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METHODOLOGICAL GUIDELINES FOR A START-UP CAPSTONE PROJECT

DeepTech Entrepreneurship Master Degree programme

Vilnius University Business School, Faculty of Physics, Faculty of Mathematics

in cooperation with CERN (the European Organization for Nuclear Research)

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INTRODUCTION

Upon satisfactory completion of the second-cycle study program "DeepTech Entrepreneurship" requirements, the master student is required to prepare either the final traditional master's thesis[1] or the research based start-up capstone project (hereafter- a Capstone Project), to apply his / her skills and knowledge in concrete research or business problem solving and eventually qualifying for master's degree or developing an innovative start-up qualifying based on scientific foresights for master's degree as well.

This methodological guidelines are for „DeepTech Entrepreneurship"[2] students who choose individually or in a group to develop an innovative start-up and underline generic rules for final preparation, technical requirements and defence.

A Capstone Project is an opportunity for students to demonstrate that they can indeed meet the levels of performance expected of a professional with science-backed leadership qualities and entrepreneurial skills. A student has individual responsibility for the timely completion of a significant Capstone Project under the guidance of an individual supervisor and will be expected, only if applicable, to establish a start-up during the study process. A student will be expected to demonstrate a professional level of preparation, planning, execution, testing and documentation, also deep understanding of research methodology and business analysis. A student also will be expected to meet a number of strictly enforced milestones and to take considerable initiative in overcoming obstacles. A Capstone Project is one of the ways of determining whether a student is ready for graduation.

A Capstone Project is independent, original project merging research and business analysis which requires enhanced information and knowledge management competences. A Capstone Project is based on business intelligence and diverse research methods, also leading to business and research problem solving via conceptual, scientific, and practical approaches and finally establishing a start-up if applicable. Students are encouraged to demonstrate their capabilities to apply all the previously acquired knowledge and skills.

A Capstone Project is usually conducted throughout four stages: first of all, the topic which is related to strategic sustainable development problem or CERN related area of interest is selected, also a possible preliminary innovative solution with potential for commercialisation

[1] https://www.vm.vu.lt/external/vm/files/PDF/studentams/Masters_Theses_Methogological_Guidelines.pdf

[2] Master Degree programme. Coordinated by Vilnius University Business School in partnership with Vilnius University Faculty of Physics, Faculty of Mathematics and Informatics, and in cooperation with CERN.

is explained. The preliminary topic is proposed by a student, in individual cases a topic might be proposed by scientists of Vilnius University. The selected case should be presented to appointed capstone development mentors (hereafter-mentors) and later to Study Programme Committee (hereafter Committee) for case approval and confirmed supervisor (s) is selected; during the second phase, research and business strategic context-related information and elaboration of innovative solution to a problem are covered; the later stage is oriented to preparation of analytical part and business plan, including development strategy, implementation and testing results, etc. and at the final stage - research and business analysis results, conclusions, recommendations and defence. The students are also expected, however, it is not strictly compulsory for graduation (each case is individually evaluated), to proceed with establishing their own start-up at the final stage and showing the skills in attracting investments for the first phase of start-up development. During the final stage posters will be exhibited to external stakeholders from research and business sectors.

A successful defence of a Capstone Project means that a student has successfully met study programs' requirements, reached the expected learning outcomes of "DeepTech Entrepreneurship" programme.

A Capstone Project should follow the Law of the Republic of Lithuania on Copyright and elated Rights, the description of study cycles approved by the Order of the Minister of Education and Science of the Republic of Lithuania No. V-1012 on 17th November 2016 (revised 2020 10-15 No. V-1569), the Business study field descriptor approved by the Order of the Minister of Education and Science of the Republic of Lithuania No. V-1664 on 14th September 2021.) the ethical standards defined by the Code of Academic Ethics of Vilnius University approved by the Resolution of the Senate of Vilnius University No. S-2018-4-4 on 17th April 2018 (revised of Resolution No. SPN-54 as of 21 October 2020) as well as the Regulations for the Preparation, Defence and Storage of Research Papers of Students Studying at Vilnius University, approved by Resolution No. S-2017-12-11 as of 19 December 2017 (with later amendments) of the Vilnius University Senate. The final Capstone project should be prepared honestly and independently under consultancy of supervisor (s) of the final master's work. Students are referred to Vilnius University rules regarding academic misconduct, including cheating and plagiarism.

Vilnius University Business School is using the adapted APA (American Psychological Association) style for the formatting of the academic papers (see the Master's Thesis Methodological Guidelines[3]. Some relevant information on the Capstone Projects is listed in the References of this guidelines.

[3] https://www.vm.vu.lt/external/vm/files/PDF/studentams/Masters_Theses_Methogological_Guidelines.pdf

1. GENERAL REQUIREMENTS FOR CAPSTONE PROJECT

1.1. General information

Students should begin thinking about a Capstone Project early in their course of study. Students enrol for Capstone Project for all three semesters, the project ideally should be a work in progress during all study process leading up to enrolment in and completion of a Capstone Project. The workshop is organised with programme committee chair and Mentors to ensure a comprehensive systemic approach in the whole process. The length of the Capstone project manuscript depends on the magnitude of the investigation, however, the minimum page requirement for a capstone is 55-70 pages in content. In case of preparing the work in groups, the scope and volume of a work can exceed 70 pages (writing alone – not more than 70; two people should not exceed 80; while three people should fit into 90 pages). Although students can decide which part of work, they individually cover, they need to show their expertise with regards to other colleagues' parts, participate in the defence and be capable to answer the questions of a defence panel (see other sections) References and Appendixes are not counted in this page requirement. All work of the student should be under the supervision and advice of the mentors and Capstone Project individual supervisor(s).

Depending on the area of interest in students' professional field, the Capstone Project should be research oriented, creative, i.e. revealing a synthesis of scientific discussion, skills and content knowledge, applied and addressing a real problem, externally oriented, include business project, outcomes of research discussion, testing and other results, and finally meet all other additional requirements.

Any Capstone Project might have intellectual property, however, for most projects the economic values will be negligible. For a number of capstone projects intellectual property may be an issue because Vilnius University or external stakeholder may seek ownership to some of the intellectual property associated with a capstone project. For such projects, an intellectual property agreement will be proposed under the regulation of Vilnius University (Intellectual Property Management Regulations of Vilnius University aprroved by the Resolution No. TN-2018-18 of the Council of Vilnius University on 19th December 2018), legal acts of the Republic of Lithuania and the European Union. Such agreement must be signed by all relevant parties (student/groups of students, owner of conceptual idea or conceptual patent and VU BS) after a Capstone Project Proposal is approved. In case intellectual property

determined in the process of Capstone Project or initiating start-up the agreement is signed between a student/group of students and VU BS.

If needed a student may have the use of laboratory areas of Vilnius University, but permission must be first obtained from the relevant laboratory supervisor. This is a formal procedure, because the resources are limited and these limited resources are determined by VU regulation.

In general, there are no VUBS funds available for Capstone Projects. However, mentors can provide information support for external funding, also organise joint hearings with potential investors, especially during the final stage of a Capstone Project. Students will be provided with information about Lithuania's CERN Business Incubation Centre (CERN BIC) and if applicable to their field of a Capstone Research will be gradually introduced with CERN BIC possibilities.

If a Capstone Project is undertaken outside Vilnius University, a student should provide details regarding an external co-supervisor, accompanying by a letter of support, also a risk assessment self-evaluation should be presented. There will be initial liaison between VU BS mentor and external co-supervisor to agree at an acceptable mode of operation that ensures a student's work is properly credited and other assistance is well-defined. VU BS mentor may visit a Capstone Project site at appropriate time to assess the context of a Capstone project and to liaise with external supervisor.

A Capstone Project supervisor(s) must be satisfied that the proposed Capstone Project has sufficient elements of definition, contextual analysis and specification to allow opportunity for full and fair assessment of student's performance on a task. This requires mechanisms detailed in the Guidelines to be in place which allow every student's contribution to the Capstone Project to be visible and traceable and clearly distinguished from the contributions of others, especially if the Capstone Project is prepared by a group of students

1.2. Aim and objectives of a capstone project

Capstone Project is undertaken from the middle of the first semester of the studies and it is an opportunity for students to demonstrate that they indeed meet the levels of performance expected of a professional DeepTech entrepreneur and explorer. While preparing the Capstone Project a student will have individual responsibility for the timely completion of a project under the guidance of senior professionals. A student will be expected to demonstrate a professional

level of preparation, planning, execution, testing and documentation, and also to meet a number of strictly enforced milestones and to take considerable initiative in overcoming obstacles. The Capstone Project is the way of determining whether a student is ready to graduate. If a student misses a milestone or submits work that is not of a professional standard, the completion may be delayed by one or more sessions.

A student is responsible for getting a Capstone Project done on time to an acceptable level. A supervisor helps a student, but is not responsible for his/her performance. In particular, the submission of the final Capstone Project. A Capstone Project has important educational and scientific objectives. Although each Capstone Project is different and the relative emphasis will vary, a student will be involved in:

- integrating knowledge and skills gained in the courses in general;
- reinforcing and developing competencies that have not been sufficiently emphasized in student's choice of subjects or earlier experiences;
- defining a substantial task for innovative solution and carrying it to completion to a professional standard;
- bridging the gap between his/her studies and entrepreneurial future, and demonstrating professional competencies and capabilities;
- demonstrating initiative and creativity, developing many of the attributes expected of a business graduate, like personal responsibility, information literacy, management skills, problem posing and solving, technical expertise, academic literacy, scientific exploration skills;

In addition to the above here are additional more general requirements for submission of a Capstone Project.:

- identification and visibility why a Capstone Project is valuable to society, for example who are the stakeholders, who is advantaged and disadvantaged, what are the criteria by which benefits and costs, including social, environmental, and success are to be determined;
- identification and visibility why a Capstone Project has an added value to applicable research, for example research exploration and its results impact on defined business sector and research field are to be explained;
- the extent to which a student is individually responsible for the definition, planning, monitoring, control, design, implementation, verification, validation, and documentation of the Capstone Project;
- the extent to which a student work autonomously or are supervised on the Capstone Project;

- identification of the knowledge and skills a student has applied on the Capstone Project;
- identification of the competencies a student has developed through the Capstone Project.

1.3. Requirements for undertaking a group capstone project

These requirements apply when two or more (but not more than three) students are working on a Capstone Project and when a Capstone requires interdisciplinary knowledge from more than two research fields:

Advantages and Disadvantages of Group Activities

Some advantages of the Group Capstone Project:

- can be more complex and demanding;
- allows for debate and discussion of process and substance;
- enriches learning through discussion and group synthesis of knowledge;
- provides opportunities to develop team leadership skills;
- can be less complicated establishing a start-up

Some disadvantages of the Group Capstone Project:

- maintaining an equitable distribution of tasks/activities between group members;
- resolution of process related problems/issues as they arise;
- inherent dependency on other group members;
- tendency for tasks/activities to degrade into ‘hand-holding’, for example two students claiming contribution for a task which requires only one person to complete;
- maintaining fair and equitable assessment across the student cohort.

Students should be aware that the assessments awarded to individuals may vary greatly within one group, even to the point where some students may not pass while others achieve distinctions. Each student will be individually assessed on their performance as a professional in the study field.

Group Structure and Division of Tasks

Each group must document and implement a management structure of their Capstone Project. Group leadership roles must be clearly identified including who has responsibility for monitoring a Capstone Project deliverables and group coordination. This role could be shared amongst group members at various times during a Capstone Project process.

A group project is interdisciplinary, with students enrolled in different fields. Before commencing the Capstone Project there must be an agreement amongst all persons involved as to the division of tasks within the Capstone Project. This agreement will form an integral part of the project proposal as well as part of the final Capstone Project itself. Appropriate contingency plans must be considered.

Supervision and Progress Monitoring

It should be known that students will be individually assessed on their performance, each student must indicate in the Capstone Project proposals their tasks, analytical parts, etc., which clearly identify those aspects of the Capstone Project which are the student's responsibility and those which are shared responsibilities. In progress and final projects should be included references to every group member where appropriate. If agreed students may include separate documentation. The Capstone Project should be setup from the start with the contingency plan in place so as not to adversely impact individual students

Each student in a group project must have the same supervision. Different individual supervisors for different students are not acceptable. It is recognized that some projects have a complexity, so they may require one academic supervisor and one consultant.

Assessment principles for individual contributions

It is necessary to effectively assess the professional contribution of each student in the group. These Guidelines provide additional criteria for evaluating individual contributions in group projects. The body of the report will clearly indicate the work attributed to other group members where applicable. As a guide, this should be clearly identified in the Introduction chapter. Every student should submit individual report with personal reflections of at least 1500 words, addressing the following:

- the particular contribution of the student, in detail;
- how the group was structured and managed;
- the main research or innovation challenge solved by the student;
- the greatest management challenge faced by the group;
- lessons learned in how to complete a group project to time and specification;
- relative contribution to the overall capstone project by each group member;
- timesheets showing all hours spent on the subject and the task done in those hours.

Students should make references to published material (journal articles, subject reading material from core subjects, text books etc.) when writing their reflection. If agreed group members are allowed to prepare individual posters (see section on defence). Each student will be individually assessed on their performance.

2. PREPARATION OF CAPSTONE PROJECT

2.1. A capstone project proposal

Timeline

The Proposal is intended to be a detailed planning document for a Capstone Project. A proposal should reflect the following indicators and the description for every assessment indicator should not exceed 50 words:

- Demonstrated ability to develop innovative solutions for problems solving and approach to analysis and design thinking;
- Demonstrated ability for holistic approach to incorporate all considerations
- Understanding of the need to incorporate cost considerations throughout the design and execution of a Capstone Project and to manage within realistic constraints of time and budget (if applicable).

The effort that is invested in this proposal will most likely have a direct impact on the success and quality of a Capstone Project. A Proposal should be prepared in conjunction with the Capstone Project Timeline (see table below) for details of dates and times. However, a supervisor can recommend individual timelines for particular students. All the details should be included in a written proposal.

Table 1

Capstone Project Timeline

Months	Activity/Task
PROPOSAL PHASE	
1-2 months	Exploration phase: using your own experience (in course and at work) come up with a number of ideas that may lead to a worthwhile final project.
3 month	Commence a broad-based academic and business literature survey, refine a short list of potential proposals. Present you initial ideas to mentors and Study Programme Committee.
4 month	Finalise a (draft) proposal and submit it to your appointed supervisor.
4 month	Contact supervisor to receive feedback on proposal over the week Submit final proposal.
DRAFT PROJECT PHASE	
5-6 months	Work on project, meet regularly with supervisor
7 month	Presenting proposals to Lithuanian CERN BIC
7-13 months	Work on project, meet regularly with supervisor
spring or autumns semester	CERN screening week
13 months	Draft capstone report and demonstrate innovative solutions to supervisor.
14 month	Prepare presentation and submit it to supervisor
14-16 months	Students with satisfactory progress reports continue work on project, meet regularly with supervisor
FINAL PROJECT PHASE	
15 month	Meetings with potential investors, participation in public calls
15 month	Establishing a start up

16-18 months	Capstone Project final submission and defence, includes poster presentation if needed.

From the beginning a supervisor discusses a Capstone Project with a student, identifies approximate timelines and meeting dates over the period. A student should also undertake a Risk Assessment for the Capstone Project (see Guidelines for a Capstone Project Proposal). If needed a student and VU BS sign Intellectual Property Agreement or Confidentiality Agreements. A Capstone Project proposal remains a living document and will be subject to changes over the course of the whole process.

Guidelines for a Capstone Project Proposal

The Proposal must include a declaration of originality. The Proposal should contain sections which carefully address each of the following sections and should in general approx. 10-15 pages:

Project Title. A student needs an appropriate project title, one that encompasses the nature of student ‘s process of work, without being too wordy or verbose.

Project outline. A student gives a brief qualitative description of the topic in plain English, and why it is of interest to him/her. Also, a student presents a more precise statement of the Capstone Project, using appropriate technical language by identifying what contributions the Capstone Project can make to the goals of sustainable development and/or areas of CERN activities and its community in terms of novel design, validation and verification of a possible innovative solution.

Capabilities of the student. A student needs to describe why he/she thinks is suitable to undertake this Capstone Project. Give a brief description of the track record in the area of the topic, and/or how a student developed interest. An important aspect to be considered here will be a student ‘s ability to complete the project on time.

Objectives and Scope. A student should describe: a) the specific objectives of his/her project; b) the need or value of the Capstone Project, and to whom; c) the viability of the Capstone Project, as he/she seeks to proceed with it . As student should also identify what are key and/or innovative assumptions which require verification and research analysis, how and to what extent a student will be able to verify them. A student should also identify other non-technical assumptions on which the Capstone Project is based - economic, social, cultural, etc. the sources on which these assumptions are based, and how and to what extent a student will be able to verify them.

Method: A student needs to be able to state here the different stages of a Capstone Project for example, literature review, experimental investigation, data interpretation, novelty of research, scientific discussion, etc. (see Final Capstone Project)

Strategies and resources A student should state possible requirements for undertaking a Capstone Project, where or whether resources are accessible, including any equipment, and any other laboratory facilities a student will need. Also, a student should indicate where resources and facilities are available, for example if at Vilnius University a student should obtain a permission for the equipment or facility that a student intends to apply in alone or in cooperation with other University members, also any equipment or material which are not currently available at the University, and need to presented – include names of suppliers and costs, available financial support if any. A student should explain what, if any, skills acquisition he/she will need to undertake in order to use the above resources, also nature of any assistance required from laboratory staff, and estimated time. A student should state what, if any, are the data that he/she will need to obtain or generate, and their sources or methods of generation. Provide indication of the likelihood that the data can be obtained. Finally, a student should give title, author, and publication details of at least 3 key references he/she has identified as academically accessible and appropriate in supporting the Capstone Project work and write a short paragraph on each of these references to describe what makes each of them accessible, for example what knowledge is assumed and what is useful about this literature for the Capstone Project.

Timeline. A student should provide a realistic and detailed timeline for the Capstone Project completion. Identify key tasks, activities, milestones. A Gannt Chart or equivalent is expected.

A Capstone Project Risk Assessment. A student should identify a broad range of foreseeable risks associated with undertaking the Capstone Project, and what contingency plans a student propose to deal with them. This section may include risk such as: procuring or availability of various equipment, access to research data, competing demands from external sources such as workplace commitments, supervisor's availability, even personal circumstances, etc.

References. A student should provide a list of resources used in the preparation of the Capstone Project Proposal using the general guidelines for references of VU BS.

It is not allowed to repeatedly defend the final proposal that has been negatively assessed by the mentors and Study Programme Committee. Appeals regarding the assessment of the capstone project proposal are not accepted.

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2.2. A capstone project progress report

A progress report is intended to describe in adequate detail the progress made during the first phases of a Capstone Project. The process is similar to a Project Proposal procedure.

Guidelines for a Capstone Project Progress Report

A student should follow the implementation of tasks with the Capstone Project. A progress report should include details of any changes to students' proposal submitted, including an updated project plan a student should submit with progress report to supervisor and mentors.

A progress report should contain two parts:

Deliverables: a) the goals which a student set for the phase of process; 2. comment on the progress in relation to the goals, work plans and any other achievements; 3. problems or issues which affected student's progress and the strategies identified to overcome them; 4. A comprehensive review of the academic literature related to a Capstone Project area which places student's work in the broader scale of knowledge; 5. Comment on the involvement of external or industry supervision (where applicable);

Planning: an updated version of a Capstone Project Proposal

A supervisor must submit an assessment to mentors and Study Programme Committee by the deadline agreed upon by all parties.

3. A STRUCTURE OF FINAL CAPSTONE PROJECT

3.1. A core structure of capstone project

Layout

For a layout for final Capstone Project, also requirements related to scientific discussion and research methods please follow general requirements for the master's thesis at VU BS. A supervisor will be able to offer relevant advice.

Structure

A final Capstone Project may be arranged in Chapters as follows:

Executive Summary

The purpose of the executive summary is to provide an abstract of the information provided in the Capstone Project. Clarity and conciseness are essential. Four to six brief paragraphs are usually sufficient.

Dedication and Acknowledgement

Inclusion of a dedication is optional. An acknowledgement of contribution by individuals may be included at the end of the Capstone Project.

Introduction

The introduction section begins with a brief discussion of the area of interest and then presents the following sub-sections:

- Background of the Problem. Description of the background of the problem (brief historical perspective and explanation of why the problem remains unsolved at this time). This part does not require an introduction to student's start up. The scientific discussion, determination of novelty and other methodological principles should meet the requirements of VU BS Master Thesis requirements[4];
- Statement of the Problem. The problem is presented in statement form, this section is concluded with a clear statement of the question or questions that need to be answered to solve the problem.
- Purpose of the Capstone Project. This section explains why the study is being conducted and arguments for commercialization activities are presented. For requirements

[4] https://www.vm.vu.lt/external/vm/files/PDF/studentams/Masters_Theses_Methogological_Guidelines.pdf

related to the determination of objective, goals, research questions and etc. a student should follow the Methodological Guidelines for Writing Master's Theses[5]

Literature Review

The purpose of the Literature Review is to guide the inquiry. What research has been completed on similar topics in other organizations, the same industry, or other industries? This may include both academic and business literature. Questions to answer in this review might be the following: How have others defined similar problems? What approaches did they use to find solutions? What solutions did they discover? What were critical weaknesses of these approaches? What else have you learned from these studies that will help the chosen approach being more productive?

The Literature Review should provide the foundation for Methodological section. The presentation of the Literature Review should lay a logical and complete foundation for the Methodology that follows. Warning: The Literature Review should not be a history of the students developed company or business sector the company is or might be established.

Methodology

In this section a student proceeds to answer the research question asked in the Statement of the Problem, explains what information is needed to be gathered inside and outside the Capstone Project and future company to answer the question. The steps which follow to systematically analysis of this data is explained.. A student must also discuss the methods of analysis. Go into detail about how (s)he coded interviews and how (s)he did the statistics. Additionally, it is not just drawing conclusions based on interpretation of a comment, but how did (s)he go about reaching the conclusion. A student must analyse the chosen methods and explain any ethical issues about collection of data, any sort of ethical issues involved. Moreover, the scope of methods and their application is explained referring to the Methodological Guidelines for Writing Master's Theses[6]. In a Capstone Project, this section should provide clear guidance and demonstrate that a student was thoughtful and thorough in his/her approach to solving the business development obstacles and providing possible innovative solution to problem defined.

Empirical Part (results, findings, interpretation and discussion)

The research question defines the field of knowledge that a student is engaged with a Capstone Project. In this section a student presents the results of his/her research. Empirical

[5] https://www.vm.vu.lt/external/vm/files/PDF/studentams/Masters_Theses_Methogological_Guidelines.pdf
[6] https://www.vm.vu.lt/external/vm/files/PDF/studentams/Masters_Theses_Methogological_Guidelines.pdf

research in the context of the Capstone Project process can also take different shapes, however, in all cases it involves a primary data analysis and analytical techniques can cover the entire range of the social sciences (based on interpretive as well as positivist epistemologies). Here a student lay out the statistics and their interpretation. If needed graphs and charts are included.

Conclusions

The findings are the setup for the recommendations to follow. This section briefly reviews and recaps what a student discovered through his/her research and business analysis:

- the problem and the question a student was expected to answer.
- the issues/problems that were investigated
- key findings of this investigation
- possible solutions for the problem and further development of business

Recommendations

The recommendations should be built on conclusions by stating action steps that the student's company can take to address those conclusions and make improvements. A student should also consider the concept of "sufficiency" whether the recommendations are sufficient to significantly solve the problem, are they practical and affordable both in financial and other resources. Recommendations should clearly state the expected results of each recommendation and allow to weigh the options and make choices. In this section a student should also explain why his/her recommendations are the best solution/prediction, describe alternative recommendations and their limitations and finally, describe the implications for businesses with respect to these choices.

Appendices

This section includes information that is too detailed to be included in its entirety in the body of the Capstone Project. Firstly, business plan (see next section), presentations to potential investors. Secondly, raw data, sample questionnaires, and detailed computations, etc. This section would also include information that is referred to but is not essential to the project, such as relevant policies, laws, forms, pamphlets, sample letters sent to organizations and subjects, etc.

3.2. Guidelines for a capstone project's business plan

A business plan is a compulsory appendix of a Capstone Project and it should not involve a thesis-type literature review which a student must do in the section of a literature review of a Capstone Project. However, a business plan does require research. At a minimum, marketing research is needed in order to quantify the opportunity which will include determining the total demand, the unmet demand, how a student's offering is to be distinctive in this market, present reasonable sales projections, etc. A business plan also involves an analysis of demographics and customer profiles in markets, and the comparison of such demographics and customer profiles to those of the proposed new market. A student where applicable should cite the specific sources from which data are obtained.

A student should demonstrate a connection between the market demand and the financial statements, present foundation for the projected revenue figures cited, including initial sales and sales growth.

A business plan should include the following sections; however, they might be organized in different orders but the content must be included:

Introduction

- Purpose of the plan (attract investors, diversification, etc.)/
- Introduction to market opportunity
- The Development of Start-up
- How start up will respond to opportunity
    - Marketing and Sales Activities
    - Product or Service Research and Development
- Organization and Personnel

Market

- Industry Overview
    - The history of the industry
    - Size of the Industry
    - Industry Evolution
    - The trend-Where the industry is expected to be in 5 or 10 years
    - The key players in the industry
    - Barriers to entering the market
- Competition strengths and weaknesses
- Target market
    - Major characteristics of the target market
    - Expected target market growth for the next 5-10 years
- Product and Industry Life Cycles
    - How does the position in the Product Life Cycle affect this business plan?
    - How does the position in the Industry Life Cycle affect this business plan?
        - Product or Service Research and Development

Start-Up Description

- Type of Business and Legal Structure

- Mission and Objectives
- Distinctive Core Competencies

Management and Ownership

- Board and Rationale for Members (if applicable)
- Management staff structure
- Key managers (if applicable)
- Future Additions to the Current Management Team

Marketing Activities

- Overall Marketing Strategy
- Sales Strategy ⁄ Analysis-Strengths
- Weaknesses as they relate to Opportunities
- Threats (SWOT/TOWS)

Risk Management

- Loss Control
- Retention of Personnel
- Insurance

Products and Services

- Detailed Product
- Service Description
- Product Life Cycle
- Copyrights, Patents, and Intellectual Property Rights
- Research and Development Activities

Operations

- Production and Service Delivery Procedures
- Supply Chain

Financial Analysis

- Funds required and their uses
- Current funding requirements
- Funding requirements over the next three years
- Use of funds

Financial statements for first 3 years (monthly first year and annually for years 2 &3) (use template)

- Income statements
- Balance sheets
- Cash flow statements
- Determine capital requirements

Business plans are expected to present a convincing business case for the establishment, expansion, or continuation of a business. A student must present data to substantiate there is sufficient demand to support this venture. Business plans are required to document either an unmet or under-met need in the market. This need should be quantified to the degree possible. The less the need is quantified, the higher the risk factor for a start-up. A business plan should include a clear demonstration of the opportunity in the market place and what will be required to capitalize on it. A student should ensure that his/her business plan addresses: current demand

in the market, market trends, competitors' market share and explain how an established start-up will better or equally satisfy the need.

Each business plan must include the following financial data. The figures for the first year are presented by month. Later years should show summary figures by year for the first three to five years. On projected income statements (profit and loss statements), vertical percentages as well as euros amounts for each year are recommended. Students are required to provide the required data in a format that contains the information in a standard presentation format. Financial data should include: sales forecast, projected income (loss and profit statement), projected cash flow, projected balance sheet, a breakeven analysis for each year.

4. ASSESSMENT

4.1. Assessment of the capstone project progress

Table 2

Assessment Form for Capstone Project Proposal Form for a Supervisor and Mentors

Proposal requirement	Yes/No	Supervisor/Mentor Notes/Comments (if required)
Appropriate title		
Capstone Project outline		
Capabilities of student		
Objectives and scope		
Method		
Strategies and resources		
Timeline		
Risk Assessment		
Assessment Criteria		
References used		
Additional comments		

Table 3

Assessment Form for A Capstone Project Progress Report Form for a Supervisor

Proposal requirement	Yes/No	Supervisor/Mentor Notes/Comments (if required)
Identified Goals		
Report of progress made		
Report on problem and issues		
Report on involvement with external stakeholders and industry partners		
Updated proposal		
Additional questions:	What has been the frequency of contact with the student? What has been the frequency of contact with the external supervisor? Will the student be working towards a potential completion?	

Table 4

Assessment Form of a Capstone Project's Business Plan

	1	2	3	4	5	6	7	8	9	10	NA
Research 20 %											
Evidence of higher level research											
Evidence of multiple sources											
Evidence of primary data											
Content 50%											
Completeness											

Relevancy											
Appropriate analysis											
Appropriate conclusion drawn											
Logical rational and/or justification											
Original thought											
Structural 30 %											
Grammar											
Spelling											
Citations											
Clear expression											
Tables, graphics, etc. appropriate and clear											
Original words											
Overall											
Comments:											

Evaluation of a business plan is a part of final score for a Capstone Project. Evaluation mark is provided by a supervisor and each member of Defence Board, which is approved according to general regulation of VU BS on Master Thesis defence process.

4.2. Assessment of a final capstone project

Table 5

Assessment form for a final capstone project

	Evaluation remark	**Supervisor/Member of Defence Board**									
Content	Does the student clearly identify a question to be answered or problem to be solved?	1	2	3	4	5	6	7	8	9	10
	Does the student present the results of the Capstone Project in a cogent form, with suitable illustration where appropriate?										
	Does the student demonstrate significant innovation-oriented judgement at a level that would be reasonably expected from a recent graduate?										
	Is the content sufficiently substantial and broad ranging to allow coverage of the chosen assessment indicators?										
	Does the Capstone Project contain sufficient material suitable for external investors?										

Knowledge/Ability	Does the student exhibit sufficient knowledge of the research topic and familiarity with the discipline it embraces for a report at this level?										
	Does the student demonstrate a capacity for clear thinking?										
	Does the student demonstrate significant techniques of analysis and/or evaluation as outlined in the chosen assessment indicators?										
	Has the student demonstrated an understanding of project management techniques and applied them effectively in the Capstone Project.										
	Has the student demonstrated an ability to manage their own time and processes effectively, prioritising competing demands to achieve the required goals and objectives										
Presentation	Does the work represent a well-planned approach to the subject matter?										
	Is the Capstone Project structured appropriately?										
	Does the student appropriately orient the reader to the ground to be covered and the arguments made?										
	Is the presentation of the Capstone Project, in matters of grammar, spelling, punctuation and general appearance, adequate?										

5. A CAPSTONE PROJECT POSTER PRESENTATION AND FINAL DEFENCE

All students presenting the Capstone Project are required to deliver a poster ready to display at the start of their presentation day – poster session. The poster session is a 'public' venue and is organised together with mentors, and as such every student should ensure the material in his/her poster does not breach any intellectual property or confidentiality agreements.

In general, a poster session provides the opportunity for in-depth exchanges with interested members of the audience. The students' posters allow a large amount of information to be transferred in a limited amount of time. The posters should be designed so they can be available for unattended viewing, therefore, should be self-explanatory so that the student is free to supplement and discuss particular points raised by audience. The intended audience would be peers, invited guests, academics, external stakeholders, business representatives.

The poster is a single A1 sized sheet, on appropriate poster paper (typically 140gsm). Posters need not be laminated (recommended). Posters must have title and author. The content, including text, diagrams, pictures, etc. of the posters should be arranged so that the text is readable when the poster is displayed in either landscape or portrait format. Finally, the poster shall be ready-to-display prior to the start of Capstone Projects presentation and defence sessions.

Students at the final stage are expected to demonstrate ability to design a study, to collect new or existing data, to analyse the findings, and to communicate the results, also ability to write analytically in a style that is well informed, well-reasoned, and be literate. He/she demonstrates oral communication skills by informed and well-reasoned arguments, finally, masters the higher order thinking skills necessary to analyze and interpret social sciences and transdisciplinary research fields. Where applicable a student should follow the general regulation on VU BS Master thesis methodological guidelines[7]. The defence process is organised according to VU BS regulation regarding defence of master thesis.

[7] https://www.vm.vu.lt/external/vm/files/PDF/studentams/Masters_Theses_Methogological_Guidelines.pdf

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