

MASTER'S THESIS

Risks and health of ITPP

Do risks impact the health of the IT Product Portfolio?

Vinju, M.

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Risks and health of ITPP

Do risks impact the health of the IT Product Portfolio?

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Abstract

This research is a single case study focusing on testing a literature-based framework in a real-life setting. The framework in question, created in this study, is based on previous performed OU thesis groups. These groups researched IT project portfolio risks and Health assessment criteria. Combining these, a framework is created to identify which risk, impacts which Health assessment criteria of the IT project portfolio. By means of a single case study, this study's goal is to validate this framework. This validation is based on real-life experience of those interviewed, whereby all arguments are analysed, summarized and then included in the results. The results of this research are useful for future research in the area of risk impact on the IT project portfolio health, and for companies wishing to limit risk impact on their IT project portfolio health.

Key terms

IT project portfolio management, risks, health assessment criteria, validation

Summary

In the current world of digital development, IT is increasing in importance for all areas of our society, especially for companies who want to stay ahead in the game. To competitively align their strategy and to structure their increasing IT focused projects, many companies choose to incorporate their IT projects in IT project portfolio's (ITPP). Naturally, all these companies want their IT project portfolio's to be as successful as possible, that is where this research has significant value.

The goal of this research is to see *"To what extent does an individual risk occurrence impact the health of the overall IT Project Portfolio"*, which is also the main research question.

In order to answer this, two sub-research questions are used:

"Based on current research, which specific impact of a risk occurrence on a Health Assessment Criteria can be identified and why"

Previous OU research conducted within the area of ITPP, resulted in the creation of two separate lists. One focusing on IT Project portfolio risks, and the other on Health assessment criteria to assess the health of the IT project portfolio. These lists are used as foundation to create a framework to highlight individual risk impact on individual Health assessment criteria. After analysis of these previous works and checking for newly release source material, a literature-based framework is created.

"Can the identified risk impacts on the Health Assessment Criteria be validated in real life and what can be deducted from this?"

Following up from the first sub-research question, the second part of this research focuses on providing a real-life validation of the theoretical framework. This is done by a single case study approach, using interviews as data collection method. Interviews were all performed in a qualitative and valid manner, and analysed according the Grounded Theory Method. The chosen organization and interview candidates are all experienced in ITPP and have been active in the field for several years. In total five interviews are performed, whereby the provided data is used to validate the theoretical framework.

The results of the validation resulted in an overview based on yes or no response if the candidate could validate the risk impact on a health assessment criteria. Excluded were those, that could validate, but not provide a real-life experience to support their validation. Finally, all unique arguments provided by the interviewee's were summarized and grouped together per unique argument. This was done to find the most important impacts, and how often each argument was used per different interviewee. This highlights, which impacts are more validated than others and emphasizes importance.

The conclusion of this research can help companies to manage their IT project portfolio. Specifically in managing their risks in regards to which risk has which impact on their ITPP. It will enable them to allocate according to which risk has a higher impact, and by this increase the success (health) of their ITPP.

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1. Introduction

1.1. Background

Digital development has become increasingly more important for businesses to increase their potential and to be innovative (Lokuge, Sedera, Grover, & Xu, 2019). Topics such as Information technology (IT) are integrated in day-to-day business and continue to increase in importance. As the difficulties and broad range of IT topics/projects continue to grow, companies struggle to achieve the maximum reachable business value possible (Jeffrey & Leliveld, 2004).

Portfolio management provides a solution for companies to align their projects within an overall strategy. Whereby regular Project management focuses mainly on the execution of specific projects. Portfolio management allows companies to group different assets/project together based on strategic goals. By grouping different assets/ projects together, companies can balance risks and rewards by spreading them over the complete portfolio to maximize their potential. (M. Daniel, M. Ward, & Franken, 2014)

This research will focus on IT Project Portfolio Management (ITPPM), more precisely, the relation between Health and Risk factors of IT Portfolio Management. Previous research in both factors yielded a list of criteria in accordance to each factor. Here, the Health criteria provided a list to assess the overall health of the IT portfolio and the Risk factors a list of potential risks that might occur.

The objective of this research is to assess the relationship between those sets of criteria, and to analyze the impact of risk factors on the future health of the IT portfolio.

1.2. Exploration of the topic

ITPPM is different from standard Portfolio Management, in that it focuses on Projects/strategy within the IT domain. IT projects focuses on Projects, which include IT assets, such as Hardware and Software assets of the company (Hoffmann, Ahlemann, & Reining, 2020).

Previous concluded studies at the OU have yielded results in providing a list of Health assessment criteria to determine the current health of a Portfolio. The health of the Portfolio indicates the probability of achieving the desired business results (Bonhna, 2005). A complete overview of these criteria can be found in Table 1.

SET OF PORTFOLIO HEALTH ASSESSMENT CRITERIA

1	Suitable ITPP projects
2	ITPP IT project priority
3	Resource Accessibility
4	Progress monitoring
5	Cross IT project dependencies
6	Stakeholder satisfaction
7	Optimal usage of staff
8	Agile to change
9	Implementation of future-proof technology
10	Staff Turnover

Table 1. Health Assessment Criteria

Additional research conducted regarding Project Portfolio risks, provided a second list containing potential risks that might occur. Risk here, is the potential occurrence of an event or situation, which can either negatively or positively affect the IT Portfolio (Teller & Kock, 2013). A complete overview of these risks can be found in Table 2.

IT PORTFOLIO RISKS

1	Information
2	Availability of resources
3	Portfolio Components
4	Portfolio component manager quality
5	Underlying independencies
6	Communication
7	Organizational Political culture
8	Managerial dedication
9	Stability of staff
10	Higher Management effectiveness
11	Stakeholders
12	Adaptability to change
13	Portfolio manager quality
14	Processes and process execution of ITPPM
15	Responsibilities, mandates and roles
16	Conflicts

Table 2. Risks

1.3. Problem statement

Although research on individual ITPPM aspects such as health and risk exist today. The relationship and importance of those factors between each other is not yet well defined. Here the problem is that current literature does not provide the necessary information for IT portfolio managers on how a specific risk occurrence could influence the health of their IT portfolio in the future. More importantly, how important are individual risks on their health impact on the IT portfolio if they incur. The significance of this problem relates to the importance of what a proper ITPPM can mean for a company to reach maximal business value (Jeffrey & Leliveld, 2004). Therefore, it could be beneficial for companies to know which risks are the most important to consider in managing when trying to increase the overall health/success of their ITPPM.

Research objective and questions

This research is following up on previous research conducted by OU thesis groups. These groups focused on either Health factors or Risk factors regarding IT Portfolio Management. Following these individual researches, two follow-up topics regarding their relationship arose:

- Current Health problems of the IT Portfolio could increase the occurrence of risk
- What is the impact of a risk occurrence regarding the health of the IT Portfolio?

As decided by our OU councillor, the second question will be the goal of this research.

Therefore, the main questions this research will focus on is:

To what extend does an individual risk occurrence impact the health of the overall IT Project Portfolio?

In order to find the relevant information to answers the main question, the following sub-questions will function as a basis:

- Based on current research, which specific impact of a risk occurrence on a Health Assessment Criteria can be identified and why?
- Can the identified risk impacts on the Health Assessment Criteria be validated in real life and what can be deducted from this?

1.4. Motivation/relevance

Previous researchers have dedicated many hours covering the topics of risk and Health criteria regarding IT-portfolio management. These researchers already provide solid foundations. However, considering the increasing importance for companies to increase their potential and utilize their IT to their fullest potential. There is an increased interest in increasing ITPP benefits as much as possible. To make this beneficial for companies, one might not look only to singular areas on analysis. But also to identify how different research can be combined to identify cause and effect. In this scenario to what extend the health/success of the ITPP is impacted by risk occurrence.

This study will focus on contributing new insights on how risk management might help improve the health of the IT Portfolio. Therefore, this research hopes to gain new insights in how companies might increase their health/risk balance to positively affect their IT-portfolio management.

1.5. Main lines of approach

The approach of this research starts by establishing an extensive literature foundation in chapter 2. The literature review will focus on previous research in the area of Health and Risks factors regarding IT-portfolio management. The literature reviewed will be followed up by conducting empirical research, which is described in chapter 3. The results of the empirical research will be analysed and presented in chapters 4 and 5. At the end of this paper, the findings will be presented and a conclusion will be drawn.

2. Theoretical framework

2.1. Research approach

As described in chapter 1, the goal of this theoretical framework is to provide the foundation on which IT Portfolio Risks affect the Health of the Portfolio.

Furthermore, as this research focuses on the impact of risk occurrence on individual health factors, the approach will be from a risk oriented view towards the health factors. To accomplish this goal, the theoretical framework will focus on establishing a cross-matrix between IT Portfolio Risks and Health Assessment criteria as per previous research.

This previous research was done by four OU thesis students and resulted in four separate graduation reports. These reports were a third cycle validation in analysing IT Portfolio risks. The first Validation was done by (Smaele, 2013), and a second validation was done in the form of three graduation reports of OU Students (2018). Continuing on this second cycle validation, the third validation's goal was to improve the quality of the results following the first two cycle's. To accomplish this, the four OU student's focused on newly released literature and performed case studies using interview's as main data gathering methods. This was then used to validate/adjust the existing list which resulted in the list shown in chapter 1 (table2).

The first step of this research will focus on analysing the interview reports of the third cycle validation. For the sake of this report, these are categorized as:

- Student 1 (Salamida, 2020)
- Student 2 (Otten, 2020)
- Student 3 (Verheul, 2019)
- Student 4 (Regtuit, 2020)

It is important to note, that this is not a fourth cycle validation, whereby the information of the interviews will be used as they are given in their original report. The overall approach of the theoretical research is separated in two steps:

1. The four reports are analysed by identifying pieces of text from the interview reports that indicate an impact based on a risk occurrence. Furthermore, referenced literature within the third cycle validations are also analysed for risk occurrence related impacts, using the following strategy:
 - Filter bibliography for relevant titles (excluding irrelevant sources, example: sources related to research approaches)
 - Determine if the source is relevant by reading the abstract/summary, if deemed relevant, the whole text will be read and analysed.
 - Checking for new literature, using Google Scholar and the OU library, the relevant Titles are checked to see if they have been referenced within the last 2 years. This is to include potential new literature that might have been released after the third cycle validation was completed.
2. Once these have been identified and listed, an analysis will be done if these pieces of text can be linked to one (or more) of the Health Assessment Criteria as per Table 1.

As with the previous concluded OU graduation reports, this research is part of a bigger group analysing the IT Portfolio Risks. Therefore, the approach will limit itself to four of the sixteen IT Portfolio Risks. Taking into account the limited time and quality, the Risks have been divided. The group councillor did this division randomly. The following four risks will be the focus of this theoretical framework (See Table 2. for full list):

- Conflicts
- Communication
- Information
- Portfolio Components

Furthermore, in order to provide an up-to-date theoretical foundation, all sources within the bibliographies of the third cycle validation graduation reports, are checked if they have been referenced in more recent research from the last 2 years. If more recent research is found, this will be included in analysis for risk occurrence impact identification and how this impacts the Health Criteria aspects.

2.2. Implementation

In this paragraph we will use the Risk 'Conflicts' as example of implementation as per 2.1 Research Approach. The approach for the other three Risks was done identical and the results of this can be found in Appendix 1.

Step 1: Identifying impacts

Following the first step, each of the four OU graduation reports were analysed for a list of impacts related to the Risk 'Conflicts'. Analysing the literature of the individual third validation reports yielded no direct results in risk occurrence impact relevant for this research. Furthermore, more recent research was found, which also referenced to literature used by the third validation, however after analysis no usable data was found. This list was then summarized in table 3 (See below) and was structured by numbering each individual identified piece of text and adding the source.

For this matter, each of the Risks was allocated a main digit number, whereby the identified pieces of text relating to the corresponding risk were given a number behind the decimal point, counting upwards. The following main digits were allocated per risk:

- Conflicts 1
- Communication 2
- Information 3
- Portfolio Components 4

Nr.	Text found	Source
1.1	Goals might not be achieved or achieved with a delay, both negatively affecting portfolio benefits the organization expects to yield	(Verheul, 2019)
1.2	Als mensen in conflict met elkaar leven, dan ontbreekt de nodige objectiviteit en communicatie gaat dan gewoon niet goed. Dus je kunt niet op een zuivere manier de juiste keuzes maken	(Salamida, 2020)
1.3	Hierdoor waren een aantal andere projecten niet gelukkig	(Otten, 2020) Interview 5
1.4	Dus als dat Conflict ontstaat, dan wordt er geen beslissing genomen.	(Regtuit, 2020) Interview 2

Table 3. Conflicts Impacts

Step 2: Linking impacts to Health Assessment criteria

Following the result of Table 3, each of the pieces of text were linked to each Health Assessment Criteria. This was done to see if an impact could be linked/identified between the two data sets. An example for the Risk Conflicts and the Health Criteria 'Cross IT Project Dependencies' can be found in Table 4 below. The other Health Criteria impact comparison are visible in Appendix 2.

Health Criteria	Impact Nr.	Argumentation
Cross IT project dependencies		
Implementation of future-proof technology		
Optimal usage of staff		
Agile to change	1.2, 1.4	As decisions cannot be made due to Conflicts. The Portfolio is unable to adapt in an agile manner, as decisions needed to provide agility would be slow and therefore not agile.
Suitable ITPP projects		
ITPP project priority		
Stakeholder satisfaction	1.1, 1.3	1.1 indicates an impact on unsuccessful completion of the portfolio due to this occurring risk. The Organization that is negatively affected is a stakeholder. 1.3 further emphasizes that this risk occurrence led to unfortunate conclusion of the portfolio.
Progress monitoring		
Resource Accessibility		
Staff turnover		

Table 4. Health Assessment criteria vs identified Conflicts risk impacts

For those Health criteria where no impact could be linked, the table is highlighted with a grey colour. Those that are linked are supported with further argumentation inside the table. Looking at Table 4, we can conclude that based on the theoretical foundation, the risk Conflicts impacts two Health assessment Criteria, namely: Agile to Change and Stakeholder satisfaction.

2.3. Results and conclusions

Following the same approach as in 2.2 for all risks individually resulted in the follow cross-matrix (table 5.)

Health Criteria	Conflicts	Communication	Information	Portfolio Components
Cross IT project dependencies		X		X
Implementation of future-proof technology				
Optimal usage of staff		X		
Agile to change	X		X	
Suitable ITPP projects				
ITPP project priority			X	
Stakeholder satisfaction	X	X	X	X
Progress monitoring		X	X	X
Resource Accessibility				
Staff turnover				

Table 5. Cross-matrix Theoretical Framework

Table 5 provides a solution on our research question, based solely on theoretical knowledge. Furthermore, we had to conclude that the referenced sources in the third cycle validation were not used in research that is more recent (last 2 years). Therefore, no additional sources were included in the creation of the above Matrix.

2.4. Objective of the follow-up research

As this chapter only focuses on theoretical literature/data to establish a matrix, it lacks a real-life comparison to confirm our findings.

Therefore, follow-up research to be conducted in following chapters will focus on collecting real-life data to confirm, reject or supplement our theoretical findings. Further elaboration of the approach used for this is described in chapter 3.

3. Methodology

This chapter elaborates on the planned research method based on a validating case study approach within Design Science. Design science was chosen, as it is a good approach to be used when handling IT research (Hevner, March, Park, & Ram, 2004). Using existing knowledge and creating an artefact to be tested using empirical research, it was given preference over other methods due to the validation nature of this research.

3.1. Conceptual design: select the research method(s)

Following a Design Science approach, this research will have the objective to validate the artefact within a real-life scenario. The cycle within the design science focuses on the relation between the health criteria and risk factors, more precisely the impact occurrence of the latter on a health criteria.

The artefact to be used will be an extended version of the matrix which was the result of chapter 2 and will include all risks as per Table 2. In order to create this artefact, all thesis students included in this research will meet up and follow the following 3 step strategy:

1. Combine their Matrix findings regarding Risk impact on health criteria:
All four OU students who each cover 4 risks will physically meet up and merge their results to create one big matrix. This Matrix will include all risks factors and the health criteria they impact.
2. Review and validation of Matrix:
To review and validate the argument/findings of the individual by the group. This is done to check if the identified impacts of each OU student's Matrix are correctly supported by their proposed findings. If an argument for a finding is deemed insufficient, the group may decide to reject the proposed impact, or if the wording is unclear, to re-analyse the source argument. All arguments and impacts are to be discussed by the whole group, only after all four OU students agree to a finding, this will be adopted within the combined matrix.
3. Review strategy:
Depending on the results of the validation by the group. The research method as described in this chapter might need to be adjusted.

Once these steps have been completed and the final Matrix has been established, the objective will be to validate this through means of a case study approach. A case study is a good method to validate within a real-life scenario (Saunders, Lewis, & Thornhill, Research Methods for Business Students V7, 2016). Furthermore, it heavily focuses on the how and why of things. As the current research is focused on validating the theoretical findings and emphasizes on the how and why to support the risk impact findings, the case study approach is a good fit for this research.

3.2. Technical design: elaboration of the method

For the scope of this case study, a single holistic case study approach was chosen. Due to the time limitation of this research within the scope of the course, a multiple case study is unfeasible. The disadvantage of this is that the external validity might be reduced. However, as the research is done by all OU students, the results of these can be merged to limit this disadvantage.

A holistic design was chosen over an embedded design due to the nature of the unit of analysis. The unit of analysis has been determined as the ITPP of the case company. As our research aims to validate the matrix, we aim to gather this data from the ITPP of the case company. This means there is one unit of analysis, which confirms a holistic design, as embedded covers multiple units of analysis.

For a case study, both qualitative and quantitative data gathering method can be used. A quantitative approach is deemed not fit due to the time limit of this research and the risk of non-response using methods such as surveys. Furthermore, given the nature of this research being a specialized topic, it is unlikely to find a large enough group of people experienced enough to make this viable, arguing for a qualitative approach.

The qualitative approach will be implemented in the form of semi-structured interviews. This provides a structure to make sure the necessary data is collected and the interview stays on topic (as opposed to unstructured). Furthermore, it also enables the interviewee to go more in-depth if needed (as opposed to structured). Within a qualitative case study design, there are other data collection methods, prominently in the form of some kind of documentation. At the start of each interview, the interviewee will be asked once to disclose any relevant documentation during the interview that might be helpful for each unit of analysis. Due to specialized nature of this topic, it is expected that little documentation will be available. Furthermore, if available it might not be possible to analyse all documentation due to time constraints, therefore interviews are used as the main data collection method to guarantee enough data for this research.

Before starting the interviews, a test interview will be done. This is to make sure the premise is clear and the questionnaire achieves the desired information. Each interview will follow the guideline laid out in appendix 3. The interview is based around the following questions:

- *Have you experienced that the occurrence of “risk factor” impacted the “Health criteria” of the ITPP? (per risk)*

This question is to be asked per risk and is vital in focusing on the impacts that could be validated by the interviewee. If a risk has occurred, the questions below will be asked. If the risk impact on an individual health criteria has not occurred based on experience, it will be skipped. If the answer is yes, the following question will follow to determine the circumstances in which the risk occurred and what its impact was on the health criteria:

- *What was the situation when the risk occurred and what was the impact on the health criteria?*

This is asked to see if the risk occurrence had a specific/recognizable impact on each of the individual health criteria as marked by the Matrix. Furthermore, by asking what the impact was (and how and why the risk led to the impact), this information can be used during analysis to check how accurately the impact actually links to the criteria as identified by the interviewee, and possibly other criteria. In order to guide the interview, a guideline was created (appendix 3).

Furthermore, each interview will be recorded, after which the transcript will be sent to the interviewee for participant validation. The interviewee will be informed of a 10-working day deadline to verify or reject the transcript, if no response is given, the data will be used as transcribed. This deadline is refreshed if the transcript is subject to change due to feedback of the interviewee and awaiting renewed approval.

The interviewee's will be selected based on the following criteria:

- Active in the case company for over 2 years.
- Active within in a ITPP relevant environment for over 1 year.

These criteria were chosen to ensure in-depth know how of the case company and their ITPP by the interviewee.

The case company itself is also chosen based on criteria:

- Active application of ITPP activities within the company for at least 1 year.
- At least 8 or more employees working in a ITPP relevant environment.

We require the company to have some history regarding ITPP to make sure they are in the position to provide in-depth data. Saunders states that the aim is to have at least 5-30 interviews in a regular study (Saunders, Lewis, & Thornhill, 2016). Therefore, 5 interviews will be conducted for this research, if we would combine this with the research of the other OU students, this would total 20 (although for different case companies). Furthermore, given that this research aims to validate a single ITPP, it is deemed unfeasible to interview a larger group due to time-limitation and this being a more specialized topic. In order to obtain the minimum of 5 interviews, the requirement is set to at least 8 employees that are active in an ITPP relevant environment for the case company. This is done on purpose to compensate for possible unwillingness to participate or unavailability.

3.3. Data analysis

Gathered data (Interview transcripts and documentation (if provided)) will be coded using the Grounded theory Method. Within the Grounded Theory Method, the 1998 version of Strauss and Corbin will be applied. The 1998 version provides a systematic approach, providing a better overview for less experienced researchers. Following this approach, the coding will be done in the following three steps:

1. Open coding, identifying text phrases and providing labels
2. Axial coding, identifying categories by establishing relationships between the labels.
3. Selective coding, integrate existing categories with the core category to provide an explanatory theory to help answer the research question.

The third step of this approach is excluded as the research focuses on validation and not on supporting theories.

To execute the open and axial coding, a deductive approach will be used to see if the data can be used to validate the artefact (Matrix). Instead of using labels or categorizing large amounts of text, only the texts that directly recognize/validate a possible impact will be marked and categorized by the associated risk and health criteria. This means that during the open coding, the goal is to find

texts that directly recognize/validate a possible impact based on a risk occurrence (similar to label). All found texts, phrases and quotes that are identified are then listed separately from their main text, to be used in Axial coding. Axial coding will then be applied to link the identified texts to a “category”. In this scenario, as we want to validate risk occurrence impact on health assessment criteria, the health assessment criteria are used as “categories”. Once all the identified risk impacts are linked to a category, these will then be further analysed and argued to see if these suffice to validate the matrix. The findings and argumentation for identified connections will be discussed in chapter 4 & 5.

Coding and further data analysis will be done in Excel, the reason for this is that the researcher has extensive experience using this specific program.

3.4. Reflection w.r.t. validity, reliability and ethical aspects

Within qualitative research it is important to maintain validity and reliability. This section focuses on providing clarity how the research is executed in a sound and acceptable way.

3.4.1. Construct validity

Construct validity looks at how accurate and to what extent the research is actually achieving an accurate observation of what it set out to measure. It is therefore important to establish some references and checks to validate/review the progress to make sure the research is following the path it aims to. In order to increase construct validity, the following points will be heeded:

- Data triangulation: comparison between different sources to validate findings (this can also be done with only interviews).
- Making sure that interviewees are qualified in answering the interview questions and Each interview will be conducted in a private, safe, anonymous and neutral environment to reduce participant bias and to promote honest answers.
- Participant participation: interviewees will be asked to validate the transcripts for their correctness.

(OU, 2018)

3.4.2. Internal validity

Internal validity reflects the quality and applicability of the research and if the findings can be attributed to the collected data. To maximize the validity of this research, the goal is to minimize the threats to internal validity as much as possible. To achieve this, following “Threat” limitations will be implemented:

- Explanation-building: all findings will be well documented and appropriate argumentation will be provided to explain why and how the findings were deduced from the gathered data.
- Admission of shortcomings/bias: a review will be conducted to identify the possible impact on the research regarding investigator bias and possible shortcomings of the conducted research.

(OU, 2018) (Saunders, Lewis, & Thornhill, 2016).

Of course, these measures do not guarantee a perfect internal validity, but merely try to limit the risks as much as possible. It is therefore important, that possible deviations of the planned process must be well documented and evaluated for their impact on the validity of the acquired data.

3.4.3. External validity

External validity looks at how well research can be applied outside the environment/setting in which it was conducted and be successfully repeated or generalized. Due to this being a single case study, this poses a significant risk to the external applicability of the research. However, as three other OU students are researching the same matrix, the results of all four reports could be combined to create a data replication similar as to a multiple case study. Furthermore, the case company will be described in order for future reference and increase external validity.

3.4.4. Reliability

Reliability is important to make sure the research is trustworthy in the context of repetition. Meaning that were the research to be redone, similar results would be concluded.

To improve overall reliability the following actions can be taken:

- Documentation of research approach used in gathering and analysing the data used that lead to the concluded findings.
- Prevent the usage of jargon to prevent misinterpretation.

(OU, 2018) (Saunders, Lewis, & Thornhill, 2016)

3.4.5. Ethical aspects

To ensure a proper ethical approach for this research, ethical guidelines of the University and Case Companies will be adhered to. The researcher will make sure to adhere to the general principles that are contained in the code of ethics, which include:

- Research will show Integrity, objectivity, respect
- Non-maleficence
- Ensure privacy, confidentiality, anonymity, voluntary participation, consent with regards to participants and safety of the researcher.
- Right to withdraw of participant (interviewees)
- Take responsibility of data analysis/reporting and compliance

All these principles will be taken into consideration when performing the interviews, making sure these are done in a safe and anonymous environment. Making sure the interviewees are aware of their rights and the goal of this research. Any retrieved data from participants will only be used after a written permission (Informed consent statement) has been given (Saunders, Lewis, & Thornhill, 2016, pp. 239-245).

4. Results

This chapter covers the re-design and result of the case study as described in chapter 3. Firstly, the established Matrix from chapter 3 will include the matrixes of the other three group members. Whereby the second part focuses on the results of the single case study.

4.1. Results re-design meeting

On the 3rd of September the research team gathered in a study room located at an OU facility in Utrecht. Due to constraints not all students were able to attend in person, those not physically present were digitally present.

The meeting started by the thesis coordinator introducing all participants and re-iterating the goal of the meeting as also described in chapter three. After introductions were completed, all matrixes (as shown in chapter) from each individual student were discussed with the whole group. Each student was given the task to introduce their matrix and present the found data and argumentation per identified impact. After assessing the presented data, the group made a decision if the argument was valid and if the impact could be validated. After all matrixes were validated, each student was given the task to update their matrix with the discussed adjustments, these were collected and consolidated by the thesis coordinator, the result can be found in Appendix 4.

4.2. Results case study

4.2.1. Case organization

The selected organization for the case study is an international automobile manufacturing company, with a customer service, logistics and IT combined branch located in the Netherlands. The chosen branch has been active for a long period and provides IT support, projects & system implementation for the overall company. The branch has a broad IT PP and has an extensive team with multiple years of experience, meeting the criteria set out in chapter 3.2.

4.2.2. Selection Interview candidates

In total 6 interviews were conducted, excluding the test interview. The interview candidates were selected to cover a wide area of expertise. The criteria's set out in chapter 3.2 were met by all candidates. Furthermore, it was made sure that the candidates were from different projects/teams to include diversity and promote triangulation. As mentioned in chapter 3, a minimum of five interviews is needed, originally, only five interviews were conducted. However, due to personal reasons, one of the candidates excluded himself after the interview was finished. This data was completely excluded from the analysis and has been destroyed. In order to compensate for this loss, another interviewee was found. A personal contact of the researcher (active in case company) was not included as an interviewee for the data analysis, but used as a test interview. This test interview was done to make sure the interview achieves the goal set out as described in chapter 3 and to highlight any issues with the current interview set-up which could negatively impact the data

gathering process. An overview of the roles of the interview candidates can be found in the table below, the test interviewee is not included.

Candidate	Role
Interviewee1	Product Owner
Interviewee2	Product Owner
Interviewee3	Business Relationship Manager
Interviewee4	IT Project Manager
Interviewee5	IT Project Manager

Table 6. Interview candidates' roles

4.2.3. Data Gathering

All the performed interviews as mentioned in 4.2.2 were conducted as close as described in chapter 3 and in appendix 3. There were slight deviations in regard to the preferred interview location. Due to a global pandemic (Covid-19) not all interviewee's felt comfortable meeting in person. Due to this limitation, two of the interviews were conducted over skype. Before the start of each interview, all interviewees were provided a copy of the OU code of conduct, a general explanation as to the purpose of the interview and this report, and a copy of the matrix.

The interviews, were conducted following the Interview set-up as described in Appendix 3. At the start of each interview, the interviewee was shown the set-up and a short explanation was given. All Interviewee's confirmed that they understood all the provided documentation. Only one of the interviewees did not agree with being recorded, the interview was transcribed as best as possible by the interviewer.

The interview followed the set-up as described in appendix 3 in a semi-structured manner. This allowed the interviewer to dive-deep if there were any unclear answers. All interviews were able to discuss the whole matrix, three of the five interviews lasted longer than the planned hour (between 15-20 minutes), this was fortunately not an issue for the involved interviewees.

Each of the interviews was transcribed afterwards by the interviewer, these were then sent to each interviewee for confirmation. Although not planned, due to the first interviewer asking for a follow-up call to discuss the validation, this was set-up with all of the interviewees. After some adjustments, everything was validated. Most adjustments were altering specific country/process/System names in generic unidentifiable alternatives.

After the data was analysed and processed (appendix 5), the recordings & transcriptions were destroyed, as agreed with the interviewees. Due to privacy concerns, the interviewees were only willing to give verbal approval of the use of data by third parties and publication. Two interviewees were prepared to sign using first name only, this was however considered insufficient and excluded. No documentation was included, due to non-approval from the company.

4.2.4. Data Analysis

As previously described in chapter 3.2, the data was analysed following the Open and Axial coding method. However, before initiating the analysis, a slight deviation occurred in the review of the data. As some of the interviews were conducted in a different language and due to the usage of specific terms (such as program names or countries) that could indicate a person or company, there were specific requests to review the data collected post-interview. In order to maintain the confidentiality and quality of the data, a transcript review session was set-up with each interviewee. Although this did not change any of the yes/no statements, some wording was adjusted.

Starting the coding process, firstly Open Coding was applied to identify pieces of text that recognize/validate an impact. These pieces of text were then separated from the main text to be used in the second step, Axial Coding. Here these pieces of text were linked to a Risk occurrence/Health criteria impact, as can be seen in Appendix 5.

Concluding this process, these arguments were cross/referenced with the interviewee's original "yes" response, to check if their experience was valid and provided solid argumentation for a "yes" response. Table 7. shows the result of this analysis, showing the yes/no response based on real-life experience.

Risk	Health Assessment criteria									
	A	B	C	D	E	F	G	H	I	J
1	3/5			1/5		4/5				
2	3/5			3/5			4/5			
3	3/5					5/5		1/5		
4				0/5						
5				0/5						
6	0/5	1/5		5/5						
7	1/5	4/5		1/5			3/5	2/5		
8	3/5	2/5		4/5			5/5			
9	2/5			3/5	3/5	4/5				
10				0/5		5/5				
11				3/5						
12	5/5	5/5								
13	5/5	5/5								
14	5/5									
15	0/5	0/5						3/5		
16						5/5				

Table 7. Cross-Matrix Yes/No experience

A final analysis was concluded to identify unique arguments that support specific risk impacts on health criteria. Each finding was rewritten in a summarizing statement, including the amount of supporting arguments provided by the interviewees. This overview can be found in the table below.

Risk & Health criteria	Argument summary Findings	Source
1A	Due to conflicts between different parties, there is a lack of awareness/communication regarding the overall goal/strategy within the department/company.	I1, I2, I5
1D	Purposely sabotaging other parties from achieving progress as a result of an existing conflict.	I2
1F	Conflicts impact alignment between sole/multiple stakeholders and the POC of the ITP. This has an effect on the timeline goals being met and the satisfaction of the stakeholders.	I1, I4, I5
	Purposely sabotaging other parties from achieving progress as a result of an existing conflict.	I2
2A	Miscommunication leads to wrongful decision making if whether to accept or decline a project within the ITPP.	I2, I4, I5
	Purposely communicating false information leads to unfavourable projects being accepted in the portfolio.	I5
2D	Timelines and deadlines are hard to track when there is no communication of what is happening between the different projects and the portfolio.	I1, I2, I3
	If there is not communication and deadlines are not tracked, the budget is not sufficient.	I1, I3
2G	Poor communication often leads to teams not being up-to-date with the current scope of the portfolio. Wasting resources/manpower on projects that are either no longer needed or overstated.	I1, I3
	Miscommunication causes teams to work on items simultaneously, instead of dividing the workload.	I2
	If a specific project has the most influence and is able to oversell their project, they will get more resources/manpower than they would normally require. This also pulls resources from more important projects.	I4
3A	Information is often incorrectly presented on purpose to have projects accepted.	I2, I3, I5
	External resources/information are not always accurate, which can negatively impact the process of accepting correct projects.	I3
3F	False promises often lead to timelines not being met, thereby not meeting the stakeholders' expectations.	I1, I2, I3, I4, I5
3H	Incorrect information when starting projects, can negatively impact the final result and also the ability for the team to adjust said project.	I1
6B	Projects are prioritized due to the nature of their role within the company. In order to safeguard their role or responsibility and to save face	I1
6D	Stakeholders are not always as involved in their responsibility of checking the progress. This in turn can harm the overall progress status monitoring of the portfolio.	I1
	A clear structure/division of responsibilities is necessary to make sure the progress is accurately tracked, well communicated and safeguarded.	I2, I3, I4, I5
7A	Financial approval within the ITPP-project implementation process can impact which projects are adapted in the ITPP.	I2
7B	Process of approval from different stakeholders such as finance & legal influence which projects are prioritized.	I2, I4
	Favouritism & friends policy influences the process of establishing prioritization of specific projects.	I3, I5
7D	If the process of tracking the ITPP is not followed, this can have an impact.	I2
7G	If favouritism is involved, the process of fair distribution of manpower/resources if often adjusted to fit personal needs.	I1, I2
	Process exceptions lead to wasteful use of resources/manpower on early adopted projects.	I5
7H	If people do not follow the project's agile process, this can have a negative impact.	I2
	Older processes tend to be ingrained and difficult to adapt to an agile environment.	I3
	Process of approval from specific stakeholders such as finance and legal slow down agility of the ITPP.	I3
8A	If the PMO is able to adequately influence and push for the correct projects, this will inadeptly lead to correct projects being adopted in the portfolio.	I2, I3, I4
8B	If the PMO is qualified, he will have the knowledge on which projects need to be prioritized and which not.	I2
	PMO's that lack quality, but are integrated in a friend policy culture, will prioritize what is best for their own image.	I3
8D	PMO's that are unable to maintain an informed overview of the projects and requirements, is unable to properly guide and track the ITPP.	I1, I3, I4, I5
8G	Awareness and knowledge of the PMO is necessary to effectively allocate/divide resources/manpower between projects.	I1, I2, I3, I5
	If external stakeholders push for prioritization of their project, a PMO needs to be able to stand their ground/argue for the current set-up. What often happens is that resources are re-allocated to satisfy	I4, I5

	stakeholders.	
9A	Experience and good qualities are needed to sell specific projects to the PMO. If these lack, the PMO will also not receive the require the necessary arguments/info to sell individual projects.	I2, I4
9D	Awareness of the projects status and progress is important for a manager to have in order to ensure success.	I3, I4, I5
9E	In order to ensure success with underlying dependencies between departments, good alignments and communication is necessary between different managers.	I1, I2, I4
9F	The manager needs a proper understanding of achievable targets and their timelines. If this lacks, the promised goals will not be reached and promises to the stakeholder will not be met.	I1, I2, I4, I5
10F	If resources are available but not released or allocated to other projects, the promises to the stakeholder will be impacted.	I3
	When the resources that are required to complete tasks for the project are not available, a delay can be expected.	I1, I2, I4, I5
11D	If there is high fluctuating staff, it is important that knowledge & progress is well documented. If there is no proper handover, the success of the portfolio is endangered.	I1, I3, I5
12/13 A/B	A top-down culture of higher management& stakeholders has impact on which projects get accepted and prioritized.	I1, I3, I5
	The personal position of & advantage to individual managers impact the decision on which projects get pushed for prioritization or implementation.	I2, I4
14A	Managers mostly focused on effectively achieving what looks best for themselves. Their focus is more on personal gain and pushing those projects which look best for them.	I1, I2, I3, I4, I5
15H	If an organisation has an agile culture, this needs to be actively engaged. If there are parties that do not fulfil these promises, it will stagnate the other processes/projects.	I1, I2, I3
16F	Personal relationships and favouritism influences which stakeholders are prioritized over others.	I1, I4, I5
	Stakeholders that push the most for their interests, gain advantages over other stakeholders.	I2, I3

Table 8. Argument summary

Following the data analysis some remarks can be made:

- Due to the nature of the interview, most of the data was already structured according to the outlined arguments in Appendix 5.
- No data was collected on those that answered “no”.
- Risk 13 & 14 were given repeat answers to the once already given on risk 12. The interviewees provided feedback in the form of “as just mentioned”. This caused Risk 12 & 13 to be consolidated. Risk 14 was not included, as there was some deviation from the previous two risks in the answers.
- A test interview was performed before-hand, which is not included in the data set.
- The semi-structured interview allowed for further questioning. This ensure that those that have a “yes” were supported by experience-based answers, and those that were not resulted in a “no”.

5. Discussion, conclusions and recommendations

Chapter 5 outlines a reflection on the performed research, followed by the conclusions that were drawn from this research and to what extent they answer the research questions. The final paragraphs focus on recommendations for practice and further research.

5.1. Discussion – reflection

This paragraph focuses on the execution of this research and the achieved quality that can be concluded.

5.1.1. Set-up

This research is not a standard exploratory, explanatory or descriptive research, but validation research. Therefore, it is focused on validating pre-existing research. This in itself, is already a limitation for the researcher, as one is not meant to re-design previous concluded points (such as the risk & health criteria lists). Even though, a literature check was done for more recent works since the previous research was performed. This does not however completely exclude potential relevant older sources that might have been missed. For the sake of this research, it was concluded that the previously conducted research is valid. Therefore, the risks & health criteria were used as given. A small deviation did occur, the health criteria research was partly conducted during the execution of this research. This led to some changes to the list while the research was performed, furthermore there was some confusion between different students as to what list to use. This was discussed and checked by the whole group, and should not have affected the quality of this research.

5.1.2. Framework creation & Consolidation

In order to effectively validate impacts from risks on the ITPP health criteria, the 16 risks were divided between four OU students. Analysing the provided literature & reports from previous OU research into risks & ITPP health criteria. The group was able to combine these into a framework highlighting the impact from risks on ITPP criteria based of this previous research. To make sure the literature research was up to date; newly released literature was checked and if relevant included. Also, by dividing the risks between multiple students, each student was able to more effectively focus on their risks as opposed to each analysing all sixteen. This significantly improved the quality of research per risk and increased the time available per risk per student. Afterwards, the individual frameworks were discussed during a group discussion and a consolidated framework was created. To make sure the identified impacts were accurately argued by each student. All found argumentation had to be validated by the whole group in order to be incorporated in the framework.

5.1.3. Case study & Framework validation

The second part of this research, focused on validating the framework established by the literature review and as consolidated by the group. To achieve this, a single case study was performed. Given the time-frame, this was a good choice, as other options would not have been achievable with the same level of quality. Furthermore, in order to gain the necessary data, semi-structured interviews were performed. In total six interviews were conducted, where one interviewee decided to withdraw due to personal reasons. Of those other five interviews, only three were in person as planned in chapter three. Due to a global pandemic, two interviewees were unable to meet in person. These two interviews were conducted over skype. Otherwise, all interviews followed the pre-described structure as per chapter 3 and appendix 3. Due to being an ex-internal researcher, there were positive and negative effects on the quality. Firstly, being ex-internal the interviewee's felt more at ease and it was easier to establish a comfortable environment between interviewee and interviewer. Secondly however, interviewees might limit themselves as confidentiality might not be 100% maintained (fear of exposure when giving critique). However, due to the researcher being an ex-internal researcher, this was severely limited and seemed not to impact the quality of the answers. Nevertheless, there is always the risk that due to these circumstances, the researcher develops a slight bias. A comparison between the results of this study and the other three students, might indicate if some abnormalities did occur.

After each interview, the interviewer analysed the results and checked for situations that might have impacted the overall quality. Even though some interviews went past the planned time, no interview felt rushed, forced or otherwise impacted. Furthermore, validation of transcripts was done in a follow-up meeting. In hindsight, this had a huge impact on the quality of the data and the comfortability of the interviewee. Given that they were able to adjust some of their original answers to be more accurate and to exclude some specific terms to ensure anonymity.

Additionally, the relaxed environment and connection between interviewee & interviewer, did not impact the validity of the data. After all, the data collection method went mostly to plan and no major impacts on validation could be identified. Unfortunately, no documentation could be provided by any of the interviewee's, one could argue this might have a negative impact. However, this impact is negligible, as this cannot be analysed.

Analysis of the data went according to plan, as described in chapter 3. The usage of excel, allowed the researcher to confidently apply the different coding/analysis steps. Being an ex-internal researcher also helped in understanding some aspects of organisation specific terms. The chosen method was effective, and lead to a solid analysis structure in order of Table 7. -> Table 8. However, there is always a slight risk that some subjectivity was unconsciously present during analysis of the text. The goal here was to transfer the core of the information as objectively as possible. Also, a comparison between the results of this study and the other three students, might indicate if some abnormalities did occur. All in all, no major impacts or deviations were identified that might affect the validity of this research or the results. All data was gathered and analysed in good faith and any deviation to the original plan (chapter 3) has been referenced.

5.2. Conclusions

Answering the main question of this research: “*To what extent does an individual risk occurrence impact the health of the overall IT Project Portfolio?*” two sub questions were formulated:

“Based on current research, which specific impact of a risk occurrence on a Health Assessment Criteria can be identified and why?”

The answer to this question is found as a result of mainly chapter 2 and the results are shown in appendix 1 & 4. Where appendix 4 shows identified impacts of a risk occurrence on a health assessment criteria, appendix 1 summarizes the argumentation that was found in the literature.

Looking at the results, we can see that based on current research, all risks impact at least one health criteria, although not all health criteria are impacted by a risk. The following three ITPP health criteria are not impacted by the risks (as per literature research):

- Resource accessibility
- Implementation of future-proof technology
- Staff turnover

On the other side however, there are three ITPP health criteria that are clearly more impacted than the other factors:

- Suitable IT Projects
- ITPP IT priority
- Progress Monitoring

“Can the identified risk impacts on the Health Assessment Criteria be validated in real life and what can be deducted from this?”

Following the consolidation of the framework (appendix 4), a single case study was used to try and validate these findings. Using Interviews as data source, a semi-structured approach was used.

The data was analysed in multiple steps and also provides multiple overviews that can be looked at:

- Table 7 shows the result of validating a risk impact, based on the first interview question (“*Have you experienced that the occurrence of “risk factor” impacted the “Health criteria” of the ITPP?*”) and excludes the “yes: answers if the interviewee was unable to provide argumentation for his answer based on a real-life experience.
- Table 8 provides a summary of arguments provided by interviewee’s, which were summarized to highlight individual arguments and their frequency as response.

If we combine these results, some interesting points can be made:

- Only 5 “Yes” or “No” responses could not be validated by a real-life experience of an interviewee.
- Risk 12 & 13 were so similar to the interviewees, that three interviewees gave as initial response “same as before”, whereby the other two gave a similar example by both risks and health impact. Organisational Politics & Managerial dedication seems to be heavily connected; this is further confirmed by arguments provided (see table. 8)
- Risk 4 & 5 (Portfolio components & underlying interdependencies) impacts could not be validated.

“To what extend does an individual risk occurrence impact the health of the overall IT Project Portfolio?”

The answer to this question can be found in combining the results from the two sub-questions. Firstly, having identified a framework based on existing literature, after which this was validated in a real-life environment. The impacts of individual risks on individual ITPP health criteria can be seen in Table 7. Whereby, this only indicates a yes/no response based on a provided argument. The extend of the impact of these risk occurrences can be further seen in Table 8, which shows how often unique arguments were given. Table 8, provides a clear overview of to what extend an individual risk occurrence impact the health of the overall ITPP. Risks that were verified to impact multiple health factors of the ITPP, are naturally more inclined to have a higher impact on the total health of the ITPP. As these individual risk occurrences would impact multiple health criteria, a health impact is more likely. Furthermore, if an individual risk occurrence is also supported by unique argumentation, which has been verified by multiple interviewee’s, one can assume it is highly likely an impact on the ITPP health will occur. Combining these, those individual risks that impact multiple Health criteria of the ITPP and have a high frequency of interviewee’s validating unique experiences of this impact, will have a higher extend of impact on the health of the ITPP. This does not mean that those risks, that only impact a single health factor are negligible. However, based on this research, those are likely to have a more limited extend of impact than those that have a higher frequency of health criteria impact and supportive argumentation.

5.3. Recommendations for practice

The results of this research can be very helpful for organizations wanting to limit risk impacts on their ITPP. Looking at table 7. organizations can use this overview for a quick indication of which risks impact which health criteria aspects of the ITPP. Especially if there is an existing issue, this might help them reduce their risk impact. Furthermore, it is advisable that the arguments given in Table 8. are taken into consideration when acting in trying to reduce risk occurrence. Not only looking at individual risk occurrence but also in potential overlapping issues between different risks/arguments. In the end, this research should help an organization in identifying possible problem area’s/risks that might occur and how this affects their portfolio. This in turn will allow them to limit these risks and improve their ITPP health. It is however important to note, that the result is based on a single-case study, whereby a different type of organization might have different results.

5.4. Recommendations for further research

Even though this research accomplished its goal of answering the research question and contributes to the scientific community. The concluded arguments and framework are based on a single case study, and further research in general regarding this topic is recommended in the following areas:

- Comparison between single case studies. As this is an only a single case study, it is recommended that the results are compared with the results of the other three OU students. The results of this could lead to new insights and more general applicability of the data.
- Further analysis of table 8. The data gathered regarding risk impact on health assessment criteria for the ITPP could be analysed in validating the current risk list. The result showed that two risk occurrences based on literature, could not be validated. It might be interesting to further analyse this, and to see if these risks should remain on the current list.
- A recommendation would be to analyse the impact of self-interest/promotion by management on all other risks and ITPP health. Multiple respondents mentioned this issue covering multiple risks and health assessment criteria.
- Further research could be conducted in identifying solutions to limit these risk occurrences. As current research identified the risks, health assessment criteria and their impacts. It could be interesting to use this data to research solutions to limit these occurrences.

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Appendix 1 - Risk Impact overview

Conflicts

Nr.	Text found	Source
1.1	Goals might not be achieved or achieved with a delay, both negatively affecting portfolio benefits the organization expects to yield	(Verheul, 2019)
1.2	Als mensen in conflict met elkaar leven, dan ontbreekt de nodige objectiviteit en communicatie gaat dan gewoon niet goed. Dus je kunt niet op een zuivere manier de juiste keuzes maken.	(Salamida, 2020)
1.3	Hierdoor waren een aantal andere projecten niet gelukkig	(Otten, 2020) Interview 5

Communication

Nr.	Text found	Source
2.1	If information is not communicated, IT PP steering is not possible, resulting in unexpected delays and negatively influencing portfolio benefits.	(Verheul, 2019)
2.3	If portfolio goals are not communicated, the portfolio can become misaligned	(Verheul, 2019)
2.4	Als er te weinig wordt gecommuniceerd wat de afhankelijkheden van de andere partij zijn dan kun je aangeven dat je het project wel gaat halen, maar als je die bevestiging daarvan niet hebt gekregen van de partij buiten jouw portfolio buiten jouw project dan is dat eigenlijk de zwakste schakel en heb je een grote kans dat je jouw doelstelling niet zal halen.	(Salamida, 2020)
2.5	de levering in gevaar komt door gebrekkige alignment. Dus er zijn teveel kennisgaps in de teamleden in het project, waardoor je onvoldoende in dezelfde richting gaat werken en ik denk het risico wat je krijgt is vertraging, omdat de teamleden op verschillende momenten dingen ontdekken.	(Salamida, 2020)
2.6	De impact kan zijn dat het niet duidelijk is waar er aan gewerkt wordt, waar de resources naar toe gaan.	(Salamida, 2020)

Information

Nr.	Text found	Source
3.1	Unclear information, like technical jargon, can lead to misunderstanding in the project's steering committee resulting in undirected projects within the portfolio	(Verheul, 2019)
3.2	If information is of bad quality, portfolio steering, and decision-making is not possible, which might lead to projects not solving the intended problem.	(Verheul, 2019)
3.3	Not possible to set proper project review criteria which may lead to wrong decisions	(Verheul, 2019)
3.4	Zodra je een change definieert moet je wel weten of die change wel kan wat voor impact dat heeft op je huidige landschap en je huidige werkwijzen. Als je daar niet voldoende informatie op hebt kun je die inschatting niet of nauwelijks maken.	(Salamida, 2020)
3.5	Heb je een transparante informatievoorziening nodig over je portfolio. Door het gebrek aan transparantie worden er verkeerde beslissingen genomen	(Otten, 2020) Interview 5
3.6	Ten gevolge van slechte informatie is uiteindelijk wel tien keer het eigenlijke begrootte bedrag uitgegeven.	(Otten, 2020) Interview 3

Portfolio Components

Nr.	Text found	Source
4.2	Portfolio management cannot steer and direct on time, resulting in not realizing the portfolio planning.	(Verheul, 2019)
4.3	De waarde van de IT PP elementen is vaak lastig te kwantificeren. Dit heeft een effect op het managen van de IT project portfolio	(Salamida, 2020)
4.4	Door de complexiteit van de project portfolio raakt men het overzicht kwijt	(Salamida, 2020)

Appendix 2 – Risk Impact overview vs. Health Assessment Criteria

Conflicts

Health Criteria	Impact Nr.	Argumentation
Cross IT project dependencies		
Implementation of future-proof technology		
Optimal usage of staff		
Agile to change		
Suitable ITPP projects	1.2	
ITPP project priority		
Stakeholder satisfaction	1.3	1.1 indicates an impact on unsuccessful completion of the portfolio due to this occurring risk. The Organization that is negatively affected is a stakeholder. 1.3 further emphasizes that this risk occurrence lead to unfortunate conclusion of the portfolio.
Progress monitoring	1.1, 1.2	
Resource Accessibility		
Staff turnover		

Communication

Health Criteria	Impact Nr.	Argumentation
Cross IT project dependencies		2.2 states that this risk occurrence would negatively influence cooperation between different business units of the company, therefore potentially negatively influencing dependencies. 2.3 Misalignment would negatively impact the whole portfolio as it would not follow the pre-agreed/determined roadmap, potentially impacting different projects within the portfolio. 2.4 states clearly that faulty communication from outside your direct project (aka other projects) can negatively impact achieving the goal of your own project, indicating decency between projects.
Implementation of future-proof technology		
Optimal usage of staff	2.6	2.5 argues that miscommunication can lead to a situation where staff are working in different directions, speed and assignments. Therefore creating a negative impact on the portfolio/project due to suboptimal usage of staff.
Agile to change		
Suitable ITPP projects	2.3	
ITPP project priority		
Stakeholder satisfaction		Both 2.1 and 2.7 state that faulty communication

		can negatively impact the success/benefits of the portfolio, hence leading to a potential unsatisfactory result, which in turn negatively influences stakeholder satisfaction.
Progress monitoring	2.1, 2.6, 2.4, 2.5	2.6 indicates that faulty communication can lead to an unclear situation of who is working on what, and what resources are being allocated where. Thus, negatively impact the ability to monitor the progress effectively.
Resource Accessibility		
Staff turnover		

Information

Health Criteria	Impact Nr.	Argumentation
Cross IT project dependencies		
Implementation of future-proof technology		
Optimal usage of staff		
Agile to change	3.4	3.4 states that if Information is sufficient/lacking, decisions cannot or only partially be made.
Suitable ITPP projects	3.1, 3.2, 3.3, 3.5	
ITPP project priority	3.5	3.3 indicates a lack of review capability because of the information risk. Therefore, wrong decisions can be made which can negatively impact priority.
Stakeholder satisfaction	3.6	3.6 Faulty information lead to a tenfold increase of budget allocation, this is clearly outside the intended scope of the stakeholder, thereby negatively impacting the satisfaction.
Progress monitoring		3.1 unclear information will hinder in effectively tracking the progress due to rogue projects and misunderstandings regarding actual statuses/goals.
Resource Accessibility		
Staff turnover		

Portfolio Components

Health Criteria	Impact Nr.	Argumentation
Cross IT project dependencies		4.2/4.2 both state that occurrence of this risk might lead to incorrect planning and therefore affect all the projects within the portfolio.
Implementation of future-proof technology		
Optimal usage of staff		
Agile to change		
Suitable ITPP projects		
ITPP project priority		
Stakeholder satisfaction		4.1 occurrence of this risk could ultimately negatively influence the costs and benefits of the overall portfolio. Thus, potentially negatively influence the stakeholder's expectations and therefore satisfaction.
Progress monitoring	4.2, 4.3, 4.4	4.4 states that through complexity as caused by this risk, an overview of the portfolio and what is going can be lost. Thus, influencing the monitoring capabilities negatively.
Resource Accessibility		
Staff turnover		

Appendix 3 - Interview Guideline

Interview guideline

At the start of the interview, the interviewee will be once more be made aware of the goal of the interview, it's usage and that they will be asked to validate the findings (transcript). Furthermore, they will be shown an overview of the artefact (Matrix) which is under validation.

Checklist:

- Safe, neutral and anonymous environment
- No influencing external factors
- Request permission to record the interview (+transcription)
- Inform interviewee that all information will be anonymous and that neither his name or the organizations name will be recorded/mentioned.
- Inform interviewer that if he is aware of any documentation that could support his answers during the interview that these could be mentioned.
- (optional) If wished, present the interviewee with a confidentiality and/or non-disclosure form from the OU.

Position/job title:

Years of experience (ITPP):

General Question

- Is the purpose of this interview clear or are there any remarks/questions before we start with the interview?

Questions per risk/ITPP health criteria impact

Have you experienced that the occurrence of "risk factor" impacted the "Health criteria" of the ITPP?

→ **If yes (has experienced)**

- What was the situation when the risk occurred and what was the impact on the health criteria?

→ **If no (has not experienced)**

Next risk

End of interview

- Inform the interviewee the interview has ended
- Ask the interviewee if everything was clear and if there are any questions or remarks.
- (Optional) if available, ask interviewee if mentioned documentation can be made available for review/analysis.
- Inform interviewee of transcription and request participant participation to validate the transcript for its correctness. (Interviewee to be informed of the 10-workday deadline, if no response, transcript will be used as is).
- Thank interviewee for his time and support

Appendix 4 – Consolidated Cross-Matrix Theoretical Framework

		Gezondheidsbeoordelingscriteria									
		A	B	C	D	E	F	G	H	I	J
Risico		Suitable ITPP projects	ITPP IT project priority	Resource accessibility	Progress monitoring	Cross IT project dependencies	Stakeholder satisfaction	Optimal usage of staff	Agile to change	Implementation of future-proof technology	Staff Turnover
1	Conflicts	(x)			(x)		(x)				
2	Communication	(x)			(x)			(x)			
3	Information	(x)					(x)		(x)		
4	Portfolio components				(x)						
5	Underlying Interdependencie				(x)						
6	Roles & Responsibilities	(x)	(x)		(x)						
7	ITPP processes and process execution	(x)	(x)		(x)			(x)	(x)		
8	Quality of the portfolio manager	(x)	(x)		(x)			(x)			
9	Quality of the portfolio components manager	(x)			(x)	(x)	(x)				
10	Availability of resources				(x)		(x)				
11	Stability of staff				(x)						
12	Organisational politics & managerial dedication	(x)	(x)								
13	Managerial dedication	(x)	(x)								
14	Effectiveness of management	(x)									
15	Flexibility and adaptability regarding changes	(x)	(x)						(x)		
16	Stakeholders						(x)				

Appendix 5 – Identified arguments, risk impact on health criteria

Conflicts

Health Criteria	Arguments
A	<p>I1: If conflicts arise, this can lead to the IT & Business portfolio environment not being aligned, which in turn can lead to incorrect projects being accepted. Unawareness is also a big factor here.</p> <p>I2: Due to conflicts between multiple stakeholders and internal project managers, projects were implemented and executed with high costs to accommodate a system which was planned to be shut off within 2 years.</p> <p>I5: Conflicts of stakeholders can lead to including short term projects, influencing long term projects which should as well be in the portfolio but might be altered due to the inclusion of these short-term projects.</p>
D	<p>I2: if there is a conflict, there are 2 parties, which in my experiences regularly leads to sabotage between these parties. This in turn leads to Un logical questions being asked to prevent the other party from achieving progress.</p>
F	<p>I1: If there is a conflict, there is always a party, also the stakeholder, that ends up unsatisfied.</p> <p>I1: what happens is that different stakeholders want different things and goals, if there is a conflict, this will lead to problems with one of the parties, the goals are either changed or not met.</p> <p>I2: Sabotage between parties, often has led to unsuccessful implementation of multiple projects within the portfolio leading to unsatisfied stakeholders.</p> <p>I2: A few months back, we lost a newer project due to a dissatisfied stakeholder. This originated because of a conflict in a previous project.</p> <p>I4: Only if the conflict is big enough to impact the final result, then it will definitely impact the stakeholder satisfaction, for example if the deadline is not met because of conflicts, costs will increase due to an extended timeline. I have seen this many times.</p> <p>I5: Satisfaction for the stakeholders most of the time is influenced when conflicts occur. Similar to project adaption long and short-term projects must me aligned, if this does not happen, they might and will negatively influence each other.</p>

Communication

Health Criteria	Arguments
A	<p>I2: Based on wrong information being communicated, incorrect projects might be considered and accepted.</p> <p>I4: If due to miscommunication wrong promises and estimates are reported, this may lead to projects being implemented that should not be in the portfolio. Unfortunately, this happens regularly.</p> <p>I5: without proper communication, there is always a risk of wrongful projects being included in the portfolio especially if there is a personal interest involved.</p>
D	<p>I1: Of course, without clear communication between different parties, there is always the risk of improper tracking of progress. How to know what is happening if it has not been communicated?</p> <p>I1: What happens afterward is that deadlines are not met and budgets need to be expanded.</p> <p>I2: In my current project, we had communication problems between our project and another project where we have a dependency, due to miscommunication, we thought the other project to be in an earlier stage, whereby we started to late with some of our timeline objectives.</p> <p>I3: Communication and information, we have regular meetings to discuss progress among the portfolio,</p>

	communication is there, however information is not always correctly communicated, which has led to incorrect assumptions, mostly involving budget and timeline.
G	<p>I1: if there is miscommunication, this can of course lead to people/teams working on objectives that do no longer fit within the scope. Thereby wasting resources.</p> <p>I1: A consequence of this is that deadlines are not met or no longer important, aka projects being scrapped.</p> <p>I2: Definitely, this is one of the most common issues when dealing with communication, teams working on overlapping projects impacting budget and creating conflicts within the portfolio.</p> <p>I3: For sharing resources, communication is important, it is also a budget issue. Often teams tend to overstate their scope to not lose specific resources to keep these for future projects or next year budget allocations.</p> <p>I4: Most of the time there is a me, me, me culture, where no-one wants to share their resources, this is also due to miscommunication and incorrect prioritisation.</p> <p>I4: Important projects often get neglected and the loudest screamer gets their project prioritized, which includes resources.</p>

Information

Health Criteria	Arguments
A	<p>I2: this is the same as Communication. <i>"Based on wrong information being communicated, incorrect projects might be considered by management and accepted."</i></p> <p>I2: Unfortunately, some people purposely leave out information for their project to be accepted.</p> <p>I3: most of the time the information is there, but the communication is not sufficient, this is also done on purpose to get their own project accepted. It does however also happen that the information from a third party is incorrect which can lead to incorrect communication regarding accepting projects within the portfolio.</p> <p>I5: Once we had an external stakeholder which was familiar with our internal processes and provided incorrect information to get the project accepted, this was eventually discovered after the project was already finished.</p>
F	<p>I1: Yes, especially when dealing with timelines and budgets. Projects are often presented to be as beneficial as possible, where the result might not always be reachable, resulting in extra costs/time and reducing stakeholder satisfaction.</p> <p>I2: Timeline issues are the most common cause for stakeholder satisfaction, often aspects, especially technical, are not all considered within the scope, which leads to new aspects being adopted later on. This increases the overall timeline for completion, sometimes this may also lead to a project being scrapped completely.</p> <p>I3: Stakeholder satisfaction is often an issue, especially when the budget is not met, which happened a lot. And yes, this is most of the time due to incorrect promises aka information.</p> <p>I4: Everyone wants their project accepted, information is often adjusted, which not only leads to external stakeholders often being disappointed by false promises, but also other projects that are dependent on specific timelines</p> <p>I5: Wrong information and promises leads to disappointed stakeholders, as well as internal as external.</p> <p>I5: we once had a project, where we were developing a tool based on an existing system. However due to miscommunication, the tool we created ended up not being compatible with the system. This was due to specific parameters being incorrectly presented.</p>
H	<p>I1: We are an agile organization, sometimes the information is not correct at the start, this can influence on how we deliver the final results and can influence our ability to adjust the project.</p>

Portfolio Components

Health Criteria	Arguments
D	

Underlying Interdependencies

Health Criteria	Arguments
D	

Roles & Responsibilities

Health Criteria	Arguments
A	
B	I1: People pushing specific project due to the nature of their role within the company. In order to safeguard their role or responsibility and to save face.
D	<p>I1: Stakeholders are often also expected to take the role of post-check different iterations within specific projects. However wrong role definition can make it that they are not as involved as they should be and this in turn can hurt the progress of the portfolio.</p> <p>I2: If no one feels responsible for tracking progress, it often happens that progress is not checked, which will almost always lead to delays.</p> <p>I3: Yes, a lot of people only do that what they are told to do. If it is not defined, it will not get done. This can impact all aspects of a project regarding satisfaction, costs and timeline.</p> <p>I4: Once there was project without clear role definition, this caused multiple parties to check the project from multiple angles, which lead to confusion as to what was the actual status of the project.</p> <p>I5: Structure like dividing roles and responsibilities guarantees a correct timeline, therefore also making sure the progress is in order.</p>

ITPP Processes and process execution

Health Criteria	Arguments
A	I2: Due to income from specific software was on discount, this was approved over another project, which probably would have been better in the end. The issue here is that within the current process finance has to give their approval, who do not always look at the best project but only at the costs.
B	<p>I2: Due to income from specific software was on discount, this was approved over another project, which probably would have been better in the end. The issue here is that within the current process finance has to give their approval, who do not always look at the best project but only at the costs.</p> <p>I3: There are processes, they can often hinder specific projects from being implemented due to unawareness or skipping steps in the projects. Most of the time because of friends' politics.</p> <p>I4: Approval once took so long that by the time the approval from other parties such as finance & legal was there, the project was no longer necessary. This was negative for us as we lost the project to another team.</p> <p>I5: The processes are most of the time clearly defined, but often not followed. Favouritism or satisfying specific stakeholders has preference over other projects.</p>
D	I2: Yes, reporting and tracking progress is a process, is this is not followed there is an impact. Deadlines were missed

	in the past due to laziness.
G	<p>I1: If processes are not followed, employees will be claimed by other projects or taken from specific projects.</p> <p>I2: Most important here again, is favouritism, if the processes are not followed. The PMO will decide solely on where the people are working on. This might not be the best for the company, but for the boss only.</p> <p>I5: Depends of what projects are in the funnel, small projects do not always need the full process approval. Multiple times this has led to projects being picked up too early. Then resources are spending more time on clarifying the project and on projects that are not fully approved.</p>
H	<p>I2: Agile processes need to be followed, some people prefer to work with a waterfall method, which will impact the project negatively.</p> <p>I3: Some processes can be very integrated and more of an older approach, which can slow down adoption of projects.</p> <p>I3: as mentioned slowdown is definitely when dealing with approval of other stakeholders such as finance and legal.</p>

Quality of the portfolio manager

Health Criteria	Arguments
A	<p>I2: if there is a good portfolio manager, he can also push for the best projects.</p> <p>I3: You need a portfolio manager who actually knows what he is doing and who has the correct connections and therefore can push for the good projects.</p> <p>I4: It is often, the one that screams the loudest that gets what he ones.</p>
B	<p>I2: A good portfolio manager, knows which projects to prioritize, a bad one does not, causing delays & extra costs.</p> <p>I3: We have PMO's that got their position through connections, they will prioritize what will give them the best imagine for themselves.</p>
D	<p>I1: Yes, a project was being highlighted, materials not being delivered, but was being pushed to do more, it took a lot of time to force the PMO to take action. There was a missing knowledge of deliverables by the PMO as there were too many projects and their impact unclear.</p> <p>I3: PMO is responsible for the progress, as similar with roles & responsibilities, if he does not take responsibility the timeline will not be met.</p> <p>I4: Of course, he has the high-level position overseeing all the projects, especially when there is dependency between projects, communication here is dependent on the PMO's capabilities.</p> <p>I4: Unfortunately, these capabilities are too often lazy in tracking the progress leaving it to the team. This has led to delays in the past. The cause here is that the PMO is more occupied with looking up then down.</p> <p>I5: The portfolio manager should keep an overview of the portfolio, if he is more concerned with saving his own position, monitoring is often delegated and not well defined.</p>
G	<p>I1: Team members sometimes get shuffled around on a daily basis, if there is PMO that has no idea what he is doing.</p> <p>I2: If the quality of the portfolio manager is not great, he will not be able to effectively steer the teams.</p> <p>I3: If the PMO does not know your capabilities, he is also not able to effectively plan the people working on each team. You'll have a cook cleaning and a cleaner cooking.</p> <p>I4: Yes, parallel activities, new functionality for another country, they have higher discussion aka deliver now which is disconnected in 2 months. This was decided by higher management and the PMO was unable to stand his ground.</p> <p>I5: I was once put on a project, only because the owner had heavily escalated with the PMO's manager. So, in order to satisfy additional manpower was moved from other projects. This made sure that specific project was done well before time, however the overall portfolio suffered delays.</p> <p>I5: you need a PMO who is able to influence the right people. If you have that you get what you need to finish the project on time.</p>

Quality of portfolio components manager

Health Criteria	Arguments
A	<p>I2: If they are unable to sell the project to the overall PMO, then the overall PMO will also not be able to sell it</p> <p>I4: Bad quality, in this context I consider not having the experience or qualities needed to correctly assess projects and selling them to the PMO. This happens especially with newer managers.</p>
D	<p>I3: It's the same as just mentioned with the previous risk, if responsibility is not taken and the checks are not maintained, a delay is almost certain. I have only seen this happen a few times so far, generally the overall PMO keeps them in check.</p> <p>I4: well yes, if the job is done poorly, this impacts the overall team's success, a delay is guaranteed. Most of the time in these situations, the team is running around without clear direction.</p> <p>I5: a PMO on every level should know what's going on in his team. If he doesn't who does?</p> <p>I5: the PMO needs to be a captain, steering the ship and keeping a close eye on where they are heading.</p>
E	<p>I1: let's say that, it can be that you are new and don't know the system that well, so you work without alignment with other managers within the system, so working on something that might be adjusted or reduced by another team which can also lead to weak stakeholder management and lack of technical knowledge or parallel projects</p> <p>I2: Bad management will lead to negatively impacting underlying dependencies.</p> <p>I2: If you are dependent on Project A, but project A changed their scope without your direct PMO informing you, your project might not be correct anymore.</p> <p>I4: A component PMO needs to have excellent communication skills, not only with his the overall PMO, but also with other projects. If this is not the case, there is always a risk that projects start running parallel on same objectives or completely ignoring dependent objectives between projects.</p>
F	<p>I1: if quality is incorrect this leads to incorrect expectations and wrong delivery and overpromising. Stakeholders are not going to be happy if you are not delivering what you promised,</p> <p>I1: wrongful use of resources can also be a consequence which can lead to delay.</p> <p>I2: If the project is being oversold and not met, the board, which is a stakeholder, is not going to be happy.</p> <p>I4: False promises by inexperienced PMO's almost always lead to delays and extra costs. Negatively affecting external and internal stakeholders.</p> <p>I5: Of course, if your PMO has no idea what he is doing, he is definitely not going to be able to make the stakeholders happy. Either the timeline is not going to be met due to false promises, or it is going to cost twice as much as initially agreed upon.</p>

Availability of resources

Health Criteria	Arguments
D	
F	<p>I1: yes, sometimes the budget is delayed, which means there is a delay on starting the project, whereby the timeline will not be met.</p> <p>I2: If there are not enough resources, for example budget and staff for all the projects.... this will definitely lead to delay and increase costs in the end. This does not make any stakeholder happy.</p> <p>I3: Availability does certainly have an impact, especially when a prioritization is being placed on one project over another. For example, if a live system is not working, a lot of resources will be diverted to this system. This will ensure that the system will be up again as soon as possible. However, the overall portfolio will suffer a delay, therefore also impact stakeholders.</p> <p>I4: If there are not enough resources to fulfil all the demands for the project, it's obvious there will either be a delay or not all promises will be met. Either way the stakeholder is going to be disappointed</p> <p>I5: Depends on the project and the resources, but most of the time yes. If you have for example do not have the correct tools needed to analyse or create specific programs/data, then the goals cannot be reached on time.</p>

Stability of staff

Health Criteria	Arguments
D	<p>I1: yes, it can be that if the person is leaving and no one picks up the topic, it can happen that the project has no process due to wrong handover or due to change priority they forget about it and promises are not met with stakeholders</p> <p>I3: Knowledge drain of SME within projects makes it more difficult to verify targets due to in-experience of newcomers. This will not only impact the ability to monitor the progress but generally all aspects of the portfolio, especially the quality.</p> <p>I5: If suddenly a lot of people change projects or leave the team completely, there is always a little confusion of who is doing what and is happening where. There will be a steep learning curve, this leads to misses and stuff being done twice aka incorrect progress monitoring. This is also due to miss-communication.</p>

Organisational politics & managerial dedication

Health Criteria	Arguments
A/B	<p>I1: Yes, let's say that not all projects are internal but some are external, for example headquarters, sometimes not letting down headquarters is more important for the boss then focusing on bigger more important projects.</p> <p>I2: The person that screams the loudest, gets what he wants, either that or the one with the most and best connections.</p> <p>I2: Personal gain over overall benefit of the portfolio.</p> <p>I3: projects were accepted with big budget, but as management was not in favour, there were attempts to delay it. In the end it was cancelled, afterwards a parallel project which they liked more themselves was started instead.</p> <p>I4: Personal interests are a big factor influencing overall business units, not only portfolio but all aspects of the business.</p> <p>I4: Of course, when handling projects, personal success is often put above the portfolio's success, unless the portfolio's success is their own success.</p> <p>I5: There is a big culture of doing what the boss says, most often the direction chosen is the one that satisfies the most important stakeholder, even if it is not beneficial to the portfolio or the company.</p>

Effectiveness of management

Health Criteria	Arguments
A	<p>I1: Own department/projects have prioritization instead of looking at the most beneficial overall.</p> <p>I2: If management is not effective, this definitely leads to late decision making, missing crucial timeframes for important projects to be accepted and implemented.</p> <p>I3: Projects are dependent on the decisions by the managers, if they are more focused on personal gain, "personal projects" are pushed as super important. Leaving actual important projects in the dust.</p> <p>I4: If managers are not involved, decisions are made on what looks best on paper, but not in reality.</p> <p>I5: My boss wants this, so this is happening, regardless if the project is beneficial or correct.</p>

Flexibility and adaptability regarding changes

Health Criteria	Arguments
A	
B	
H	<p>I1: yes, can happen, simple example, when management says we fully support changes, and then don't show up, this create a fake agile environment in the end stagnating instead of being more agile.</p> <p>I2: If the company wants to be agile, but you are not working agile, this can be very problematic when handling changing environments or projects. There will be a conflict of methods.</p> <p>I2: All teams need to be on 1 level, if they are not, difficulties on all levels occur, from communication to collaboration.</p> <p>I3: Depending on the changes, it will definitely impact the adaptability regarding change. For example, people that are resistant to adapt affecting delivery and team atmosphere.</p>

Stakeholders

Health Criteria	Arguments
F	<p>I1: Promises between different stakeholders that is just to save face, have many times negatively impacted other stakeholders.</p> <p>I2: Yes, some stakeholder promises something to Headquarters or external stakeholders, prioritization might be low. However, because they go to portfolio board and say something has already been promised and that otherwise external people will start complaining which in the end affects other stakeholders.</p> <p>I3: If there are 30 cooks in the kitchen, the one that screams the loudest, impacting the others negatively. For example, if you have a stakeholder that is always pushing and another that is not, the one that is pushing is the one that almost always gets his way.</p> <p>I4: Favouritism leads to external stakeholders being satisfied, but negatively impact internal considered less important stakeholders.</p> <p>I5: If you have a specific stakeholder who holds the most power, such as budget, projects can and are sometimes changed mid-project to accommodate their personal interest. Impacting other stakeholders.</p>