



Nov 2021

STUDY ON THE DIGITALIZATION IN CONFORMITY ASSESSMENT

Survey among conformity assessment bodies

Introduction

Our mission: Safety in technology and chemistry



BAM is a senior scientific and technical federal authority with responsibility to the Federal Ministry for Economic Affairs and Energy (BMWi)



Federal Ministry
for Economic Affairs
and Energy



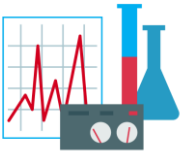
Our tasks - Research, testing and consultation under one roof



Statutory duties for
technical safety



Consulting the German Federal
Government and Industry



Research and development



Contribution to standards
and statutory regulations



Testing, analysis, approval



Technology transfer

→ Find out more at www.bam.de

Facts & figures



Organisation

11 departments divided into

70 divisions and sections

People

1660 staff including trainees, Ph.D. students, post-docs

1060 of which are permanent staff

Budget

€133.4 m basic financing

€13.2 m third-party funds

€10.6 m income from testing, analysis, approval; of which

Status: May 2017

Digitalization in Conformity Assessment – A joint international study

The German Federal Institute for Materials Research and Testing (**BAM**), **Technische Universität Berlin** (Germany) and **University of Canterbury** (New Zealand) jointly carry out a study to explore digitalization in conformity assessment.

The study is conducted within the research initiative **QI-FoKuS** that aims at improving our understanding of Quality Infrastructure, especially CA, through scientific data collection and analysis.



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Our 3 QI-FoKuS studies so far

➔ www.qi-fokus.de



2019:
Management Systems
(GER)



2020:
ISO/IEC 27001
(GER)



2020:
Corona-Monitor
(GER/UK/IT/NZ)



2021:
Digitalization in CA
(GER & others)

The study

Scope and content

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The study is centered around a survey among accredited Conformity Assessment Bodies

- **WHAT:** Empirical study (+ trend report) on the digitalization in CA
- **HOW:** Online survey (+ case studies)
- **WHO:** all accredited Conformity Assessment Bodies of all types worldwide (in cooperation with international partners)
- **Guiding questions:**
 - How **digital mature** are the Conformity Assessment Bodies?
 - What **motivates** them to introduce digital technologies and processes?
 - What **impacts** do they realize through digitalization?
 - How is their **benefit perception**?
 - Which **obstacles** do they encounter?
 - How can digitalization be **supported**?
 - Which digital **technologies and processes** are in use in testing, certification and inspection? Which ones are planned to be implemented within 5 years?
 - How does the **market** for conformity assessment change through digitalization?
 - Which impact does/did the **COVID-19 pandemic** have on digitalization?

3 major topic areas are covered in the study

Digital Maturity Level

- Maturity model with defined categories (strategy, organization, processes, ...) to depict the readiness and status of digital transformation in CABs

Drivers, Benefits and Barriers

- Drivers and motives for digital transformation
- Benefits and impacts realized through digitalization
- Barriers faced by CABs towards digital transformation

Technology Trends

- Assessment of the actual digital technologies and processes in use (now and in 5-years-perspective)

Qualitative Case Studies with Best Practices

COVID-19 and Digitalization + Update on COVID-19 situation of CABs

What is the actual status of digitalization in CABs? → How digital mature are they?

- **digital maturity** = “the status of a company’s digital transformation” (Channias and Hess, 2016)
- **digital maturity models** (Berghaus and Back, 2016)
 - to assess companies’ ability to encounter digital transformation according to *pre-defined dimensions*.
 - they assist in *understanding the current state and the capabilities* of an organization in *effectively managing and guiding digital transformation* efforts in a systematic way
 - consist of *dimensions and criteria* which describe areas of action and measures in various levels which indicate the evolution path towards maturity

Part 1) Digital Maturity: What is the status of digital transformation of CABs?

Science-based elaboration of a **digital maturity model** specifically focused on CABs



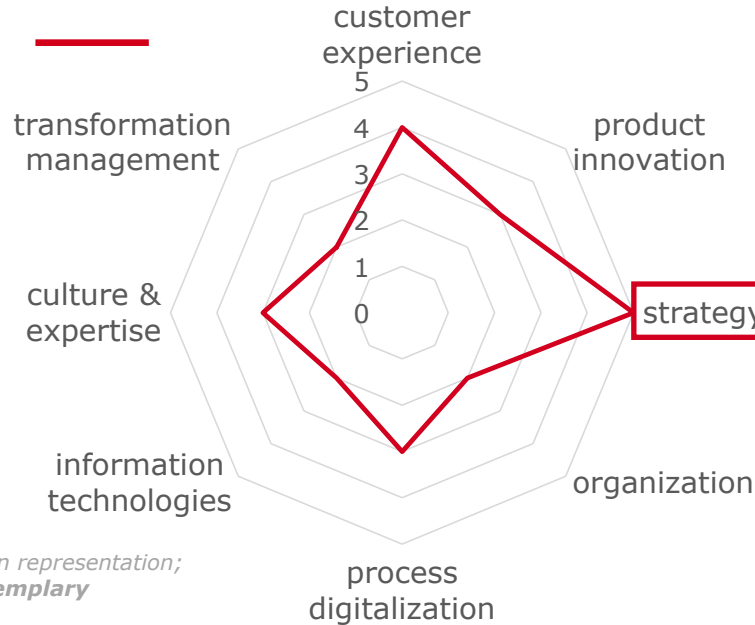
Assessment of the digital maturity level of the CABs



Differentiated **analysis** with regard to the various areas of conformity assessment (certification, testing, inspection, ...)

- The study assesses the digital maturity of the CABs, thus their **status of digital transformation**
- The focus lies on their **organizational capabilities, resources** and transformation management along key dimensions
- It will reveal the **overall maturity level** in CABs in the country
- The analyses will allow insights into the **differences** of digital maturity between the different types of CA
- Are digital mature CABs better **mastering the COVID-19 pandemic?**

Part 1) Digital Maturity: How it is measured



Own representation;
exemplary

$$M_D = \frac{\sum_{i=1}^n M_{Dli} * g_{Dli}}{\sum_{i=1}^n g_{Dli}}$$

M...Maturity
D...Dimension
I...Item
g...Weighting Factor
n...Number of Maturity Item

The maturity model consists of predefined dimensions. For each dimension, maturity is measured through adequate questions. The single scores are then calculated into a final maturity score.

Example: strategy (Likert scale 1-5 for level of agreement)

- Digital Transformation has a central place in our overall strategy.
- We have a clear vision for how our company will win in a digital future and are taking the necessary steps to achieve that vision.
- We systematically evaluate new technologies and changes in customer behavior to identify potential for digital innovation.

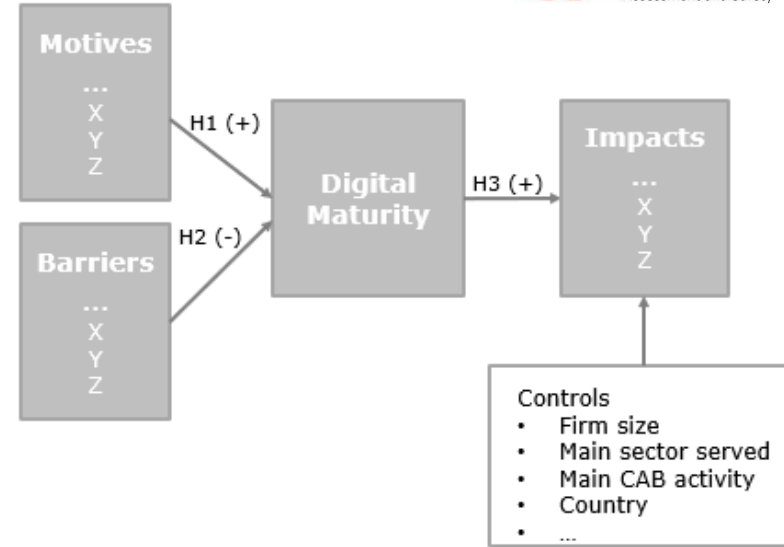
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Schumacher et al. (2018)

Part 2) Drivers, Benefits and Barriers of Digital Transformation in CA

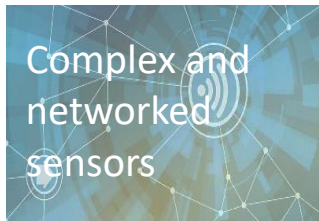
Based on established scientific models and methods, the study explores:

- What **motivates** CABs to introduce digital technologies and processes?
 - Which **obstacles** do they encounter?
 - What **impacts** do they realize through digitalization?
 - And how does this all relate with each other?
 - Which role does CABs' digital maturity play?
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- The data and analyses from this study help understand the dynamics in digital transformation.
 - The study further highlights measures that can **support** digitalization in CA



Part 3) Digital technologies and processes in use – today and in perspective

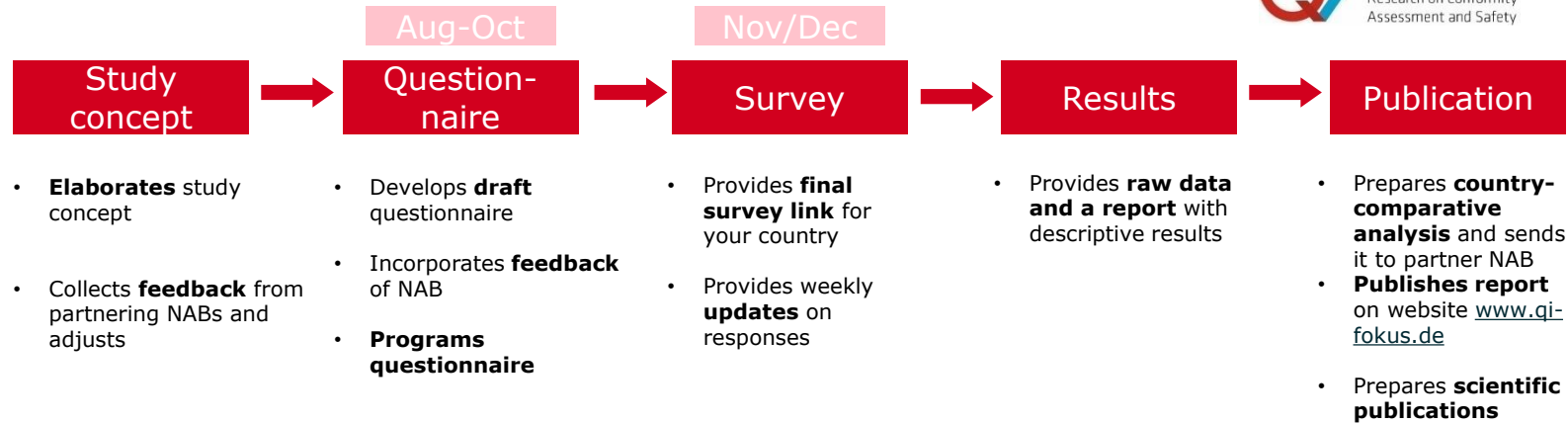
- Studies suggest that new digital technologies will concern approximately 40% to 60% of the current TIC market*
 - digital enabled Conformity Assessment
 - Conformity Assessment of new types of (digital) products
 - new data-driven services
- Various technologies, processes and applications are encountered in the survey to assess their current use in the CABs – and future scenarios
- Questions and items are specifically designed to account for the different activities of CA



How to proceed?

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Proposed Process with tasks



Implementing and conducting the survey



- The survey is organizationally and technically managed by BAM
- **Technical platform:** LimeSurvey
- **Data privacy and security** are central requirements!
 - Survey data are stored in LimeSurvey's German data center (**GDPR-compliant**)
 - Responses are **anonymized** („there will be no way to connect answers and participants. Even the admin will not be able to link response data and participant data“)
 - Participants, before starting the survey, need to give consent for their data to be included in study and are provided with a link of the LimeSurvey privacy policy → <https://www.limesurvey.org/privacy-policy>
 - If needed we can also include an individual privacy policy if provided by partner NAB
- **Survey period:**
 - typically 6 weeks
 - Can be prolonged upon request by NAB and agreed by BAM

Deliverables

- Raw data in Excel
- Descriptive statistics and diagrams in Excel
- ppt report

Background

Methodology	Online survey*
Survey period	October 12 – November 3, 2020
Sample	240 completed questionnaires

This survey evaluates the impact of the COVID-19 pandemic on conformity assessment and Conformity Assessment Bodies (CABs) in Italy in a reliable, neutral, and scientifically sound manner. The survey was carried out by Accredia in cooperation with the German Federal Institute for Materials Research and Testing**, the Technische Universität Berlin (Chair of Innovation Economics), and Fraunhofer ISI in the framework of the QI-FoKuS initiative.

* accredited CABs in Italy have been invited by e-mail to participate in the survey
 **Bundesanstalt für Materialforschung und -prüfung



Evaluation Italy Survey on Corona Impacts on CABs

n=240

V1 Is your conformity assessment body part of a group of companies, e.g. an association of several companies?

No, independent company	146
national group of companies	21
international group of companies	36
Public Body or Charity	27
national group of companies	6
other	236

V2 What applies to your organisation?

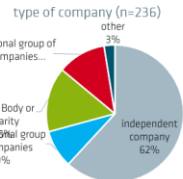
Conformity assessment is the CA is main focus of the entire organisation	83
Conformity assessment (for external customers) is mainly an internal concern	57
We are mainly an internal CAB	80
Other	18
	238

V3 Is the headquarters of your organisation in Italy?

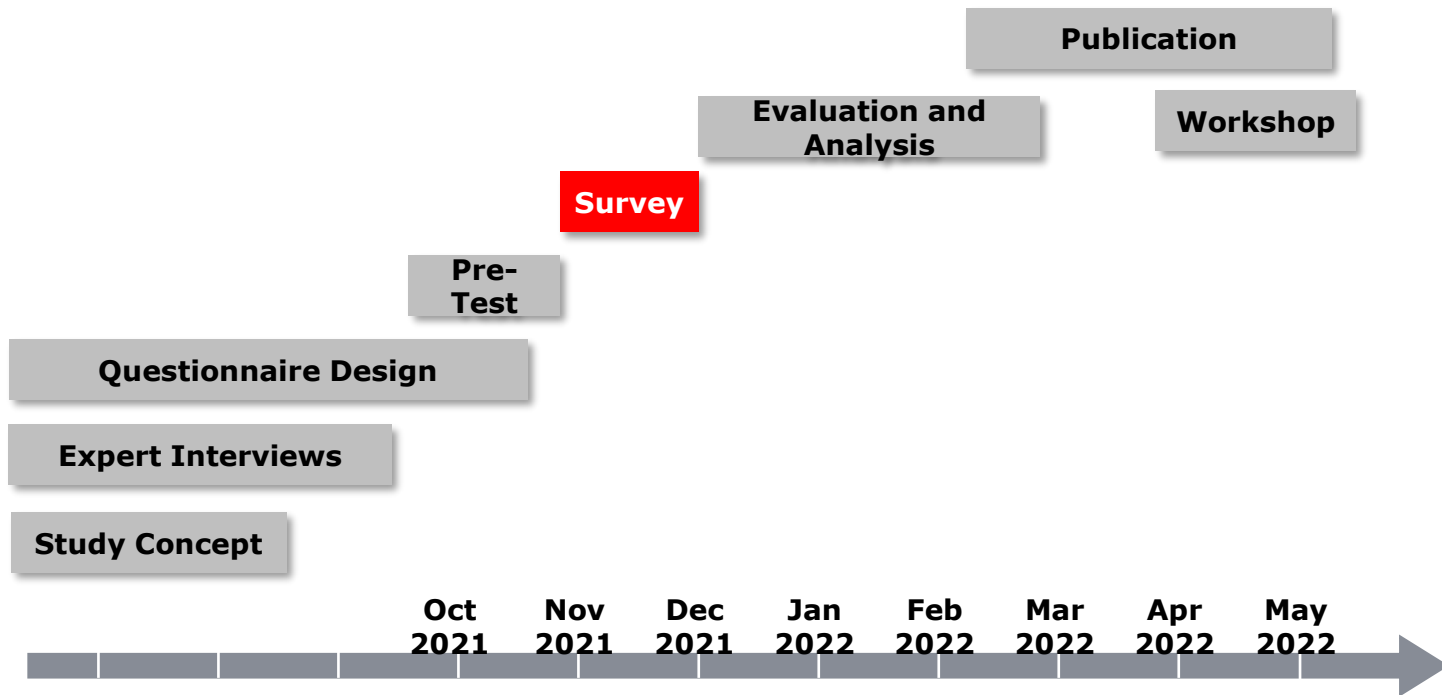
Yes	11
No	10
	21

V4-V15 Please indicate the type of conformity assessment services that your organisation provides.

Testing laboratory (ISO/IEC 17025)	180
Calibration laboratory (ISO/IEC 17025)	24
Medical laboratory (ISO/IEC 17025)	0
Reference measurement	1
Inspection body	30
Certification	28
Other	9



Schedule



We are looking forward to our cooperation!



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