The Value of Computer-based Simulation Technology as Part of an ADC

Experiential Technologies
competent to compete
Agenda

• The Challenge
• Assessment Center Evolution
• Concept Development of the EAC
• Custom-made CBST
• Development Methodology
• Research Results
• Value of Technology
• Implications for Assessment Practitioners
• Demo
Background AC Research Focus Area

Professor Deniz Ones from the University of Minnesota, USA, challenged the South African AC fraternity with her keynote address at the 28th ACSG Conference in 2008 on “Recent AC Research - A Recap”. She encouraged AC practitioners, scholars, and students in South Africa to become engaged in the research debate locally and internationally. She advocated that if AC practitioners and academics wanted to gain the respect of their peers they would have to do “heroic things” in the AC field.

• 2009 – ACSG Workshop
• 2010 – ACSG Workshop
About Experiential Technologies

We Provide Assessments and Training Technologies through e-Learning, Business Simulation Solutions and Continuous Education
Geographical Scope

Botswana
Namibia
Lesotho
Netherlands
Switzerland
Nigeria
Sweden
South Africa
Zimbabwe
Vietnam
Cambodia
Sri Lanka
Nepal
Melbourne
Singapore
Bangalore
History of Using Technology in ADC
HISTORICAL TIME LINE AND DEVELOPMENT

EARLY DAYS

Traditional Assessment Centers

- Process
  - Trained Observers and Administrators
  - Measured only Behavioral competencies
  - Conduct 5 exercises
  - Measure behavior
  - Evaluate behavior against NORM
  - Integrate scores through consensus
  - Write Feedback report
  - Give individual Feedback with Individual Development Plan

Before Technology
• E-Learning
• Cyber teams
• Technology/ paperless environments
• E-mail, Cell phones, Skype, Blogging, Facebook, MXit, GPS
• Google and YouTube

Why not shape assessment events and experiences to fit this exciting world of Technology?
A self-important college freshman walking along the beach took it upon himself to explain to a senior citizen resting on the steps why it was impossible for the older generation to understand his generation. "You grew up in a different world, actually an almost primitive one" the student said loud enough for others to hear. "The young people of today grew up with television, jet planes, space travel, man walking on the moon. We have nuclear energy, ships and cell phones, computers with light speed....and many more."

After a brief silence, the senior citizen responded as follows.

"You're right son. We didn't have those things when we were young....so we invented them. Now, you arrogant little sh*t what are you doing for the next generation?
The applause was amazing!
Evolution of my own experience

’75–’92

Traditional AC

‘92–’96

Video based

Behavior

Multiple choice

Looking Glass

Technology

’96–’99

Behavior

Organizational

Multiple choice

and observation

2000–2003

SJT’s

Behavior

Big 5

Multiple choice
USE OF BUSINESS SIMULATION TECHNOLOGY AS A COMPUTERIZED IN BASKET
Assessment Centers with Generic Leadership Business Simulations

PROCESS
Developed AC to measure both Behavioral and Organizational competencies

Aligned generic Behavioral competencies with client specific job competencies and used generic Organizational process competencies as per simulation

Pre Assessment
Prior to a 18 month development program
Turn of the century
Technology enhanced AC’s

AC/DC as Experiential Centers

- AC imbedded with all or various technologies
- Computerized Business Simulation
- Automated report-writing capabilities
- Rapid development
- With a proper LMS
- Web enabled
- Low on band width
- Easy to build
- No programming needed
- Customizable for any client; industry specific
- Should still be an AC
Issues

- Functional - Validate
- Cultural - Circumstantial
- Behavioral - Learning
- Organizational - Procedural
- Technical
- Validated
Definition of Assessment Centers

- Evaluation of behavior
- Based on multiple inputs
- Specially developed simulations
- Multiple trained observers and techniques
- Judgements are made about the behavior
- Judgements are then reported and discussed
- Agreement among assessors on candidate behavior

MOSES 1975
Functionality

Exercises were not linked within the computerized simulation. Independent behavioral exercises
Cultural

It’s Friday night, and you have already put in 45 hours this week. The owner asks you to work tomorrow night, promising that you will be given a large dinner party which should get you a big tip.

Which of the following would you most likely say?

A. “I’d rather not, thanks.”
B. “Sure!”
C. “I’m kind of tired, but I’ll do it if you can’t find someone else.”
D. “I’ll be happy to do it if you can guarantee the tip.”
Procedural

Client ....a ship bridge contract worker

He:    Hi .... SILENCE ...
You :  Good Morning. How can I help you?
He :    I am Jan. I want to apply for a personal loan.

What will you do?

Explain the procedure : Choose the right procedure
1 Need an ID
2 If banking with XXX bank, need bank statement
3 Ask for pay slip
4 Go into system and check if client will be good for the amount
5 If Not explain to him that it will not be possible
6 If ratings are good, explain to him the various loan options

a.  1.3.2.4.5.6
b.  4.3.1.2.5.6
c.  4.5.6.3.2.1
d.  1 2,3,4,5,6
Technically

• Involvement from IT
• Computer labs
• IT infrastructure
• Delivery methods
• Administrative rights etc.
The Value of Computer based Business Simulation in ADC

Continental TIRE
SUPERVISORY BUSINESS SIMULATION
Development of a computer based simulation

Business analysis

Learning Outcomes

Perspective Custodians Developed assessment criteria

Compiled scenarios and story line

Custodians write feedback, score each scenario against competencies

Quality Checks

Develop Multi Media

Assemble
High-Level Scope of Project Implementation

• Project Definition
• Business Analysis Phase  
  – JAD Session
• Develop the Simulation  
  – High-level Outline
• Develop Simulation Content
• Identify Multi Media Content and Role Plays
• Quality Assurance
• Implementation
• Pilot Sessions
PROJECT GOAL

- To develop a business simulation tool by 19 March 2011 to:
  - Develop supervisor’s expected behavior in a consistent manner measured through feedback on plant KPI’s and departmental goals in order to grow effectiveness of skills and decision-making, which is transferable from one department to the other.
  - Align content with the current Supervisory Development Program
  - Analyze gaps and to measure success of the improvement and then develop action plan for addressing issues
  - Aid in developing a plan to increase supervisory awareness
  - Role out to all incumbent Supervisors
Learning Outcomes

The Learning Outcomes of the Conti NA Supervisors Business Simulation are:

1. To develop the supervisor’s oral and written Communication Skills
2. To provide hands-on understanding on being a better Team Player
3. To enable the supervisor to apply best-practice Leadership Skills
4. To develop the supervisor’s Computer Literacy Skills
5. To enhance the supervisor’s Math ability and build awareness to be more mechanically inclined
6. To provide the supervisor with the necessary tools to be more effective in applying coaching and counseling
7. To develop the supervisor’s Planning, Organizing, Scheduling and Controlling Skills
8. To enhance and develop the supervisor’s Administrative Skills
Simulation “Factory”

- Simulation Development Experience
- Best-practice Content
- Reusable Content Modules
- Technology, process/methodology & tools
- Practical Implementation
- Cultural Change
Uniqueness

The Simulation Experience

- Introducing new behaviors/change
- Exposure to best practices
- Experiencing the future state
- Understanding operational complexities
- Exploring new processes/technology

Competent to compete
## Supervisory Business Simulation

<table>
<thead>
<tr>
<th>Lesson Name</th>
<th>Time Taken in Last Attempt</th>
<th>Last Date Launched</th>
<th>Times Attempted</th>
<th>Rating</th>
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<td>4 - Conti NA Closure</td>
<td>0000:00:05</td>
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Continental TIRE
SUPERVISORY BUSINESS SIMULATION
Exercises

• Analysis Problem - Service and Maintenance Plan

• Integrated, simulated In-Basket: a day in the life of a supervisor

Customized Simulations include interactive exercises:

• Group Discussion
• One-on-One Client/Employee Interview
• Presentation
• Technical Processes
• Product Knowledge
<table>
<thead>
<tr>
<th>Conti Big 6 Clusters:</th>
<th>Competency:</th>
</tr>
</thead>
</table>
| **VISION**           | Visionary Thinking  
|                      | Strategic Orientation  
|                      | Innovation  
|                      | Leading Change  |
| **DRIVE**            | Initiative  
|                      | Leading and Steering  
|                      | Self Determination  
|                      | Passion and Commitment  |
| **EXECUTION**        | Problem Solving  
|                      | Decision Making  
|                      | Delivering Results  
|                      | Assertiveness  |
| **ENTREPRENEURSHIP** | Customer Orientation  
|                      | Profit Orientation  
|                      | Quality Orientation  
|                      | Integrity (In Business)  |
| **LEARNING**         | Building up Business Acumen  
|                      | Self Reflection  
|                      | Handling Feedback (conflict)  
|                      | Coaching Others  |
| **INTERACTION**      | Clear and Open Communication  
|                      | Networking  
|                      | Fostering Teamwork  
|                      | Motivating Others  
|                      | Intercultural Sensitivity  
<p>|                      | Promoting Diversity  |</p>
<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Training and Development needed</td>
</tr>
<tr>
<td>2</td>
<td>Development needed</td>
</tr>
<tr>
<td>2.5</td>
<td>Development with potential</td>
</tr>
<tr>
<td>3</td>
<td>Rounding-off needed</td>
</tr>
<tr>
<td>4C</td>
<td>Adequate (Needs counseling)</td>
</tr>
<tr>
<td>4</td>
<td>Adequate (Norm: effective management practice)</td>
</tr>
<tr>
<td>5</td>
<td>More than adequate</td>
</tr>
</tbody>
</table>
Hi there

I hope you have enjoyed your first exercise - The Business plan and the Sales plan.

Please email me the five priorities for growing your business. I would like to include this into our Regional Business Sales Plan.

Anyway all the best.

Joan
Feedback

- Feedback to the Individual
- Feedback to Management
- Talent Management Process
PERSON/JOB MATCH

<table>
<thead>
<tr>
<th>OVERALL MATCH RESULT:</th>
<th>RATING:</th>
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</thead>
<tbody>
<tr>
<td>MODERATE POTENTIAL</td>
<td>65TH PERCENTILE</td>
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GUIDE: PERSON/JOB MATCH INTERPRETATION

<table>
<thead>
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<th>OVERALL MATCH RESULT:</th>
<th>RATING:</th>
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</thead>
<tbody>
<tr>
<td>HIGH POTENTIAL</td>
<td>90TH PERCENTILE AND ABOVE</td>
</tr>
<tr>
<td>GOOD POTENTIAL</td>
<td>75TH TO 89TH PERCENTILE</td>
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<tr>
<td>MODERATE POTENTIAL</td>
<td>50TH TO 74TH PERCENTILE</td>
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<tr>
<td>WEAK POTENTIAL</td>
<td>25TH TO 49TH PERCENTILE</td>
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<tr>
<td>NO FIT</td>
<td>10TH TO 24TH PERCENTILE</td>
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### Addressing the Assessment Gap – ATAG™

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<thead>
<tr>
<th>CLUSTER</th>
<th>COMPETENCY</th>
<th>MODULE NAME</th>
<th>SUGGESTED READING</th>
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<tbody>
<tr>
<td></td>
<td>Strategic Orientation</td>
<td></td>
<td>Mighty Manager: <em>Managing in Times of Change: 24 Tools for Managers, Individuals, and Teams</em></td>
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<td></td>
<td>Innovation</td>
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<td></td>
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<tr>
<td></td>
<td>Leading Change</td>
<td>Strategic Leadership</td>
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<td>Strategic Leadership</td>
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<td>Constructive Thinking</td>
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<td>Whole Brain Problem Solving incorporating NBI Profiles</td>
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<td></td>
<td>Managing Change</td>
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<td>Self Reflection</td>
<td>Business Finance</td>
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<td>Handling Feedback</td>
<td>Intro to Business Economics</td>
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<td>Coaching Others</td>
<td>Personal Leadership</td>
<td></td>
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<td></td>
<td>Managing Staff Development</td>
<td></td>
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<td></td>
<td></td>
<td>The Manager as Communicator &amp; Counselor</td>
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<td></td>
<td></td>
<td>Coaching Skills</td>
<td></td>
</tr>
<tr>
<td>CLUSTER</td>
<td>COMPETENCY</td>
<td>MODULE NAME</td>
<td>SUGGESTED READING</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------</td>
<td>----------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Entrepreneurship   | Customer Orientation, Profit Orientation, Quality Orientation, Integrity | Customer Care, Business Finance, Best Practice, Risk Management, Operational Management, Personal Leadership | **ENTREPRENEURSHIP**<br>![Bar chart showing competencies: Integrity, Quality Orientation, Profit Orientation, Customer Orientation]
| Execution          | Problem Solving, Decision Making, Delivering Results, Assertiveness   | Whole Brain Problem Solving, Operational Management, Best Practice, Managing Staff Development, Time Management, Personal Leadership | **EXECUTION**<br>![Bar chart showing competencies: Assertiveness, Delivering Results, Decision Making, Problem Solving]<br>**How to Manage Performance: 24 Lessons for Improving Performance** (The McGraw-Hill Professional Education Series) (9780071435314): Robert Bacal |
Conti NA Supervisors

OVERALL PERFORMANCE MATRIX
(N=93)
## PERFORMANCE MATRIX: CONTINUA

(N=75)

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Percentile Rank</th>
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<tr>
<td>Visionary Thinking</td>
<td>2.6</td>
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<tr>
<td>Strategic Orientation</td>
<td>2.6</td>
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<tr>
<td>Innovation</td>
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<tr>
<td>Leading &amp; Steering</td>
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<tr>
<td>Initiative</td>
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<tr>
<td>Leadership</td>
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<tr>
<td>Self determination</td>
<td>3.3</td>
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<tr>
<td>Passion &amp; Commitment</td>
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<tr>
<td>Problem Solving</td>
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<td>Decision Making</td>
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<td>Customer Orient</td>
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<td>Profit Orient</td>
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<td>Quality Orient</td>
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<td>Business Acumen</td>
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<td>Coaching Others</td>
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<tr>
<td>Handling Feedback</td>
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<tr>
<td>Customer Service</td>
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<td>Handling Others</td>
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<td>Feedback</td>
<td>2.6</td>
</tr>
<tr>
<td>Coaching Others</td>
<td>2.9</td>
</tr>
<tr>
<td>Clear &amp; open</td>
<td>3.0</td>
</tr>
<tr>
<td>Networking</td>
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<tr>
<td>Motivating others</td>
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<td>Intercultural Sensitivity</td>
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<tr>
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</tbody>
</table>

### Average

- **Visionary Thinking**: 2.6
- **Strategic Orientation**: 2.6
- **Innovation**: 2.3
- **Leading & Steering**: 2.6
- **Leadership**: 2.6
- **Self determination**: 2.5
- **Passion & Commitment**: 2.7
- **Problem Solving**: 3.3
- **Decision Making**: 3.4
- **Networking**: 3.3
- **Clear & open**: 3.4
- **Promoting Diversity**: 2.3

### Competencies

- **Visionary Thinking**: 2.6
- **Strategic Orientation**: 2.6
- **Innovation**: 2.3
- **Leading & Steering**: 2.6
- **Leadership**: 2.6
- **Self determination**: 2.5
- **Passion & Commitment**: 2.7
- **Problem Solving**: 3.3
- **Decision Making**: 3.4
- **Networking**: 3.3
- **Clear & open**: 3.4
- **Promoting Diversity**: 2.3
Talent Solution

- Succession Planning
- Assessment Centre Reports
- Performance Management Results
- Workplace Diversity and Skills Plan
- Individual Development Plans
- Talent Management
- Training Assessment Results
- Equity Plans

Assessment Centre Reports

Talent Management

Succession Planning

Training Assessment Results

Equity Plans

Workplace Diversity and Skills Plan

Individual Development Plans

Performance Management Results

Talent Management

Training Assessment Results

Equity Plans

Workplace Diversity and Skills Plan

Individual Development Plans

Training Assessment Results

Equity Plans

Workplace Diversity and Skills Plan
# Overall Results

<table>
<thead>
<tr>
<th>Overall Match</th>
<th>Rating</th>
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<tbody>
<tr>
<td>Fit with High Potential</td>
<td>5</td>
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<tr>
<td>Fit</td>
<td>4</td>
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<tr>
<td>Moderate Match</td>
<td>3</td>
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<tr>
<td>Weak Match</td>
<td>2</td>
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<tr>
<td>Not Fit</td>
<td>1</td>
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</table>

<table>
<thead>
<tr>
<th>Attendees</th>
<th>No Points</th>
<th>Incomplete</th>
<th>Not Fit</th>
<th>Fit With Potential</th>
<th>Fit</th>
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<td>41</td>
<td>145</td>
<td>134</td>
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</tbody>
</table>

*Note: The table above shows the distribution of attendees across different categories with their respective ratings.*
Talent Matrix Comparing Results

High Potential

Disengaged Stars
30%
High potential ability and aspiration but lacks engagement

Misaligned Stars
33%
High levels of ability and engagement but may lack aspiration or good coaching

Engaged Dreamers/Good Talkers
7%
High aspirations and engagement but LOW potential

Low Potential

Potential Ranking

- Limited Potential
- Potential
- High Potential
Recommendations

Integrated Approach

Talent Management

Development of IDP’s

Solutions Focused on Innovation

Leadership for Business Results

Strategy Alignment and Implementation e.g. Client Relations vs. Client Care
Challenges

• Cultural
• Functional
• Behavioral
• Organizational
• Technical
• Legal
• Validated
## Toughest Part

| Get SME’s and AC/DC team to score and agree on each answer to each scenario | Locate Most Appropriate answer  
ID the Primary Competencies per answer  
ID the Secondary Competencies  
DO that per answer per scenario  
Scoring : 10-point scale  
- +5 to -5  
- Primary competencies  
- Secondary Competencies  
- Tertiary Competencies  
  
*If an answer is MOST Appropriate*  
Competencies are scored highest: +4, +5  

*If answer is IN THE MIDDLE Appropriate*  
Competencies are scored towards the middle:  
- +2, +3 or -2, -3  

*If answer is LEAST Appropriate*  
Competencies are scored lowest: -4, -5 |
Cultural

KNOWING YOUR CHALLENGES
3.1 OVERALL AREA PERFORMANCE
Technical

- Internet vs. Intranet
- Bandwidth
  - Edge
  - GPS
  - 3G
  - HD
- LMS or HRIS
- SCORM
- Multimedia
  - Flash
  - Squeeze
Server and Back-up Generator
<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Race</th>
<th>Sex</th>
<th>Religion</th>
<th>National origin</th>
<th>Disability</th>
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The ADC Research Focus Area vision is to demonstrate **academic excellence** in the study of Assessment and Development Centers (ACD’s) that has **practical applied** value in South Africa.
CONSTRUCT VALIDITY OF AC’s

- Empirical support for AC’s construct validity remains illusive ideal (Bowler & Woehr, 2009)
- Generally three approaches: G-theory, IRT, and CFA
- Increased popularity of the CFA approach
- Design: Correlated Dimensions Correlated Exercises (CDCE) (Lievens & Conway, 2001)
- Similar to Multi-Trait Multi-Method approach
- Probably biggest advantage: Dimension vs. Exercise effect
- Problem: Complex to model, colinearity problems, under-identification, convergence problems, substantial samples is needed
- Lance (2008): only three successful studies on CDCE
Fundamental Question: Level of Analysis?

- Considering lack of AC-level empirical support: Molecular Level (i.e. dimension level) vs. Global Level (all dimension and exercise effects) CFA? **Degrees of freedom not enough**
- Current study: AC-level (i.e. all dimension and exercise effects) did not converge in MPLUS due to singularity
- Diagnosing misspecification: Return to Molecular Level (dimension level)
- Consider INTERACTION dimension:
  - Communication
  - Networking
  - Teamwork & Motivation
  - Diversity
- Too few sub-dimensions (i.e. items) to utilize CDCE design
- However, can operationalize correlated dimensions (CD’s)
AC: Interaction Dimension

• Sample: N = 94 managers
• Small sample size for SEM structural equation modelling
• To obtain more credible model parameters, utilized two resampling techniques:
  Made assumption as realistic as possible
  – Monte Carlo simulations (Muthén & Muthén, 2009; Paxton et al., 2001)
  – Bias corrected bootstrapping (Bollen & Stine, 1990; MacKinnon, Lockwood, Williams, 2004)

• Owing to excessive cost of AC’s – small samples are often unavoidable

• Two methodological advancements to increase credibility of small sample AC statistics
CFA Model Fit Dimensions, No Exercises

Model Fit:

RMSEA = 0.056
CFI = 0.997
TLI = 0.991
SRMR = 0.011

Model Parameters (unstandardized) factor loadings:

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Fit is good Kline (2011)
Dimensions, No Exercises

- All factor loadings are robust
- However, due to low statistical power, model parameters may be doubtful: Bias model parameters, standard errors and inflated Type I errors
- Interpret resampling results
- However, resampling not substitute for proper sampling!

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SYNOPSIS

- Considerable bias in model parameters when using small samples
- Parameter and standard error bias in MC were non-negligible (>10%)
- However, 95% coverage, statistical power and BC-C.I. reflected that the model parameters differ from zero in the population (P < 0.05)
- Empirical support for the interaction dimension
- Monitor parameters and SE bias as more data is being collected
- IMPLICATION:
  - SE seems to be upward bias in small samples which could lead to the rejection of CFA models that are tenable in population
  - Fit indices, and chi-square, in particular are sensitive to sample size
  - BC-bootstrap adjusts chi-square, which adjusts all other fit indices dependent on chi-square distribution as basis of comparison (e.g. CFI)

**Construct Validity**

*Red wine effect: data better with aging*
Simulations add value in the following manner:

• Improve assessees’ understanding

• Facilitate communication and debate

• Allow managers to prioritize

• Improve understanding of industry dynamics
Simulations add value in the following manner:

- understanding of cause-and-effect relationships
- make more effective decisions
- allow managers to complete a what-if analysis
- demonstrate leadership strengths
The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn

- Alvin Toffler
The Value

• The most significant value can be described in three words:

experience through experience
Critical Success Factors
Critical Success Factors

- Commitment and involvement
- Consequence management
- Coaching - willingness and involvement
- Sustainability of development
- Customized learning solutions that address business and individual needs
- Relevance of learning
- Strategic alignment
Implications

• **Project Management Skills**
  – Right project and project right
  – Stakeholders management
  – Scope creeping
  – Q T Budget vs. competitiveness

• **Technology Skills**
  – E learning
  – Managing IT people
  – Technology changes
  – Virtual hosting

• **Research capabilities**
  – Validity
  – Reliability
  – country and group norms

• **Process driven vs. better business results**
  – Results between organizational scorecards and AC outcomes
Debate Questions

• Are trade activators a must for future AC’s and DC’s?
• Trade activation Organizational vs. Behavioral Competence measured
  – Reliability of 95% ?
• Ethical issues of technology assessment centers
  – High-performance teams
• Process measurements vs. results measurements
• Potential vs. Competence?
  – Fairness vs. predicative validity and team competence
In Conclusion

Technology:
- Simulates real-world issues and global practices and processes
- Aligns business workflow and processes across the organization and countries
- Establishes best practices and learning
- Tests these best practices and knowledge
- Shares knowledge between member countries
- Trains Business Acumen
- Creates awareness of “big picture”
In Conclusion (cont.)

- Facilitates pre-course attendance
- Determines the growth potential
- Targets individual development
- Determines a risk profile of people
- Enables assessment as well as learning through experience
- Supports the new organizational culture
- Enables change management
- Ensures competitive advantage
QUESTIONS
The ultimate experiential solution
EXAMPLES
Generic Supervisory and Managerial Assessment
Diplomatic Services
Financial Institution
Energy Sector
Insurance Industry
Manufacturing Industry