketing analysis
  - saved other non-IT costs
  - reduced external IT costs,
  - saved headcount in IS
- » Found that soft benefits impacted significantly more than the more tangible benefits

Source: Pendse, N, 2006, Effect of the BI Application on Business Performance, *BI Review*

# Factors Affecting Benefits

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## Factors which affect BI performance outcomes

- » OLAP Survey 2005 also reviewed a number factors and identified several which affect the business performance index:
  - Product choice,
  - Methods of product selection,
  - Architecture,
  - Input data volumes,
  - Server platform,
  - License fees paid,
  - External consulting costs,
  - Type of lead implementer,
  - The extent of Web deployment,
  - Deployment time,
  - Data load/aggregation time, and
  - Query performance.
  
- » Whilst all these factors had an impact the biggest came from query performance – that's the time it takes to submit a request and get a report up on the screen.
  
- » The survey found that business performance suffered as query performance declined.

Source: Pendse, N, 2006, Effect of the BI Application on Business Performance, *BI Review*

# More on Benefits

## Example of benefits from a UTAS Business Case

**Table 3. Schedule of Expected Benefits**

Benefit	Quantum	Notes
Reduction in effort associated with the budget planning and forecasting process.	\$200,000 p.a.	<ul style="list-style-type: none"> <li>Based on a 50% reduction in effort for all staff involved.</li> </ul>
Reduction in the costs associated with planning facilities and associated resources	\$94,000 p.a.	<ul style="list-style-type: none"> <li>Recovery of time lost associated with the introduction tools for efficient data access and utilisation.</li> </ul>
Reduced costs associated with budget centre management reporting	\$110,000 p.a.	<ul style="list-style-type: none"> <li>25% reduction in access time,</li> <li>75% reduction in efforts associated with data transformations from reports</li> </ul>
Reduced costs associated with the preparation of funding acquittals	\$38,500 p.a.	<ul style="list-style-type: none"> <li>50% reduction in efforts associated with report preparation</li> </ul>
Capability to generate and utilise advanced financial/costing models	\$2.6 million over 5 years.	<ul style="list-style-type: none"> <li>Opportunity cost estimated at 1% of turnover, with benefits accruing in year 3.<sup>5</sup></li> </ul>
Better management decisions	\$1.3 million over 5 years.	<ul style="list-style-type: none"> <li>Cost or revenue improvements associated with having access to higher quality information, 0.3% of turnover over 5 years with benefits accruing in year 3.<sup>5</sup></li> </ul>

# More on Benefits

## Example of benefits from a UTAS Business Case

Table 4 provides a summary of net inflows or benefits over a five year period. The present value of benefits (PVB) is estimated at \$ 4.513 million, using a nominal discount rate of 10% per annum.

**Table 4. Summary of Net Inflows (benefits)**

Benefits (Inflows)	Year 1	Year 2	Year 3	Year 4	Year 5
Budget planning and forecasts	120,000	200,000	200,000	200,000	200,000
Budget centre management reporting	33,000	110,000	110,000	110,000	110,000
Facilities planning	18,800	94,000	94,000	94,000	94,000
Funding acquittals	-	38,500	38,500	38,500	38,500
Advanced financial/costing models	-	-	866,667	866,667	866,667
Better management decisions	-	-	433,333	433,333	433,333
<b>Net Inflows</b>	<b>171,800</b>	<b>442,500</b>	<b>1,742,500</b>	<b>1,742,500</b>	<b>1,742,500</b>

# Possible Discussion Topics

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- » Does BI deliver
- » Who's using open-source BI
- » Who's doing sustainability BI
- » BI Platforms vs BI Products, products are so much easier ?
- » Business vs IT ownership
- » Real-time is it feasible ?
- » Building Business Cases for BI
- » BI Better bought than built ?