5. Results – Job Market and Job Profiles

in Standards-Specialty Organizations

5.1 Number of Standards Professionals in Companies

In total, 36 standards-specialty organizations responded, and 32 responses included valid numbers of total employees and standards professionals. The 32 responses showed that nearly58.7% of their employees are involved in standards-related tasks.

The ratio is a bit distant from 100.0% because some responding organizations were government agencies and non-profit associations that deal with standards-related tasks as a part of their mission; their ratio of standards professionals ranged from 8.3% to 100.0%. As they are standards-specialty organizations, their average ratio is quite high compared to that of companies. Table 8 offers an overview of the survey responses.

5.2 Organizations Grouped by Three Domains: ST, CA, ME

Among the study responses, 28 included a detailed proportion of 3 domains for standardization, conformity assessment, and metrology. Figure 19 summarizes the composition of standards professionals by these three domains, and their organizations are described by type and number of standards professionals notted in parentheses.
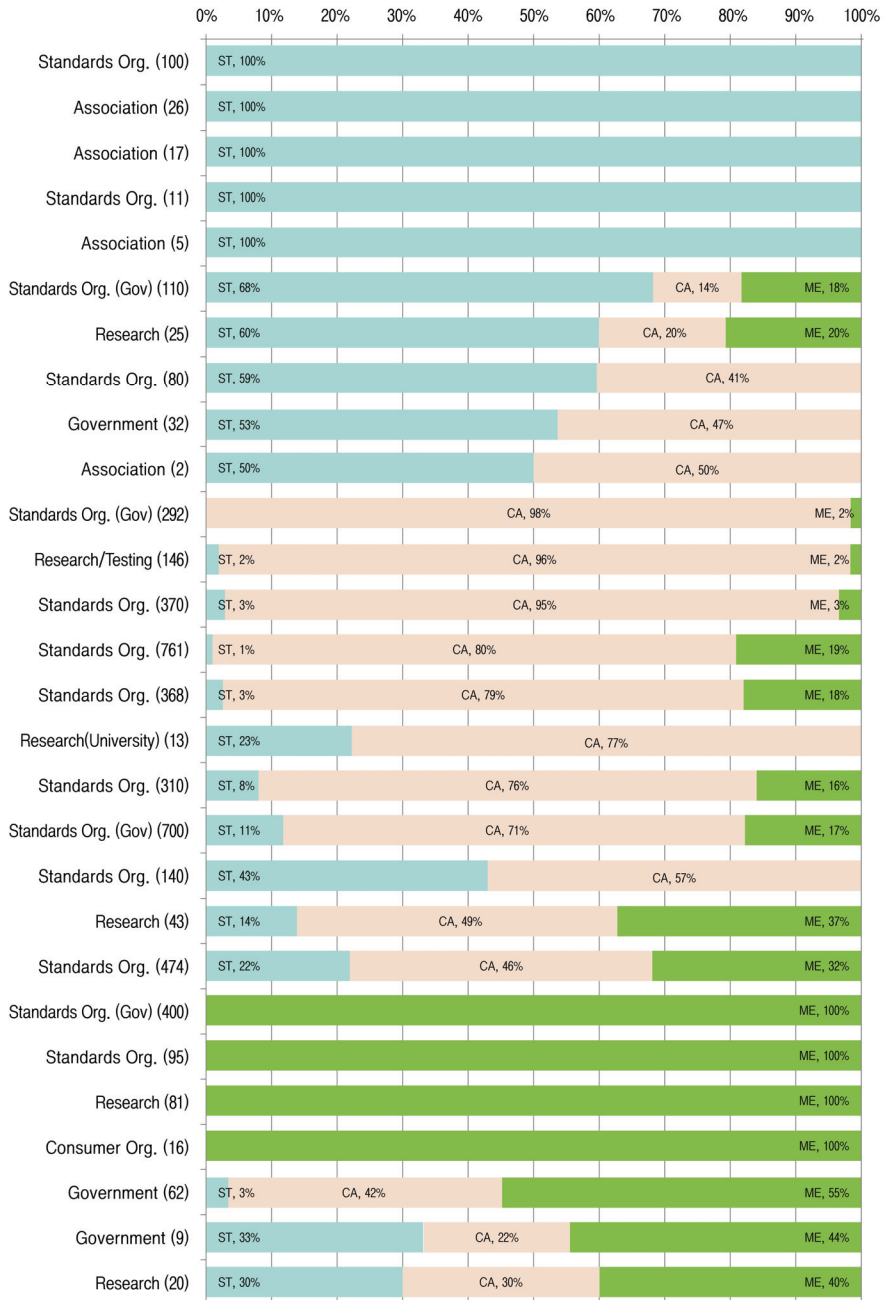
Figure 19 visibly explains how the first six organizations can be considered standardization-specialty organizations because more than two -thirds (68% to100%) of their standards professionals focus on standardization- related activities. Another eight organizations can be considered conformity-specialty organizations using the same rationale (71% to 98%). Also, in four organizations, all the standards professionals were metrology professionals (100%). The other ten organizations showed a mixture of three domain tasks within the proportion of standards professionals.

There is a very limited relationship between the types of organizations (government, association, and research) and the proportion of standards professionals. Unlike the job market analysis of companies in the previous chapter (4.2 and 4.3), the data of standards-specialty organizations are not meaningful because the number of standards professionals will depend on the characteristics of each organization.

<Table 8> (In Organizations) On Average, 58.7% of the Total Employees of Participated Organizations Have Standards-Related Tasks

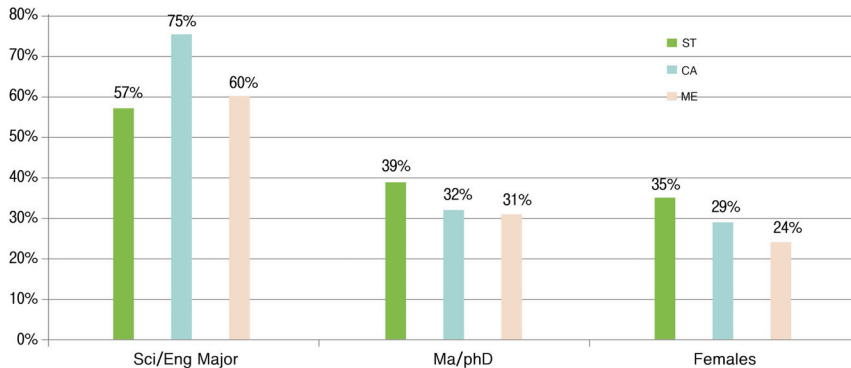| No.	Total Employees	Standards-Professionals	Ratio (%)	Types
1	300	25	8.3%	Research
2	349	43	12.3%	Research
3	150	20	13.3%	Research
4	67	9	13.4%	Government
5	89	17	19.1%	Association
6	100	26	26.0%	Association
7	61	16	26.2%	Consumer Org.
8	227	62	27.3%	Government
9	260	80	30.8%	Standards Org.
10	430	146	34.0%	Research/Testing
11	330	140	42.4%	Standards Org.
12	30	13	43.3%	Research (University)
13	180	81	45.0%	Research
14	1500	700	46.7%	Standards Org. (Gov)
15	67	32	47.8%	Government
16	4	2	50.0%	Association
17	475	292	61.5%	Standards Org. (Gov)
18	584	370	63.4%	Standards Org.
19	243	155	63.8%	Standards Org.
20	127	95	74.8%	Standards Org.
21	115	92	80.0%	Standards Org.
22	580	474	81.7%	Standards Org.
23	368	310	84.2%	Standards Org.
24	822	761	92.6%	Standards Org.
25	338	313	92.6%	Standards Org. (Gov)
26	380	368	96.8%	Standards Org.
27	5	5	100.0%	Association
28	11	11	100.0%	Standards Org.
29	96	96	100.0%	Standards Org. (Gov)
30	100	100	100.0%	Standards Org.
31	110	110	100.0%	Standards Org. (Gov)
32	400	400	100.0%	Standards Org. (Gov)
Total	8898	5364	1877.4%	--
Average	278	168	58.7%	--

<Figure 19> (In Organizations) Organizations Sorted by Proportion of Three Specialty Domains

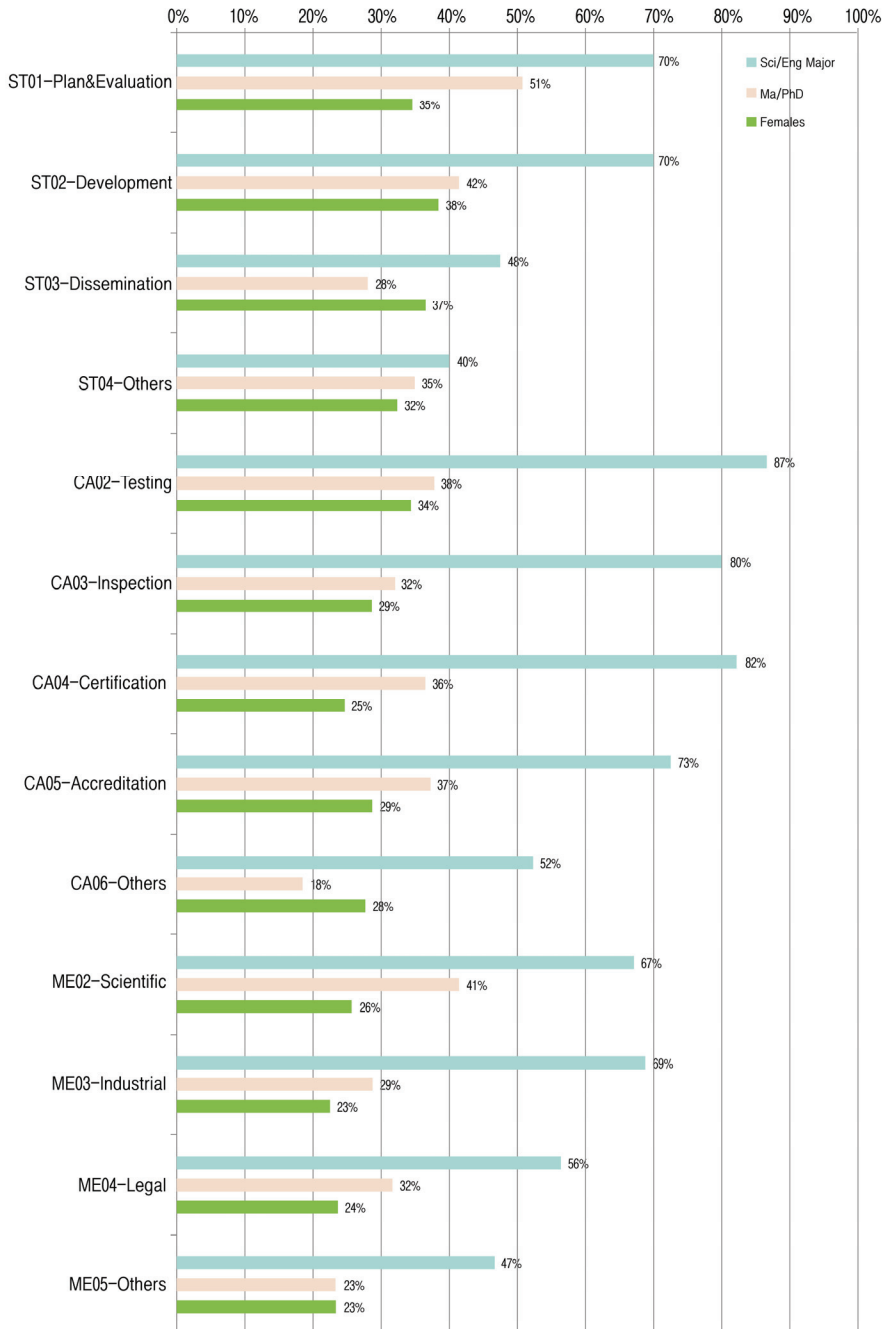### 5.3 Competency Characteristics of Current Employees

To understand the job market better, we collected information on the basic characteristics of standards professionals – science/engineering degree holders, Master/PhD degree holders, and females/women. We note in Figure 20 that nearly two- thirds of the standards professionals majored in science and engineering, slightly higher than the number of companies which is around 50% in previous chapter. Conformity assessment professionals in these companies had the highest rate of science/engineering majors, while standardization professionals had the highest rate in companies in previous chapter. For advanced degree holders, there was very little difference between the three categories professionals, as around one- third do hold Master/PhD degrees. In terms of the female ratio, standardization showed the highest ratio in the survey.

<Figure 20> (In Organizations) Current Employees – Two-Thirds are Sci/Eng Majors; Around One-Third Hold Advanced Degrees and Are Females

Here <See Figure 21>, the characteristics are matched to each sub-category of standards professionals. For science and engineering majors, professionals in testing (CA02), certification (CA04), and inspection (CA03) had the highest numbers, while dissemination (ST04) had the lowest. For advanced degree holders, standardization planning/evaluation (ST01), standards development (ST02), and scientific metrology (ME02) showed the highest ratio. Females seemed to be the most active in areas of standardization planning/evaluation (ST01), standards development (committee secretary) (ST02), and standards dissemination(ST03). Again, these results should not be overgeneralized, but rather considered as an adequate sample of information that we tested. But only a small part of the overal real job market.

<Figure 21> (In Organizations) Current Employees – Characteristics According to Each Category
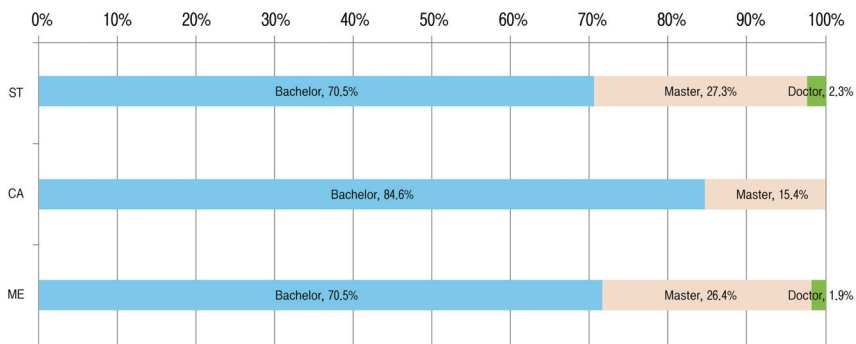
5.4 Expected Competency Requirements of New/Potential Employees

When the specialty organizations have vacancies, they use internal requirements or expectations when recruiting new employees. This section analyzes the minimum or preferred requirements for these potential employees by education degree, education major, work experience, required/preferred personnel certification, and future need for personnel certification.
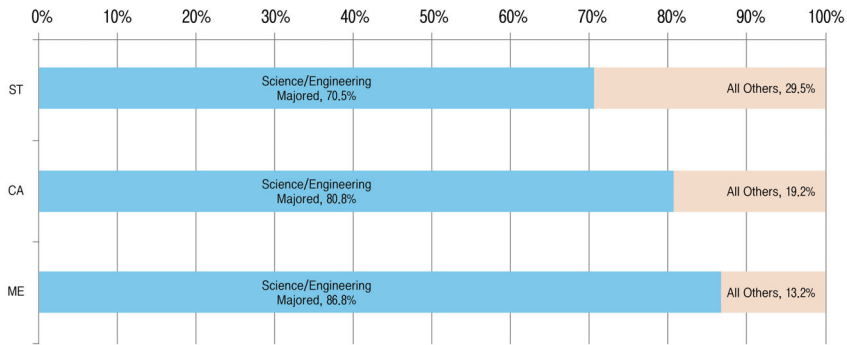
In terms of a required education degree, the Bachelor's degree was the most common while some do require a Master's degree. Very limited job positions require a Ph.D degree as the minimum. Overall, standardization professionals require a slightly higher academic degree than conformity and metrology job positions do. For standardization positions (ST), about 70.5% require the Bachelor's degree or above, 27.3% require a Master's degree, and only 1.2% require the Ph.D as a minimum degree. For conformity assessment positions (CA), about 84.6% require a Bachelor's degree or above, and 15.4% require a Master's degree. For metrology positions, 71.7% require a Bachelor's degree, and 26.4% require a Master's degree as the minimum academic degree. (See Figure 22)

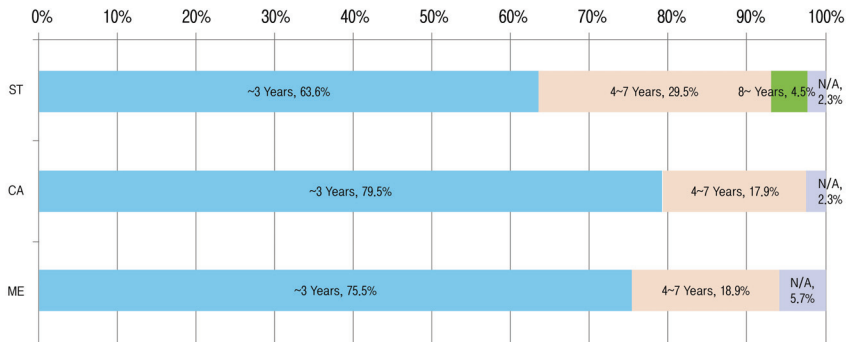**<Figure 22> (In Organizations) Minimum Degree Requirements**

In terms of a required or preferred major, we simply asked whether the job positions require or prefer science/engineering majors for employees or do not. The result shows that most job positions require a science/engineering major which is similar for companies. Metrology positions require the highest rate of 86.8%,while conformity assessment requires 80.8%, and standardization requires70.5% (See Figure 23)

<Figure 23> (In Organizations) Preference for Science/Engineering Majors

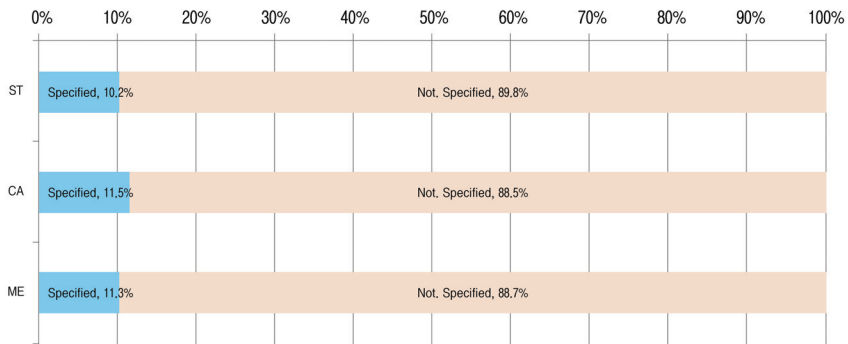|	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ST	Science/Engineering Majored, 70.5%								All Others, 29.5%		
CA	Science/Engineering Majored, 80.8%								All Others, 19.2%		
ME	Science/Engineering Majored, 86.8%								All Others, 13.2%		

In terms of required minimum work experience, around 36.4% require more than 4 years of work experience in standardization positions while 20.5% required more than 4 years for conformity assessment positions and 24.5% required more than 4 years for metrology positions. (see Figure 16)

<Figure 24> (In Organizations) Minimum Work Experience Requirements

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ST	~3 Years, 63.6%							4~7 Years, 29.5%	8~ Years, 4.5%	N/A, 2.3%	
CA	~3 Years, 79.5%								4~7 Years, 17.9%	N/A, 2.3%	
ME	~3 Years, 75.5%								4~7 Years, 18.9%	N/A, 5.7%	

Personnel certification is not commonly required for most standards professional job positions. Only around ten percent of the survey positions required certification. Conformity assessment uses personnel certification more than the standardization and metrology fields as a requirement. (See Figure 25)
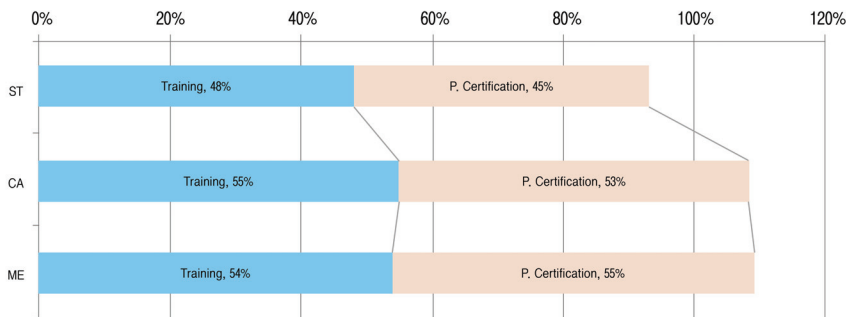
<Figure 25> (In Organizations) Personnel certification Requirements

5.5 *Future Needs for Training and Personnel certification*

Among the three fields, those job positions related to standardization need the lowest level of training and personnel certification, a finding contrary to that for companies. Future needs for personnel certification was the highest (55%) in the field of metrology followed by conformity assessment (53%) and standardization (45%).

<Figure 26> Future Needs for Training and Personnel certification

5.6 Examples of Typical Job Postings

Job advertisements provide us a good opportunity to recognize the valid needs and details for standards professionals in standards-specialty organizations. Table 9 presents nine real job postings from seven different participating organizations to include position title, major task description and minimum/preferable competency requirements.

<Table 9> 9 Organization Job Posting Examples

1) Position Title : Specialist in Standardization [ST01]

> Description

- Research and analyze proposals received from NTP industry sector for development of the Technical Standards.
- Present technical proposals using NTP guidelines for Standardization
- Revision of draft NTP and related technical documents at each stage
- Support Standardization Technical Committees Industry in general
- Coordinate and support the review, updating, and repeal of the Peruvian view
- Offer technical assistance and training in Technical Committees and Subcommittees for Standardization.

3. Requirements

- Preferably a Master's degree
- 4+ years' experience in the food industry, Chemical Industry, Electrical and Electronics, Civil, Software and more.
- Good writing skills. Knowledge of basic level English and the Windows operating system,
MS Office, and Internet Explorer.

2) Position Title : Committee Secretary [ST02]

2. Description

- Prepare annual working plan of the committee;
- _Proceed with standard development procedure according to national policies and regulations;
- Prepare standards within the committee; prepare committee reports;
Arrange for committee meetings; Handle any other committee tasks.

3.Requirements

- At least a Bachelor's degree in Electrical Engineering or related concentration.
- 3 years' experience working in electrical engineering/standards is preferred;
- Word processing skills; Computer skills; Language skills; Communication skills.

3) Position Title : Compliance Manager [CA01]

> Description

- Construction policies, strategies for managing conformity assessment of domestic and foreign (testing body, inspection body, certification body); propose measures to popular organizations and guide implementation after approval **> Requirements**

- Bachelor's degree or higher

- Work experience in a related field

- Knowledge of the requirements of laws and regulations guiding and operating conformity assessment

- Skills to collect and synthesize information and solve problems; ability to research, analyze and evaluate

4) Position Title : **Product Quality Manager [CA01]**

> Description

- Manage product and goods quality as prescribed by legislation and technical regulations from the Ministry of Science and Technology and issued under authority of the Directorate for Standards, Metrology and Quality

> Requirements

- Bachelor's degree or higher

- Work experience in a related field

- Knowledge of the requirements of laws and regulations' guiding conformity assessment

- Skills to collect and synthesize information and solve problems; have the ability to research, analyze, and evaluate precisely

5) Position Title : Senior Researcher in Conformity [CA02/CA03/CA04]

> Description

 -Test and inspect electric products and components, machines, or energy equipment

-Review and certify all test reports

> Requirements

- Higher than Bachelor's degree in Science and Engineering

- Minimum of 10 years' experience in Science or Engineering fields

- High level of understanding of testing, inspection, certification, and standards

- High level of operability in testing equipment and measuring instruments

- High level of ability for interpreting test results

- High level of ability to inspect and manage testing equipment

*To meet the above requirements and abilities, complete training programs in a designated educational institute and pass auditor examination.

6) Position Title : Full-time Assessor [CA05]

> Description

- Manage assessment
- Assess Accreditation
- Operate related committees

> Requirements

- Bachelor or higher education in Science or Engineering
- Technical professional experience 8 years or longer
- Knowledge and experience with quality system management of ISO/IEC 17025

7) Position Title : Junior Researcher in Calibration [ME03]

> Description

- Operate calibration service
- Develop calibration procedures
- Establish and implement management system for calibration laboratory (ISO/IEC 17025)

> Requirements

 - More than Bachelor's degree in Science and Engineering
- Minimum 3 years' experience in Science or Engineering fields
- High level of understanding of testing, inspection, certification, and standards
- High level of operability of testing equipment and measuring instruments
- High level of ability to interpret testing results
- High level of ability to inspect and manage testing equipment

*To meet the above requirements and abilities, complete training programs in designated educational institute and pass auditor examination

8) Position Title : Calibration Lab Technician [ME03]

> Description

- Calibration and testing; Handle management system for calibration laboratory

> Requirements

- Bachelor's degree in Science or Engineering; Good English reading and writing skills
- Proficient skills with Microsoft Office software.

9) Position Title : Senior Researcher [ME03]

> Description

- CRM Development & Management
- Proficiency testing program ; Development & Management

> Requirements

- Fluency in English
- 7 years' experience
- International activity (proficiency testing, standardization, etc)