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BUSINESS INTELLIGENCE AS A KEY FOR THE SUCCESS OF THE ORGANIZATION

University
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in Katowice

Celina M. Olszak

AGENDA

1. Motivation

2. Background

➢ Issue of Business Intelligence

➢ Business Intelligence maturity models

3. Research methodology

4. Research findings and discussion

5. Conclusion

Motivation for the study

☐ A contemporary organization competes in a business environment that is characterized by a massive influx of information (Schick, Frolick and Ariyachandra, 2011).

☐ A critical component for its success is the ability to take advantage of all available information (Cody, et al, 2002; Jordan and Ellen, 2009).

☐ Business Intelligence (BI) - a solution that may help organizations to make informed, intelligent business decisions and to survive in the business world (Negash and Gray, 2008; (Wixom and Watson, 2010).

☐ Although BI has been developing for over 20 years, unfortunately, many organizations are not able to make from it an effective tool for decision making and creating a competitive advantage (Davenport and Harris, 2007).

☐ The analysis of BI using shows that practical benefits are often unclear and some organizations fail completely in their BI approach(Clavier, Lotriet and Loggerenberg, 2012). Typical approach to BI – reporting with small portion of analysis

Research assumptions

The research attempts to answer the question:

☐ What possibilities offers Business Intelligence for an organization, what factors allow an organization to achieve a high competences in BI, and consequently to obtain business sucess;

☐ The BI model may be treated as a key for the succes of the organization, making more effective decisions and gaining better business results (Wixom and Watson, 2010).
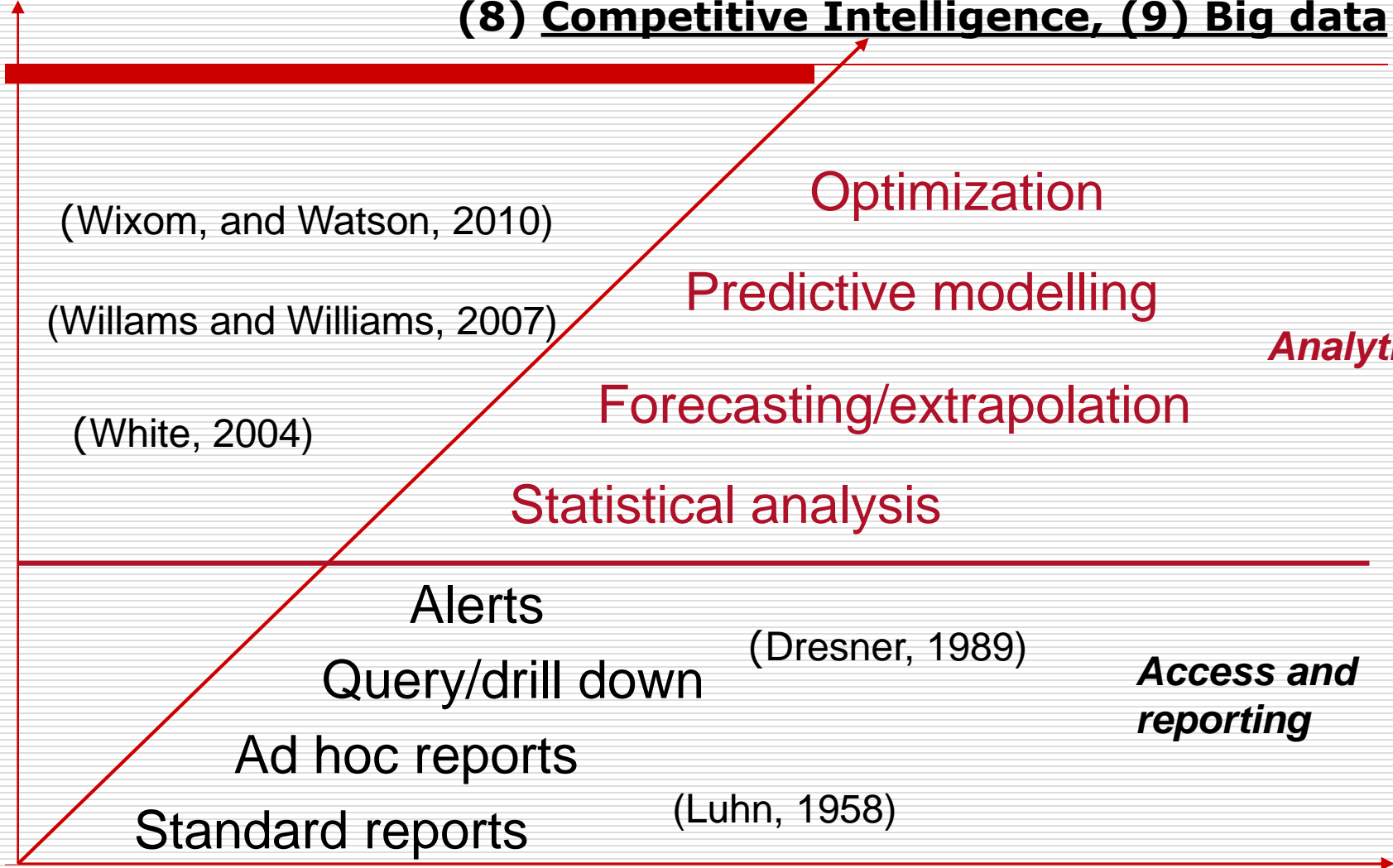
Business Intelligence
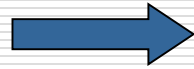
(1) Tools, technologies, (2) Knowledge management, (3) Decision support systems, (4) Dashboards, (5) New working culture with information, (6) Process, (7) Analytics, (8) Competitive Intelligence, (9) Big data

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(Wixom, and Watson, 2010)

(Willams and Williams, 2007)

(White, 2004)

Optimization

Predictive modelling

Analytics

Forecasting/extrapolation

Statistical analysis

Alerts

Query/drill down

(Dresner, 1989)

Access and reporting

Ad hoc reports

Standard reports

(Luhn, 1958)

Degree of intelligence

5

Targets of BI	Description
Single or a few applications	BI are used in selected departments to support effective marketing campaigns, to analyze profitability different products and to monitor the behaviors of customers
BI infrastructure	The organizations create an infrastructure for BI by clearing up and defining their data, establishing efficient process to move data from source systems to a highly extensible data warehouse
Organizational transformation	BI systems are used in order to introduce new business model oriented on change management, knowledge management and customer relationship management

Different BI models

Type BI	Function	Scope	Decision support level	Used techniques
Data Marts	Ad hoc analysis, comparative analysis, reporting	Narrow, limited to unit, department (sale)	Operational, well structured	Simple, static reporting, OLAP
Data warehouse	Multidimensional analysis	The whole enterprise	Operational, tactical, strategic	OLAP, data mining
BI with PA	Forecasting of different scenarios	Narrow, limited to unit, department (sale)	Operational, tactical, strategic	OLAP, AP
Real-time BI	Monitoring of current activities discovering irregularities	Narrow, limited to unit, department (sale)	Operational, well structured	EII
Corporative BI	Corporative management, building loyalty strategy	All actors of value chain	Operational, tactical, strategic	ETL, data mining
BI portals	Content management and document management, group work	Selected communities	Operational, tactical, strategic	Internet, Web mining, CMS, work group, personalization techniques
BI nets	The building of expert' nets, social capital management	Global, various communities	Operational, tactical, strategic	Web mining, Web farming
BI for everyone	The building of social nets, social capital management	Global	Operational, tactical, strategic	Mobile, social media, semantic Web, Web mining

The Characteristics of 3 ages of Business Intelligence

	BI 1.0 (Tool-centricity)	BI 2.0 (Web-centricity)	BI 3.0 (Application-centricity)
Content	DBMS-based structured content	Web-based, unstructured content, Web technology	Mobile and sensor-based content
Foundational technologies	DBMS, ERP, OLAP, data warehousing, data mining	Web services, search engines, web mining, web visualization, information semantic services, natural language question answering	Cloud services, social search and mining, smartphone platforms, mobile web services, spatial mining
User interface	Client	Web	Multi-device
Design priority	Capability	Scalability	Usability
Functionality	Aggregate and present	Explore and predict	Anticipate and enrich
Frequency/detail	monthly/detailed	weekly-daily-summary	Real-time/processes
Client use case	Operational reconcillation	Enterprise alignment	Social empowerment
Insight scope	Mile deep inch wide	Mile wide inch deep	Outcome-specific
Uptake/reusability	<1%/limited	<15%/some	>25%/entire application
Foundational Influences	Delivery only	Creation & delivery	Creation, delivery & management

Assessment of Business Intelligence. Maturity in Business Intelligence

➢Maturity - a state of being complete, perfect or ready.

➢ To reach this a desired state of maturity, an evolutionary transformation path from an initial to a target stage needs to be progressed".

➢ Maturity models are used to guide this transformation process.

Name of BI maturity model	Description
TDWI's Business Intelligence Model – Eckerson's Model Eckerson [30]	This model focuses mainly on the technical aspect for maturity assessment. It constitutes of 6 maturity levels and uses a metaphor of human evolution: prenatal, infant, child, teenager, adult and sage
Gartner's Maturity Model for BI and PM [31]	The model is a mean to assess the maturity of an organization's efforts in BI and PM and how mature these need to become to reach the business goals. The model recognizes 5 maturity levels: unaware, tactical, focused, strategic, pervasive
AMR Research's Business Intelligence/ Performance Management [29]	The model is described by 4 maturity levels: reacting (where have we been?), anticipating (where are we now?), collaborating (where are we going?), and orchestrating (are we all on the same page?). It is used to assess the organization in the area BI and PM
Business Information Maturity Model [28]	The model is characterized by 3 maturity levels. The first level answers the question ,, what business users want to access", the second "why the information is needed", the third "how information put into business use"
Model of Analytical Competition [1]	The model describes the path that an organization can follow from having virtually no analytical capabilities to being a serious analytical competitor. It includes 5 stages of analytical competition: analytically impaired, localized analytics, analytical aspirations, analytical companies, and analytical competitors
Information Evolution Model, SAS [32]	The model supports organization in assessing how they use information to drive business, e.g., to outline how information is managed and utilizes as a corporate asset. It is characterized by 5 maturity levels: operate, consolidate, integrate, optimize, innovate
Model Business Intelligence Maturity Hierarchy [33]	The model was developed in knowledge management and constitutes of 4 maturity levels: data, information, knowledge and wisdom
Infrastructure Optimization Maturity Model [28]	The model enables a move from reactive to proactive service management. It aids in assessing different areas comprising the company infrastructure. The model is described by 4 maturity levels: basic, standardized, rationalized (advanced), and dynamic
Lauder of Business Intelligence (LOBI) [28]	The model describes levels of maturity in effectiveness and efficiency of decision making. IT, processes and people are assessed from the perspective of 6 levels: facts, data, information, knowledge, understanding, enabled intuition
Hawlett Package Business Maturity Model	The model aims at describing the path forward as companies work toward closer alignment of business an IT organizations. It includes 5 maturity levels: operation, improvement, alignment, empowerment, and transformation
Watson's Model [27]	The model is based on the stages of growth concept, a theory describing the observation that many things change over time in sequential, predictable ways. The maturity levels include: initiation, growth, and maturity
Teradata's BI and DW MM [26]	Maturity concept is process-centric, stressing the impact of BI on the business processes The model has 5 maturity levels: reporting (what happened?), analyzing (why did it happen?), predicting (what will happen?), operationalizing (what is happing?), and activating (make it happen).

Levels of Maturities in Gartner's Maturity Model

Unaware

- ✓ An information „anarchy";
- ✓ A lack of awareness and need to collect, process and analyze information;
- ✓ Data not complete, incorrect;
- ✓ Metrics are not defined;
- ✓ The use of reporting is limited.

TACTICAL

- ✓ The organization starts to invest into BI;
- ✓ Metrics are usually used on the department level only;
- ✓ Most of the data, tools, and applications are in "silos";
- ✓ Users are often not skilled enough in order to take advantage of the BI system.

FOCUSED

- ✓ The organization achieves its first success and obtains some business benefits from BI, but it is still concentrated on a limited part of the organization;
- ✓ Management dashboards are often requested at this level.

STRATEGIC

- ✓ A clear business strategy for BI development;
- ✓ BI are used in critical business processes and for strategic and tactical decisions.

PERVASIVE

- ✓ BI plays pervasive role for all areas of the business;
- ✓ The usage of BI is available to customers, suppliers, and other business partners.

Reaserch Methodology

•The aim of the survey was to assess the BI using in 20 purposefully selected organizations, and to determine the factors that allow the firms to achieve high competences in BI, and consequently various business benefits.

•The research was of qualitative nature and used as a research technique of an in-depth interview.

•The survey was conducted in 2012 among purposefully selected firms (in Poland) that are considered to be advanced in BI. They represented the service sector: telecommunications (T)-4, consulting (C)-4, banking (B)-4, insurance (I)-4, marketing agencies (MA)-4.

• Interviews were held with over 80 respondents: executives, senior members of staff and ICT specialists.

No	Asked questions during interviews	FINDINGS: Answers (number of organizations)
1	How do you define BI?	Tools to manage information (9), data warehouse (5), analytical applications (4), new way of doing business (2)
2	What do you use BI for (reporting, ad-hoc reporting, analyzing, alerting, predictive modeling, operationalizing, optimization, activating, etc.) ?	Reporting (15), ad-hoc reporting (9), analyzing (12), alerting (2), predictive modeling (2), optimization (3), activating (2)
3	Does your organization have a defined BI strategy?	Comprehensive BI strategy (5), partly defined BI strategy (12), none (3)
4	Does your organization have defined business processes?	Defined basic processes (9), defined core business processes (6), not defined (5)
5	Does your organization/department have defined metrics?	Metrics for selected departments (13), metrics for the whole organization (4), none metrics (3)
6	Assess the quality of data used in your organization (complete, correct, consistent; high/medium/poor quality data, etc.)	High quality data (6), medium quality data (11), rather poor quality data (3)
7	Are you skilled enough in order to take advantage of BI systems?	Skilled enough (7), not skilled enough (8), poor skilled (5)
8	Do you use management dashboards?	Used management dashboards in limited scope (14), used management dashboards in whole organization (4), not used (2)
9	Is your BI (un)limited to the part/department of organization?	BI limited to the part of organization (15), unlimited (5)
10	Are you motivated to use BI (how)?	Users motivated by training (8), motivated by bonuses (6), not motivated (6)
11	Do you use BI for analyzing customers, suppliers, competitors and other business partners?	BI for analyzing customers (17), suppliers (14), competitors (5), other stakeholders (4)
12	Who is the sponsorship of BI in your organization?	CIO (3), senior management (6), business analyst (4), ICT specialists (7)
13	What kind of BI software do you use?	Regional data warehouse (9), centralized data warehouse (5), operational data bases (6)
14	Describe some successes/failures from using BI	Success: acquiring new customers (14), acquiring new suppliers (11), increase of sale (8), fraud detection (6), launching new channels of sale (3), launching new products (3). Failures: not trust in BI (4), gap between BI/ business (12), users do not recognize their own data after it is processed (7), decision-making skills absent (6), BI is expensive (5)
15	Indicate some benefits from using BI	Better access to data (13), better decisions (12), improvement of business process (9), improved business performance (8), costs saving (7), transparency of information (5), new way of doing business (2)

Level	People	Process	Metrics and technology	Scope of benefits
Tactical 2I, 2C, 1MA	The users take the first BI initiatives; low support from senior executives	Traditional approach to management, focused on the performing the basic tasks of departments; identification of basic business processes	Regional data warehouses are built; analyzing trends and past data; first interactive reporting tools; metrics are usually used on the department level only	Low benefits limited to small group of users; better access to data and static reporting
Success factors: support from senior management, appropriate BI tools, quality of data, defined business processes and metrics				
Focused 2T, 1MA, 2C, 2I, 2B	Lack of appropriate knowledge about possibilities of BI among staff	BI is used to perform ad hoc reporting and to answer questions related to department's ongoing operations	Management dashboards are used; a centralized data warehouse is built; ad-hoc reporting, query drilldown	Benefits limited to departments and business units; improvement of internal business processes and decision making on operational level
Success factors: developing corporate culture based on facts, stating clearly BI strategy, implementing training system on BI				
Strategic 1MA, 1T, 2B	Users have high BI capabilities, but often not aligned with right role	Business process management based on facts	High-quality data; have BI strategy; using more complex prediction and modeling tools; data mining	They do not compete through BI; integrated analysis for finance, logistics, production; improvement of decision making on all levels of management
Success factors: support from CEO, motivation of users for collecting, analyzing and using information				
Pervasive 1T, 1MA	Users have capabilities and time to use BI; skill training in BI; users are encouraged to collect, process, analyze and share information; CEO passion and broad-based management commitment	Broadly supported, process-oriented culture based on facts, learning and sharing of knowledge	The common BI approach is used in the whole organization; Enterprise-wide BI architecture largely implemented; customized reports; business and BI are aligned and cooperative	Benefits for the whole environment; competing through BI (acquiring new customers, lunching new products, new channels of sale); new ways of doing business
Success factors: strong support of CEO, effective HRM and all user's trust in BI				

Conclusions and recommendations

(1) BI may be a key (trigger) <u>for making more effective decisions, improving business processes and business performance, as well as doing new business.</u>

(2) The factors that allow organizations to achieve business benefits with BI, include first of all: <u>management leadership and support, corporate culture, expressed by effective information resources management, clearly stated strategy and objectives, and use of appropriate BI technologies.</u>

(3) Additionally, the important factors are: clearly defined business processes, business performance measurement, incentive system to encourage collecting, analyzing information and knowledge sharing, appropriate resources (financial, intellectual), training and education on BI and knowledge management.

THANK YOU…

QUESTIONS?

celina.olszak@ue.katowice.pl

Some case studies confirm that BI may be utilized in an organization for :

•increasing the effectiveness of strategic, tactic and operational planning,

•creating or improving relations with customers,

•analyzing and improving business processes and operational efficiency of an organization.