Reflection [1]Report for

Investigation Project Assignment

Analyse and optimize different processes of the Danish start-up company "Life Science Robotics" in the expansion of its business

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Group Number: 11

1 Reflection is "the practice of periodically stepping back to ponder the meaning to self and to others in one's immediate environment about what has recently transpired" Raelin, J. A. (2001). "Public Reflection as the Basis of Learning." Management Learning **32**(1): 11–30. A reflective practitioner is a person capable of learning, acting and adapting to environments, someone who is constantly seeking to widen their experience and knowledge by adapting their manner of work in the profession. Someone who always learns through what they do, and who continually combines action with reflection on what has been done.

1. Introduction

The motivation for our investigation is that the healthcare sector will become more important in the coming years due to the demographic challenge, where more people are getting older and fewer people are getting educated within the healthcare sector. Therefore, more digitalisation is needed and it will continue to grow in the future.

Life Science Robotics is a Danish company who creates innovative robots within the healthcare sector focusing on rehabilitation of patients. The company is the developer of ROBERT® which is designed to improve the mobilization of patients. Their aim is to improve the working environment for the professionals so they do not have to do the heavy lifting themselves and therefore, the professionals can help multiple patients at a time. The company drives the digitalisation in the healthcare sector and that is why we decided to make our investigation about Life Science Robotics.

Our investigation paper was about analyzing and optimizing the processes of the company and helping them to internationalize quicker in different countries and make the new technology accessible to all. Our investigation included an interview with the CEO of the company, Keld Thorsen. We asked him questions about Life Science Robotics in general, the relationship with the stakeholders and the market entry in Denmark and in other European countries. We aimed to identify problems that we could help analyze and optimize.

In the interview, the CEO expressed the challenges the company faced when entering the market in the beginning. There was a lot of skepticism due to the conservatism in the healthcare sector and it was challenging to enter the market. The company had major acceptance problems which could be caused by their lack of stakeholder mapping.

In our investigation paper we suggested different strategies for classification and working with their stakeholders. We also found different ways for entering a market in the literature and then suggested the best way, they could have entered the market.

In this reflection paper, we want to discuss the processes of our project work. It includes how well we communicated, planned and delegated our tasks. We will reflect on what factors that contributed to success or failure and what lessons we learned from this experience. In the end, we will evaluate if our project and project management was a success.

2. Evaluation of Project management effort

A) Organization of the project group

When looking at our collaboration in the group, it was overall very organized and there was good communication between each other in the team. We always planned in advance when we were going to meet and everybody was on time to all of our meetings. Every time we had to come up with new ideas in the project, we all brainstormed together and listened to the opinions of every group member. When we had come up with an idea or a plan, we always distributed the workload equally between the group members. Our communication was very good also when problems occurred and one of us was prevented from doing their task. Then we always helped each other and if there was any uncertainty we did the same.

In the beginning of the project, we divided the roles so there was one project manager. She had the responsibility to arrange the meeting with Keld Thorsen, who is the CEO of Life Science Robotics. The project manager was also responsible for a good environment and this was achieved. We never had a room reserved for us at our meetings and sometimes we ended up having a meeting in the canteen, where it was very noisy. This could have been improved and more organized. The project manager could have booked a room for us, so we did not have to look around for an empty room every time we had meetings.

B) Effectiveness of risk management

When starting our project, we were very set on the idea to investigate Life Science Robotics. We had a risk assessment plan, where we found out our project was a medium risk project. The factor that was most risky in our project was the fact that we wanted to interview Keld Thorsen, the CEO of Life Science Robotics. We planned the interview before we asked him when he was available. Therefore, our project was very dependent on him to be executed and even if he agreed to do the interview with us, he could have been sick or too busy on the day of the interview. Our idea was to interview him to get as much information as possible about Life Science Robotics and we did not have a plan B if he was unavailable. This was a very risky decision of our project group, that we were aware of.

When looking back we should have had a plan B or contacted Keld Thorsen earlier in the process before we started planning. Then, we would have an interview arranged with him before we started the project. Another idea to make the project less risky could have been to have a backup person from Life Science robotics, that also could do the interview. Then we would not have been as dependent on Keld Thorsen as we were.

At the beginning of the execution phase, the project manager went on vacation and was unable to attend the team meetings. This postponed our project plan and interview since we all wanted to be present for the interview. Instead, the rest of the group brainstormed and organized all the questions for the CEO. The questions were then very organized and we sent the questions to the CEO before the interview, so he could prepare his answers beforehand.

The interview ended up being on the day we planned and the CEO was well prepared because he received the questions before the actual interview. The order of the question was very organized since the group had prepared them during the absence of the project manager. Despite the risk, the interview was executed on the day we planned after we postponed it.

In the project group, we had all our documents on Google Drive which is a very reliable cloud. It still has low risk, since all of our documents were on the drive. In our original risk assessment plan, we planned to save local copies of our documents. None of the group members saved the documents on their local drive, so that part of the risk assessment plan was not very effective and we ignored the small risk.

C) Effectiveness of the communication plan

At the beginning of our project, we made a communication plan. We were very ambitious about how frequently we wanted to have meetings but also how frequently we wanted to be in contact with Life Science Robotics. In our communication plan, we prepared to have periodic virtual meetings with Life Science Robotics. We only had the planned interview with them, and we have not been in contact with them since for additional questions. Being in contact with the company we put on the highest priority and we wanted to update them on our progress and results. This was too ambitious for our project but also compared to how much time we had. So far, we have only been in contact with them once for the interview, but we plan to contact them again when our final report is done. In this way, they get to see our suggestions and results when they are all finished.

The communication within our group has been very frequent through WhatsApp. We always update the other group members when we are finished or when we need help to finish a task. In the communication plan, we prepared to have weekly meetings and this was also a bit too ambitious. We were very good at delegating the task of the project, so sometimes it was not necessary to meet in that certain week. Therefore, we did not meet physically every week, but we still kept in contact and informed the group about our work.

We assessed the communication with the university to a medium priority, since it was not necessary with a lot of communication during the project. We planned to have contact with them at the beginning and end of our project or if we needed to contact them regarding additional questions during the project. We ended up contacting them during our project because we had a few questions along the way. This was the exact communication we planned to have with the university in our communication plan.

D) Success criterias compared to project results

One of our most important success criteria was to do the interview within our own time frame. The interview was our main source of knowledge for our investigation and therefore, it was one of the most important tasks to get done in time. We managed to have the interview done by the time and date that we planned. Due to our organized project management and our constant dialogue between the group members we managed to do the interview and investigation paper according to our plan. This helped the group reach its full potential and success in our project.

Another success criteria was to make a project that made our group acquire new skills and knowledge to use in the future. When looking at our investigation paper, we have gained knowledge about different strategies for market entries and how important it is to know how to collaborate with your stakeholders. This knowledge we can use in our studies or in a potential job in the future. Our investigation can also benefit students who are going to attend the same course next year. We managed to reach our listed success criterias and deliver the project results as originally stated at the beginning of the project. The only thing we could have improved as a team was to make our project less risky. Overall we reached project management success due to our organized plan and excellent communication within the team.

‘*We evaluate our project management effort as successful*’

Scale	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Your response				X	

3. Evaluation of the impact/ Project success

A) Target audience of the project results

The start-up company Life Science Robotics can definitely benefit from our findings. When they first introduced the robot, they did not get good feedback from the market. Among other aspects, ignorance about different strategies for entering new markets might have contributed to this. In our paper we gave them a proposal about the right strategy. In order to expand their business they can use this proposal to be more accepted and recognised in new markets. We also delivered them measures to become known faster and better. Moreover, we support them to introduce standardised stakeholder management, including stakeholder mapping and specific strategies for dealing with the various stakeholder categories. This creates a better understanding of the importance of the different stakeholders and helps strengthen relationships and acceptance.

Those responsible for the course "Applied Project Management" in the autumn semester 2022 can hopefully broaden their horizons when assessing this work. They will get to know a very innovative start-up company that could also be interesting for further research projects.

Another project group of the course "Applied Project Management" will do a peer review of our work. They can compare their workflows with ours and learn from the things we've done better or the mistakes we have made. Students who take this course in the future may be presented with the report as an example and can learn from our experiences too.

B) Quality of the final results

We have explained the investigation method, i.e. the interview, in a comprehensible way and described exactly why it is best suited for our purpose. From the interview we gained a lot of qualitative data and based on these we developed improvements for LSR's processes. We described our findings and the improvement measures in a clear and reasonable way. As we have tried to optimize their processes, we have created added value for LSR, so that the relevance of the results is given. We also used literature to underline our suggestions for getting into new markets and stakeholder management. As we have correctly indicated all our sources, the criteria of verifiability and transparency are also met.

'We evaluate the quality of our final results as outstanding'

Scale	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Your response					X

4. Factors that have contributed to failure/success

Success factors are ground rules that every group member should adhere to. A successful project requires measures that translate these success factors into concrete activities and decisions. According to the lecture, success factors can be divided into three success groups: project, process and project management success. Compared with the success factors listed in (Hussein 2018) pp-92 we have found many of those identified there to be important for us as well.

First, an important factor that has contributed to the success of our project is **effective communication** within the project group. We clearly distributed the tasks so everyone knew what they had to do. We also set firm deadlines that every group member had to adhere to. Even outside the meeting times, there was lively communication on the selected communication channels to understand the tasks or organizational things. Everyone responded in an appropriate tone and time. Moreover each of us understands the importance of the project and shows a **strong commitment and motivation**. Also some other soft factors played a significant role for the project success of the paper. Firstly, we acted as **"one team"**. This meant that we always listened to each other and helped each other as well as discussing the tasks together. Everyone was able to express his or her opinion and in general we were a very balanced project group with a high degree of loyalty. Secondly, there was a strong **trust** within the group. Everyone did his or her job, and when we put the parts together, we only proofread each other's work. This allowed us to ensure that everyone could concentrate on their own work.

In addition to these success factors, we think **consulting the client**, i.e. the people responsible for the course, **for questions and approval** contributed to process success because these are the people we want to satisfy. After receiving feedback for our pre-report, we met with a student assistant to get a more detailed explanation of the feedback and to clarify our next steps. Continuous contact with stakeholders is related to process success.

Defining **clear roles and responsibilities** is mandatory for successful project management. Every group member was assigned tasks according to their knowledge and skills. As Amalie has a direct connection to LSR she has taken on the role of the project manager. However, she had no **experience** in taking on this responsibility until now and that influenced the project management success. Therefore she didn't book a room for our meetings and we had to look for free rooms or sit in the canteen. But she was a really engaged project manager, took into account all the opinions of the members, treated everyone with respect and cared for a good working environment. At the beginning of the execution phase, she went on holiday for one week.

The interview was scheduled to take place immediately after the start of the project but we had to postpone it until the week after her return. However, the interview could have taken place earlier. The other group members took the task of preparing the questions for the interview and we were able to stay on the modified schedule.

Early planning was also important for us because we had to carry out the project under certain constraints, for example we only had a limited amount of time to deliver. To adhere to this, we created a very detailed schedule in MS Excel, which we were able to keep to a large extent. The schedule was updated regularly. Furthermore, there are different models of executing a project and using an **appropriate model** definitively contribute to the success of the project. Inside the project group, we decided to use a plan driven project life cycle model because we know all specifications and requirements for our project. This has proven to be appropriate. Early planning and the use of the right model are important factors that are related to project management success as well.

Another key factor for project success was the **clarity of purpose and objectives**. In the beginning, we were not sure about that. We only know the rough topic of analyzing the selling process but this was actually too ambitious for this investigation project. So everything was based on the interview and on finding specific issues regarding the whole process to write about, which was maybe a bit risky. We did not really think about what we would do if LSR had refused the interview in general. We only had some ideas but no fixed Plan B. Not **having a Plan B** is a factor that could have led to project management failure.

Therefore we noticed that, additionally to the listed factors in (Hussein 2018) pp-92, a well-structured and elaborated **risk management** increased the success of the project management. In the pre-report, we have wrongly described the risks of LSR instead of our own. After we adapted the risk management plan we had a clear picture of the possible risks during the execution and how to react if they occur.

Acquiring experience and new skills contribute to long-term success, which is closely linked to project success. Doing that reflection report helps us to learn from the experience we gained during our investigation project. It's necessary to do a **follow-up** of our work because we can use the lessons learned from this project in the future.

5. Most important lessons from your project

We as a group learned very much in this project for our study life but also for our future working life in a company. Therefore we would like to share our newly gained knowledge with other students that are also working on a similar project. Our advice is to **book meeting rooms very early** so that you have a quiet room with sockets so that you can charge your laptops. Moreover we would recommend that you **think about what you want to investigate or produce as early as possible**. So you have enough time to execute a brainstorming process in the project group and find the best solution from this. Because we decided to do an investigation paper on the day of the deadline and at the beginning, we did not have a fixed idea. We only knew that a collaboration with the company Life Science Robotics would be very beneficial for us but we had no time left to ask the company if they would like to work together with us or not. Hence we asked the company after our decision and we are very glad that they liked the idea to collaborate with us. But this could also have ended quite differently. We had a vague idea for a backup plan, but we would like advice to the other students to **have a fixed idea for a plan B** if something with the main plan goes wrong.

We also learned that we could **use much of our knowledge from the lecture for our real-life case.** This is very positive because we had the possibility to repeat the topics from the lecture and also see how they are applied in reality. In addition, we realize how important the tool of stakeholder mapping is in relation to the success of a project or a whole company. We also have the **opportunity to learn more** about the strategy for entering a new market which was not a topic in the lectures. This was also relevant for our investigation of the company LSR because these entry strategies are essential for the success and acceptance of a new product in new country markets. Therefore we searched and read literature about this topic.

In summary and with the experiences after the completion of the project, we can suggest that you must start the initiation and idea-finding phase as soon as possible after the course starts because you do not have so much time between the deadline for choosing a topic and the submission of the final project documents. This means if you start early, you do not have to do all the work at the end of the semester. Moreover we would suggest that you speak to the company you want to work with in advance about our ideas before you have to decide on one of the three topics. Our last suggestion is that you must book meeting rooms at the university very early because they are really fast booked out.

6. Reflection on learning and unlearning

A) What did we need to learn?

We had to gain new knowledge for our assignment and also improve some practices and attitudes inside the project group. First, we expand our knowledge about **how to create expressiveness and specific questions for our interview** with the CEO. Therefore we discussed in the group our previous know-how about this topic and looked on the internet for assistance and suggestions. Furthermore we **deepened our understanding of stakeholder mapping** and the different strategies how to handle these different stakeholder groups inside a project. For this point we read our lecture notes again and also looked in the literature about this topic. We also had to **gain knowledge about strategies how a company can enter a new market**. Therefore we also look in different books and on the Internet. Moreover one group member dealt with these strategies at her home university. We also had to **learn more about the company Life Science Robotics** and the general purpose of this start-up. To do this we looked at the website of the LSR and read the texts. We also watched the videos there and searched for the Instagram page because it is important to know as much as possible about this company to collaborate well with the same aims for the project. We created our video with a software which is called “Animaker”, and this is the reason why we had to **learn more about this application** and how it works.

We also had to improve some of our practices for the project assignment. For example, **we worked consequently on the project and had regular meetings** where we discussed everything which was relevant to the progress of the project work. Moreover every team member had to **enhance his/her time management**, because we were the same group members for the hand-in assignments as for the project assignment. Hence we had a huge workload every week with both assignments.

The attitudes of the team members also improved through this project work because we had to **work reliably on our own tasks** and furthermore help the other members with problems or take care of each other.

B) What did we need to unlearn?

We also needed to unlearn some practices or knowledge we had. For example, some of us started to gain knowledge and read articles about **how to create a good survey** because our idea at the beginning was to develop a survey for the company. But after some meetings and discussions, we voted against the survey and decided to execute an interview with the CEO. Therefore the knowledge about the surveys was no longer necessary and helpful for us.

We had to unlearn some practices too within the project. For example we normally **execute an interview after we define the focus** of the investigation. But this time we did not have the focus before the interview because we identified the problems of the company and what we might be able to improve after talking to the CEO of LSR. Moreover we had to unlearn **some methods of how we did citations** at our home university before or **how we formatted the references** correctly and find a new method to do this so that every team member is satisfied.

We also had to unlearn some attitudes which we learned at our home universities for this period of the project time. Especially some **approaches in connection with how we write an investigation paper (structure etc.)**. This is strongly connected to the practices previously described.

7. Acknowledgments

We would like to express our deep gratitude to Keld Thorsen the CEO of the Danish company Life Science Robotics for his encouragement for our project and the great help to have participated in our interview and answer all our questions about his company.

We would also like to thank Professor Bassam Hussein and the student assistants of the course "Applied Project Management" who helped us a lot with the writing of the paper.

8. References

Hussein, B. (2018). The Road to Success: Narratives and Insights from Real-Life Projects, Fagbokforlaget.

9. Appendix

Appendix 1: Our pre-report

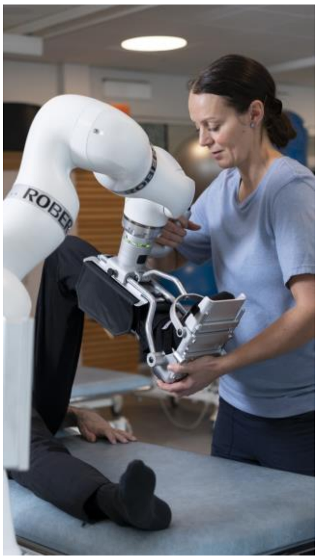
Appendix 2: Our investigation paper

Appendix 3: Link to our video presentation

Appendix 1: Our Pre-report

Pre-report Project Group 11

Focus of the investigation



The Danish company Life Science Robotics creates innovative robotics within the healthcare sector. The company specializes in rehabilitation robots and is the developer of ROBERT®, which is a new revolutionary robot designed to improve mobilization of patients in hospitals and rehabilitation centers. Their aim is to provide a better working environment for professionals working with rehabilitation of patients. Instead of the physiotherapists and healthcare workers doing the heavy lifting in the process of rehabilitation, ROBERT® can do the heavy lifting for them.

Our focus is to investigate how Life Science Robotics managed the sales process and installation of ROBERT® in hospitals in Denmark. As well as examine how the process of getting into the Danish market was executed. The empirical investigation will also include the planning and strategy to reach their goal and how well the project management helped to do so. It will then list the challenges and risk assessment of the process and how the stakeholders were managed in this case. The success factors will be discussed and how they contributed to the success or failure of the process. Last, it will determine the satisfaction of end-users and if there are any challenges with ROBERT® in everyday life in the hospitals.

Importance of this investigation

Regarding the added value that our investigation intends to bring, it can be identified in the experience and teaching that can be brought by the case study. Carrying out an investigation related to one or more real projects conducted by a company, can in fact be an effective tool for analyzing every single aspect of these projects, therefore the different factors that led to their success and (perhaps even more important) the mistakes that have been made during the management. It should also be emphasized that the company we have chosen as the subject of the survey, that is Life Science Robotics, focuses its activity in the healthcare and hospital sector, a sector that is characterized by a considerable load of responsibility, as success or failure of a project (such as the delivery of a machine to a hospital before a certain date) directly affects people's health and life. It is also necessary to correctly classify the various categories of stakeholders, in order to interact in a profitable and constructive way with all the classes of people and entities that could influence or be influenced by such a project.

Learning from mistakes made in the past, analyzing the factors that have distinguished a project and making the best use of the knowledge acquired to optimally manage future projects, can consequently be indicated as the added value that a survey of this kind intends to bring.

Potential stakeholders and plans to involve these during the project

We ourselves are the **project organization**. We are a group of 6 persons and also have expectations towards each other. We are dependent on the cooperation of every group member. So everybody of us can influence the outcome of this project. Furthermore, the investigation is very important for us because we have to be approved to write the exam.

The **persons responsible for the course Applied Project management at NTNU** are the most important stakeholders in our investigation. They are the clients and we want to satisfy them, because they will evaluate the final report of this investigation and decide whether we are admitted to the exam or not. So they have a large influence on our investigation project and that's why we definitely collaborate with them. We can consult them with any questions regarding the project and our approach and we have to submit this pre- report to give them a good overview of our project.

The **company Life Science Robotics** itself is also a stakeholder in our project. They are very important for us because they provide us with a lot of information about their product and processes. On the other hand, they have a large interest in our investigation. We could help them to learn from the experiences of this project and to collect the experience data. We can also contribute to implement a standardized procedure for other projects in the company. We want to create a survey for the customers to measure their satisfaction. This can help the company to become better. Involving this stakeholder is mandatory and our strategy is to closely collaborate with them. We want to interview the CEO about the project and want to arrange regular meetings during the project development.

<table>
<tr><th colspan="2" rowspan="2">Stakeholder mapping</th><th colspan="2">Interests</th></tr>
<tr><th>Small</th><th>Large</th></tr>
<tr><td rowspan="2">Influence</td><td>Critical</td><td></td><td>- Project organization
- persons responsible for the course Applied Project management at NTNU
- Life Science Robotics</td></tr>
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Figure 1: stakeholder mapping of our investigation

Project risk assessment plan

A project risk assessment plan indicates the main risks and how are you going to address these risks. Project risk management is based on describing processes, analyzing, assessing and managing risks throughout the project life cycle. Obviously, excellent risk management increases the success of the project. It is therefore necessary to identify the risk, evaluate it, plan a response to the risk, monitor and control it.

First of all, our top priority is to be able to **deliver on time** under all circumstances. If we do not submit on time, we will not be admitted to the exam and will not get the ECTS points we need. This could mean that our studies are delayed and we do not receive the full amount of Erasmus funding. In the following we will describe possible risks, their impact on our workflow and how we try to contain them.

A serious risk could be that the **CEO of LSR is sick or not available** on the interview date. Autumn is the season for colds and so the probability that he will be sick is medium. Our project is based on that interview and if we can't do it in the planned time frame we are not able to deliver on time. So the consequence of this risk would be large. Therefore, we must ask him in advance whether he can appoint a representative in this situation. Otherwise we have to set a new appointment but this would lead to delays in the project process. As we are planning to hold the interview via an online platform, there might be **connection problems**. To minimise this risk, we should hold the interview at the university, because the Wifi-network called eduroam is very reliable. Due to the reliability of eduroam, we rate this risk as low probability. But if we don't solve the connection problem quickly enough, we can't ask all the questions in the limited time the CEO has, and so the consequence is rated medium.

One of us could also **get ill and thus not fulfil his or her part of the tasks** by the set deadlines. In that case, the sick group member should inform the others as soon as possible so that the tasks can be divided among them and that there are no delays. Because the others then would have more effort to complete the tasks, we estimate the extent/ consequences to be medium. We rate the probability of this risk also as medium because in fall and winter many people are getting sick.

Moreover there could be **discrepancies or communication problems within the project group**. That leads to a bad working atmosphere and endangers the project success because we can't do the tasks in the right quality or do not deliver on time. This shows that the consequences would be serious. In that case the project manager has the responsibility to mediate the conflict. To prevent this, the project manager must communicate a clear idea of the purpose and importance of the project to the project members in advance. However, the probability of this is low because we get along very well and already know each other from working on the hand-in assignments.

We use a cloud to edit our project data so that everyone is always up to date. In addition, everyone can see who has made which changes. But if **technical problems** occur, all our results could be lost or no longer accessible. The probability of that is low because Google Drive is very reliable, but if it still happens the consequence is dramatic and we can probably not deliver on time because we have to do everything again. Ideally, everyone should have a daily backup on their local storage to prevent a loss of data.

Probability	High			
	Medium		one of the team members gets ill and cannot deliver his/her tasks on time	no delivery on time CEO is sick
	Low		connectivity problems by the digital meeting	technical problems with cloud communication problems in the project group
Risk matrix		Small	Medium	Large
		Consequences		

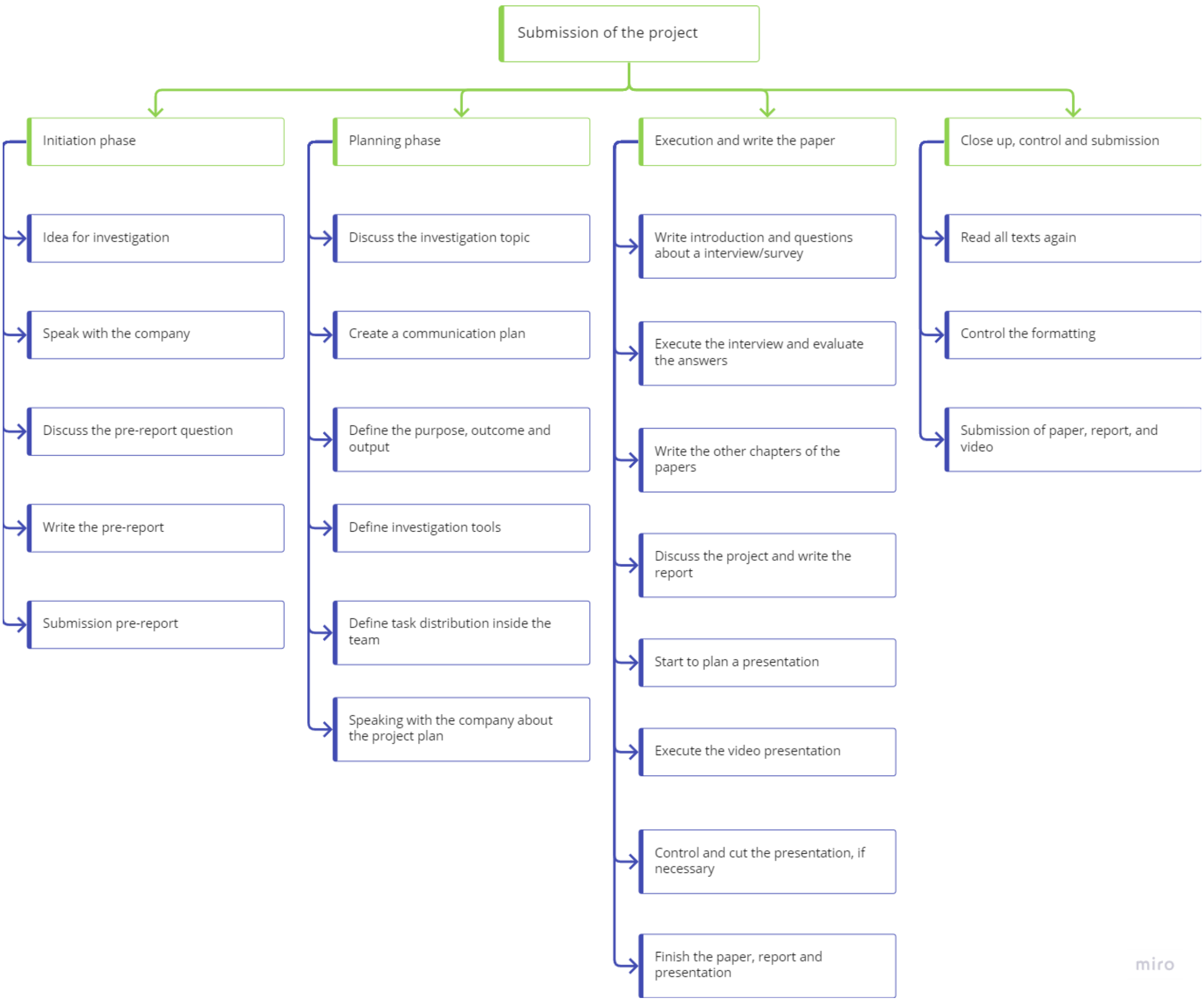
Figure 2: Risk Assessment of our investigation

<u>**Skills the project team needs and how we will acquire these**</u>

To carry out the investigation we need to acquire some specific skills. First, it is important to do good research. We need to be well informed about the company and its product. To understand exactly what the company does, we should look to their communication channels (website, Instagram, Facebook). Additionally, we should be familiar with the topic of rehabilitation robots and so we should maybe read some literature. Newspaper and press articles could be also helpful to get a better overview of the company. Then we must know how to collect all this information. We plan to interview the CEO of Life Science Robotics. To conduct a good interview, we can read previous interviews or watch videos of them and study literature on different interview methods. We also want to create a questionnaire for the company to evaluate their customer satisfaction. For this purpose, we need to acquire knowledge about what a good questionnaire should look like. There are different techniques to create questionnaires related to the respective situation. We should read the literature and evaluate which one is the best for us. Throughout the process we should act as a team and communicate well. When we worked on the Hand In Assignments, we already gained our first experiences and found ourselves as a team. We should be familiar with the aspects of good project management in order to be able to analyze the project in this respect. For this we will use literature and our lecture notes. To present our investigation results we need to be able to write a report. Again, we can use literature to know how to write a good report.

Project breakdown structure

This is the project breakdown structure divided into one main deliverable: Submission of the project and other four sub-deliverables: Initiation phase, Planning phase, Execution and Close-up. In turn they are split into work packages that represent different tasks which have to be completed in a defined right time.



Project schedule

Inside the project group, we decided to use a plan driven project life cycle model because we know all specifications and requirements for our project. This model has four phases and in between these phases decision gates. These decision gates have three different options which are to continue, to go back and rework something or to stop the phase. The characteristics of this project life cycle model are that the amount of work at the beginning is low and increases in the second and third phases and decreases in the last phase again. This means that most work is during the execution and control phase. Moreover there are a lot of uncertainties in the first phases of this model but they will decrease because of the knowledge that the project team gains over the project life cycle.

Our project started with the **initiation phase**. After our decision to execute an empirical investigation, we collected ideas for a possible topic for our paper. After we had an idea for a topic, we spoke with a Danish company with whom we would like to work. After we had the company's commitment to work together, we discussed the questions for the pre-report and split up these inside the group. After all Team members wrote their answers and copied them into the final document, we submitted the pre-report inside the deadline on blackboard.

After we finished the initiation phase, we decided to continue our work and start the **planning phase** right now. Therefore we will discuss the investigation topic again and more in detail. We also will create a communication plan where we define how we communicate with our stakeholders and inside our project teams. This is very important for the project. After the finish of this plan, we also define and indicate the purpose, the outcome and the output of our project. Another important decision is which investigation tools we want to use for our paper. This will be decided in the planning phase too. After we define all points and create work packages for our project, we will distribute this work and the responsibilities inside our project team. At the same time as the task distribution inside the team, the project manager will speak with the company and present our project plan to them.

After this presentation and the approval of the company, the **execution and writing phase** of the paper will start. At first the responsible member will write the introduction. The other members who are responsible to create the survey and the interview will think about the questions for both investigation tools. After that they will deliver the survey to the company and furthermore execute the interview with the CEO of the company. If both tasks are finished the team members evaluate the answer and include them in our investigation paper and work on the other chapters too. During the whole time of the execution and control phase the project manager will stay in contact with the company and the responsible employees to inform them about changes and have an open ear for their wishes or comments. In the middle of the execution and writing phase the project team will discuss the question for the report which must be submitted at the same time as the paper. Moreover, some members who have already finished their chapter will write this report. Besides the paper and the report, we have to submit a 5-minute video presentation about our investigation topic.

This presentation will also be planned in the middle of the execution phase and the responsible members will write the script for it. After the execution of the presentation, the video will be controlled and edited if necessary. The paper, the report and the video will be finished on 28.10.2022.

After this important project deadline, the **close-up and control phase** will begin. At first the project group will read all texts again and also rewatch the video together. Moreover they will control the formatting of the paper and the report and fix some parts which are not correct. Finally the project manager will submit the paper, the report and the 5-minute video presentation on blackboard on 03.11.2022. In the appendix to the pre-report you also find the actual project schedule which the start and finish times and the progress of each task (status from 01.11.2022).

Important success factors

The definition of project success criteria is one of the fundamental points to evaluate the success or failure of a project. In the case of our survey, the project success criteria could also be highly correlated to the project management success criteria.

In fact, one of the criteria that our group considers most relevant for the success of the project is the completion of the survey within the foreseen time frame; these deadlines are not only dictated by the course calendar, but also by a schedule that will be drawn up internally by the group, in agreement between the various team members. Therefore, maintaining a rational and efficient organization, as well as a fruitful and constant dialogue between all the members of the group, could be considered an essential element to measure the success of the project, as it can make it possible to exploit the skills and potential of individuals to achieve the best possible result.

Furthermore, another element that will influence the success of the project will be the added value and knowledge that will derive from our investigation; as mentioned previously, the main outcome of our work is to be the necessary experience and learning that can be applied to better manage future projects. In order to affirm that this project has been successfully completed, the knowledge and skills acquired by us during it should be usable in the course of our working life and not, such as the ability to interact and dialogue with people with different points of view.

Roles and responsibilities in the project

An important point for a good and successful project is a clear distribution of the roles and responsibilities inside the project team. The most significant role is the project manager. He or she is primarily responsible for the successful completion of our project. The main tasks are to ensure that the project proceeds within the specified time and the budget which we don´t have in this case. He or she also makes sure that the project has enough resources and manages the relationship with contributors and stakeholders. Moreover the project manager is responsible for developing a project plan and managing all deliverables according to this plan. He or she leads the project team and establishes a project schedule. Furthermore the project manager assigns tasks to the team members and communicates with the upper management or in our case the company and sometimes the university. The project manager is Amalie Frederiksen.

The team members are also very important for the success of the project. They work actively on one or more phases of the project. The responsibilities of the members can vary according to each project. But they often include the completion of individual deliverables and work packages and providing expertise. The members can also work with the users and stakeholders to establish and meet business needs and execute interviews with them. A big part is the documentation of the process and the work of each member so that no knowledge or idea is lost. The team members in our project are Alexa Diana Schubert, Clarissa Werner, Michele Chiantera, Germano Ianniello and Mattia Sarti.

Communication plan

The communication plan should keep stakeholders informed and give them the opportunity to provide feedback and a clear insight into the processes. Good communication planning will contribute to smooth project execution and avoid failure. In the table below we listed the main stakeholders. For every one of them we determined the deliverables, frequency, priority and the preferred way to deliver.

Main Stakeholders	Life Science Robotics	Project organization	University
deliverable	Present interim results (what's been completed and what's in progress) and next steps list approval, questions status report about relay timeline	all important information of the project	pre-report, finished paper, report and video presentation and questions
frequency	periodic virtual meeting and status report every monday	weekly	at the beginning and the end of the project and if needed

priority	very high	high	medium
preferred way to deliver	virtual conference call via MS teams and email	meeting (in-person) communication channel: WhatsApp file sharing: Google Drive	blackboard and email
notes	communication style: more casual, not formal		

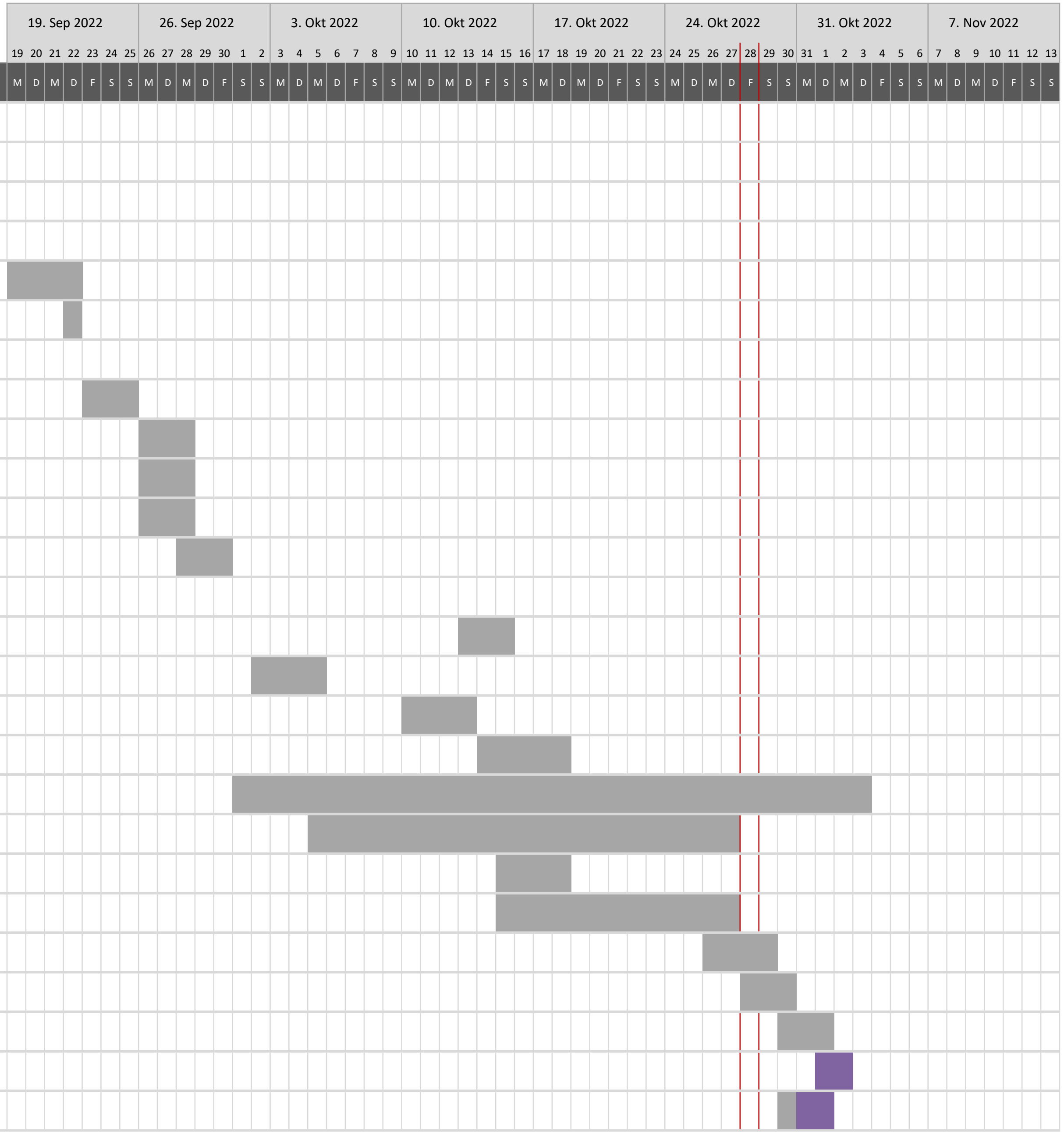
Applied Project Management

NTNU Trondheim
Group 11

Projectstart: Mo, 12.9.2022

Number of display weeks: 2

TASK	Assigned to	PROGRESS	START	FINISH
Initiation Phase				
Idea for investigation	All	100%	12.9.22	15.9.22
Speak with the company	Team member	100%	15.9.22	16.9.22
Discuss the pre-report questions	All	100%	16.9.22	18.9.22
Write the pre-report	All	100%	18.9.22	22.9.22
Submission pre-report	Project manager	100%	22.9.22	22.9.22
Planning Phase				
Discuss the investigation topic again + create communication plan	All	100%	23.9.22	25.9.22
Define the purpose, outcome and outputs	All	100%	26.9.22	28.9.22
Define investigation tools (interview or survey)	All	100%	26.9.22	28.9.22
Task distribution inside the project team	All	100%	26.9.22	28.9.22
Speaking with the company about the project plan	Project manager	100%	28.9.22	30.9.22
Execution and write the paper				
Start to write introduction	Team member	100%	13.10.22	15.10.22
Create the questions for the interview	Team member	100%	2.10.22	5.10.22
Execute the interview with the company	Team member	100%	10.10.22	13.10.22
Evaluate the answer and include into the paper	Team member	100%	14.10.22	18.10.22
Stay in contact with the company	Project manager	100%	1.10.22	3.11.22
Write the other chapters for the paper	All	100%	5.10.22	27.10.22
Discuss the project and the questions for the report	All	100%	15.10.22	18.10.22
Write the report	All	100%	15.10.22	27.10.22
Start to plan the 5 minute presentation	All	100%	26.10.22	29.10.22
Write the script for the presentation	Team member	100%	28.10.22	30.10.22
Execute the video presentation	Team member	100%	30.10.22	1.11.22
Controll the video if necessary	Team member	0%	1.11.22	2.11.22
Finish the paper, the report and the prese	All	50%	30.10.22	1.11.22



Number of display weeks: 2

19. Sep 2022 | 26. Sep 2022 | 3. Okt 2022 | 10. Okt 2022 | 17. Okt 2022 | 24. Okt 2022 | 31. Okt 2022 | 7. Nov 2022

TASK	Assigned to	PROGRESS	START	FINISH
Close up, Control and Submission				
Read all texts and watch video again	All	0%	1.11.22	2.11.22
Controll the formatting	All	0%	2.11.22	2.11.22
Submission (the paper, the report an the video)	Project manager	0%	3.11.22	3.11.22
Add new lines above this one				

Appendix 2: Our investigation paper

Norges teknisk-naturvitenskapelige universitet
Institutt for maskinteknikk og produksjon
Fakultet for ingeniørvitenskap

TPK5100 - Applied Project Management

Fall semester 2022

An investigation paper with the topic:

Analyse and optimize different processes of the Danish start-up company Life Science Robotics in the expansion of its business

Deadline: 03.11.2022

Team members Group 11:

Alexa Diana Schubert
Amalie Frederiksen
Clarissa Werner
Germano Ianniello
Mattia Sarti
Michele Chiantera

Abstract

The aim of the present paper was to analyze and optimize processes and strategies of the danish company Life Science Robotics which was founded 2014 and sells rehabilitation robots. Therefore we interviewed the CEO Keld Thorsen and asked general and more specific questions. In the end, we also provided some advice to correct and improve critical issues that emerged during the interview with Keld Thorsen, trying to link our previous knowledge and experiences to academic and scientific literature. It became clear that Life Science Robotics had major acceptance problems when the robots were launched. One reason for this was the lack of cooperation with key stakeholders. So far, there is no clear process for stakeholder management. Therefore we recommended a stakeholder mapping that includes a classification of stakeholders and specific strategies for working with them. Due to the desire to expand in the next few years, we have provided measures to become better known, for example setting up a specific team of social media managers. In addition, we determined that the right choice of strategy for entering a new market plays an important role in the expansion process. We figured out that the best strategy is the hierarchical mode, in particular the domestic-based sales representative. Regarding the timing of the market entry, it is recommendable to choose the waterfall strategy.

Table of Contents

1. Introduction

In this paper, we want to investigate how the company called Life Science Robotics managed the market entry, the sales processes, and the relationship with the stakeholders. But first, we would like to introduce the company.

The Danish company Life Science Robotics, also called LSR in the paper, was founded in 2014 and creates innovative robotics within the healthcare sector. The idea for the technology developed because healthcare workers, especially physiotherapists, face daily challenges for example heavy lifting in relation to the rehabilitation of patients. Therefore the company specializes in rehabilitation robots and develops ROBERT®, a new revolutionary robot designed to improve the mobilization of patients in hospitals and rehabilitation centres.

Since its founding the company has grown and got a new CTO in 2017. One year later the top management decided to rename the firm from Robert to Life Science Robotics. The reason for this step was the focus on expansion and internationalisation. In this year also the actual CEO and investor (shareholder), Keld Thorsen, joined the company. In the following years, the company expanded its international network quickly and was represented in Austria, Finland and many other European countries. In 2019, the first robot was also successfully installed in a hospital in Denmark. Installations were also made in Germany last year and moreover the company could close four new agreements with large German hospitals and clinics over a period of three weeks.

The aim of the company is to provide a better and more sustainable working environment for professionals working with the rehabilitation of patients. In this case, a sustainable working environment means achieving working conditions that support people in engaging and remaining in work throughout extended working life (Eurofound, 2021). The robots relieve physiotherapists of the physical strain and thus contribute to a better health of these healthcare workers because ROBERT® can do the heavy lifting for them in the rehabilitation process. The company also supports environments and organizations that focus on research and innovation and also wants to get educated by the healthcare community to make their products better.

In conclusion Life Science Robotics is a start-up with an innovative idea to support the healthcare sector. They have already succeeded in establishing themselves on the market, but the company will continue to grow and change the work of physiotherapists for the better.

The motivation for our investigation is that the healthcare sector will become more and more important in the coming years and that digitalisation will continue to advance there as well. In this context, robots can help the staff to perform their work even better so that all patients can be satisfied quickly in the future. Therefore we think it is important to analyse and optimize the problems of the company Life Science Robotics to help them to internationalize quicker in different countries and make the new technology accessible to all.

Our investigation includes an interview with the CEO of the company, Keld Thorsen. We will ask him questions about Life Science Robotics in general, the relationship with the stakeholders and the market entry in Denmark and in other European countries. We aim to identify problems which we would like to optimize in the following chapters. In the end we want to present our results to the company and help strengthen the relationship with their stakeholders and prevent common problems when they would like to enter new markets in the future.

2. Explaining different theoretical basics (Literature review)

2.1 Strategies for entering a market

The literature divides three different modes of how a company can enter a new market. The first mode is called **export mode** and can be split up into an indirect or direct export mode (Czinkota, 2013). In the indirect export mode, the company that wants to internationalize its business across the domestic market works with an export agent company in its home country. This agent company goes with the product across the country borders and does the marketing and the sales in the foreign market. In the direct mode, the company goes across the border and works with an agent company or distributor in the foreign market. This mode implies a low risk for the company but also a low control of the products marketing and sales in the new market. Furthermore the company cannot build up a relationship with its customers in the new market but the flexibility is very high. This means that the company can exit the new market very quickly if new customers do not like the product.

The next mode is the **hierarchical mode** which can be divided into two options. A domestic-based sales representative is the first possibility of how the company can internationalize in this entry mode (Czinkota, 2013). This means that an employee of the company travels from the home market of the company as a representative in other foreign markets and tries to find new customers there. The other option is the resident sales representative. Here the employee of the company resides in the foreign market and travels through the country. The advantage of this option is that the representative lives in the foreign market and therefore knows the traditions and what products the people like, but this entry mode is connected with high risk and high costs/capital for the company. The control over the marketing and sales process is much higher than in the export mode but the flexibility to leave a market quickly is very low.

The last mode to enter a new market is the **intermediate mode** (Czinkota, 2013). It is in the middle between the export and the hierarchical mode. The risk, the flexibility and the control are in the middle range. Examples of this mode are licensing where the usage of rights transfers from a licensor to a licensee or franchising where the franchisor also exchanges rights with the franchisee and he also can use the total business concept of the franchisor.

After the company decides on one entry mode the timing of the market entry is also very important. Therefore the literature defines two different timing strategies. The first one is called the **waterfall strategy** and with this, the company starts to enter a new market in one country and the other will follow step by step over the months or years (Czinkota, 2013). The advantage of this strategy is that the risk is not so high at the same time and the marketing process can be adjusted when the company perceives that the concept does not work in foreign countries. The negative point is the risk that competitors can enter the market before the company can do it. The **shower strategy** is the second possibility of a market entry and here the company enters all foreign markets at the same time (Czinkota, 2013). The advantage is the establishment of an entry barrier for competitors in these countries, but this strategy needs many financial and human resources in a short time and the risk of failure is very high. Risk in general is a very big point in entering a new market and therefore we will focus on this topic deeper now.

From the interview with LSR's CEO, one can infer the company's willingness to expand globally and enter new markets; however, even according to Keld Thorsen, there are a number of factors to consider. First, the scientific literature highlights how these factors can be divided into internal and external (Shaw, 2018).

Internal risks for market entry are related to the organizational structure; they are very often more predictable than external risks, thus more manageable. Management and organizational errors are usually a consequence of an unclear vision of leadership, radical changes in the company's management staff, and lack of coordination between departments; goals, in fact, should be communicated effectively to each team member, so as to avoid the emergence of conflicts and confusion, and it would be advisable trying to reduce the organization's dependence on the work of specific individuals. Other obstacles may be technological and logistical in nature, also related to the difficulty of knowing how to correctly assess the goodness of an investment (in technology or infrastructure) and the uncertainty of future cash flows; in particular, this obstacle could be significatively relevant for a young company without a sophisticated forecasting system such as LSR.

External risk factors are more difficult in nature to predict and manage, even having a precise plan of action. These factors can be cultural, like language, economic, and cultural barriers between the company and local communities, which may then be distrustful or may not be the most suitable customers for the business; in addition, also political and legislative factors should be considered.

Indeed, it is necessary to know the legislation of the state in which you intend to expand your business; in the case of the European Union, for example, the legislation regarding the use of personal data is very stringent (Europe's GDPR law), while in developing countries the laws may not be well defined and may be subject to gaps or ambiguous interpretations.

These problems are also related to political contexts that are not always stable (geopolitical tensions or frequent changes of government tend to adversely affect business) or political classes unwilling to support the company's mission and grant permits and funds where needed.

2.2 Stakeholder mapping

The model we use to classify our stakeholders is built like a matrix with four parts. On the x-axis is the interest of the stakeholders in the project. This interest can be small or large. How much influence the stakeholders have in our project can be found on the y-axis. This influence can be critical or marginal.

In the **first group,** the stakeholders have critical influence and a lot of interest in the project. The project is critically dependent on these stakeholders. Therefore it's a good strategy to collaborate with them and not do anything without their consent. For this category, it is also important to involve and motivate the stakeholders to maintain a stable and constant dialogue.

In the **second group,** the influence of the stakeholders in the project is critical again but their interest level is just marginal. The right strategy here is to satisfy the small concerns of these stakeholders to maintain their support. It's also important to find compromises if they are not cooperative.

The **third category** of stakeholders is characterized by a low level of influence but a huge level of concerns and expectations related to the project outcome. Their approval is not so important for the project’s success, but it would be recommendable that a constant flow of information be exchanged to reach a transparent level of communication, to reaffirm that their concerns are being considered and to lower the resistance to changes. Moreover it is important to have a look at this group because sometimes these stakeholders can switch their positions and can become more influential in the project.

In the **fourth and last group,** the influence of the stakeholders is marginal and the interest level is low. These stakeholders should be monitored during the project and it's important to keep an eye on them because they can also change their group and can negatively affect the outcome and workflow of the project.

Finally, we can say that it's important to classify the stakeholders and follow the recommended strategies to work with them to reach the project outcome and project success.

<table>
<tr><td colspan="2" rowspan="2">Stakeholder mapping</td><td colspan="2">Interests</td></tr>
<tr><td>Small</td><td>Large</td></tr>
<tr><td rowspan="2">Influence</td><td>Critical</td><td>• Second group
• Strategy: Satisfaction</td><td>• First group
• Strategy: Collaboration</td></tr>
<tr><td>Marginal</td><td>• Fourth Group
• Strategy: Keep an eye on them</td><td>• Third group
• Strategy: Inform</td></tr>
</table>

Figure 1: Illustrate the four groups by Stakeholder mapping

3. Method

Once we had an overview of the company and the general topics about it we had to focus deeper on our purpose for the project. First, we had to find some information about the company, so we got a general overview through their website in order to know which are their main products, distributors and feedback from their main stakeholders.

It was immediately clear what their final purpose was, selling their main product which is ROBERT®, which provides a complete and flexible solution for rehabilitation. Therefore, our main focus was to analyze some potential problems that could affect this business like:

- Selling process
- Logistic optimization
- Finding and collaborating with stakeholders
- Entering the market

At this time we had to decide which was the better method to get some information about the company and the previous points.

We had two main ways of conducting our work:

1) **Surveys** are useful because they allow a researcher to collect information on many people, and they can be developed in less time (compared to other data-collection methods), but anyway there is a bug issue about this method, it can lead to dishonest or inaccurate information about participants, in fact the biggest problem with surveys is that people are inherently subjective, not objective, when they respond. Furthermore typically they operate on a sample size approach where a subset of people in the overall population are invited to respond. Even when everyone in the group is invited to respond, typically only a proportion will do so with the result that they often have a low response rate.

   Eventually they are good for capturing simple information in numerical or short-text form, which was not what we wanted.

2) **Interviews** have a higher response rate, probably because people feel like it’s easier to answer a question verbally than it is to write it down and it fits well for capturing discursive or complex information on participants’ thoughts, feelings, behaviors and beliefs. Nevertheless, this method requires a time commitment and effort to conduct, transcribe, and analyze the interview.

After these considerations, we conclude to do the interview because we think this is the best strategy for our goals. Therefore, we decided to contact Keld Thorsen. At the beginning of our first meeting he came across as very helpful and according to him, we fixed a video call for the following days. Furthermore, with this method we had the opportunity to have a direct confrontation and get knowledge and interesting insight from inside the business.

We prepared some questions to send to him before the interview in order to have better answers at the moment of the meeting, so we divided the question into two main groups: general questions and specific questions, where the latter were more important to us. The general questions were about learning more about the business environment. Instead, the specific questions covered more important topics to identify which situation we could analyze and improve. We also recorded the video call so we can recap information in the following days.

Once we had the data ready for our investigation, we decided which topics we should focus on and analyze. Our aim is to improve LSR's processes in order to help them become a prestigious company in the healthcare robotic solutions on an international level. We also tried to understand which will be topics that will affect this business in the future.

Finally we had a clear vision of what the project should be about and which kind of topics we should focus on.

4. Findings

In the interview, the CEO Keld Thorsen starts by introducing himself. He studied Industrial Engineering in Denmark, since he has worked and lived abroad for many years and had a lot of experience in the top management of companies. He then takes us through the sales process, strategies and how they managed their challenges of starting up Life Science Robotics with ROBERT® as their product. The following references are based on the interview with Keld Thorsen which can be found in **appendix 6.1**.

When Life Science Robotics started entering the Danish market, it was challenging to get acceptance from the professionals in the beginning. The CEO, Keld Thorsen, mentioned that the professionals, for example physiotherapists, were very skeptical when they were introduced to ROBERT®. The physiotherapists are an important stakeholder since they are the ones who are going to manage and use ROBERT® in the hospitals in the future. “There was a lot of conservatism in the healthcare sector” Keld Thorsen added, and the professionals were not trusting the new technology when it was introduced. A reason for this was the fact that a lot of physiotherapists preferred to do the manual work by hand. Some physiotherapists were already satisfied with the tools that were already introduced at that time. Therefore, it was a challenge for LSR to get acceptance from the professionals and this came as a surprise for the company. Keld Thorsen mentioned “It has been a struggle to get acceptance among the professionals”. Another reason for this is that the physiotherapists are afraid to lose their job if they think ROBERT® is going to replace them and they will end up without a job. This is far from the truth according to Keld Thorsen. The physiotherapists and other professionals still have to decide what rehabilitation the patients need as well as manage ROBERT®.

On the other hand, we have the patients who are important stakeholders too. The patients and their relatives have been satisfied with ROBERT®. On the website of LSR, it is clear to see in the testimonials that the patients and their relatives are very satisfied. One patient specified that rehabilitation with ROBERT® was the reason his mobility and ability to walk improved, and other patients also acknowledged ROBERT® for their physical progress in rehabilitation.

When Keld Thorsen looked back, he mentioned what LSR could have done differently to prevent this challenge with conservatism and skepticism from the professionals. They could have worked closer with key opinion leaders within the healthcare sector. These key opinion leaders are also their biggest stakeholders. In order to create acceptance from the beginning, the key opinion leader could have helped with expertise, because they are very respected and acknowledged within their field.

Keld Thorsen is positive about this challenge now and according to him, it is very hard to implement new ideas and technology in the healthcare sector. This was also an external risk which was not in the company’s knowledge. A few years have already passed since LSR introduced ROBERT®, and today the conservatism and skepticism are still there but it has been reduced.

In the interview, Keld Thorsen mentioned the reason why he believes LSR can grow greatly. In the future there will be a higher demand for healthcare workers and professionals in the hospitals. This is due to the demographic challenge of more people getting older while less young people choose to get an education within the healthcare sector. This challenge is something the politicians are currently trying to solve, and that is why the politicians are very important stakeholders. Keld Thorsen points out “The two far most important stakeholders are key opinion leaders and politicians”. The reason why is that the politicians have the power to influence and make changes, he says “Politicians start to influence the decision makers for example doctors, key opinion leaders etc.”. Their task is to solve this demographic challenge and LSR could be a part of this solution. Keld Thorsen mentioned that the politicians have already started to approach them because ROBERT® would help out the healthcare workers at the hospitals, so they are able to treat multiple patients at a time.

Along with the demographic challenge in the future also comes the digital transformation. As Keld Thorsen mentions in the interview “We drive the digital transformation”. LSR aims to digitalize the manual work of healthcare workers and they strive to become even more digital. Now they already have an interface where all the data from the patients automatically goes into the patient’s journal. He also mentioned that they are basically a software house and that is why they have great knowledge. Digital transformation for LSR is their business opportunity and their business model.

LSR's mission is to create added value for physiotherapists. “It’s in our mind every day”, he pointed out. To achieve this, they update their strategy every half a year. In order to control activities and projects, they use a roadmap over three years, working through the tasks quarter by quarter.

LSR currently produces 25 to 30 robots per year and their forecasts are based only on personal beliefs. Keld Thorsen mentioned that the average lead time of the robots changed a lot in the last 12 months. They had big problems because of the long delivery time of the electronic components. LSR wants to expand its business within the next few years. To produce a higher number of robots per year forecast methods will be necessary to ensure a continuous production. “We cannot wait until we have an order to start buying products and components”, Thorsen mentioned.

The issue of sustainability becomes more and more popular and obviously plays a major role in the development process of LSR. They take the so-called ESG criteria into account in all its processes, i.e. criteria from the areas of environment, social affairs and governance. Regarding the environment LSR itself has an impact on the lifetime of the robot, as well as on the power consumption of the product and its manufacture. Thorsen said that the challenge is to develop the robot in a way that reduces power consumption.

When we talked about Risk management, Keld Thorsen underlined that the main risk is uncertainty about the customer’s needs. For this reason, they always involve three independent physiotherapists from different directions in the product development process. They never launch a product without the approval of these physiotherapists.

To receive feedback from end users later on the robot's performance, they have a post-market surveillance system. The customers are the key opinion leaders for LSR and therefore, he emphasised, especially the relationship with them is very close. Before they are allowed to work with the robots, they get an introduction course two times four hours to get a diploma. After implementation LSR needs to ensure that the professionals use the robots correctly. "We visit them a minimum of 4 times a year", he said. During the COVID-19 pandemic the hospitals were closed for visitors and LSR had to look for other opportunities to stay in contact with the professionals. Since they couldn't be physically in the hospitals, they had to do the training and control in a digital way. This way of communication seemed to work well and so they decided to do the first meeting digitally in general.

LSR's next step will be to get into the German and US markets. In order to gain new selling partners, they try to find companies that develop complementary products to ROBERT® and are therefore not competitors. Furthermore, these companies need to be ISO certified. They also need to take various measures to become better known. A very effective way is to introduce the robot at conferences, where many professionals are present. Videos and testimonials from physiotherapists and patients are also used to bring the purpose of the product closer. While printed media is becoming more and more extinct, LSR relies on publicity through social media. "Printed media is dead", Thorsen said. On the social media channels there are several influencers who inform about new technologies in the health sector, and this helps LSR to become better known. LSR spent about ten percent of its sales into marketing.

We asked ourselves whether the robot can completely replace the work of physiotherapists. Keld Thorsen clearly denied this. The robots are only the ones who do the work, but the physiotherapists have to make the decision about the treatment of the patients. In addition, the robots open the possibility for physiotherapists to treat several patients at the same time. For patients they allow receiving more treatments. Finally, we wanted to know where he sees LSR in 20 years from now. "We are a global provider right now", he described the success of the company so far. As for the future, he left the question open and mentioned that he could imagine a change of ownership that would take the company to a new level or make it part of a larger one.

5. Discussions and conclusions

The goal of this chapter is to try to provide suggestions for problems or possible challenges as mentioned in the chapter above. Initially, we will focus on analyzing how to involve stakeholders more with the goal of increasing acceptance and gradually reducing the skepticism generated by entering a completely new market. Afterwards, we will provide our considerations to try to implement some processes and services regarding technological development.

First of all, as a result of the interview with Keld Thorsen, it became apparent that LSR company had not distinguished stakeholders through "stakeholder mapping" and thus their resources were being deployed exclusively in a qualitative and intuitive manner. For this reason, we investigated that one of the possible solutions to increase their acceptance could be to divide and rank them through an analytical and quantitative approach, so as to establish priority channels, devoting a different budget (in terms of time, money, resources) to each of them, focusing more on those most important to the project. Another suggestion could be to offer a trial period to hospitals, to familiarize them with the new product, during which frequent meetings could be held with the company, in order to exchange feedback and suggestions for improvements. This trial period could be complementary to the training courses already provided by LSR.

It can therefore be said that a primary objective of the company is to grow by becoming more and more known in the sector, and then expanding into new markets. With regard to this issue, it might be advisable to increase the funds allocated for marketing and advertising, which currently represent about 10% of the overall budget; the company is currently already adopting this strategy, as it presents an active profile on various social channels, such as Instagram, LinkedIn, Facebook and YouTube. In addition, a specific team could be set up, with social media managers, for the management and constant updating of the aforementioned channels. The company, among other things, plans to start a collaboration with famous influencers, to try to lower the wall of mistrust between new robots and patients.

However, it is important to underline that the aim of the proposed technology is not to replace human intervention but to constantly support it and try to treat a greater number of patients at the same time.

It could be advisable that the best strategy for entering a new market is the hierarchical mode, in particular the domestic-based sales representative; it means that an employee of the company travels from the home market of the company as a representative in other foreign markets and tries to find new customers there. Another option is that the employee of the company resides in the foreign market and travels through the country. LSR could therefore have advantages like better control of sales activities and close contact with large customers in foreign markets close to the home country.

After deciding on the entry method, it is also important to consider the timing of the market; it could be advisable to use the waterfall strategy. One of the advantages that can be obtained from this strategy is that the risk is not very high, at the same time the marketing process could be changed when the company perceives that the concept does not work abroad.

From the logistical standpoint, since the company has a very qualitative demand forecasting system, which is quite common for young companies, we would like to recommend a more precise system of data analysis that also considers the objective of expanding the business in new markets. In this regard, there are valid alternatives on the market; for example "Streamline" could help LSR to produce a more precise number of robots and, subsequently, to allocate the budget more effectively.

To conclude, even considering the statements made by Keld Thorsen, it can be said that LSR, a company that bases its business on highly specialized robots and new technologies, has good margins for growth, since digital transformation will increasingly have a greater impact on people's life.

As a matter of fact, according to the CEO, the company will assume an increasingly global position in the coming years, covering greater market shares in other socio-economic contexts than European ones. If these predictions prove correct, in the future the company may decide to expand its set of technological and digital offerings by broadening its horizons.

6. Appendix

6.1 Notes from interview with CEO of "Life Science Robotics" Keld Thorsen

Introduction

Can you shortly introduce yourself, please?

- studied Industrial Engineering at DTU in Denmark
- worked and lived abroad after graduation (for example Germany, Hong Kong or Indonesia)
- had many jobs in the top management of companies
- works as the CEO and Investor from LSR since April 2018

Since when are you the CEO of this company now?

- For 4 years

Why did you decide to invest in this company? Why this specific area? Do you think it can grow a lot?

- He was always interested to invest in a company to be a part owner and got an opportunity there
- He like the combination between robotics and medicine
- Robotics have a future in health-care sector
- New start-up company
- It can grow but not as fast as he thinks, but it will be growth

In your opinion, how can LSR contribute to technological development?

- New production who nobody others have a product right now
- Create value for your users → it's very important (if you cannot create values it's not profitable)
- technological development as a main driver

What were the opinions and feedback from the market (hospitals) when you started selling the robots?

- Not really good and this was a surprise for him
- It takes a long time to implement new ideas in the health care sector (very conservative)
- "It has been a struggle to get acceptance among the professionals" → It's coming but it takes a long time.
- Professionals think that the robot cannot make their job better or equal to theirs and are afraid whether they have a safe job in the future. They don't understand that it is rehabilitation on a new level. → "There was a lot of conservatism in the healthcare sector"
- Stories and testimonials on the website are very important to show the success of the robots and create more acceptance
- Great acceptation from the patient

Specific questions

What is the average lead time (from the purchase confirmation by the client to the product arrival in place), and which are the main variables that affect its variability?

- Changed a lot over the last 12 months
- Last year: 8 weeks
- Now: 25 weeks because of electronic goods (planning without this can be a risk → inventory management)
- It will go down next year he thinks

How do you organise the logistics process?

- "We cannot wait until we have an order to start buying products and components"
- No tool to forecast demand, based on knowledge of the CEO
- 25 – 30 robots a year / order in batches of 10 / do their own estimate how long will this batch cover the demand
- 2 suppliers (one from Germany)

Which tools do you use during the selling process to coordinate the orders, the manufacturing jobs and the delivery and in the project management?

- Microsoft project / ERP system

Do you use methods to forecast the demand?

- Personal belief/ knowledge of the CEO
- No tool → maybe improvement if the demand will become higher in the next years

How do you control activities, investments, and decisions, to ensure that everything is based on the vision and mission of your company?

- Every half a year they take their strategy up again and update vision / how to create value for physiotherapies → "It's in our mind every day"
- Roadmap over 3 years / development quarter by quarter / 3 new product development projects are possible because of the size

What have been the biggest challenges of expanding/ internationalising LSR globally? Could you have done anything differently to prevent these?

- To create acceptance
- He should have worked more with key opinion leaders to prevent the unacceptance
- He would also change this if he would did it again and would work more with doctors to get acceptance
- This would have been a more effective way than how it went now

Considering one or more projects carried out by LSR, which were the main risks? How were they assessed (project risk assessment plan)?

- Main risk: don't really hear what the clients want
- That's why they always have 3 different physiotherapists in a project development meeting from different directions
- Only launch a product with the approval of these 3 different physiotherapists

Is there training for the hospital staff so that they know how to work with the robot? Which competencies do they have after the introduction of the robots?

- 2 times 4 h to get a diploma
- After the training, they can work independently and also can teach others

How do you create a maintenance process and do you have technicians who can repair the robot in the hospital?

- Big income streams for money
- Preventative maintenance once a year based on health tech regulations
- Work with distributors because they don´t have enough money do to this yourself
- Maintenance contract: monthly fee for the customer

Do you check the status of the robots after a fixed time or just when there is a request? Do you have a forecasting method to know the probability of the failure of the product?

- Prevent maintenance
- No, they don't really have a forecast but they have a post market surveillance system to get feedback and do forecast based on that

Do you have reverse logistics when the products have finished their lifecycle, and how important is it for your company?

- It's becoming very important
- Refurbishment scheme → sold second-hand unit

How is the concept of sustainability implemented in one or more projects that the company carried out? Which were the main challenges?

- Main influences on sustainability: power consumption (challenge: how to create the products to get the power consumption down) and life time of the product → these two aspects LSR can impact
- ESG criteria

How are the relationships with customers, suppliers and partners?

- Very close especially to the customers → "We visit them a minimum of 4 times a year" (make sure they use in the right way)
- Always good to have a close relationship
- Social media influencers

How does LSR deal with the different categories of stakeholders? Which strategy do you adopt with every category (involvement, keeping informed etc.)?

- "The two far most important stakeholders are key opinion leaders and politicians"
- "Politicians start to influence the decision makers for example doctors, key opinion leaders etc."
- Interesting for politicians: Demographic challenge → many people are getting old and there are no young people coming into the health-care sector, so this is becoming more and more important for politicians. → more people who need care, less people who take care

How do you want to acquire new selling partners in Germany and in the USA?

- No structured way of doing this → normally independent consultants
- Simply talk with different people and then try to find products where the robots of LSR complement products and not competitors and then work with them

Which criteria do you consider for choosing new suppliers?

- ISO certification is important
- If they are not certified LSR needs to make audits every year → much money → so they prefer to use certified suppliers

What do you do to strengthen the relationship with your suppliers?

- motivate them

What measures do you take to become better known? What are the most used information and communication channels? (fairs, social media, ...)

- Social media → influencer who presents new products in the health sector or does inform about new technology that improves the future
- Videos on the website
- Conferences are very effective, because all the professionals come and get to know the product
- "Printed media is dead"

How much of your budget (in %) has been invested in the marketing process?

- Conferences also included
- 70 000€ → 60 000€ (close to 10% of the sales are invested in marketing)

How do you prepare yourself for the challenges of digital transformation? What are the new skills/competencies required of managers?

- "We drive the digital transformation"
- Interface with information about the patient for example
- Artificial intelligent
- They are actually a software house and that's why they have the knowledge (programmer for software etc.)

Future

Do you think that in the future the robot can completely replace the work of the physiotherapist?

- No, because they must decide which treatment the patient should get (physiotherapists are the decision maker about what the robot has to do with the patient)
- New opportunities: Several patients at the same time which is not possible until now (face-to-face treatment) and more training per week for patients

Where does Robotics Life and Science see itself 20 years from now?

- "We are a global provider right now" (Denmark, Germany, Austria)
- Change ownership (next phase with a new owner who can bring the company to the next level or maybe become part of a bigger company)
- Scale your business to develop your business

Further questions

What was your biggest challenge during Covid 19?

- Access to the clinic / customers (have to do video meetings and presentations) → new opportunity because clinics start to accept video meeting but some only focused on the daily business and were not ready for new products and projects
- Not high impact on delivery time
- Training and application also with video meetings
- Pandemic leads to change in presentation mode: first presentation is always by video (less travelling and thus saving costs and time), second meeting can then be on site with clients

Do you prioritize your stakeholders?

- e.g. distinguish between university hospital / regional hospitals / clinics → they want to go to the clinic with the greatest prestige

7. References

Boyd, N. (2021).”Surveys, Interviews, and Case Studies.” Research Methodology and Statistics, https://study.com/academy/lesson/surveys-interviews-and-case-studies.html#:~:text=Surveys%20can%20be%20done%20on,response%20rate%20than%20surveys%20do

Czinkota, M. R., & Ronkainen, I. A. (2013).“International Marketing.” Cengage Learning, South-Western.

Eurofound (2021).“Working conditions and sustainable work: An analysis using the job quality framework. Challenges and prospects in the EU series.” Publications Office of the European Union, Luxembourg.

GDPR (2022).“What’s GDPR, the new EU’s data protection law?” GDPR.EU, https://gdpr.eu/what-is-gdpr/

GMDH Streamline Website, https://gmdhsoftware.com/

Irvine, A. (2018).“Interviews VS surveys.” Thesislink, https://thesislink.aut.ac.nz/?p=6198

Ramshaw, A. (2022).”The advantages and disadvantages of surveys you need to know.”, https://www.genroe.com/blog/pros-and-cons-of-surveys/11471

Shaw, J. (2018).“The biggest risks and barriers to market entry.” Kadence International, https://kadence.com/

Appendix 3: Link to our video presentation

Link to our video presentation

If you want to watch our short video presentation please follow this link:

https://drive.google.com/file/d/1pjwYdUeafHannDxOFiYo7GdazmElp-oT/view