
Human resource management — Workforce data quality

*Management des ressources humaines — Qualité des données de la
main d'œuvre*

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 260, *Human resource management*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Workforce data quality is concerned with policies, processes and practices for:

- identifying and determining relevant workforce data;
- data capture;
- data maintenance;
- data review.

This document establishes the importance of data quality and the validity and consistency of comparative data across functions, size, specific segmentation, industry sector, industry and region. This document also provides a basis for continual improvement in the quality of workforce data that are available for analysis and to support evidence-based decision-making.

The application of this document's guidelines assists organizations to make informed decisions based on high-quality workforce data. The economic and social benefits derived from improved decision-making are substantial and, along with the impacts of poor workforce data quality, are discussed in [Annex A](#).

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Human resource management — Workforce data quality

1 Scope

This document provides the basis for organizational improvement underpinned by quality workforce data that supports analysis and evidenced-based decision-making.

Workforce data quality, for the purpose of this document, is the process of:

- a) workforce data determination;
- b) data capture;
- c) data maintenance;
- d) data review processes.

The focus of this document is on the quality of data itself rather than on other critical aspects relating to the overall management of data, such as privacy and security of personal data, the analysis and reporting of data and the use of technology.

This document does not cover the analysis of data and reporting structure or the definition of any metric other than quality of workforce data. Technology platforms in the form of human resource information systems, databases, spreadsheets, and the like, can improve the process of the capture and management of data. The focus of this document is the data itself.

While data security and data privacy are also critical to the overall management of data, they are not dealt with in this document.

This document is applicable to all types and sizes of organization across all industry sectors and regions.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Defining workforce data quality

4.1 General

A high level of workforce data quality provides the foundation for evidence-based decision-making to support organizational performance and continual improvement.

Key considerations are the identification and capture of relevant data. The organization should determine what data is material to the purpose of the organization and its strategic objectives.

When considering what data to capture, refer to the relevant national and international human resource management standards.

This document focuses on key elements of workforce data quality: accuracy, timeliness, completeness, consistency and relevance. Further information on overall data quality can be found in the ISO 8000 series.

NOTE 1 Refer to ISO 30414:2018, Figure 2, which highlights and recommends a number of metrics for reporting internally and/or externally.

NOTE 2 See [Annex A](#) for the impacts of poor data quality.

NOTE 3 Refer to ISO 8000-1 and ISO 8000-2 for further information on general data quality.

4.2 Accuracy

To determine the level of accuracy required for various data, first consider the nature of the data being captured. The accuracy of the data determined to be important should be aligned to relevant industry guidelines. The current accuracy should also form the basis for future targeted accuracy. [Table 4](#) offers an example of data accuracy requirements.

4.3 Timeliness

Timeliness of data capture and the availability of the data for decision-making and reporting should be considered. For instance, when considering termination data, the reason can be different at the time of termination than a few months later, or if engagement data is being collected from one group at the start of a shift and another group at the end of a shift, the trends can be affected by the timing of collection.

4.4 Completeness

Completeness regularly becomes an issue when forms are partially filled in and/or data partially collected. Some examples of this include:

- a) qualifications have not been regularly sighted or verified;
- b) referees have not been contacted;
- c) performance information has not been recorded.

The risks to the organization and the individual in these instances cannot be underestimated. Complete data collection should be mandatory. Further, the responsibility for checking, recording and validating information that people provide is critical to data quality and should not be underestimated.

4.5 Consistency

Consistency in collecting data is essential for comparative analysis. Comparative analysis highlights the direction of an issue being monitored, such as an increase in workforce turnover.

To be consistent, consideration should be given to:

- a) timing of the data collecting, for instance monthly or bi-monthly;
- b) formulae used in any calculation not varying;
- c) data points and formats used not varying, such as dates, job titles, department names and employee ID numbers.

4.6 Relevance

Not all data collected are valuable. Many data points currently being measured are interesting but not relevant. One way to understand the importance of data and measurement is to use a framework that allows for the grouping of data points and/or measurements. For simplicity, group the resulting metric using the performance audit framework of input, process, output and outcome to allow the metric to be clustered across the activities within the workforce life cycle.

NOTE See ISO 30414 for guidelines on internal and external human capital reporting.

This framework focuses on a grouping within an activity. Some examples of this include:

- a) inputs for recruitment and talent management;
- b) grouping across activities;
- c) the entire workforce life cycle.

An example of this grouping can be seen through the following recruitment processes:

- input: CVs received;
- process: interviews with prospective employees;
- output: hiring of an employee or contractor;
- outcome: impact of hire compares the desired outcome, such as sales figures or customer service scores, against the actual outcome of what the new recruit delivered in the nominated time frame.

The relevant data to use for various metrics and assessments should be determined using this grouping.

5 Workforce life cycle framework

5.1 General

A workforce life cycle framework is a table of all the activities an organization undertakes and considers relevant to the management of its workforce. The framework can be unique to an industry sector or developed for each individual organization. The workforce life cycle follows the high-level framework of plan, do, check and act.

5.2 Expanding the workforce life cycle framework

Expanding the workforce life cycle framework will enhance the ability to determine what data should be captured. Through expansion of the framework, a clearer understanding of the interrelationships of each stage of the life cycle will be determined, see example in [Table 1](#). By selecting the activities that form the core workforce management functions of an organization and expanding on the higher-level functions, the practitioner can gain a more detailed understanding of what key measures and data points impact workforce management in the organization. For example, turnover can be broken into voluntary, involuntary and/or critical position turnover for the practitioner to gain greater insight into the data.

Table 1 — Example of expanded workforce life cycle framework (organizational perspective)

Plan		Do			Check		Act	
Define re-requirements	Strategise and plan	Consolidate or acquire	Develop	Administer	Analyse	Report	Evaluate	Repeat
Organizational objective(s)	Workforce planning	Recruitment	Capability framework	Reward and recognition	Workforce activity analytics	Statutory reporting	Data dictionary	Prioritise
Values	Diversity and inclusion		Position descriptions	Payroll	Root cause analytics	Administrative reporting	Human resources data quality	
Define work required to deliver objectives	Sustainable employability		Critical role management	Statutory requirements		Workforce reporting		
Organization design	Workforce design		Mandatory training	Health and safety				
Organization design			Learning and development	Disciplinary management				
Define functions and roles required			Performance management	Employee relations				
Determine build capability, buy capability, outsource requirement			Succession planning	Policies and procedures				
				Workforce allocation				
				Transition				
				Knowledge management				
Define re-requirements	Strategise and plan	Consolidate or acquire	Develop	Administer	Analyse	Report	Evaluate	Repeat

An example of a more detailed breakout of the “do” function of the workforce life cycle can be seen in [Table 2](#).

Table 2 — Example of more detailed “do” components of the workforce life cycle (organizational perspective)

Consolidate or acquire	Develop	Administer
Employer of choice positioning	Innovation	Reward and recognition
Alumni	Organization development	Payroll
Attraction	Capability framework	Statutory requirements
Recruitment	Position descriptions	Health and safety
Assessment	Critical role management	Disciplinary management
Interviewing	Mandatory training	Employee relations
Reference checking	Performance management	Industrial relations
Clearances or psych testing	Learning and development	Policies and procedures
Letter of offer	Succession planning	Workforce allocation
Onboarding	Engagement	Rostering – scheduling

Table 2 (continued)

Consolidate or acquire	Develop	Administer
Contract preparation and management	Retention	Transition
Vendor management	Business advisory or partnering	Turnover – voluntary
		Turnover – involuntary
		Turnover – critical position
		Outplacement
		Transition to retirement
		Retirement
		Knowledge management
		Governance
		Contingent management

5.3 Using the framework

The content in the expansion of the workforce life cycle framework varies across industries. Organization size has an impact on what services are undertaken and what data needs to be captured. This framework should be used to document the activities undertaken within the organization.

NOTE Some organizations do not manage an alumnus or have a need for vendor management. Other organizations break recruitment into several subsets due to the volume of recruits.

While each organization will determine what exactly is relevant to include in the workforce life cycle framework, the similarities across industries and sizes of organization typically outweigh the differences.

5.4 Generic workforce data framework

The relevant human resource information shall be part of an assurance regime for data quality.

The relevant human resource information to be collected is determined by each organization.

[Table 3](#) shows examples of generic data groups to capture.

The following responsibilities shall be allocated:

- setting the time frames;
- volume of data to be sampled;
- accuracy requirements.

The key workforce data shall be user defined.

Current and relevant national and international standards on human resource management cover many of the core components of the workforce life cycle, such as recruitment, learning and development and workforce planning. These standards highlight the most appropriate measures and data points to capture.

Table 3 — Example workforce data review

Key workforce data points to capture throughout the workforce life cycle	Examples
Personal information	Name, preferred name, address, date of birth, qualifications, licence renewal dates, as well as other mandatory information, e.g. tax file number, bank details. Optional: work preferences (shift work, part-time, full-time), preferred work location, other skills or qualifications.
Position information, including critical position identification	Position title, reports to, critical position y/n, mandatory requirements, e.g. qualifications, licences, certifications.
Organizational chart	A full chart of the organization reporting lines and position titles.
Learning and development records	Courses attended, development activities undertaken, certification renewals, mandatory training completion. Optional: hours of training, development plan.
Workforce recruitment	Recruitment costs, time to fill vacant positions, number of vacant positions, quality of hire, impact of hire.
Onboarding	Time to full productivity.
Human resources data dictionary	
Human resources data analytics, especially FTE and headcount	FTE, headcount, employee total, full-time, part-time, casual labour, contractors, turnover.
Human resources master data set (user defined)	
Human resources salary data	All payroll data.
Workforce performance ratings	
Workforce visa information (right to work)	
Workforce overtime status – exempt	
Workforce bonus payments	
Mandatory credentials	e.g. licence renewals, recertifications, insurance requirements, practising certificate.
Survey data	e.g. employee engagement, culture surveys.
Occupational health and safety data	Accidents, near misses.
Key	
FTE full-time equivalent	

6 Data capture and maintenance requirements

6.1 General

Ownership of the responsibility for workforce data needs to be established through the nomination of people in key stakeholder groups and then designating responsibilities.

The responsibility for data capture and maintenance to the hierarchical structure of the organization can be aligned. For example, data capture and maintenance can be conducted by team leaders, managers and executives for direct reports, including but not limited to employees and contractors.

When ownership and responsibilities for workforce data have been established, the importance of workforce data quality through the inclusion of workforce data quality performance measurement as a component of individual performance management reviews can also be reinforced.

The specific workforce data requirements for the organization shall be determined in accordance with this clause. The responsibility for the capture and maintenance of this data shall be determined and documented. This documentation shall include the following:

- a) procedures for initial entry;
- b) ongoing updating;
- c) maintenance of workforce data.

A schedule and procedure for reviewing and/or updating workforce data capture and maintenance documentation and procedures shall be developed. Responsibility for the reviewing and updating of workforce data shall be assigned by the relevant stakeholder.

The relevant stakeholders shall be skilled regarding their respective responsibilities and associated procedures.

6.2 Current and future workforce data capture and maintenance

A comprehensive template based on the defined workforce data requirements in [Clause 4](#) shall be developed. For example, small organizations can use spreadsheets. Larger organizations can use more complex technology-based solutions where appropriate.

When workforce members join, transition within or exit the organization, relevant data shall be captured and/or updated through each step of the process in accordance with documented procedures. A complete data set shall be determined for each employee.

NOTE For example, the team leader, manager and/or executive could be responsible for the quality of data related to direct reports.

The ongoing review of workforce data is discussed in [Clause 5](#). Performance review processes or similar one-on-one meeting strategies may be used as the trigger for a conversation with employees regarding individual data validity.

6.3 Historic data cleansing and collation

6.3.1 General

Poor-quality historic data is often the cause of poor-quality workforce reporting. The task of cleansing the historic data can appear daunting. There are many benefits to applying a focused approach to historical data cleansing.

Accurate historical data is of great value to an organization for several reasons, including:

- a) historical reporting;
- b) trending analysis;
- c) root cause analysis;
- d) alumni management (former employee or contractor management);
- e) marketing and “employer brand” positioning;
- f) proactive workforce management;
- g) support with conflict resolution;
- h) workforce negotiation.

The reliance on, and value of, historical data is largely industry- and organization-specific. The specific data that offers the greatest value should be identified and retained.

An example of variances in the value of historical data is where one organization considers workforce data over 6 months old to be valueless, as the workforce varies greatly and is transitional, whereas another organization considers 5-year-old historical data on a workforce group to still be useful.

6.3.2 Historical workforce data management time frames

When historical workforce data management is established, a rolling 3- to 5-year history should be maintained. When the initial historic workforce data cleansing is complete, the workforce data maintenance procedures highlighted in 6.2 should ensure the ongoing quality of the workforce data. There could be ongoing, specific requirements for further data cleansing of specific information, for example changes in critical positions or capabilities. Responsibility for this ongoing historical data cleansing shall be assigned by the relevant stakeholder. The associated processes and procedures shall be developed and relevant stakeholders informed and trained. Some of the most effective data cleansing techniques that can be useful in human resource management include removing duplicates, removing irrelevant data, standardising capitalization, converting data types, clearing formatting, fixing errors and handling missing values.

6.3.3 Cost of historical data cleansing

The cost of initially cleansing historical data varies with workforce data complexity. Such issues should be taken into account when determining the extent and depth of a workforce data cleansing activity to be completed.

The most appropriate approach to historic data cleansing shall be based on the following criteria:

- a) whether the data relates to the current workforce;
- b) whether the data relates to current critical positions;
- c) current state of the workforce data quality;
- d) ease and estimated cost of cleansing historical workforce data versus the anticipated benefits gained.

As a minimum, a historical data cleansing activity should be focused on:

- the current workforce;
- historical data on current critical positions and/or critical skills and capabilities.

6.3.4 Historic workforce data project team

When the decision is made to cleanse historic workforce data, a specific project team shall be established. This project team should include relevant stakeholders. An example of the composition of members includes:

- a) human resources;
- b) payroll;
- c) employee representatives;
- d) information technology;
- e) reporting and executive.

Internal and/or external auditors may be included as applicable.

A project plan shall be developed by the organization for the duration of the initial historic data cleansing.

7 Data integrity review process

7.1 Workforce data quality review process

There are three parts to the workforce data quality review process: a data quality process review report, management assurance and establishment of time frames.

7.2 Reviewing workforce data management processes report

An assessment and report on the workforce data quality review process shall be conducted at least annually or more often, as defined by the user.

7.3 Management assurance

Management assurance is provided through routine reporting mechanisms and evidence of action-in-response outcomes. Measurement and analysis of data quality, continuous improvement and clear accountability are all necessary requirements for management assurance.

These process review and management reports shall be available for audit scrutiny, testing and verification. The availability of these reports allows auditors to provide assurance that the workforce data quality review process shall perform its intended function. Audit work shall be determined by an examination of strategy and risk issues.

Critical strategies and bigger risks should command greater audit attention.

7.4 Time frames

Review of workforce data shall be conducted at least annually and more frequently if further assurance of data quality is required.

For required credentials, mandatory licences, visas and similar documents, the data assurance requirement shall be more stringent. Data quality in some cases should be absolute. For example, a physician's credentials, a long-haul truck-driving licence or working with children checks.

When data quality falls below the user-defined tolerance levels, a data cleansing operation shall be conducted and the action-in-response documented to the employee or team allocated the responsibility for workforce data quality.

A workforce data quality review process shall be developed highlighting the minimum accepted error rate and the minimum volume of data to be sampled for each of the key data points selected. An example of this is highlighted in [Table 4](#).

All stakeholders shall be advised of the process and what input is required by them. As highlighted in [Clause 5](#), the workforce data quality review process should form another core component of management responsibility.

[Table 4](#) expands on [Table 3](#) by including the following examples:

- a) recommended time frames;
- b) volume of data to be assessed;
- c) nominated accuracy level of the data accessed.

Table 4 — Example of workforce data review time frames and sample size

Key human resource data points to capture throughout the life cycle	Recommended time frames for management review (assurance)	Volume of those key data points to be sampled	Recommended levels of accuracy or completeness per category
Personal information	Annually (min.)	1 % to 5 %, depending on initial results	96 % to 100 %
Position information, including critical position identification	Annually (min.)	1 % to 5 %	95 %
Organizational chart	Two to four times per year (min.)	5 %	95 %
Learning and development records	Annually (min.)	3 % to 5 %	95 %
Staff recruitment	Annually (min.)	3 % to 5 %	95 %
Onboarding	Two to four times per year (min.)	2 %	98 %
Human resources data dictionary	Annually (min.)	3 % to 5 %	95 %
Human resources data analytics, especially FTE and headcount	Two to four times per year (min.)	5 %	98 %
Human resources master data set (user defined)	Annually (min.)	3 % to 5 %	95 %
Human resources salary data	Two to four times per year (min.)	3 %	99 % to 100 %
Workforce performance ratings	Annually (min.)	2 %	99 %
Workforce visa information (right to work)	Time before visa end date, e.g. 2 months	Confirmation of all expiry dates	100 %
Workforce overtime status – exempt	Annually (min.)	2 %	100 %
Workforce bonus payments	Annually (min.)	2 %	100 %
Mandatory credentials	Annually (min.)	2 %	100 %
Survey data	Annually (min.)	2 %	95 %
Occupational health and safety data	Annually (min.)	5 %	100 %