

Assessment report  
Limited Framework Initial Accreditation

**MSc Digital Business and Innovation**

Vrije Universiteit Amsterdam

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## 1. Executive summary

In this executive summary, the panel presents the main considerations which led to the assessment of the quality of the MSc Digital Business and Innovation of the Vrije Universiteit Amsterdam. The programme was assessed according to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, as published on 20 December 2016 (Staatscourant nr. 69458).

The programme aims to provide students with knowledge on information systems and business innovation. The programme has a strong focus on digital transformations; the role of technology within digital transformations is mainly focused at the impact of technology. Graduates of the programme not only have advanced academic knowledge in the above-mentioned fields but also have developed a sound set of skills which allows them to apply theories and methods in order to solve real-life problems, and allows them to convey solutions in a convincing way to a variety of stakeholders. Graduates of the programme are able to reflect on their role and take into account ethical and societal concerns when they solve problems and innovate businesses. The programme is taught by staff members who are part of one of the world's leading research groups in this area. The panel concludes that the programme's unique profile connects well to current developments in a wide area of professional fields. The panel concludes that the programme meets standard 1, the intended learning outcomes.

The programme's teaching and learning environment offers a theoretical foundation at the start of the programme. In a later stage, students develop skills in the application of theories to practice and in academic research. The programme finishes with the writing of an academic thesis and completing a project which is focused at practising professional skills. The panel is positive about the content of the courses, these allow students to achieve the learning outcomes. The panel observes that the integration between on the one hand the field of information management, and on the other hand business innovation, could be stronger emphasized throughout the curriculum, and recommends to do so. With regard to the teaching methods, the panel concludes that the programme provides a varied mix of learning experiences, in which students are regularly exposed to the professional field. The programme admits students with various backgrounds, and has adequate procedures in place to ensure that all students have sufficient prerequisite knowledge. Staff members of the programme are experts in their field and competent teachers. The panel met an enthusiastic team which composition is also diverse in terms of national backgrounds. The panel concludes that the programme meets standard 2, teaching and learning environment.

The assessment methods used by the programme are varied. The programme's management as well as the Examination Board have measures in place to stimulate a reliable and valid assessment practice. The panel is positive about the programme's systematic approach in this regard. The panel recommends the Examination Board to start reviewing samples of theses in order to evaluate if the process of assessment results in valid and reliable testing. The panel concludes that students are informed about the assessment criteria. The panel concludes that the programme meets standard 3, assessment.

The theses reviewed by the panel demonstrate mastery of the intended learning outcomes by the students. Students choose relevant topics and apply theoretical insights to practical problems. Alumni are successful in finding jobs to which the programme has prepared them. The panel concludes that the programme meets standard 4, achieved learning outcomes.

The panel assesses that the programme is focused at the broad domain of Economics, and therefore advises that the programme will be allocated to the CROHO-sector 'Economics'.

The panel that conducted the assessment of the Master programme in Digital Business and Innovation of the Vrije Universiteit Amsterdam assesses this programme to meet all the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, judging the programme to be satisfactory. Therefore, the panel recommends NVAO to accredit this programme.

Rotterdam, 11 April 2019

Dr. Cees Terlouw  
(panel chair)

Jetse Siebenga MSc.  
(panel secretary)

## 2. Assessment process

The evaluation agency Certiked VBI received the request by Vrije Universiteit Amsterdam to support the limited framework programme assessment process for the Master Digital Business and Innovation. The objective of the programme assessment process was to assess whether the programme would conform to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, published on 20 December 2016 (Staatscourant nr. 69458). The programme is an existing programme which is organised as a specialisation of the MSc. Programme in Business Administration. The Vrije Universiteit Amsterdam requests for an independent accreditation of the programme.

The management of the programmes in the assessment cluster Business Administration convened to discuss the composition of the assessment panel and to draft the list of candidates.

Having conferred with management of the programme, Certiked invited candidate panel members to sit on the assessment panel. The panel members agreed to do so. The panel composition was as follows:

- Dr. Cees Terlouw (chair), Emeritus lector Intake and Transition Management Higher Education, Saxion University of Applied Sciences;
- Prof. dr. Peter van Baalen, Full Professor in Information Management and Digital Organisation, University of Amsterdam;
- Prof. dr. Marc De Ceuster, Full Professor in Finance, Antwerp University;
- Prof. dr. ir. Rob van der Heijden, Full professor in Innovative Planning Methods, Nijmegen University.
- Marijke Speelberg MSc. (student-member), recently graduated student Master Global Business and Master Sustainability, Erasmus University Rotterdam.

On behalf of Certiked, J.W. Siebenga MSc. served as the secretary in the assessment process. The overall coordination of the assessment cluster Business Administration was executed by drs. W. Vercouteren. Drs. Laura Oosterveld, policy advisor at NVAO, was present during the site visit as an observer.

All panel members and the secretary confirmed in writing being impartial with regard to the programme to be assessed and observing the rules of confidentiality. Having obtained the authorisation by the University, Certiked requested the approval of NVAO of the proposed panel to conduct the assessment. NVAO have given their approval.

To prepare the assessment process, the process coordinator convened with management of the programme to discuss the outline of the self-assessment report, the subjects to be addressed in this report and the site visit schedule. In addition, the planning of the activities in preparation of the site visit were discussed. In the course of the process preparing for the site visit, programme management and the Certiked process coordinator regularly had contact to fine-tune the process. The activities prior to the site visit have been performed as planned. Programme management approved of the site visit schedule.

Well in advance of the site visit date, programme management sent the list of final projects of graduates of the programme of the last two complete years. Acting on behalf of the assessment panel, the process coordinator selected 8 final projects from this list. The grade distribution in the selection was ensured to conform to the grade distribution in the list, sent by programme management.

The panel chair and the panel members were sent the self-assessment report of the programme, including appendices. In the self-assessment report, the student chapter was included. In addition, the expert panel members were forwarded a number of final projects of the programme graduates, these final projects being part of the selection made by the process coordinator.

A number of weeks before the site visit date, the assessment panel chair and the process coordinator met to discuss the self-assessment report provided by programme management, the procedures regarding the assessment process and the site visit schedule. In this meeting, the profile of panel chairs of NVAO was discussed as well. The panel chair was informed about the competencies, listed in the profile. Documents pertaining to a number of these competencies were presented to the panel chair. The meeting between the panel chair and the process coordinator served as the briefing for panel chairs, as meant in the NVAO profile of panel chairs.

Prior to the date of the site visit, all panel members sent in their preliminary findings, based on the self-assessment report and the final projects studied, and a number of questions to be put to the programme representatives on the day of the site visit. The panel secretary summarised this information, compiling a list of questions, which served as a starting point for the discussions with the programme representatives during the site visit.

Shortly before the site visit date, the complete panel met to go over the preliminary findings concerning the quality of the programme. During this preliminary meeting, the preliminary findings of the panel members, including those about the final projects were discussed. The procedures to be adopted during the site visit, including the questions to be put to the programme representatives on the basis of the list compiled, were discussed as well.

On 9 January 2019, the panel conducted the site visit on the Vrije Universiteit Amsterdam University Campus. The site visit schedule was in accordance with the schedule as planned. In a number of separate sessions, the panel was given the opportunity to meet with Faculty Board representatives, programme management, Examination Board representatives, lecturers and final projects examiners, and students and alumni.

In a closed session at the end of the site visit, the panel considered every one of the findings, weighed the considerations and arrived at conclusions with regard to the quality of the programme. At the end of the site visit, the panel chair presented a broad outline of the considerations and conclusions to programme representatives.

The draft report was finalised by the secretary, having taken into account the findings and considerations of the panel. The draft report was sent to the panel members, who studied it and made a number of changes. Thereupon, the secretary edited the final report. This report was presented to programme management to be corrected for factual inaccuracies. Programme management were given two weeks to respond. Having been corrected for these factual inaccuracies, the Certiked bureau sent the report to the University Board to accompany their request for initial accreditation of this programme.

### 3. Programme administrative information

Name programme in CROHO: M Digital Business and Innovation  
Orientation, level programme: Academic Master  
Grade: MSc  
Number of credits: 60 EC  
Specialisations:  
Location: Amsterdam  
Mode of study: Full-time (language of instruction: English)  
Registration in CROHO: n.a.

Name of institution: Vrije Universiteit Amsterdam  
Status of institution: State-funded University  
Institution's quality assurance: Approved

## 4. Findings, considerations and assessments per standard

### 4.1 Standard 1: Intended learning outcomes

<p>The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.</p>
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#### *Findings*

The programme teaches students how organizations can effectively use digital technologies to innovate their business processes, products, services and business models. The programme is oriented at developing academic professionals who not only excel in academic skills and theory, but are also able to apply theory to creatively solve practical problems and interact professionally in a societal context.

The programme focuses on the management of the innovations made possible by digital technologies, such as cloud computing, 3D printing, robotics, internet-of-things, block chain and big data analytics, and the consequences thereof. In business practice, information systems are no longer merely supportive to business processes; a range of digital technologies are a driving force behind the innovation of products, services and business models. Research in information systems has embraced the concept of digital innovation, and research in innovation management is currently starting to address the specific challenges of digital innovation. The programme is unique in the positioning between the fields of information systems and innovation management. From a comparison in the self-evaluation report, it becomes clear that comparative programmes are either focused on information systems (such as the Business Administration specialization on Digital Business of the University of Amsterdam or the Business Information Management programme of the Erasmus University Rotterdam) or on innovation management (such as the Management of Innovation programme of the Erasmus University of Rotterdam or the Innovation Management programmes at technical universities). To employers of future graduates, the combination of these fields is of high relevance since revolutions in business are currently happening on the brink of the two disciplines. The programme compares itself to the Master's programme of Information Systems and Digital Innovation at the London School of Economics and a Master's programme at the Warwick Business School. Most staff members of the programme are part of the research group KIN, and collaborate with the programmes in London and Warwick. The programme will organize work field consultations in order to ascertain that the learning outcomes meet the demands of the professional field.

The programme drafted learning outcomes, in accordance with the format in use by the School of Business and Economics. The learning outcomes as such address attitudes, skills and knowledge. Three roles are distinguished: the academic role, the professional role and the citizen role. The learning outcomes are related to the Dublin Descriptors. Students are expected to develop academic, research and communicative skills at an advanced level and be able to apply these to the professional practice. According to the learning outcomes, graduates for example demonstrate a command of all the academic research skills, necessary to make relevant contributions to the domain of Digital Innovation and the discipline of information management. In addition, students show a critical understanding of state-of-the-art theory and methods in the domain of Digital Innovation and the disciplines of information systems and innovation management. Graduates are able to design well-founded, substantial solutions based on the appropriate methods and techniques commonly used in the domain of Digital Innovation and further are able to reflect on related issues within society, including both economic interests and environmental, societal and ethical concerns.

### *Considerations*

The panel observes that the programme's intended learning outcomes are in line with the international standards. The programme found a unique niche in offering a combination of digital and business innovation and the resulting focus on digital transformation and a bridging combination of theory and practice. The panel is positive about the approach of the programme with regard to the role of technology, which is focused at the impact of technology.

The professional orientation of the programme demonstrates a well-thought approach, which include that students develop relevant skills and a relevant attitude. The programme resides in an academic environment which allows it to translate developments within the domain in the educational programme. The programme is well aware of developments in the professional field; graduates of the programme will be highly attractive. The panel recommends to consider that the programme improves its branding, in order to attract more students to participate in the programme with its unique profile.

### *Assessment of this standard*

These considerations have led the assessment panel to conclude that the programme meets standard 1, Intended learning outcomes/



## 4.2 Standard 2: Teaching-learning environment

The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

### *Findings*

The programme admits motivated and ambitious students with various backgrounds, such as Business Administration, Computer Science and Industrial Design. Students should have a university level Bachelor's degree with at least 30 EC in Business Administration of which at least 6 EC in Innovation management and 6 EC in information Systems. A course on business research methods is a prerequisite as well. Students should have at least a Grade Point Average of 7.0 for their Bachelor courses. The process of admission for international students runs through the international office of the Vrije Universiteit Amsterdam. Prospective students who miss one or two courses can address these deficiencies by completing relevant courses before the start of the course. Students with a bachelor diploma from a Dutch University of Applied Science are required to follow a pre-master's programme of 30 EC and should have a GMAT score of at least 550. As of 2014, student numbers in the predecessor of the programme consistently increased, up to 139 in 2018. The number of international students admitted to the programme increased as well. In 2018, 30 of the 139 students had an international background.

The programme is structured in six periods and distinguishes four different domains: (1) the Academic Core, (2) Information Systems (3) Innovation Management and (4) Digital Transformation. All intended learning outcomes are translated in course objectives. The programme provided an overview of the connection between the courses and the learning outcomes. At the start of the programme students obtain foundational knowledge, the programme gradually builds towards the skills necessary to apply theoretical insights to the professional practice and the development of academic and professional skills.

The programme starts with two mandatory courses, in Digital Business and Information Systems and in the Management of Digital Innovations. During these courses students are offered the foundations for understanding how information technologies enable the innovation of products, services, business processes and business models. The courses not only discuss current theoretical developments but give also an overview of 'old' theories in order for students to understand underlying mechanisms and learn how to apply these theories to new circumstances. Students are from the start of the programme also introduced to new business models such as the business model Canvas.

During the second period, the mandatory course Working and Organizing in a Digital Age covers the implications of digital technologies in day-to-day work. In the second period, students can also choose from a variety of electives of which some build forth on the courses in on offer in the first semester. The course Business Process Management & IT Alignment that covers the effective use of information systems to support business processes, for example builds forth on the course in Digital Business and Information Management. Other electives in the second period include a course in Management of Sustainable Information, a course in Watson Innovation (organized in cooperation with IBM Netherlands and the University of Amsterdam), and a course in Digital Marketing. The panel observes that the course on Management of Sustainable Information gives a rather general outlook towards sustainability.

The third period involves a course in Research Design and Methods, preparing students to the writing of their thesis. During the third period, students also take a mandatory course in Ethics in a Digital World. For this course students have to write a paper on the ethical aspects of Digital Business and Innovation. The course Research Design and Methods continues in the fourth period, during which students start

writing their master's thesis, parallel to the Digital Innovation Lab. This is a hand-on lab class during which students in a lab setting experience how solutions driven by digital technique is one of the drivers of business innovation. During the fifth period students continue working on their thesis and take either a digital consultancy project or a digital entrepreneurship project. These projects are specifically aimed at helping students to prepare for a specific work environment. Students work on solutions of real-life problems and have to present these (digital consultancy project), or learn how to apply business models and present a business proposal to potential investors. The courses involve experienced consultants and entrepreneurs to connect to real life practice. The consultancy project can be connected to the thesis, the latter needs to be an independent contribution to knowledge in the domain of Digital Business and Innovation.

The panel discussed with various representatives of the programme the extent to which the domains of Information Systems and Digital Innovations are integrated in the programme. This integration is present in some of the compulsory courses. However, students aren't necessarily expected to integrate the two domains in their choice of electives, or in their choice for projects and their thesis subject.

The didactic approach for the foundational courses at the start of the programme involve plenary lectures for which students have to prepare and which aim to stimulate active participation. The ability to design solutions is practised in the course Digital Business and Information Systems (during which students pitch their final solution in a 'Dragons' Den at the office Deloitte), the Digital Innovation Lab, and in the project electives in period five. The projects rely heavily on interactive tutorial sessions. Other teaching methods aimed at skills training involve group work. Group work assignments include also peer feedback and reflection on one's role within a group. The programme uses a system which is called buddy-check to prevent free-riders behaviour. Other skills training includes a workshop to create videos, a workshop on storyboarding, a workshop on interacting with stakeholders, and multiple presentations to train oral communication. In addition to this teaching methods, the panel observes that the programme emphasizes the importance of a strong student community by organizing coffee chats and various other community-building activities.

The programme is lectured by staff members from the KIN research group, which is internationally renowned in the field of Digital Innovation. The group has a strong international network. All courses are coordinated by senior or medior staff members, all of whom have a PhD and almost all have a University Teaching Qualification (UTQ). The programme further includes staff members who are PhD-candidates and external lecturers with a part-time appointment who bring in their expertise and knowledge of the professional practice. In addition, 36% of the course coordinators of the programme have an international background.

### *Considerations*

The programme's approach towards teaching and learning results in a rich and interesting learning environment. The theories on offer within the programme are varied, and allow students to gain the knowledge described in the intended learning outcomes. The panel does recommend to strengthen the integration in the programme between the two domains of Information Systems and Digital Innovation, since students can avoid the integration of the two domains. Since the combination of the two domains is central in the unique programme profile, the panel recommends to develop an explicit focus in the programme for the combination and integration of both.

The panel is positive about the content of the courses. These courses provide students with state-of-the art knowledge, skills training, and exposure to the professional field. Yet, the panel has two

recommendations. The first is to reconsider the contents of the course on sustainable innovation management: the digital aspect in this course is quite limited and as such, the course does not connect very well with the programme as a whole. Further, since the dynamics in the field of Digital Innovations rapidly follow each other, it will be a challenge to the programme to meet with the current very fast developments. The second recommendation of the panel therefore is to keep ensuring that new developments find their way to the curriculum in due time.

The elements of the programme which are geared towards the professional practice allow students to develop the skills and the attitudes described in the intended learning outcomes. In addition, they provide students with an awareness of the reality in the professional field, and with the professional field as an object of research. The panel is very positive about the effort made by the programme to develop a community. This helps students who naturally don't speak out, to feel comfortable. The panel is positive about the expertise of the staff members, as well in terms of domain expertise as in didactical competences. The research group to which the staff members belong, is considered as belonging to the very best research groups in this domain.

*Assessment of this standard*

These considerations have led the assessment panel to conclude that the programme meets standard 2, teaching-learning environment.

### 4.3 Standard 3: Student assessment

The programme has an adequate system of student assessment in place.

#### *Findings*

The assessment policies are described in the University's manual on quality assurance. The examination policies, are drafted on the basis of this manual. The programme provided an assessment plan which indicate the connection between the intended learning outcomes and the assessment thereof in the various courses, specified for core elements of each course. The assessment plan further provides an overview of the assessment methods used in each course. The programme uses a variety of assessment methods, such as papers, individual and group assignments, presentations and peer feedback. In almost all courses, more than one assessment method is used. For all courses a test blueprint is available, as well as a model answer or assessment criteria. Per course, an assessment file is assembled, containing all relevant documents regarding the assessment of the course. Assessment criteria are provided to students in course manuals and students have the right to be able to practise their skills and knowledge in at least one representative mock exam.

In order to structure their courses and the development of the assessment of the courses, staff members are provided a digital tool, the 'Academic Course Support'. The quality assurance process involves an evaluation by the course coordinator and by the students. Furthermore, the construction of exams is guided by the four-eyes principle. The course coordinator has the final responsibility on the quality of assessment. With regard to the assessment of group work, the programme ensures that the individual addition of a student is valued.

The thesis is assessed by the supervisor and a second assessor. The thesis assessment form contains a specification of five levels of competence, for each criterion that is assessed. The staff members independently fill out this form and afterwards together decide on the grade for the thesis. In the case of strong disagreement, the thesis coordinator of the department decides on the final grade. The grade distribution of all thesis grades awarded in 2016-2017 and 2017-2018 demonstrates that the average grade awarded to the theses was respectively 7.2 and 7.3. The panel agrees with the variation in the grades given to the theses it reviewed.

The Examination Board is responsible for the process of assessment. It performs audits on the quality of the process and the outcomes thereof. These audits take a thematic approach and concern for example the validity and reliability of the multiple-choice exams. The Examination Board plans to start periodical reviews of samples of theses in order to evaluate if the process of assessing theses results in a reliable and valid assessment.

#### *Considerations*

The panel has established that the assessment methods comply with the teaching and learning methods and are fit to assess the course objectives and as such, the learning outcomes. The programme's management as well as the Examination Board have measures in place to stimulate a reliable and valid assessment practice. Students are made aware of the assessment criteria well in advance of the actual assessment. The measures that are in place to safeguard the quality of assessment could be strengthened by starting a periodical review of a sample of theses involving external reviewers. The panel recommends the Examination Board to implement such review in a systematic way.

*Assessment of this standard*

The considerations have led the assessment panel to conclude that the programme meets standard 3, student assessment.

#### 4.4 Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

##### *Findings*

The panel has reviewed eight theses. In addition, the programme provided a list of the graduates of the predecessor of the programme, including the title of the thesis of each graduate. The list and the theses reviewed by the panel show that students discuss topics related to the profile of the programme such as the governance of international block-chain networks, Big-data in fast-response organisations and the Internet of Things, and Business Model Innovation. The panel observes that students apply relevant theories to practical, real-life problems.

The most recent exit poll of the master programme in Business Administration in which the programme used to be a specialisation, shows that 85% of the graduates had a job within three months after graduation. A number of students was already employed before their graduation. This might relate to the fact that 80% of the graduates start searching for a job before graduation. The programme monitors graduates through an active LinkedIn group. Alumni work in digital innovation or IT departments of renowned organisations in all sectors including commercial industry, services sector, healthcare, and government. Students have positions as IT consultant or project manager but also started working for consultancy companies at which they support clients in the use of digital technology in change processes or started a company themselves. To students who are interested in an academic career or research-related job, the programme considers to offer an extension, based on courses currently part of a research master.

##### *Considerations*

The panel is positive about the quality of the theses it reviewed. The theses reflect an academic master's level and the choice of subjects for the thesis connects well to the programmes intended learning outcomes. The topics demonstrate that the students are interested in the investigation of current developments. The theses are concise and address the relevant methodological issues.

The panel has established that the theses show that students have obtained the programme's learning outcomes. The graduates of the programme have a highly attractive profile to several areas of the professional field. The panel encourages the programme to develop an extension to the programme which smoothens the transition to research-related jobs or a PhD-trajectory.

##### *Assessment of this standard*

The considerations have led the assessment panel to conclude that the programme meets standard 4, achieved learning outcomes.

## 5. Overview of assessments

Standard	Assessment
Standard 1. Intended learning outcomes	Meets the standard
Standard 2: Teaching-learning environment	Meets the standard
Standard 3: Student assessment	Meets the standard
Standard 4: Achieved learning outcomes	Meets the standard
Programme	Meets all standards

## 6. Recommendations

In this report, the panel listed a number of recommendations. These recommendations have been brought together below:

- to consider to improve its branding, in order to attract more students to the programme with its unique profile;
- to strengthen the integration between the two domains of Information Systems and Digital Innovation, since students can avoid the integration of the two domains. This integration is part of the unique profile of the programme, and therefore should be consistently implemented throughout the curriculum;
- to reconsider the contents of the course on sustainable innovation management; the digital aspect in this course is quite limited and as such, the course does not connect very well to the programme as a whole;
- to keep ensuring that new developments find their way into the curriculum in due time;
- to implement the systematic review of theses.