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Specification for digital maturity evaluation of small and medium-sized enterprises

中小企业数字化成熟度评价规范

(English Translation)

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Contents

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Foreword

This document is drafted in accordance with the rules set forth in GB/T 1.1-2020 *Directives for Standardization -- Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This document is proposed by the Industrial Internet Committee of the Guangdong-Hong Kong-Macao Greater Bay Area Standards Innovation Alliance.

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This is the first release.

Specification for digital maturity evaluation of small and medium-sized enterprises

1 Scope of Application

This file provides a description of the digital maturity level, evaluation index and evaluation method of small and medium-sized enterprises.
This file is suitable for self-assessment of small and medium-sized enterprises' digital maturity and provides guidance for the third party assessment.

2 Reference Files Normatively

The following documents are referred to in the text in such a way that some or all of their content constitures requirements of this document. For dated reference, only the edition cited applies. For undated references, the latest edition of the reference document (including any amendments) applies.

SJ/T 11772-2020 *Evaluation of Enterprise Cloud Effect*

3 Term and Definition

The following terms and definitions apply to this file.

3.1 Small and Medium-Sized Enterprise

Small and medium-sized enterprise refers to an enterprise established in the territory of the People 's Republic of China according to correlative laws. It occupies relatively small scale of personnel and operation, including medium, small and micro enterprises. The formulation of specific standards are based on enterprise employees, operating income, total assets and other aspects and combined with industry characteristics.
Note: The definition of small and medium-sized enterprise in Hong Kong and Macao follows local regulations.

3.2 Digital Transformation

Digital transformation refers to organizing and using digital technology to reconstruct, optimize and innovate the products, services, production methods, management methods or business models.
Note 1: The application of digital means can improve the efficiency of scale and diversification, enhance the output of unit time and employee value, reduce the cost of development, production, control and operation, and promote the improvement of the quality of the whole process of design, production service, procurement and supplier collaboration, so as to realize the optimization of enterprise operation.
Note2: The integration and application of a new generation of information technology can innovative intelligent products and high experience products / services, rely on the value extension of new products/services and expand innovative products or services based on existing products.
Note3: Digital resources and data capabilities are transformed to form a new format of data-driven production and services. Ecological partners link and cooperation ability are strengthened, including supply chain coordination ability and ecological co-construction ability and so on. Besides, business model is explored

and innovated, value increment is created, value space boundary is expanded, and finally a new value system is constructed.

3.3 Cloud Computing

Cloud computing refers to a mode of supplying and managing scalable and flexible shared physical and virtual resource pools in a self-service on-demand manner through the network.
Note: Resources include servers, operating systems, networks, software, applications, storage devices, etc.
[Content source: GB/T 32400-2015, 3.2.5]

3.4 Cloud Service

Cloud service refers to one or more capabilities provided by an interface which is defined by cloud computing (3.3).
[Content source: GB/T 32400-2015, 3.2.8]

3.5 Cloud Deployment Model

Cloud deployment model refers to the way of organizing cloud computing according to the control and sharing of physical or virtual resources.
Note: The cloud deployment model includes community cloud, hybrid cloud, private cloud and public cloud.
[Content source: GB/T 32400-2015, 3.2.7]

3.6 Cloudification

Cloudification refers to the use of cloud deployment model (3.5) to transform the organization 's resources and capabilities into service models through the use of cloud services to achieve shared reuse and flexible management of resources and capabilities.

4 Abbreviation

The following abbreviations apply to this file:
CPU: Central Processing Unit
CRM: customer relationship management
ERP: enterprise recourse planning
IT: Information Technology
KPI: Key Performance Indicator
MTTR: Mean Time To Repair
OKR: Objectives and Key Results
ROI: Return on Investment
SaaS: Software-as-a-Service

5 Level for Digital Maturity of Small and Medium-Sized Enterprises

The digital maturity of small and medium-sized enterprises is divided into the following four levels, as shown in Table 1.

Table 1 Definition for digital maturity of small and medium-sized enterprises

Level	Characteristic	Explanation
Level 1: Level of basis	Enterprises formulate development plans for digital transformation or upgrading, complete the basic deployment of digital hardware and software and services, and collect data on one or several core links such as research and development, production, sales, and services, thereby improving production efficiency and reducing production costs.	1. Development goals and schedules for digital transformation or upgrading are formulated; 2. Digital infrastructure deployment is used for core processes, including office and production environment network coverage, hardware and software equipment and service procurement, IT department planning, IT technical training, etc.
Level 2: Level of development	Enterprises collect and synchronize data in core links such as research and development, production, sales and service. It leverages services provided by cloud computing infrastructure, SaaS and other software systems to provide enterprises with dynamic business information, so as to achieve efficiency improvement and decision optimization.	On the basis of level 1, the following requirements also need to be met: 1. The post mechanism and responsibility distribution of digital transformation are clarified, and a certain number (no less than 5 % in total) of digital talents are introduced and trained; 2. Integrate SaaS applications according to the services provided by the software system (such as SaaS platform) and the actual needs of the work, so as to realize the automatic collection, storage and analysis of key business data in the core links of research and development, production or delivery, sales and service, and provide dynamic management or business information for enterprises; 3. The cloud infrastructure is initially deployed and adopted, and the migration of equipment, business and management to the cloud is completed. The cloud base is completely established and the platform services and application services are skillfully acquired and used, which is capable of secondary development.
Level 3: Level of maturation	Enterprises realizes the collection, analysis and visualization of data in the whole process of production management and the large-scale batch processing of data, which can promote the integration of key business systems and management systems, and open up links between various links of the enterprise value chain and internal departments. Therefore, it can promote business process reengineering and improve production and management efficiency.	On the basis of level 2, the following requirements also need to be met: 1. Automatic data acquisition, analysis and storage of the whole process of business links (including research and development, production or delivery, sales, services) and management links (including human resources and administrative management, financial management) can be basically realized; Various types of business data (including the data related to procurement, production, quality, sales, after-sales service, etc.) are opened up, so as to achieve the integration of key business systems and management systems and eliminate information barriers within the enterprises; 3. Available data is further analyzed and visualized online and rules are extracted based on the individual needs of the business to realize the empowerment of decision-making.

Table 1 Definition for digital maturity of small and medium-sized enterprises (continued)

Level	Characteristic	Explanation
Level 4: Level of benchmark	Enterprises deeply integrate cloud computing, big data, artificial intelligence and other new generation of digital technologies with production management activities. Then they open up data channels between different systems based on industrial clusters and supply chain upstream and downstream enterprises, effectively improve the level of scientific decision-making through data analysis and model-driven, and promote the innovation of product and service, so as to achieve the cost reduction and efficiency increase of enterprise production management	On the basis of level 3, the following requirements also need to be met: 1. The data communication channels between different systems are opened on the basis of industrial clusters and upstream and downstream enterprises in the supply chain, so as to realize the smooth flow of data information, resource sharing and process coordination; 2. The stored data is processed in large batches in real time or with delay and integrated, scheduled, simulated and output into a visual form according to the needs of the enterprises. Moreover, the data is deeply analyzed through digital twin technology to form a scientific digital platform, which can iteratively optimize decision models and processes based on digital technology.

6 Evaluation indicator

6.1 Indicator and Weight for Digital Maturity Evaluation of Small and Medium Enterprises

The evaluation for the digital transformation of small and medium-sized enterprises is the evaluation based on the organization 's operation and management, digital technology and other aspects, which involves digital leadership, digital innovation culture, digital development and delivery, digital workspace and other fields, as shown in Table 2.

Table 2 Indicator and weight for digital maturity evaluation of small and medium enterprises

First-level indicators (including 2 indicators)	Second-level indicators (including10 indicators)	Weight (suggestions)
Business process (management)	Research and design	10%
	Purchasing of raw materials	10%
	Product production	10%
	Warehousing logistics	10%
	Product marketing	10%
	After-sale service	10%
Operation management (management)	Strategical view	10%
	Organization and management	10%
	Enterprise culture	10%
Digital technology	Infrastructure	10%

Note: The weight is proposed to be set at 10 % and can be adjusted for actual industry and business needs when evaluating.

6.2 Contents for Digital Maturity Evaluation of Small and Medium Enterprises

Description and details for digital maturity indicators of small and medium-sized enterprises, as shown in Table 3.

Table 3 Digital evaluation indicator and evaluation content

First-level indicators	Second-level indicators	Evaluation contents
Business process (management)	Research and design	1. Are the tools for research and design such as digital modeling, simulation and verification used ? 2. Are the digital means used for process planning? 3. Are product Development and design process managed digitally?
	Purchasing of raw materials	4. Are the supply chain management softwares used to digitally manage the supplier system? 5. Does it form a digital industrial chain with suppliers? 6. Is the procurement process digitally monitored?
	Product production	7. What is the proportion of digital production equipments in production equipments or production lines ? 8. How is the popularity of manufacturing industrial softwares (including product data management PDM, product life cycle management software PLM, auxiliary manufacturing software CAM, manufacturing execution system MES, data acquisition and control system SCADA, etc.). 9. Is it possible to apply digital means to carry out production planning and automatically send operation instructions to the digital equipments? 10. Is it possible to achieve information tracking and control of the whole process of product processing or assembly and to achieve tracking and control of work-in-process logistics information? 11. Is it possible to collect and record employee safety operations management and environmental data, and to carry out emission analysis and early warning monitoring based on information technology?
	Warehousing logistics	12. Are digital warehousing equipment and processes used? 13. Is in-plant physical transportation completed by digital means? 14. Are digital tools used to optimize the distribution of finished goods?
	Product marketing	15. Are the products sold online? 16. Are the digital softwares used for sales management? 17. Is digital technology used to analyze sales groups targeted?
	After-sale service	18. Is digital technology used to optimize the customer experience ? 19. Are the digital software (e.g. CRM) used to manage customer relationships? 20. What is the proportion of customized products 21. Are the digital systems used for parts management and maintenance services? 22. Are digital systems used for call center management and customer service online collaboration.
Operation management (management)	Strategical view	23. Are the top leaders involved in the formulation of digital transformation strategies? 24. Is there a team dedicated to digital transformation? 25. Is there a digital transformation strategy? 26. What is the proportion of budgeted expenditures for digital transformation? 27. Are there institutions or experts for digital transformation strategy consulting?

Table 3 Digital evaluation indicator and evaluation content(continued)

First-level indicators	Second-level indicators	Evaluation contents
	Organization and management	28. Are management processes improved aiming at digital transformation? 29. What is the ratio of full-time, part-time and total staff in digital transformation. 30. Are enterprise resource management softwares (e.g. ERP) used ? 31. Are the whole process of business and financial digitization seamlessly connected ? 32. Is digital system used for human resource management ?
	Enterprise culture	33. Are employees organized for learning and training in digital transformation? 34. Are innovation mechanisms and platforms facing digital transformation established ? 35. Is the company's approval cycle shortened with digital technology?
Digital technology	Infrastructure	36. How about the Internet platform building ability/Is there an intranet? 37. What is the proportion of digital hardware equipments purchased and used by enterprises (including computers, local area network, IoT devices, dedicated data storage devices, data acquisition and transmission devices, dedicated data computing and data processing servers) 38. What is the proportion of expenditure on digital software and services purchased and used by enterprises [including enterprise management systems such as ERP, online software (APP), mobile service platforms (enterprise WeChat), cloud services, others)] 39. What is the situation of cloud computing services procurement and application. what is its situation according to The results of the evaluation of the *enterprise cloud effect evaluation industry standard SJ/T 11772-2020.* 40. Is there any investment in digital security construction?

7 Evaluation Method

7.1 Evaluation Tools

Digital evaluation tools of small and medium enterprises should meet the following requirements:

a) The digital maturity evaluation of small and medium enterprises adopts the method which combines tool platform and field evaluation.

b) The indicators should be confirmed by collecting information on functions, activities and processes related to enterprise digitization

1) The evidence collected should be recorded, and the collection methods can include interviews, observations, on-site inspections, document and record review, information system demonstration, data collection, etc;

2) According to the definition of digital maturity, the collected evidence should be compared with its satisfaction degree to form an assessment, and the specific assessment findings

should include evidence-supported compliance matters and good practices, improvement directions and weaknesses;

3) The scores of enterprises are calculated and the maturity level is finally determined according to the indicator, weight and each scoring results.

7.2 Evaluation Conclusion

7.2.1 The evaluation is based on the specific problem requirements corresponding to the indicator domain and indicator items, and the scoring method is as shown in Table 4.

Table 4 Scoring table of digital indicators satisfaction degree

The satisfaction degree of digital indicators	Score
90%-100%	10
60%-89%	8
30%-59%	5
0-29%	0

7.2.2 Calculate the score of digital index indicators according to Table 3 and Table 4

a) The contents in Table 3 shall be scored one by one according to Table 4, and the evaluation contents that are not applicable shall not be scored;

b) The calculation of Second-level indicators in Table 3 shall be accumulated by adding the product of the scores and weight values of the corresponding evaluation items, and the arithmetic mean score shall be calculated (the inapplicable items shall not be counted into the average score);

c) The digital maturity evaluation report is formed from the score results of first-level indicators and Second-level indicators;

d) The digital maturity score of the enterprises is obtained by adding all the second-level indicators evaluation results.

7.2.3 The maturity level is determined according to the digital maturity score, as shown in Table 5.

Table 5 Digital maturity evaluation of enterprises

Digital maturity score	Score
Basic level	0-55
Developing level	56 -70
Mature level	71 -85
Benchmarked level	86-100

Bibliography

[1] GB/T 32400-2015 Information technology-Cloud computing-Overview and vocabulary
[2] GB/T 39116-2020 Maturity model of intelligent manufacturing capability
[3] Implementation Guide for Promoting Enterprises to Cloud (2018-2020): Notice of the Ministry of Industry and Information Technology No.135,2018
[4] Notice on Printing and Distributing the Provisions on the Classification Standards for Small and Medium sized Enterprises: Notice of Ministry of Industry and Information Union Enterprise No.300,2011

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