Algorithmic Decision-Making in Organizations: Network Data Mining, Measuring and Monitoring Work Performance, and Managerial Control

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ABSTRACT. I develop a conceptual framework based on a systematic and comprehensive literature review on algorithmic decision-making in organizations. Building my argument by drawing on data collected from Bright & Company, Corporate Research Forum, Deloitte, Management Events, McKinsey, and Top Employers Institute, I performed analyses and made estimates regarding employees who understand data concepts very well or completely (% of respondents) and challenges to success with data and analytics (asked of those who reported being ineffective at meeting objectives, %). The data for this research were gathered via an online survey questionnaire and were analyzed through structural equation modeling on a sample of 4,600 respondents.

1. Introduction

To attain first-rate performance, companies should adjust their plan of action making endeavors to (a) monitoring alterations in customer demands and competitor strategies, (b) participating in creative processes, and (c) integrating the massive knowledge obtained from such undertakings. (Schweiger et al., 2019) Data mining methods equip companies with inexpensive and sound tools that would improve comprehension of workforce and supervising them in a manner that would enhance the results. (Gelbard et al., 2018)

2. Conceptual Framework and Literature Review

Companies should harmoniously assimilate human capital analytics into all operations to determine organizational performance. (Phillips and Phillips, 2019) There are broad boundaries to enhance the connection between environmental innovation and data communication technology so as to harness their possible upsides on output performance. (Antonioli et al., 2018) Cutting-edge technologies are decisive for integration and dissatisfaction, where monitoring technologies appraise the qualitative and display formerly unassessed features of the labor process (e.g. mood, subjective self-awareness, fatigue, psychological wellbeing, etc.). (Moore, 2018) Via the adoption of personnel standards and workforce analytics, decision-makers would more successfully supervise and drive forward human resources programs and mechanisms (Andrei et al., 2016; Duşmănescu et al., 2016; Mihăilă et al., 2016; Nica et al., 2014), thus contributing to the productiveness of the employees and organizational performance. (Durai et al., 2019)

3. Methodology and Empirical Analysis

Building my argument by drawing on data collected from Bright & Company, Corporate Research Forum, Deloitte, McKinsey, Management Events, and Top Employers Institute, I performed analyses and made estimates regarding employees who understand data concepts very well or completely (% of respondents) and challenges to success with data and analytics (asked of those who reported being ineffective at meeting objectives, %). The data for this research were gathered via an online survey questionnaire and were analyzed through structural equation modeling on a sample of 4,600 respondents.

4. Results and Discussion

Human judgment as it is employed currently in recruiting is unsound. Machine learning can supply additional scrutiny and assessment outside the limitations of performance standards and predictors. (Fernandez, 2019) In the data analytics disruption, the striving for human resources consists in: altering approaches and conventions related to the adoption of substantiation for decision making; searching for answers that connect procedures, personnel, and performance; and taking accountability for carrying out change and for handling the adjustments in culture, operations, practices, and capabilities that are rooted in analytics strategies. (Minbaeva, 2018) Human resource professionals having outstanding analytical capacities would have superior perceived job performance, whereas the effectiveness of this link differs by certain job roles. (Kryscynski et al., 2018) (Tables 1–10)

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Table 1 HR analytical companies have stronger HRA organizational fundament (% of respondents answering "Agree" or "Strongly agree")

	Developed analytical organizations	Starting analytical organizations
Dedicated HR reporting	76	46
Dedicated HR analytics	74	30
Strategic positioning of HRA	72	36
Support by key roles and capabilities	59	31
Clarity on processes and responsibilities	68	29
(High) data accessibility and quality	63	42

Sources: Top Employers Institute; Bright & Company; my survey among 4,600 individuals conducted May 2019.

Table 2 Employees who understand data concepts very well or completely (% of respondents)

	At high-performing organizations	At all other organizations
Executives	66	44
Managers	55	34
Frontline employees	31	22

Sources: McKinsey; my survey among 4,600 individuals conducted May 2019.

Table 3 Employee experience (new rules, %)

Employee experience defined as a holistic view of life at work, requiring constant feedback, action, and monitoring	76
Company uses tools and behaviors to measure, align, and improve culture during change, M&A, and other major initiatives	74
Companies have someone responsible for the complete employee experience, focused on employee journeys, experiences, engagement, and culture	68
Compensation, benefits, rewards, and recognition designed to make people's life better and balance financial and nonfinancial benefits	67
Companies have an integrated program for employee well-being focused on the employee, her family, and her entire experience at life and work	62
Rewards also include nonfinancial rewards: meals, leaves, vacation policy, fitness, and wellness programs	57
The employee experience platform is designed, mobile, and includes digital apps, prescriptive solutions based on employee journeys, and ongoing communications that support and inspire employees	54

Sources: Deloitte; my survey among 4,600 individuals conducted May 2019.

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Table 4 Our senior management actively promotes the use of analytics and data-driven decision-making in general (% of respondents answering "Agree" or "Strongly agree")

Starters	52
Practitioners	67
Front Runners	83

Sources: Top Employers Institute; Bright & Company; my survey among 4,600 individuals conducted May 2019.

Table 5 Do you have a methodology or standardized approach for undertaking HR analytics projects? (%)

Yes	27
No	65
Don't know	8

Sources: Corporate Research Forum; my survey among 4,600 individuals conducted May 2019.

Table 6 In my organization, the business proactively asks HR to provide data to help solve business problems (%)

Never	2
Rarely	17
Sometimes	55
Frequently	22
All the time	4

Sources: Corporate Research Forum; my survey among 4,600 individuals conducted May 2019.

Table 7 Traits of the modern chief HR officer (%)

Deep analytical skills	78
Strong communication skills	82
Strategic mindset	79
Technologically-abled	78
Diversity, inclusion and culture driven	76
Transformation management	72
Leadership capabilities	71
Board governance understanding	68

Sources: Management Events; my survey among 4,600 individuals conducted May 2019.

Table 8 Challenges to success with data and analytics (asked of those who reported being ineffective at meeting objectives, %)

Constructing a strategy to pursue data and analytics	28
Designing effective data architecture/technology infrastructure to support analytics activities	18
Securing talent with skills required to develop data and analytics projects	15
Ensuring senior-management leadership of analytics	13
Developing a workforce that understands how to use analytics	11

Sources: McKinsey; my survey among 4,600 individuals conducted May 2019.

Table 9 To what degree have you invested in upskilling HR generalists
and HR business partners in data and analytics? (%)

Not at all	8
A little	52
A fair amount	22
Substantially	15
Don't know	3

Sources: Corporate Research Forum; my survey among 4,600 individuals
conducted May 2019.

Table 10 Companies can call on an ecosystem of stakeholders
to help overcome the skills mismatch (%)

Labor agencies: Facilitate employee mobility in labor market, e.g. through supporting retraining or making benefits more portable	78
Educational institutions: Help companies fill their skills needs, e.g. by focusing courses on skills most relevant in the future	74
Industry associations: Enable employers to build better talent pipelines in particular sectors to find skills that match demand	71
Non-profit organizations: Pilot innovative training approaches to help lower-educated workers upgrade and market their skills	67

Sources: McKinsey; my survey among 4,600 individuals conducted May 2019.

5. Conclusions and Implications

Relevant strategic human capital issues should be managed with big data analytics, facilitating human resources to improve entire organizational performance. (Hamilton and Sodeman, 2019) Workforce analytics are of value when there is significant fluctuation in talent that is connected with a result of impact. When the dissimilarity between the achievements of high- and low-performing personnel in a certain role is unimportant, and roles are effortlessly filled, analytics would not supply a prolonged determinant of competitive advantage. (Huselid, 2018) Adaptive scoring algorithms can consider seniority, achievements, and performance assessment directions, enabling staff appraisal continuously. (Nicolaescu et al., 2019)

Author Contributions
The author confirms being the sole contributor of this work and approved it for publication.

Conflict of Interest Statement
The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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