

DIGITIZATION SELF-DIAGNOSTIC TOOL

1. Does your organization have a digitization talent development plan? A structured talent development program is necessary to improve your workforce competencies for digitization transformation.

- a. There is no formal curriculum on digitization training for onboarding workforce.
- b. There is a formal talent development curriculum with clear commencement and conclusion points. The scope of talent development is limited to skills acquisition.
- c. There is a structured talent development curriculum that adopts an approach of continuous learning to enable constant learning or re-learning, as well as improvement of new and existing skills.
- d. There is a continuous talent development curriculum that is integrated with organizational objectives, talent attraction and retention, and career development pathways.
- e. Formal feedback channels are in place to allow integrated talent development programs to be jointly created and updated by employees, HR, and business teams.

2. Top management technology competency refers to the readiness of the senior management team to leverage the latest trends and technologies for the continued relevance and competitiveness of the organization.

- a. Senior management is unacquainted with the latest concepts that can enable the next phase of advancement.

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- b. Senior management is partially familiar with the latest concepts that can enable the next phase of advancement.
- c. With external assistance, senior management is able to apply the latest concepts to enable improvements in at least one area.
- d. Senior management is able to apply the latest concepts to enable improvements across multiple areas.
- e. Senior management is able to augment its improvement initiatives as the latest concepts change or evolve over time.

3. Established digitization strategy and governance role for design and execution, a plan of action to achieve a set of digitization long-term goals. It includes identifying priorities, formulating a roadmap, and developing a system of rules, practices and processes to translate a vision into business value.

- a. Intentions to establish a Factory/Plant-of-the-Future are not identified as a strategic focus in the company's current or future plans.
- b. Intentions to establish a Factory/Plant-of-the-Future have been identified as a strategic focus in the company's current or future plans.
- c. A long-term strategy and governance model to establish a Factory/Plant-of-the-Future is being developed or has been developed.
- d. The long-term strategy and governance model to establish a Factory/Plant-of-the-Future has been put into action.

- e. The long-term strategy and governance model to establish a Factory/Plant-of- the-Future is scaled up to include other secondary areas.
4. What is the level of digitization contribution ~~of digitization~~ that your organization needs in order to increase the competitiveness and overall value creation of your products and services?
- a. Do not need to adopt digitization in the next 5 years.
 - b. Need to adopt digitization in the next 3 years.
 - c. Need to adopt digitization as soon as possible.
 - d. ~~Need to adopt~~Should have adopted it in the last 3 years.
 - e. ~~Need~~Should have ~~to~~ adopted it in the last 5 years.
5. What is your production equipment readiness in adapting digitization or implementing Industry 4.0?
- a. Legacy machines, stand alone and no communication port.
 - b. Significant retrofit or overhaul is required to meet digitization or industry 4.0 requirement.
 - c. Some machines and systems can be upgraded to meet digitization or industry 4.0 requirement.
 - d. Machines have already met some of the requirements of digitization or Industry 4.0 and can be upgraded as required.
 - e. Machines and systems have already met all requirements of digitization or Industry 4.0 with option for intelligence.

6. How would you rate the degree of the digitization of your vertical value chain (integration of processes and systems across all hierarchical levels of the automation pyramid – M2M capability) from R&D, product development to production?

- a. No automated exchange of information along the vertical value chain.
- b. Some data flow exchange through internal IT within organization.
- c. Data flow is only within organization and will be implemented throughout vertical value chain in the next 1 – 3 years.
- d. Data flow is along the vertical value chain eg. integration of ERP in the past 1 – 2 years.
- e. Continuous data flow along the vertical value chain eg. direct controlling of machines via CAD models, integration of ERP in the past 2 – 5 years.

7. What is the degree of product customization by your organization?

- a. Product does not allow for any customization, or / and? standardized mass production.
- b. Majority of products are made in large batch sizes with limited and late differentiation or customization.
- c. Product can be customized in small modules s but major parts are still on standardized base.
- d. Product can be largely customized but still have standardized base.
- e. Late differentiation is available for most make-to-order products (batch size 1).

8. Integrated Product Cycle is the integration of people, processes and systems along the entire product lifecycle, encompassing the stages of design and development, engineering, production, customer use, service, and disposal. What is the degree of Product Lifecycle adaption in your organization?

- a. Processes along the product lifecycle are managed and executed in silos, based on informal or ad-hoc methods.
- b. Processes along the product lifecycle are managed and executed in silos, based on a set of formally-defined instructions.
- c. Processes along the product lifecycle are managed and executed in silos, by digital tools.
- d. Digital tools and systems that manage the product lifecycle are formally linked with each other; however, the exchange of information along the product lifecycle is predominantly managed by humans.
- e. Digital tools and systems that manage the product lifecycle are formally linked with each other, and the exchange of information along the product lifecycle is predominantly executed by computer-based systems.

9. ~~Does~~ Is your organization supply chain system integrated with your customers and suppliers?

- a. Voice communication and manual paper documents exchange. No electronics or digital documents in place. ~~d.~~
- b. Ad hoc reactive communication (email or fax) with suppliers and customers. .
- c. Basic communication and data sharing (EDI – Electronic Data Interchange) where required with suppliers and customers. .
- d. EDI Data transfer between key strategic suppliers/customers, eg. customer inventory levels. .
- e. Fully integrated systems with suppliers/customers for appropriate processes, eg. real-time integrated planning. .

10. Automation (Shop Floor, Enterprise and Facility) is the application of technology to monitor, control and execute the process from production to delivery of products and services, within the location where the production and management of goods is carried out, including sales and marketing, demand planning, procurement, human resource management and planning; HVAC, chiller, security, and lighting systems. What degree of aAutomation (Shop Floor, Enterprise, Facility) adaption level is practised in your organization?

- a. All the processes es is are manually executed by humans. .
- b. All the processes es are is executed by humans with the assistance of equipment, machinery and computer- based systems. .

- c. All the processes es are ~~is~~ predominantly executed by equipment, machinery and computer-based systems. Human intervention is required to initiate and conclude each process.
- d. All processes es are ~~is~~ fully automated through the use of equipment, machinery and computer-based systems. Human intervention is required for unplanned events.
- e. Equipment, machinery and computer-based systems can be modified, reconfigured, and re-tasked quickly and easily when needed. Limited or no human intervention is required for unplanned events.

11. Enterprise, Shop Floor and Facility Intelligence are the processing &and analysis of data to optimize existing processes and create new applications, products, and services. What degree of Intelligence (Shop Floor, Enterprise, Facility) adaption level is practised in your organization?

- a. Equipment, machinery and computer-based systems are able to perform tasks based on pre-programmed logic.
- b. Equipment, machinery and computer-based systems are able to notify operators of deviations from predefined parameters.
- c. Equipment, machinery and computer-based systems are able to notify operators of deviations, and provide information on the possible causes.
- d. Equipment, machinery and computer-based systems are able to predict and notify operators of potential deviations, and provide information on the possible causes.

- e. Equipment, machinery and computer-based systems are able to predict and diagnose potential deviations, and independently execute decisions to optimize performance and resource efficiency.

12. How much of the operations data collected have been used to improve your manufacturing capabilities?

- a. Data just is simply collected as reference information if needed.
- b. Some data is only used for quality and regulatory purposes.
- c. Majority of data is used to control processes, eg. predictive maintenance.
- d. Majority of data is used to process optimization, eg. prescriptive maintenance.
- e. All the data is used not only to optimize processes, but also for decision making and future business plan.

13. Does your manufacturing equipment have the intelligence for self-optimizing processes?

- a. No self-optimization process capability.
- b. Basic self-optimization processes are in use.
- c. Some self-optimizing processes are in use, however there are pilots in more advanced areas or selected areas of business.
- d. Self-optimizing processes are widely used.
- e. Self-optimizing processes are fully used.

14. Enterprise, Shop Floor and Facility connectivity are the interconnection of equipment, machines and computer-based systems, ~~which~~ to enable communication and seamless data exchange, within the location ~~where the~~ for administrative work, production and management of goods, or physical building. What is the degree of cConnectivity (Shop Floor, Enterprise, Facility) adaption level practised in your organization?

- a. Equipment, machinery and systems are not able to interact or exchange information.
- b. There are formal network links that will enable equipment, machinery and computer-based systems to interact or exchange information.
- c. Equipment, machinery and computer-based systems are able to interact and exchange information without significant restrictions.
- d. There is a vigilant and resilient security framework to protect the network of interoperable equipment, machinery, and computer-based systems from undesired access and/or disruption.
- e. Interoperable and secure network links across different equipment, machinery and computer-based systems are able to interact or exchange information as the information is generated without delay.

15. Data and communications security ~~are~~is increasingly ly -important ~~to~~in any organisation ~~that~~gearing towards digitization transformation. What is the degree of IT and data security that has been implemented in your organization?

- a. No IT security solutions in place.
- b. IT security solutions are planned.
- c. IT security solutions have been partially implemented.
- d. Comprehensive IT security solutions have been implemented with major plans developed to close any gaps.
- e. IT security solutions have been implemented for all relevant areas and are reviewed frequently to ensure compliance.