



PROJECT IMPLEMENTATION PLAN

5 October 2017

1. **Project Code** 17-RP-33-GE-DON-C-02
2. **Project Activity** Research on Industry 4.0 Digitization Strategies for SMEs
3. **Reference** APO Project Notification 17-RP-33-GE-DON-C dated 10 May 2017
4. **Timing and Duration** December 2017– June 2018 (six months)
Expert Coordination Meeting:
13–15 December 2017 (three days)
New Delhi, India
5. **Venue** APO Secretariat
6. **Number of Participating Countries** One chief expert and up to seven national experts from the Republic of China, India, Japan, Republic of Korea, Malaysia, Thailand, and Vietnam. Other member countries with special interest in this project may nominate candidates upon consultation with the APO Secretariat.
7. **Closing Date for Nominations of National Experts** 15 November 2017
8. **Objectives**
 - a. To assess the current level of digitization and the level of readiness for Industry 4.0 among SMEs;
 - b. To identify the critical needs of SME digitization to embrace Industry 4.0; and
 - c. To generate strategies for digitizing SMEs for Industry 4.0 in selected APO member countries.
9. **Background**

Industry 4.0, the rapid technological revolution driven by new-generation technologies such as the Internet of Things, cloud computing, big data and data analytics, artificial intelligence, robotics, 3D printing, etc. has fundamentally transformed the future of production systems. The integration of manufacturing with state-of-the-art ICT linked to logistics processes between different companies is the key concept behind Industry 4.0. The introduction of intelligent automation is set to be the biggest change in the manufacturing industry in a generation. It has opened new horizons for industry to improve processes, develop innovative

products and services, and become more adventurous and more efficient. However, the pressure brought about by Industry 4.0 on executives to adapt and compete is tremendous. Since the Industry 4.0 vision is to be realized once most processes become digitized, the focus of industrial leaders is on digitizing essential functions both vertically and horizontally to create the future cyberphysical production systems. Digitizing manufacturing processes in factories might not be that problematic, but digitizing SMEs along global supply chains will be a much harder target to achieve. In APO economies, SMEs are on a fast-growth trajectory, but only a small fraction of them have access to the type of ICT that is commonplace in larger enterprises. SMEs might be willing to adopt new technologies to scale up their businesses and are aware that digitization is one of the prime game-changers, but there are plenty of barriers to overcome before SMEs can fully embrace Industry 4.0. Such barriers include a lack of digitization knowledge, the high learning curve involved, difficulty in defining the starting point, etc.

In order to support SMEs in member countries to move toward digitization, thus staying competitive in global value chains and unlocking opportunities for exponential growth through leveraging digital technologies, research on Industry 4.0 Digitization Strategies for SMEs is being conducted by the APO. It is also aligned with the inputs consolidated through discussions among experts and various stakeholders in the workshop on the Center of Excellence of IT for Industry 4.0. The current status of digitization among SMEs and readiness to adopt Industry 4.0 in selected APO member countries will be assessed in this research. The research findings, together with the currently available Global Industry 4.0 Readiness Indicators established by the Danish Institute of Industry 4.0, will complete the picture of national readiness for Industry 4.0 and pinpoint the critical needs of SMEs before they can embrace the 4th Industrial Revolution. A set of recommendations for SME digitization strategies at national level will be generated and published.

10. Scope and Methodology

Scope

- 1) Coordination meeting of experts: A meeting will be held 13–15 December 2017 in New Delhi, India. The tentative topics of discussion to be covered in this meeting are:
 - a. Initial research outputs on the levels of digitization and readiness among SMEs for Industry 4.0;
 - b. Discussion on sources of data, data collection, and data analysis methodology;
 - c. Discussion on the set of indicators for measuring Industry 4.0 readiness for SMEs; and
 - d. The final report format.
- 2) Conducting in-country research: Each national expert will gather and analyze data under the guidance of the chief expert based on the agreed research methodology and framework. The experts will be responsible for analyzing the data and preparing a report for review and acceptance by the chief expert and APO.

Methodology

The research will employ one chief expert who will lead the team of national experts in performing the study.

Chief expert's tasks:

- a. Developing the guidelines and formulating the overall framework for the research;
- b. Presenting the research framework, methodology, and outline of the report structure and format to national experts;
- c. Providing support and advice to national experts in conducting the research including data collection and data analysis;
- d. Providing comments on the initial work of national experts during the expert coordination meeting;
- e. Reviewing the drafts of national experts' reports to ensure the quality of the work; and
- f. Preparing the final report and submitting it to the APO Secretariat by the deadline.

National experts' tasks:

- a. Data collection at national level following the methodology, framework, and timeline agreed upon during the coordination meeting;
- b. Writing country reports on the analyses and findings based on the data gathered;
- c. Submitting the report following the agreed format to the chief expert and APO within the time frame; and
- d. Cooperating with the chief expert to ensure the quality and consistency of the final reports.

11. Qualifications of National Experts

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| Present Position | Researchers, academics, or policy analysts who have sufficient background in and knowledge of industrial digitization strategies and Industry 4.0. |
| Experience | At least five years of experience in the position described above. |
| Education | University degree or higher in technology management, engineering, or a related field from a recognized university/institution. |
| Language | Sufficient English proficiency to communicate with the APO Secretariat and chief expert on matters related to the research and excellent writing skills. |
| Health | Physically and mentally fit to commit him/herself to a one-year period of research. |
| Age | Candidates who fit the above profile are typically between 35 and 50 years of age. |

Other A strong commitment to undertaking and completing the research within the time frame is necessary; published articles, books, or substantive reports on SME digitization are desirable.

12. Qualifications of the Chief Expert

The APO will appoint a chief expert for this project to guide the group of national experts in undertaking the research. The APO-appointed chief expert must possess the following:

- a. Extensive knowledge of industry need analysis, SME digitization, and Industry 4.0, with publications in English on those topics desirable;
- b. Excellent English writing and presentation skills, as the final report will be written in English; and
- c. Strong commitment to undertaking and completing the research project within the given time frame and producing the consolidated analysis of all national reports.

13. Financial Arrangements

To be borne by the host country of the coordination meeting (India)

- a. Local implementation costs for the meeting including meeting room rental and required equipment.

To be borne by the APO

- a. Honoraria for the chief and national experts to be paid upon completion of the final research report;
- b. All assignment costs for the chief and national experts including daily subsistence allowances, miscellaneous expenses, and round-trip international airfare by the most direct route between the international airport nearest to the experts' place of work and New Delhi for attending the coordination meeting for the research;
- c. Travel insurance coverage against accident and illness for the entire duration of the coordination meeting and travel; and
- d. Other local implementation costs.

To be borne by experts or participating countries

- a. Any expenses incurred by experts for extra stay at the venue before and/or after the official project period due to early arrival, late departure, or any other reason must be borne by the experts attending the coordination meeting; and
- b. All local implementation costs incurred by national experts when conducting the research and related activities at the national level.

14. Actions by Member Countries

- a. Member countries included in the research are requested to submit appropriate nominations (preferably more than two for consideration) by 15 November 2017, in line with the provisions in section 11.
- b. Each nomination should be accompanied by the candidate's biodata on the standard APO form in duplicate along with a passport-sized photograph. In addition to the standard APO form, nominees should also prepare a list of publications, research, and/or consulting projects they have undertaken in this field. A nomination lacking any of these documents will not be considered.
- c. The selection of national experts will be based strictly upon their professional qualifications and experience, academic background, and commitment to this research.

15. Preparatory Work by National Experts

The selected national experts will be instructed to prepare a preliminary report on the level of SME digitization and their readiness for embracing Industry 4.0. The preliminary findings will be presented at the coordination meeting in New Delhi and will form the basis for further comment and validation by the chief expert. The detailed guidelines for the preliminary reports will be provided later.



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