What does Big Data have to do with human performance improvement?

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Boise State University

Session objectives

• Define big data
• Identify causes of performance gaps that may lend themselves to big data solutions
• Identify potential big data applications for HPI practitioners
Agenda

• Warm up
• Examples of big data applications
• L&D and PI applications
  • Where do you fit in?
  • Mapping causes to potential big data solution
  • Our organizations
  • Other examples
• How to spot potential big data applications in your work
• Questions?

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Common definition: 4 V’s

No single definition (Dumbill, 2013)

Widely accepted definition:
1. Volume
2. Velocity
3. Variety (Laney, 2001)
4. Value (Gantz & Reinsel, 2011)
Big data for performance improvement

The ethical collection of data points from a volume of learners in a given population over enough time to show patterns or changes in patterns, with the velocity required for timely policy, program, or organizational management decisions, that come from a variety of both primary and secondary sources, intended to result in added-value in the learners’ or organizational performance.

(Giacumo & Breman, in press)
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Learning and development or performance improvement applications
Where do you fit in?

Map causes to potential big data solutions

<table>
<thead>
<tr>
<th>Level</th>
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<tbody>
<tr>
<td>Environment</td>
<td>Information</td>
<td>Resources</td>
<td>Incentives</td>
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<td>• Roles &amp; expectations</td>
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<td>• Ability to learn and perform</td>
<td>• Motives align with work and environment</td>
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<td>experience, skills,</td>
<td>• Recruitment and selection</td>
<td>• Desire to perform job</td>
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<td>• Free of emotional limitations</td>
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<td>• Cross training</td>
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Example 1 – WorldHelp

“We’re bleeding new hires,” confided CEO Pat Jones of WorldHelp, an NGO providing assistance throughout troubled parts of the world. “We hire them, we start training them, and we get them into the field so that they can make a difference. They typically stay for around 6 months. Then they leave. From what we know, they go to other NGOs or leave for technical work in other sectors.”

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Performance to do is remain employed with WorldHelp</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desired Performance</td>
<td>What we want our new hires</td>
<td>Saves $10M annually by avoiding unnecessary hiring and training costs</td>
</tr>
<tr>
<td>Actual Performance</td>
<td>What our new hires are doing now is leaving within 6 months to seek other employment</td>
<td>Costing $10M annually in additional hiring and training costs.</td>
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Example 1 – NGO w/ hiring & retention problems

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<td>There are no bonuses for retention. New hire pay is low.</td>
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<td>Reinforcement for positive performance</td>
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<td>Mentoring new hires punishes supervisors and managers with additional work.</td>
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<td>Positive work environment</td>
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<td>There are widespread expectations that “new hires don’t last”</td>
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<td>Motives</td>
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<td>Motives align with work and environment</td>
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<td>Desire to perform job</td>
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<td>Recruitment and selection</td>
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<td>WorldHelp recruiting and selection materials depict ideal workplace situations, rather than actual ones.</td>
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Example 2 – WorldAid

“We’re lacking the right skills and loosing opportunities to meet our mission,” confided CEO Chris Bakker of WorldAid, an NGO providing assistance for capacity development throughout the world. “We promote our best to middle management, we develop them in 1-week leadership programs, and give them the tools to make a difference, but they just don’t get it. They run into problems with negotiation within the organization, they are too focused on technical project design, and we are not winning the big grants. From what we know, they have the training they need but the results aren’t appearing.”

<table>
<thead>
<tr>
<th>Desired Performance</th>
<th>Actual Performance</th>
<th>Evaluation Standard</th>
</tr>
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</table>
| What we want our middle management to do | What our middle management are doing now is leading teams that are not high performing and don’t win big funding | that is:
| to do is lead high performing teams to deliver project results that achieve follow up funding and win big grants | Costing $10M annually in training without changes in performance or achieving results that the donors value |
| | Interfering with the organization’s ability to meet our mission and strategic plan outcomes. |
| | Producing low follow up funding rates |

Target Population Performance Evaluation Standard

### Desired Performance

- What we want our middle management to do is lead high performing teams to deliver project results that achieve follow up funding and win big grants.

### Actual Performance

- What our middle management are doing now is leading teams that are not high performing and don’t win big funding.

### Evaluation Standard

- Costing $10M annually in training without changes in performance or achieving results that the donors value.
- Interfering with the organization’s ability to meet our mission and strategic plan outcomes.
- Producing low follow up funding rates.

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Example 2 NGO Grant Mismanagement

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<tr>
<td><strong>Environment</strong></td>
<td>Roles &amp; expectations Middle managers have no formally specified roles and few expectations for guiding employee performance.</td>
<td>Processes and procedure There is no formal process to support front line employee capacity development throughout WorldAid.</td>
<td>Financial and nonfinancial There are no systematic incentives for winning funding. Pay is low.</td>
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<td></td>
<td>Guidance for work processes Middle managers lack relevant, timely, and accurate sources of guidance to support front line employee performance.</td>
<td>Materials, tools, time, to perform job Middle managers lack tools to support the development and training selection process.</td>
<td>Reinforcement for positive performance Mentoring new hires punishes middle managers with additional work. Sending staff to training alleviates work responsibility in the short term but is not helping with performance in the long term.</td>
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<td>Guidance for development Career paths and ways to monitor progress are very fuzzy. Feedback Middle managers lack timely, relevant, and actionable feedback that they can use to improve performance and retention. There is no &quot;retention dashboard.&quot;</td>
<td>Cross training Siloed WorldAid groups recruit and select training for their staff differently.</td>
<td>Positive work environment There are widespread expectations that training is someone else’s responsibility to track and manage</td>
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<td><strong>Individual</strong></td>
<td>Knowledge/Skills Possess necessary experience, skills, knowledge</td>
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<td>Most training is a long information dump, with opportunities to talk about expected performance abstractly but no opportunity for practice and clear feedback.</td>
<td>Siloed WorldAid groups recruit and select training for their staff differently.</td>
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<td>o Middle managers are expected to learn their job tasks via informal mentoring and on-the-job training</td>
<td>Free of emotional limitations</td>
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<td>o Middle managers could not find out how widely effective and applicable training opportunities are prior to enrolling—even if their lives depended on it.</td>
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<td>Placement New hire placement is based on the organizational pain associated with a given open position</td>
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Example 2 NGO

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**Resources**

- Processes and procedure
  - There is no formal process to support front line employee capacity development throughout WorldAid.
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**Motives**

- Align with work and environment
- Desire to perform job
- Recruitment and selection
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Systematic literature review

Research questions

1. Does the use of big data and analytics either reduce costs or improve NGOs’ training efficiency, workplace learning effectiveness, and performance outcomes?
2. What training and workplace learning outcomes, can be informed by the use of big data and analytics?
3. What factors are involved with an organization’s ability to leverage big data and analytics for training and workplace learning?

Results: Initiatives & outcomes

- HR
  - candidate selection, staff development intervention selection, retention
- Metrics & scorecard creation
  - EPSS, dashboards, recommenders
- Leverage social networks to improve productivity
- Sustainability
Results: Big Data organizational readiness factors

Culture – Value data driven decisions

Capacity - Talent & skills

Resources - technology

What performance improvement opportunities do you see in our models?
Performance Technology Landscape

Four Principles of Performance Technology

- Focus on Results
- Add value and focus on the business or organizational purpose
- Establish partnerships and work collaboratively
- Take a system(s) viewpoint

Systematic Approach
- NEED: Assessment and Analysis of Need/Performance, and/or Opportunity
- RESULTS: Functional/Requirement Analysis
- WHAT: Drivers/Cause Analysis, Solutions/Interventions, Recommendations
- HOW: Organize, Design, Develop
- DO: Implement, Deploy, Manage Change
- EVALUATE: Effectiveness, Value, Continuous Improvement, Lessons Learned

Addison, Haig, & Kearny (2009)

Performance improvement/HPT Model

Performance Analysis of Need or Opportunity

- Identify the problem or opportunity
- Analyze the situation
- Design the solution
- Implement the solution
- Evaluate the outcome

Evaluation

- Formative: Early evaluation of the design and process
- Summative: Final evaluation of the solution
- Feedback: Continuous improvement of the system
THANK YOU

O brave new world that has such people in it.
~ William Shakespeare, “The Tempest” (Act V, Scene I)

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