Big Data Adoption in 2016

In 2012, Gartner reported that the potential opportunities available from the adoption of big data were higher for the Government sector than for any other sector or industry. The following is a first draft toward documentation of adoption by all sectors / industries.

**Barriers to Adoption**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Technical Barriers | | Aggregate Surveys | | | | | |
| Category | Sub Category | CDW | Accenture | Knowledgent | Hitachi | TDWI | InformationWeek |
| Lack of practitioners for complexity of software |  | 27% | 40% | 40% | 40% | 42% | 46% |
| Performance during concurrent usage |  |  |  |  |  |  |  |
| Integration with existing infrastructure |  |  | 35% | 35% |  |  |  |
|  | Moving data from source to analytics environment NRT |  |  |  |  |  |  |
|  | Blending internal & external data; merging sources | 45% |  |  |  |  |  |
|  | Organization-wide view of data movement between apps |  |  |  |  |  |  |
|  | Moving data between on-premise systems and clouds |  |  |  |  |  |  |
|  | Hadoop data |  |  |  |  |  |  |
| Hadoop specific |  |  |  |  |  |  |  |
|  | Backup and recovery |  |  |  |  |  |  |
|  | Availability |  |  |  |  |  |  |
|  | Performance at scale |  |  |  |  |  |  |
|  | Lack of user friendly tools |  |  |  |  | 27% |  |
|  | Security |  | 50% |  |  | 29% |  |
| Compliance, privacy and regulatory concerns |  |  |  | 42% |  |  |  |
|  | S&P securing deployments from hack |  |  |  |  |  |  |
|  | S&P inability to mask, de-identify sensitive data |  |  |  |  |  |  |
|  | S&P lack of fine control to support hetero user population |  |  |  |  |  |  |
|  | Governance: auditing access; logging / tracking data lineage |  |  |  |  |  |  |
| Analytics layer Technical ‘mis-specifications’ |  |  |  |  |  |  |  |
| Lack of suitable software |  |  |  |  | 42% |  |  |
| Lack of metadata mgmt. |  |  |  | 25% |  | 28% |  |
| Providing end users with self service capability |  |  |  | 33% |  |  |  |
| Providing business level context for understanding |  |  |  | 33% |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Non-Technical Barriers | | Aggregate Surveys | | | | | |
| Category | Sub Category | CDW | Accenture | Knowledgent | Hitachi | TDWI | InformationWeek |
| Developing an overall management program |  |  |  |  |  |  |  |
| Budget; expensive licenses |  | 32% | 47% | 47% |  |  | 34% |
| Stakeholder definition and product agreement |  |  |  | 45% |  |  | 40% |
| Establishing processes to go from POC to production |  |  |  | 43% |  |  |  |
| Compliance, privacy and regulatory concerns |  |  |  | 42% |  | 29% |  |
|  | S&P challenge in regulation understanding or compliance |  |  |  |  |  |  |
|  | Governance: monitoring; doc operating model |  |  |  |  |  |  |
|  | Governance: ownership |  |  |  |  |  |  |
|  | Governance: adapting rules for quickly changing end users |  |  |  |  |  |  |
| Difficulty operationalizing insights |  |  |  | 33% | 31% |  |  |
| Lack of access to sources |  |  |  |  |  |  |  |
| Silos | Lack of willingness to share; departmental communication. |  |  |  | 36% |  |  |
| Healthcare Info Tech (HIT) | Defining the data that needs to be collected | 35% |  |  |  |  |  |
|  | Resistance to change | 30% |  |  |  |  |  |
|  | Lack of industry standards | 21% |  |  |  |  |  |
| Lack of buy-in from management |  |  |  |  | 18% | 29% |  |
| Lack of compelling use case |  |  |  |  |  | 31% |  |
| No clear ROI |  |  |  |  |  |  | 36% |

Larger and mid-size organizations are considered to be the earlier adopters. In 2015, IDG reported that top priorities were integration into existing infrastructure [48%], security [38%], ease of use [35 to 51% depending on firm size], and support and services [37%]. In 2012, Gartner reported the potential opportunities were highest for Government; followed closely by Communications, Media and Services; Manufacturing and Natural Resources; and Banking and Securities, respectively. Healthcare Providers; Retail; and Insurance were to expect moderate potential, while Transportation; Utilities; Education; and Wholesale Trade industries had lower potential. More often than not, Hadoop is cited as overkill; and big data projects in general as too costly in comparison to expected ROI.

This Big Data Adoption in 2016 draft prepared for NIST does not adhere to or necessarily agree with the categorization schemes or findings of any reports cited.

The following spend figures have not been researched in depth enough to be verified and adjusted for accuracy.

|  |  |  |  |
| --- | --- | --- | --- |
| Industry | Spend | Certainty of Spend assumption | Adoption Rate [Economist] |
| Telecommunications and media | $1b |  | Highest, 62% |
| Telecommunications and IT | $2b |  |  |
| Banking Financial services | $2b to $14b |  | 38% |
| Government and defense | $3b | high | 45% |
| IT, software, internet | $3b |  | 57% |
| Natural resources, Energy, and utilities | $1b |  | 45% |
| Healthcare | $1b |  | Slowest, 21% |
| Retail | $.8b |  | Highest, 68% |
| Transportation, logistics | $.7b |  |  |
| Biotechnology |  |  | Slowest, 21% |
| Pharmaceuticals |  |  | Slowest, 21% |
| Construction and real estate |  |  | 52% |
| Education |  |  | 53% |
| Manufacturing and automotive |  |  | 40% |

Table 2: Spend per Industry

Other categories that could be included in Table 3: life sciences, insurance and professional services.

Reference:

Economist / Hitachi report: <https://www.hds.com/assets/pdf/the-hype-and-the-hope-summary.pdf>

IDG survey: <http://www.idgenterprise.com/resource/research/2015-big-data-and-analytics-survey/>

Informationweek: Survey of 665 business technology professionals October 2013

Knowledgent: 2015 Survey: Current implementation challenges.

TDWI: Hadoop for the Enterprise: Making data management massively scalable, agile, feature rich and cost effective.