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Abstract
The effects of so-called big data, which involves a torrent of detailed information about employees and customers, have begun to ripple through hospitality human resources—allowing managers the potential to connect HR policies with corporate financial results. As discussed in this inaugural roundtable on "Hospitality HR and Big Data," hospitality firms are gradually addressing both the possibilities and the challenges of this mountain of data. In addition to dealing with the volume of data, hospitality firms must cope with the velocity, variety, and veracity of the data, while they also ensure ethical application of the information they gather. Given the size of HR databases, it's possible to draw statistically valid conclusions from analytical procedures, but care must be taken to ensure that those results make business sense before taking actions based on such analyses.

Keywords
big data, hospitality human resources

Disciplines
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Hospitality HR and Big Data:

Highlights from the 2015 Roundtable

by J. Bruce Tracey

EXECUTIVE SUMMARY

Considering the astonishing amount of human resources data available to the hospitality industry, participants in the 2015 Hospitality HR and Big Data Roundtable were concerned with both the quality and comprehensiveness of the data, as well as how to apply those data. Looking at the nature and quality of big HR data that hospitality organizations are gathering and using, many panel members expressed reasonable confidence that the data is appropriate for various HR decision-making and problem-solving activities. But others expressed substantive concerns regarding the specificity, quality, and comprehensiveness of those data. Panel members see a need for further integration of big HR data with other types of big data, such as that from customer and operational performance sources, and they also noted the potential ethical concerns associated with the ability to view and potentially abuse huge volumes of sensitive information. Regarding the future of big HR data in the hospitality industry, roundtable participants are concerned about the types of skills and knowledge that will be needed to address the challenges big data presents.

Key words: Big data, hospitality human resources

ROUNDTABLE PARTICIPANTS

Abigail Charpentier, *ARAMARK*

Chris Cunningham, *LogiServe*

Rick Garlick, *JD Power*

Carey Goldberg, *Ritz-Carlton Hotel Company*

Danielle Hawkins, *Deloitte Consulting LLP*

JoAnne Kruse, *American Express Global Business Travel*

Henrik Mansson, *LVMH*

Yasamin Miller, *Cornell University*

Alan Momeyer, *Loews Corporation*

Judy Newman, *Leading Hotels of the World*

Jamie Perry, *Cornell University*

J. Bruce Tracey, *Cornell University*

Michael Sturman, *Cornell University*

Emily VanHuysen, *Hilton Worldwide*

ABOUT THE AUTHOR

J. Bruce Tracey, Ph.D., professor of management, received his doctorate from the School of Business at the State University of New York at Albany in 1992. Since that time he has taught courses in human resources management for undergraduate, graduate, and professional audiences throughout North America, Europe and Asia, and he has won several awards for his efforts. He has conducted research on a wide range of strategic and operational-level HR topics, including the impact of training initiatives on firm performance, employee turnover, employment law and leadership. He has presented his work at numerous regional, national and international conferences, and his research has been published in diverse outlets such as the *Journal of Applied Psychology*, the *Cornell Hospitality Quarterly*, and the *University of Pennsylvania Journal of Labor and Employment Law*. Tracey's recent sponsors for research and consulting include Four Seasons, Hilton, ClubCorp and Uno Chicago Grill, and he has been cited in *USA Today* and the *Orlando Sentinel*, among other popular press outlets.

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The effects of so-called big data, which involves a torrent of detailed information about employees and customers, have begun to ripple through hospitality human resources—allowing managers the potential to connect HR policies with corporate financial results. As discussed in this inaugural roundtable on "Hospitality HR and Big Data," hospitality firms are gradually addressing both the possibilities and the challenges of this mountain of data. In addition to dealing with the volume of data, hospitality firms must cope with the velocity, variety, and veracity of the data, while they also ensure ethical application of the information they gather. Given the size of HR databases, it's possible to draw statistically valid conclusions from analytical procedures, but care must be taken to ensure that those results make business sense before taking actions based on such analyses.

***American Express's JoAnne Kruse*: Core business objectives form a lens for focusing on big data. "Activity-based" data points can then be examined over time.**

Session 1: The Nature of Big HR Data

At least four key attributes can used to describe the types of big human resources data used and managed by hospitality organizations, as discussed in the opening session, led by Chris Cunningham, the chief science officer at Logi-Serve, and J. Bruce Tracey, roundtable chair and professor of management at the School of Hotel Administration. These attributes regarding the basic nature of big HR data are based on a framework recently developed by John Morrison and Joseph Abraham.[1] The framework includes the following four attributes: volume, velocity, variety, and veracity. Volume can be expressed in terms of terabytes, number of employees, and similar metrics, while velocity refers to how quickly information is accumulated or amassed. Variety characterizes the diversity of information sources, and veracity captures the quality of the information. Using this framework, participants considered the information they gather, manage, and use for various HR decision making and problem solving activities.

Volume. Several participants stated that their companies have thousands of data points for every individual in their employ—data that would be helpful if the company were able wade through it. The primary level of analysis for these data is the employee (as well as individual applicants and former employees), but some firms are also obtaining and analyzing transaction-level information. For example, American Express's JoAnne Kruse explained that she tracks call-level or "activity-based" data points and uses the results for initiating continuous improvement efforts. Moreover, she not only examines the data at different points in time, but also evaluates changes over time. Thus, the volume of big data is in part a function of velocity.

Veracity. While managing volume can be tricky due primarily to information technology constraints, the veracity of the data was a much more salient concern. While many of the participants were reasonably confident about basic HR metrics such as headcount, management and non-management turnover rates, and revenue per employee, everyone expressed concerns about the quality of existing HR information. For example, Carey Goldberg, of Ritz-Carlton, said that the data she captures from the U.S. markets tends to be much more accurate than the data from outside the U.S., due primarily to information systems' differences and limitations. She explained: "In many of our overseas properties, they are still doing turnover calculations by hand—there just isn't the support that we have here in the 'States." Hilton Worldwide's Emily VanHuysen noted that even the definition of an employee (e.g., full-time-equivalent) may vary for different functions (e.g., HR vs. finance). She stated: "These differences are not inconsequential and have a negative impact on the accuracy and utility of the information at hand."

***Logi-Serve's Christopher Cunningham*: The hospitality industry is gradually learning how to analyze big data, but challenges remain.**

[1] J.D. Morrison, Jr., and J.D. Abraham, "Reasons for Enthusiasm and Caution Regarding Big Data for Applied Selection Research," *The Industrial-Organizational Psychologist*, Vol. 52, No. 3 (2015), pp. 134-139.

Variety. The participants find substantial variance in the types of big HR data that they collect. For example, data for the recruiting function include not only demographic information about applicants (who in some cases are many times the number of current staff), but also specific channels that applicants use to apply for jobs, interview and test scores, and related data. Compensation and benefits data are similarly variable—including wage and salary histories and the number of healthcare claims that have been submitted for reimbursement. Similar to the information technology challenges noted above, integrating the information generated from these various systems is difficult because each database is typically housed and managed by a function-specific platform (e.g., applicant tracking systems for recruitment, learning management systems for training, and performance or talent management systems for assessment). However, rather than simply trying to integrate the ever-increasing amount and diversity of data within the HR function, there appears to be some movement toward broader centralization of the data management process. For example, both Kruse and VanHuysen said that their companies have taken steps to unify data from all functional groups—including HR, finance, and operations—and manage those data under a single, strategically central umbrella. The primary objective is to develop a comprehensive executive dashboard that operates in real time. However, both agreed that it will take several years for systems of this type to be fully operational.

Velocity. Underlying the other three aspects of HR data is the incredible speed at which data are compiled. Because organizations' data analyses rely on ensuring that the data are accurate, collection routines must account for the rapid acquisition of data. As with the volume of data, the velocity is an issue if users are not prepared to deal with the resulting accumulated information. On the other hand, Morrison and Abraham point out that the velocity of data can be helpful in such tasks as early screening of job applicants, since HR managers will quickly acquire sufficient volume of information to make appropriate evaluations.

Using HR Data

Looking at how companies are using big HR data, participants observed that the primary objective for gathering and examining those data was to enhance both functional and business performance. To that end, they utilized a variety of data mining procedures to examine the various sources of HR data, including those that can be used to assess qualitative information, such as thematic content analyzers for assessing employee comments that are reported in opinion surveys. To set benchmarks and determine action steps for improvement, some participants concentrate on data from specific areas of focus (e.g., talent acquisition, development, performance management). Once benchmarks have been established, then the data are re-examined over time to determine whether progress is being made.

***Aramark's Abigail Charpentier*: Several HR metrics are significantly related to one of the firm's key operational performance metrics—account retention and growth.**

Many participants further explained that they have been attempting to link the various functional benchmarks to broader indicators of operational performance, such as service quality, customer satisfaction, and revenue growth. This effort provides an opportunity to identify which HR metrics may be the strongest and most consistent predictors of unit- and company-level outcomes. Aramark's Abigail Charpentier said that her strategy for examining big HR data is grounded in an effort to "validate what we think we know about the HR metrics that we are currently tracking." This comment prompted applause from the more academically inclined participants in the room. "I'm very glad to see that hypothesis testing is alive and well!," exclaimed Rick Garlick, of J.D. Power. "It works some of the time," replied Charpentier, "but there's a lot of noise, so we have to be pretty conservative in how we use the results." Kruse agreed, but noted that one way she attempts to reduce the noise is to start by examining such key operational outcomes as sales and revenue objectives, and then work backward to identify their key HR drivers of sales and revenue performance. This strategy allows her to sift out information that is most relevant and

***Judy Newman, of Leading Hotels of the World*: To make sure data "mirror reality," it's important to evaluate how the data are collected.**

use it as a basis for establishing priorities. "It's really easy to get mired in big data, so starting with the core business objectives helps narrow the field considerably," Kruse explained.

However, in light of the concerns regarding veracity, most of the participants admitted that they are only scratching the surface in terms of exploiting the available data. At least for now, most of the efforts appear to focus on ensuring that the various types of function-specific information are reliable and valid. For example, many of the participants are looking at the processes by which data are collected, including employee opinion surveys and worker compensation claims, to ensure that the captured information is accurate, or, as Judy Newman, of Leading Hotels of the World, put it, a "mirror of operational reality." In addition, some of the participants proposed addressing some of the veracity issues by examining different levels of analysis. As suggested previously, in settings that have robust data management systems, information tends to be more accurate and thus offers the opportunity to provide more detailed analysis that allows management to develop a much more precise action plan for making necessary improvements. However, since many properties or units do not have contemporary data management systems, it is difficult to offer an actionable prescription. "In some situations the data will show there is a problem with employee engagement," said Ritz-Carlton's Goldberg, "Unfortunately, I can't determine what aspects of engagement are most problematic. Thus, it takes a lot longer to find solutions in these kinds of settings." Henrik Mansson, of LVMH, agreed, saying that one of his strategies for managing this type of information gap is to examine different levels of data aggregation. For example, he explained: "Operational managers tend to be a bit myopic, so we provide our team leaders with departmental, unit, region, and brand level information so that they are more broadly aware of how they and others are performing. The awareness helps them become more engaged in seeking out solutions that are contextually relevant."

Session 2: Linking Big HR Data with Other Data

Led by Rick Garlick, global practice lead, travel and hospitality, J.D. Power, this session considered ways that companies are starting to align big HR data with other types of big data. Starting with a focus on the importance of variance, Garlick stressed that alignment requires good measures, and that good measures must create real variance. Indeed, without variance, we cannot establish relationships among anything. For this purpose, Garlick looks for "hard or extreme" indicators to tease out and assess the sometimes subtle but important differences that can occur within and across individuals and work settings. For example, he referenced one of the items that is included in Gallup, Inc.'s employee engagement survey, a question that asks whether the respondent has a best friend at work. Analyzing responses to this kind of "extreme" item provides an opportunity to distinguish among levels of engagement more effectively than more neutral items that ask about the general quality of relationships at work.

***Rick Garlick, of J.D. Power*: It is vital to discriminate between statistical significance—which is easy to establish with big data—and practical significance, which takes more discernment.**

The challenge for the hospitality analysts is that variance is "as common as trees in a forest" in the hospitality industry. Thus, Garlick said that it is vitally important to differentiate between statistical significance and practical significance. Because the sample sizes for many types of HR data are so large, the results from most inferential analyses that assess the alignment between HR metrics and those from other sources will always be statistically significant. However, while such findings may suggest that there is some sort of true effect (assuming the measures are reliable and valid), the amount of actual variance explained may be quite small and the outcome may have little to no practical value. Thus, the magnitude of effects have to be taken into consideration.

In response, Aramark's Charpentier said that her data mining efforts have identified several HR metrics that are statistically significantly related to one of their key operational performance metrics: account retention and growth. She further found that there was one standout factor, the tenure of the current management team, which had the strongest impact on these key outcomes. She added that this effect has been consistent over time, geographic location, and line of business. Thus, many of her recent efforts have focused on increasing management team retention.

In contrast, few other participants reported that they had been able to find clear connections between many of the HR metrics that they monitor and other sources of information. Some noted consistent and positive relationships between measures of employee engagement and customer satisfaction. However, the links between other types of big HR data and operational performance data were not clearly identifiable. Many of the participants echoed previously noted concerns regarding the lack of data integrity, particularly regarding individual performance data. Indeed, a substantial amount of discussion focused on the challenges associated with obtaining information that clearly and comprehensively explains how well employees were executing their tasks, duties, and responsibilities, and then linking this information to aggregate measures of departmental and unit performance.

***LVMH's Henrik Mansson*: By sharing data at all levels, managers can gain a greater perspective on the importance of their operational responsibilities.**

***Alan Momeyer, of Loews*: Organizations that have developed a strong, integrity-focused culture don't need regulations to manage how employees conduct themselves.**

Most of the challenges in this domain are not new. Established procedures for assessment are routinely not followed, for example, and managers do not have enough opportunity to accurately assess their employees, while employees do not trust that managers will use the information fairly and properly. In response, some of the participants have attempted to reframe the performance evaluation process and are using more developmentally based approaches, rather than focus on the extent to which employees have met, exceeded, or failed to meet their essential performance requirements over the past six or twelve months.

"No one likes to be evaluated, but everyone loves to talk about where they want to go," said Alan Momeyer, of Loews Corporation. He and many other participants have revamped their performance assessment process and integrated a more forward-looking and learning-oriented approach to talent assessment and performance management.

***Deloitte's Danielle Hawkins*: Big data invites big ethical questions and careful use.**

In doing so, HR teams can track employee participation in various learning and development activities, which can be linked much more directly and easily to individual- and unit-level performance-outcome indicators (e.g., mystery shopper results, customer loyalty, and food and labor costs).

Session 3: Ethical Implications

Danielle Hawkins, senior manager, Deloitte Consulting, led the third session by addressing the key ethical challenges associated with big HR data, along with the types of policies and other mechanisms that have been or should be considered to address these challenges. She suggested that one of the fundamental big data issues that is often overlooked is making clear choices about the use of the available data. "Big data can lead to big conclusions," she pointed out, "but given the challenges regarding veracity, far too much weight is given to the conclusions." Indeed, if companies place too much emphasis on data that are suspect, the solutions based on those data will have little likelihood of success. An ethical dilemma comes into play when companies know that the data have limitations, yet still make substantive decisions using the information.

Another key ethical challenge is ensuring the security of sensitive information. LVMH's Mansson noted that "Europe has some well defined systems that provide excellent guidance on ethical data use." JoAnne Kruse added that due to regulatory requirements, her company is compelled to monitor and ensure the security of their data systems. However, while regulation may be one way to ensure the effective use of big data, there was consensus among the participants that the organization's values and expected behavior will have the greatest impact on how companies use or abuse big data. Alan Momeyer concluded: "Organizations that have developed a strong, integrity-focused culture don't need regulations to manage how employees conduct themselves."

Session 4: Future Considerations

The final session was led by Emily VanHuysen, vice president of human resources planning and insights at Hilton Worldwide, and JoAnne Kruse, chief human resources officer at American Express Global Business Travel. The discussions centered on the future of big HR data for the hospitality industry and the implications for hospitality HR professionals. Three key topics came to light. First, as noted previously, both facilitators emphasized that improvements are needed in the information technology that is used to house and manage big data. Additionally, many of the participants reinforced the need to improve integration among the various HR system platforms (e.g., linking applicant tracking systems with talent development and talent assessment systems), as well as integrating data from the various HR platforms with information generated from other platforms (e.g., financial, quality, customer).

Both facilitators also expressed the need for a more purposeful approach to the data analysis process. Kruse suggested that is it critical to start with a holistic understanding of the HR function before attempting to address specific functional issues. Indeed, several participants noted that a careful examination of the broader and more robust metrics for efficiency (e.g., staff turnover) and effectiveness (e.g., staff engagement) can provide a good starting point for identifying function-specific problems. "Taking a deep dive in our broader HR fundamentals can tell me if I need to turn right or left. Sometimes, that's the only direction I get," said Kruse. VanHuysen agreed and emphasized the importance of understanding how each of the function-specific activities are related. She added, "I spend a lot of time and effort looking at our staffing results, for example, but it is much more beneficial to see how the staffing results line up with data from other sources, such as training and development and employee retention." Also as noted previously, it is also important to examine the predictive validity of the available information and link the various HR efficiency and effectiveness metrics to various financial and non-financial indicators of unit and company performance (e.g., customer service).

The panel then turned to the need to develop strong "big data skills" among HR professionals. "HR analytics

***Hilton Worldwide's Emily VanHuysen*: It's important to see how staffing results line up with such data as training or employee retention. Eventually one can assess the predictive validity of various types of data.**

must be owned by HR," VanHuysen stated, "and we need to ensure that the data we report is clear and actionable for anyone." As such, HR professionals must have strong data collection, data analysis, and communication skills.

"We have begun hiring data scientists who are helping us with our most sophisticated and complex big data issues," she added, "but everyone in a leadership role needs to understand big data basics and how the information can be applied." Most of the participants agreed that a fundamental understanding of research methods and both descriptive and basic inferential statistics were necessary. While no one expressed the expectation that HR professionals should know the formula for calculating a correlation coefficient or conducting a t-test, there was strong sentiment that managers need to know the meaning of a significant correlation coefficient or t-test result, and, more critically, whether that result is substantive or not. In addition, several emphasized the importance of understanding the details of their company's business model and being able to demonstrate how HR performance contributes to both financial and non-financial indicators of performance. Finally, strong consultative skills were considered to be a critical area of future development. Making a business case for change or developing an executive dashboard certainly requires strong technical skills. However, these kinds of activities also require HR professionals to work closely and collaborate with individuals from other functions. As such, strong interpersonal skills are also needed to coordinate and execute cross-functional solutions that are generated from big HR data. ■

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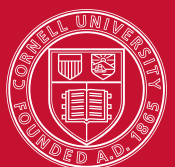

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