Creating Value with Analytics

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Agenda

- Introducing myself
- Background to the research
- Insights from case studies
- Research model
- Methods
- Findings and conclusions
- Recommendations

About me: Rajeev Sharma

- Professor and Associate Dean, WMS
- Universities of
  - Wollongong, Melbourne, Oklahoma, NSW
- PhD, AGSM, UNSW
- Indian Institute of Management, Bangalore
- Delhi University
- Industry

10 secrets to winning with Analytics

- Create a Plan
  - Use business discovery to spotlight data quality issues
  - Team up with a designer
  - Learn through play & through doing
  - Sell it!
  - Find a champion
  - Build a Cross Functional Team
  - Have dual processes
  - Tip the Balance Away from Reports
  - Turn your data into a profit center
- Common Success Models
  - if only life were that simple!

Realizing Value from Investments in Business Analytics Platforms

- Study conducted for SAS, a leading global vendor of analytics
  - http://blogs.sas.com/content/sascom/2016/10/06/achieving-analytics-roi-path-success/
- Anand, A., Sharma, R., & Coltman, T. (2016). "Four Steps to Realizing Business Value from Digital Data Streams." *MIS Quarterly Executive, 15*(4).
  - http://ro.uow.edu.au/cgi/viewcontent.cgi?article=2013&context=buspapers
- Anand, Sharma, Coltman (2016), "Realizing Value from …", *ICIS*, Dublin.

Key Issue

What do organizations need to do in order to create business value out of their investments in Business Analytics platforms?

Key Insights from Line Managers

- *"We've got the money to build the model, but not to … actually getting it into production"*
- *"You can't always go and look for money because that takes time and effort"*
- *"You wouldn't be able to get very much done if it takes you … months to get money"*
- *"we poured 70 to 80 million [on infrastructure] … followed by a lot of investment … [in applications]"*

What happens to the insight after it is generated is the most critical issue for value creation!

Two-Stage Investment Process
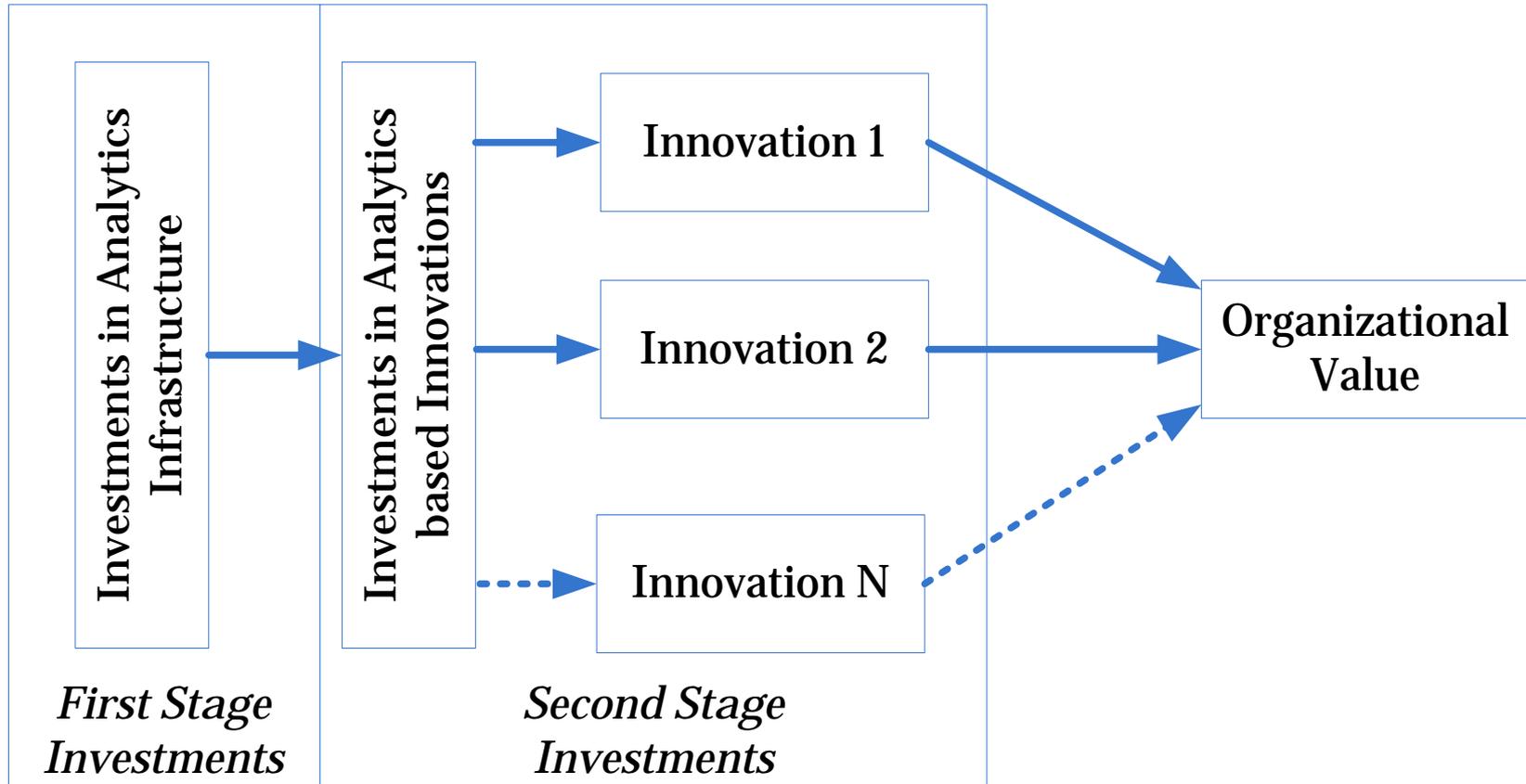
Source: Anand, Sharma, Coltman, MISQE 2016

Differences between the two stages

Infrastructure stage	Innovation stage
Centralized planning	*Diffused exploitation*
Run by technical management	*Initiatives by line managers*
Lengthy execution	*Short-term*
One time major investment	*Small investments, multiple independent projects*
Ex-ante planning	*Post-hoc situated actions*
Success rests on good technical design, tight execution, effective project management	*Success rests on entrepreneurial actions of line managers*
Vendor makes money	*Client makes money*

Value Creation with BA

Figure 3.1: Business Analytics Value Chain

Implications of the Two-Stage Process

- Resourcing insights is the key issue
- How does an organization's resource allocation process affect value creation?
- What aspects of the resource allocation process are important?
- How does the resource allocation process influence the effect of other critical success factors?

Key Role of RA Processes

- Resources needed to monetize insights
  - Financial, technical, human
- Capital budgeting processes
  - Structured processes
  - Formalized, centralized
  - Innovation capital and infrastructure capital
  - Not geared for fast paced innovation, start-up culture
- Agile RAP
  - Low centralization, low formalization

RA Processes and Innovation

- RA Processes generally formalized
  - Formal rules and procedures for requesting resources
  - Greater formalization → lesser experimentation
  - Greater formalization → lesser problem solving efforts
  - Greater formalization → lesser search for new opportunities
- RA Processes generally centralized
  - Top management discretion
  - Greater centralization → lesser resourcing of innovative ideas
- Agile RAP → higher innovation, performance
  - More value creation from investments in analytics

Role of Maturity of Analytics Platform

- Maturity needs investment
- Key platform capabilities
  - Data management, systems integration, reporting and visualization, and predictive discovery
  - Reporting, analysis, discovery, prescription
- User capabilities
  - Analytics team, competency centres, line management
- More maturity → more insights → more innovation → higher performance
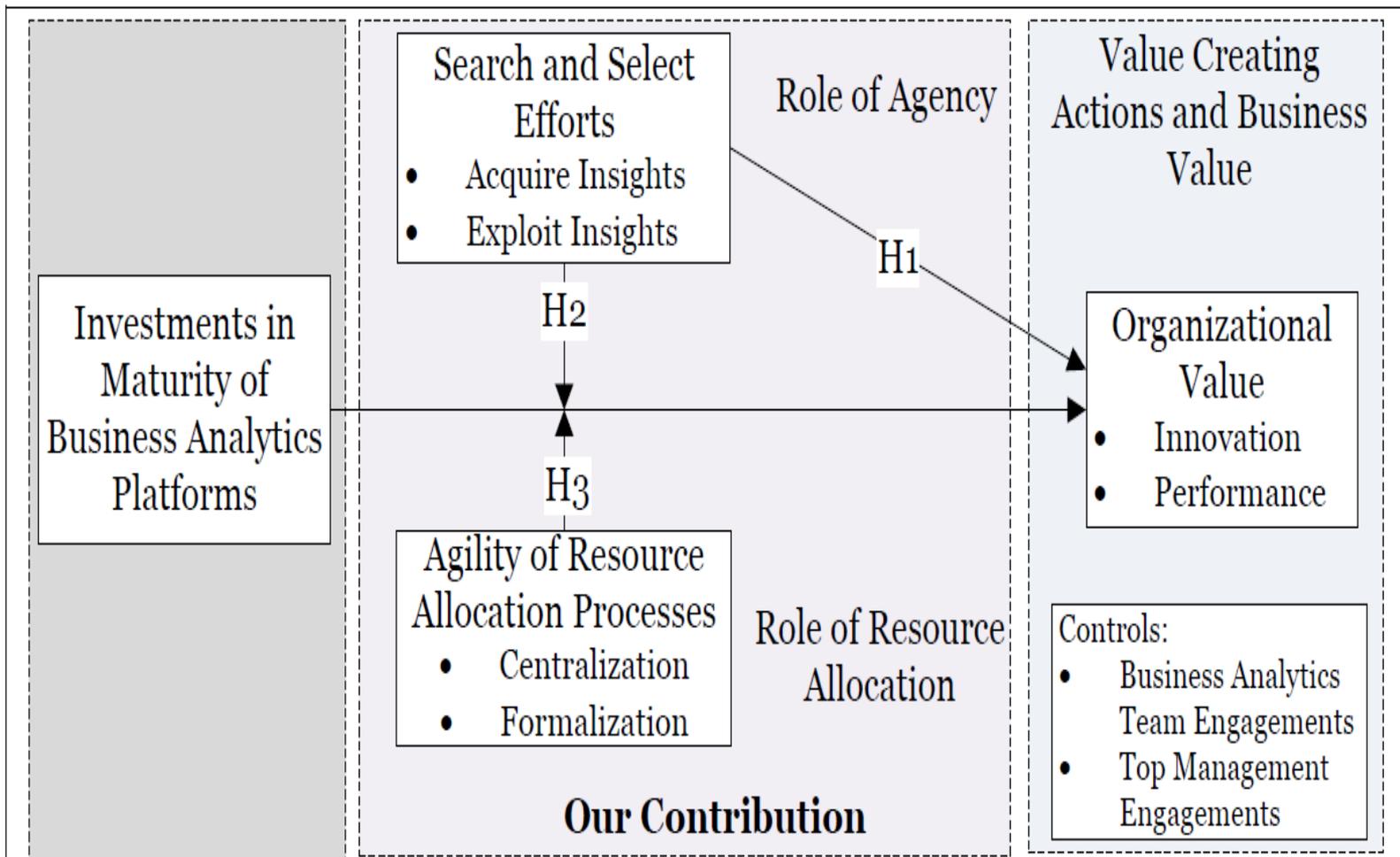
Role of Top Management Support

- Commitment to data driven innovation
  - Active personal involvement, communication, resources
- Key signal for line managers
  - Legitimizes search for analytics-based innovations
- Encourages line managers to take calculated risks on new analytics-based innovations
- Higher top management support → more innovation → higher performance

Key Question for Managers

What do we need to do in the second stage to create business value?

Effects of Organizational Interventions

(a) Maturity of the analytics platform,
(b) Top management support,
(c) Engagement of the analytics function with line managers, and
(d) Organizational resource allocation processes

ON

Desired Outcomes

(a) Acquisition of insights by line managers,
(b) Exploitation of insights by line managers,
(c) Innovation, and
(d) Organizational Performance.

Figure 1.1: Purpose and Scope of this Study

Figure 1. Research Model

Anand, Sharma, Coltman (2016), "Realizing Value from …", *ICIS*, Dublin.

Method

- Survey of line managers
  - Australia and NZ
  - IT managers excluded
- Model development
  - Other variables that might affect tests of hypotheses
  - level of engagement of analytics team with line management
  - efforts by line managers to acquire and exploit insights
  - firm size, analytics budget, …

Survey Development

- Literature review
  - definitions, measurement, theory
- Reviewed by three IT managers
- Pre-tested with four additional IT managers
- Pilot-tested two versions of web-based survey
- Administered jointly with SAS
- Online survey
  - Dec 2014 to March 2015, n = 72

Construct Definitions & Measurement

- Agility of RAP
  - the extent to which managers can expeditiously obtain innovation capital to resource competitive actions
  - I can make my own decisions to allocate resources on business analytics projects
  - In my organization, there are established rules and procedures for allocating resources for business analytics projects

Construct Definitions & Measurement

- ## Business analytics maturity
  - the extent to which organizations have implemented BA tools and capabilities

Table 2.1: Business Analytics Maturity Dimensions

Data Management Capability: The extent to which your business analytics team extracts, integrates and converts data from multiple sources
Systems Integration Capability: The extent to which your organization has seamlessly integrates data from various operational systems into your business analytics systems
Reporting and Visualization Capability: The extent to which your business analytics team utilizes reporting and data visualization tools to present insights from business analytics in a readily understandable format for users and decision makers
Predictive Discovery Capability: The extent to which your business analytics team uses advanced analytics to proactively discover new insights and to predict future patterns and trends

BA Maturity Levels

Table 2.2: Levels of Business Analytics Maturity

Non-existent: the organization does not have this capability
Initial: the capability exists but is poorly developed
Intermediate: the capability is well developed but there is much room for improvement
Advanced: the capability is very well developed but there is still a little room for improvement
Optimized: the capability is so highly developed that it is difficult to envision how it could be further enhanced

Construct Definitions & Measurement

- Top management support
  - the extent to which TM <u>undertakes actions</u> to support the use of BA by business managers to acquire and exploit insights

Table 5.1: Top Management Support for Business Analytics

| |
|---|
| *Resources:* The extent to which top managers committed resources (time/personnel/financial) to support business analytics projects. |
| *Vision:* The extent to which top managers communicated the importance of business analytics for creating value. |
| *Change:* The extent to which top managers changed existing norms to support adoption of business analytics. |
| *Monitoring:* The extent to which top managers got involved with direct reports on business analytics projects. |

Construct Definitions & Measurement

- In the last one year, my manager has <u>committed substantial resources</u> (time/personnel/financial) to BA projects
- In the last six months, <u>how many meetings</u> did you have with your manager to discuss resourcing of (time/personnel/financial) to BA projects
- How many BA projects has your manager <u>approved in the last one year</u>
- My manager has <u>clearly explained to my unit</u> the strategic value of investing in BA

Construct Definitions & Measurement

- Organizational value
  - the extent to which organizations are able to capture benefits from investments in business analytics platforms
  - product innovations, operational gains, quality gains, financial performance gains
  - self-report, validated against annual reports
  - My unit has <u>improved the quality</u> of our existing products and services based on insights generated using BA
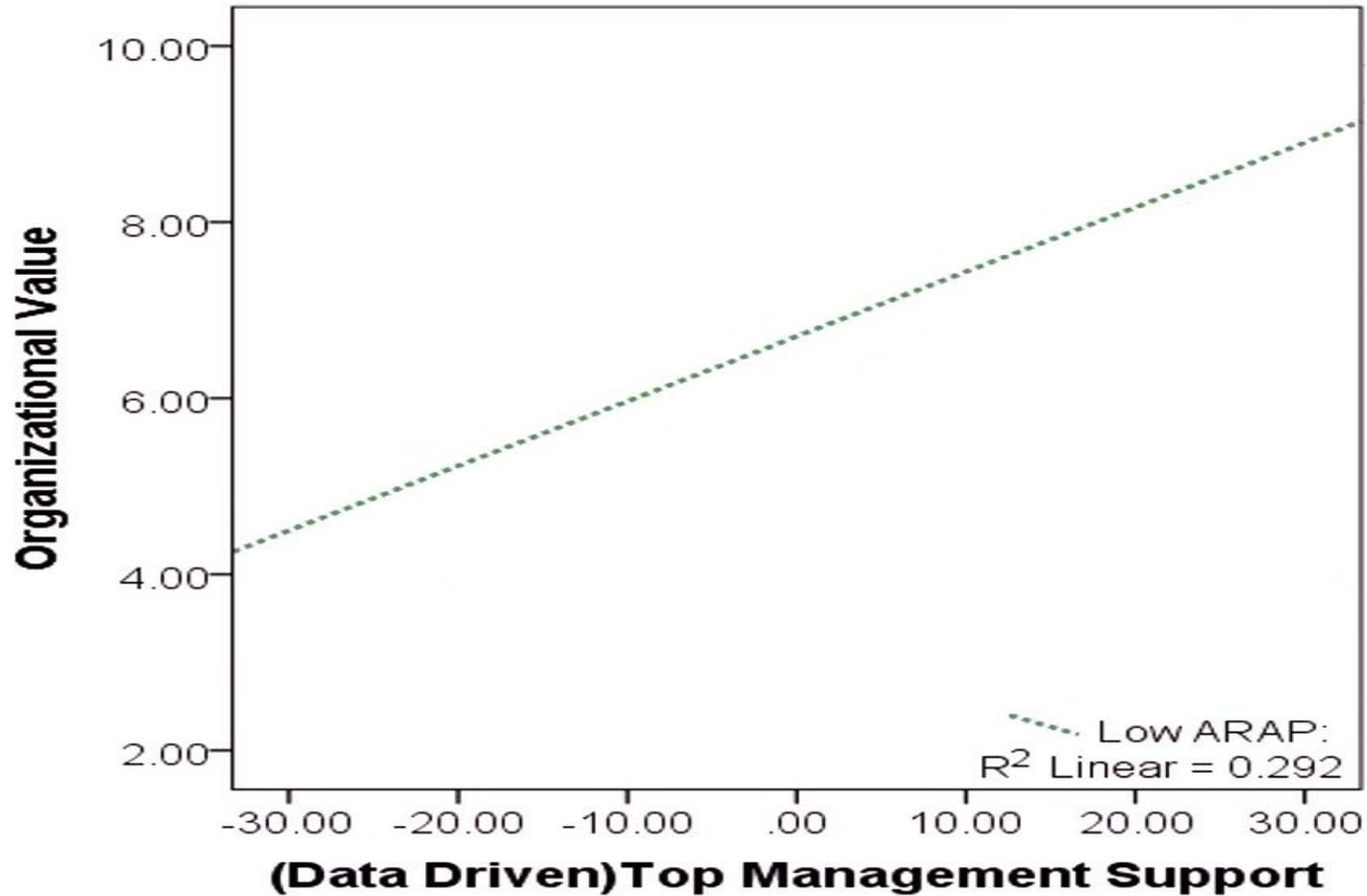
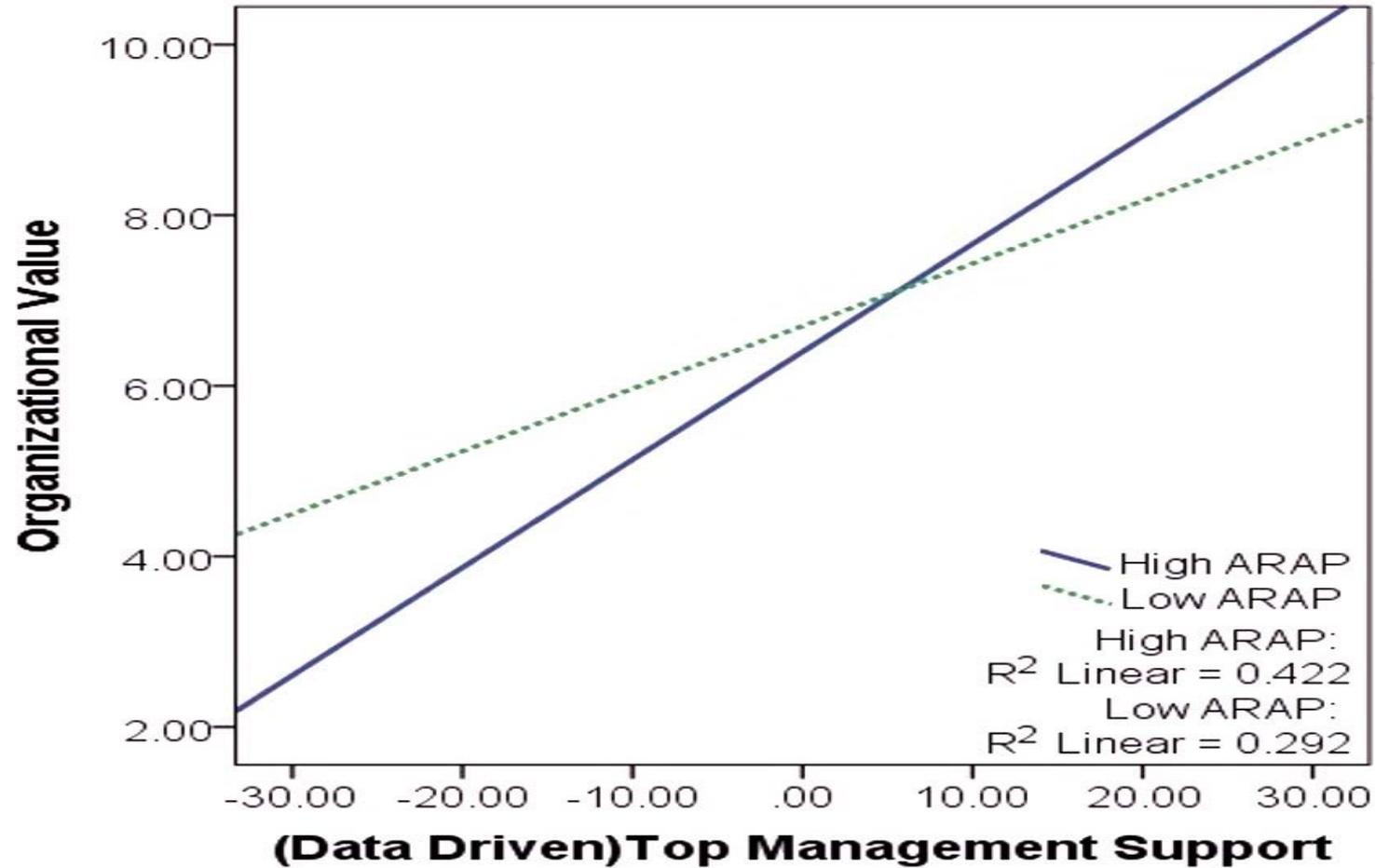# Effect of BA Maturity on Value (under low agility RAP)
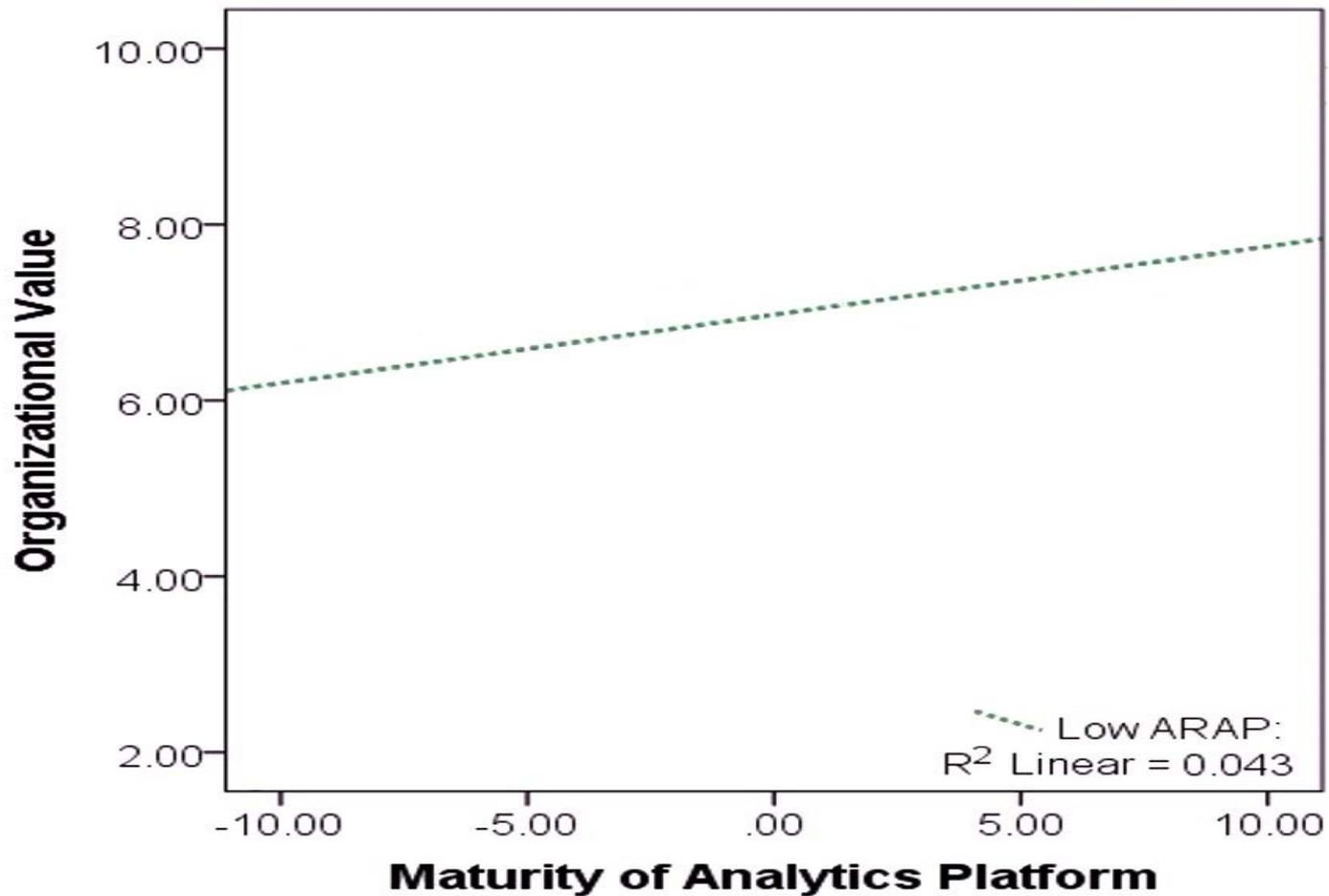
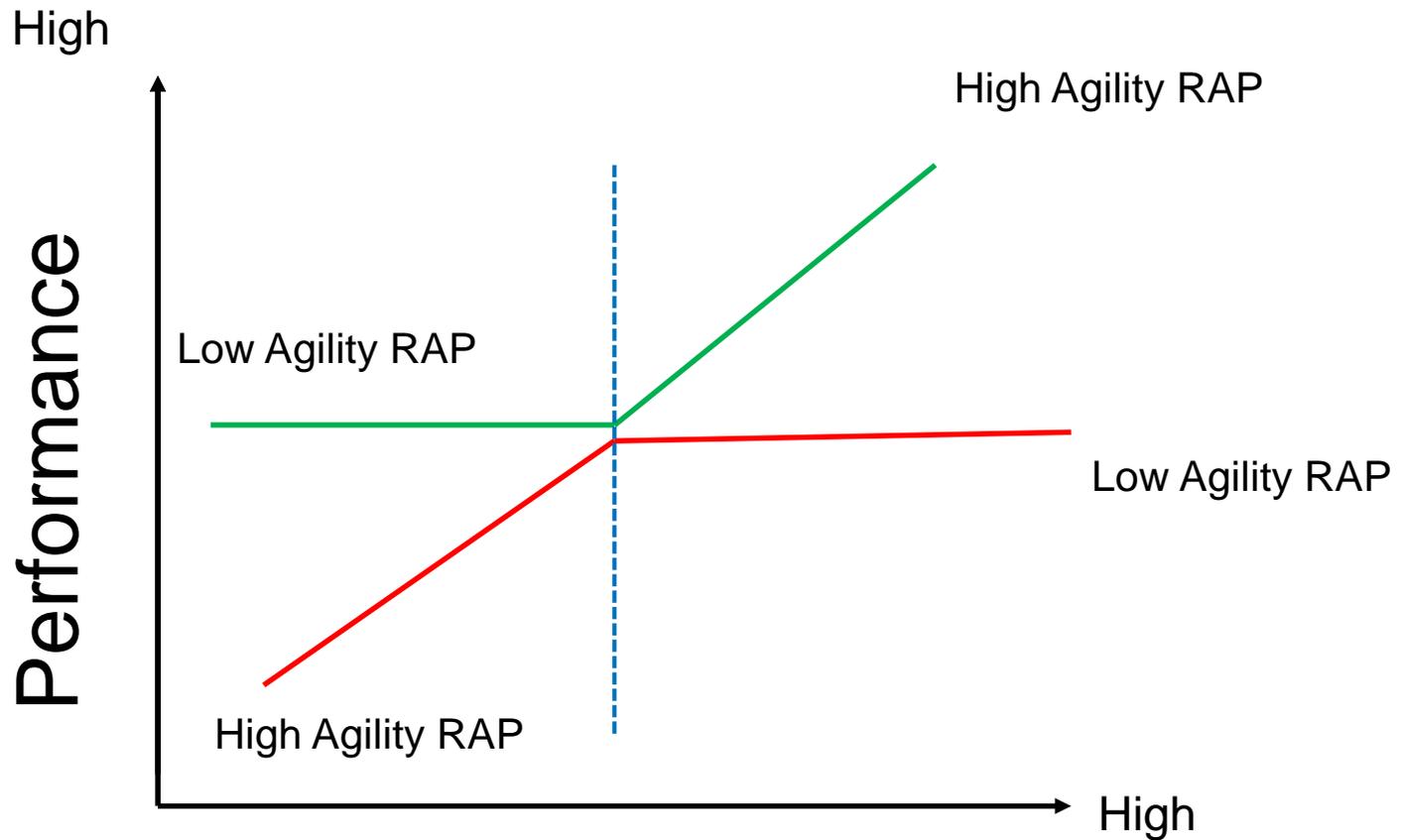# Effect of BA Maturity on Value (under high agility RAP)
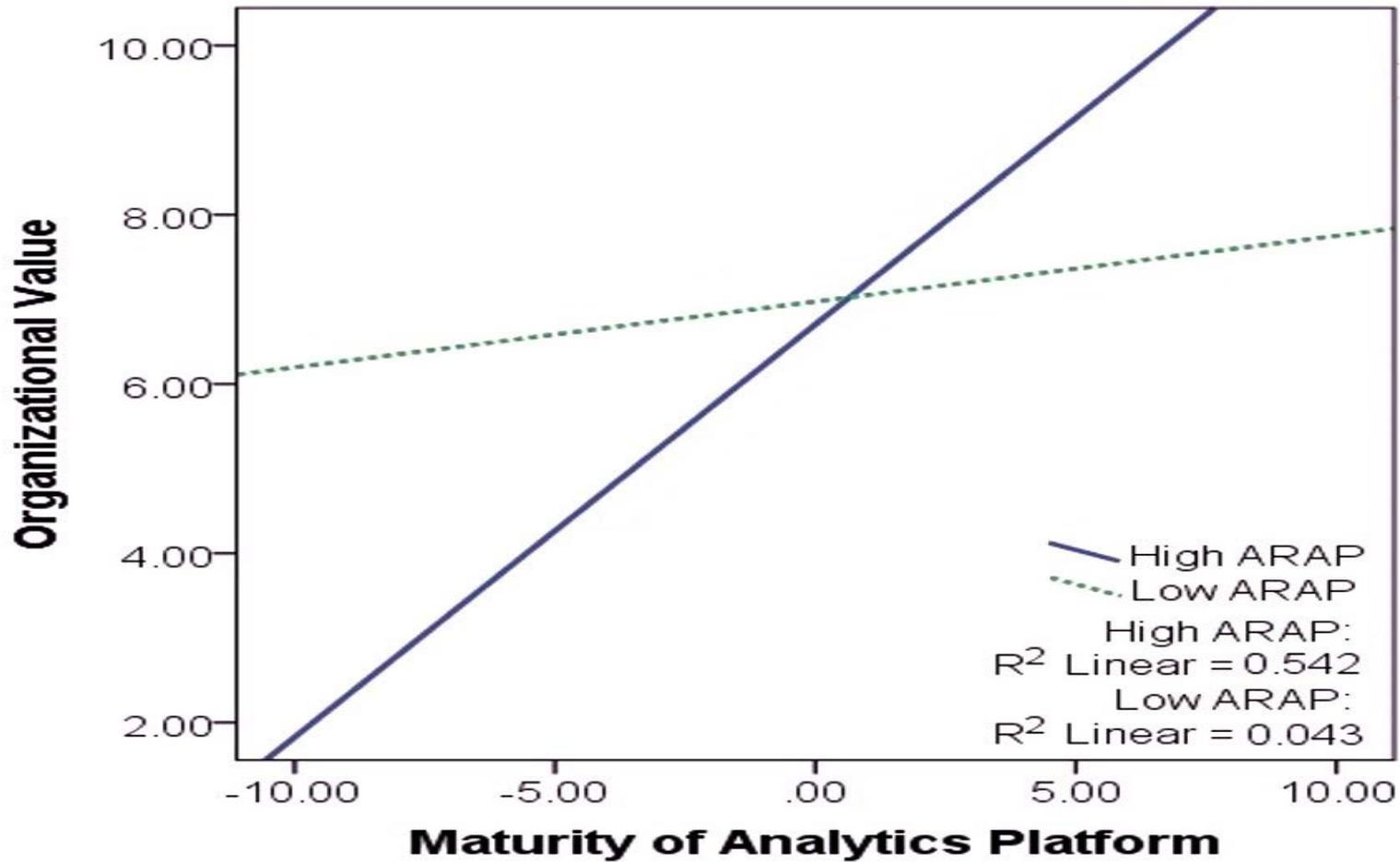
Effect of TMS on Value (under low agility RAP)

Effect of TMS on Value (under high agility RAP)

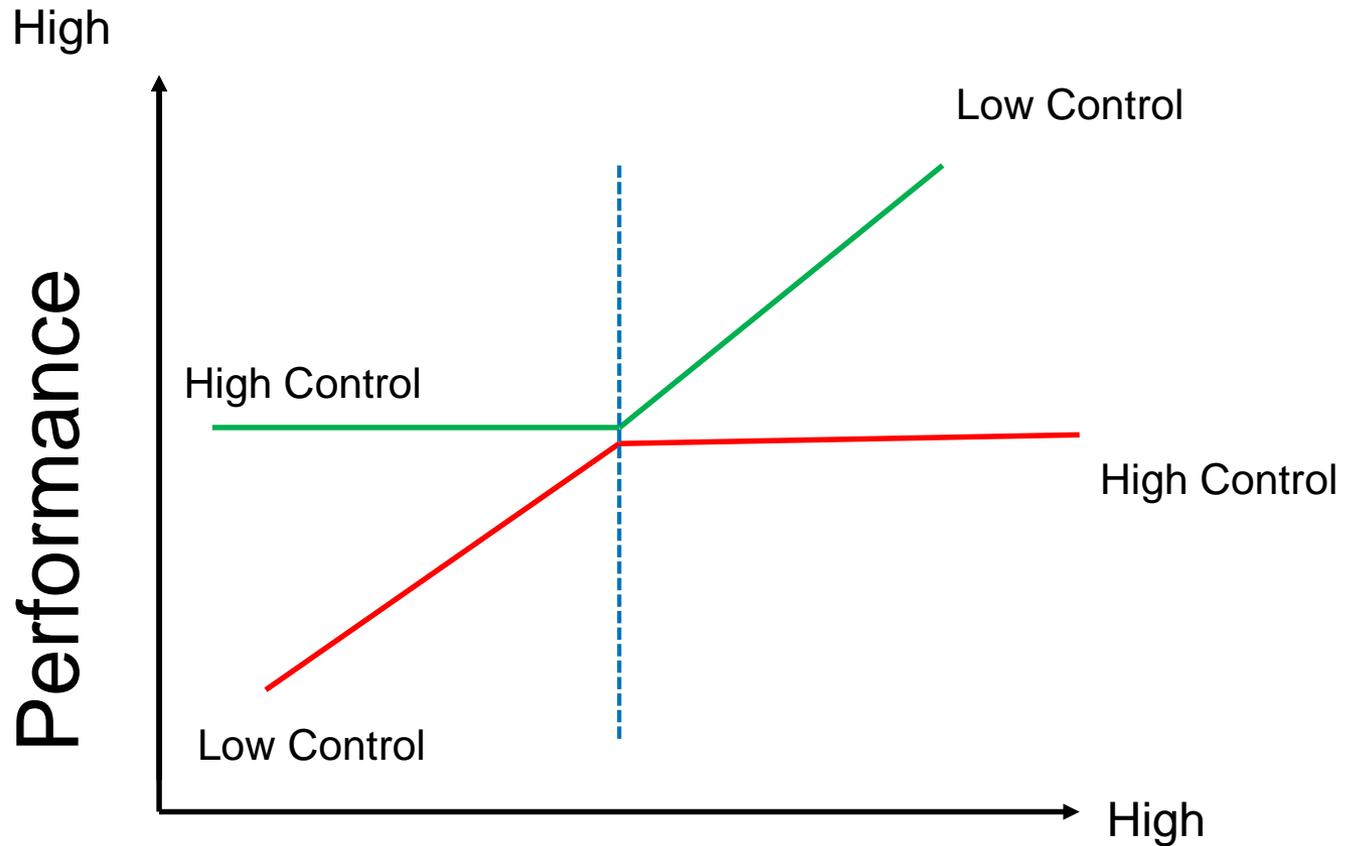# Joint Effects of Agility of Resource Allocation Process and Other CSFs

What do these findings mean?

- Resource allocation processes are critical
- Agile resource allocation processes needed to create value from analytics
- Management of second stage needs to be very different from management of first stage
- Agile resource allocation processes under wrong conditions can lead to performance decline

Generalizing the Effects of Control

High

Performance

High Control

Low Control

Low Control

High Control

High

Individual and organizational competencies

Four-Step Sequence to Create Value

- Step 1: Top management engages with line managers to acquire insights
- Step 2: Line managers engage with the analytics team to exploit insights
- Step 3: Invest in maturity of the platform
- Step 4: Make resource allocation processes progressively more agile

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Thank You

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