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Garbage Can Decision-Making in a Matrix Structure

A Case Study of Linköping University

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**Master of Science in Business Administration:
Strategy and Management in International Organizations
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Abstract

Title: Garbage Can Decision-Making in a Matrix Structure. A Case Study of Linköping University

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Background: A university is characterized as organized anarchy. According to Cohen, et al. (1972) decision-making occurs in form of A Garbage Can Model (GCM) in such organizations. This model is influenced by some factors such as organizational structure. The influences of some types of organizational structure have been studied based on a computer simulation by Cohen and his colleagues in 1972. However, the study was based on numerical statistics and excluded the influence of genuine characteristics of an organizational structure.

Aim: This thesis aims to understand the influence of the dynamic and real characteristics of an organizational structure on a university's decision-making process. Therefore, this research is conducted to explore how matrix structure influences on decision-making process in Linköping University by reducing uncertainty characteristics of decision-making process.

Definitions:

A Garbage Can Model: provides a theory framework in order to understand how decisions are made in organizations under condition of organized anarchy. This Model has four heterogeneous streams include decision, solution, decision maker, and choice opportunity. All these streams are moving around within the organization and need to match up in the choice opportunities to make decisions.

Matrix Structure: is a structure with focus on multiple dimensions through multiple lines of authority and lateral communication.

Results: The Matrix structure reduces the uncertainty of decision-making in Linköping University by managing the information process through the lateral communication. More specifically, the lateral communication occurs based on different approaches such as informal meetings, network of people, management group, and external information. However, the authority aspect in Linköping University has certain tendency towards the single unity of command (centralization), which is in contrast with matrix structure characteristics.

Keywords: The Garbage Can Model, Uncertainty, Decision-Making, Matrix structure

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Table of Contents

1. Introduction	1
1.1. Background.....	1
1.2. Decision-Making in a University	2
1.3. Uncertainty and Decision-Making	2
1.4. Purpose	4
1.5. Limitation	4
1.6. Target Group and Contribution	5
2. Methodology.....	6
2.1. Research Design.....	6
2.2. Research Approach	7
2.3. Research Reasoning	7
2.4. Data Collection	8
2.4.1. Data Analyzing	9
2.5. Research Quality.....	10
3. Theoretical Framework.....	11
3.1. Organized Anarchy in Organizations.....	11
3.2. The “Birth” of Garbage Can Model	12
3.2.1. Verbal Theory of Garbage Can Process	13
3.2.2. Computer Simulation of Garbage Can Process.....	15
3.3. Outcomes of the Garbage Can Process.....	15
3.5. Garbage Can Model and Organizational Structure	17
3.6. Organizational Structure	19
3.7. Matrix Structure and Story of Birth	20
3.7.1. Why Matrix	21
3.7.2. Definition and Origin of Matrix Structure	21
3.7.3. Types of Matrix	22
3.7.4. Strengths and Weaknesses.....	23
3.8. Communication and Information Flow in Matrix	25
3.8.1. Complexity, Uncertainty and Responsiveness.....	26
3.9. Managing Matrix.....	27
3.11. Summary of the Theoretical Review	28
4. Empirical Data	30
4.1. Linköping University.....	30

4.2. Process of Interview.....	31
4.3. Faculty A.....	33
4.3.1. Person A.....	33
4.4. Department B.....	35
4.4.1. Person B.....	35
4.4.2. Person B ₁	38
4.4.3. Person B ₂	40
4.5. Department C.....	42
4.5.1. Person C.....	42
4.5.2. Person C ₁	43
4.6. Department D.....	45
4.6.1. Person D.....	45
4.6.2. Person D ₁	48
4.7. Department E.....	50
4.7.1. Person E.....	50
4.7.2. Person E ₁	51
4.8. Department of F.....	53
4.8.1. Person F.....	53
4.8.2. Person F ₁	55
5. Analysis and Discussion.....	56
5.1. The Matrix and Establishing Linkages.....	56
5.2. Vertical Information Sharing (Formal Communication).....	56
5.2.1. E-mails, Written Documents, Figures.....	56
5.2.2. Formal Meetings.....	57
5.3. Horizontal Information Sharing (Informal Communication).....	59
5.3.1. Informal Meetings.....	59
5.3.2. Network of People and Right Locus of the Information.....	61
5.3.3. The Management Group (Ledningsgrupp).....	62
5.3.4. External Information from Other Sources.....	62
5.4. Information Processing Illustration in Linköping University.....	63
5.5. Weaknesses.....	63
5.6. Authority and Decision Structure.....	64
5.6.1. Centralization.....	65
5.7. Authority and Access Structure.....	67

5.7.1. Rules and Regulations	68
5.8. Outcomes	69
5.8.1. Lengthy Process	70
5.8.2. Problem Solving Within Boundaries of Regulations	70
5.9. Summary of the Analysis Part.....	72
6. Conclusion.....	73
6.1. Answering the Research Question.....	73
6.2. Suggesting for Further Research	75
References	iv
Appendix.....	ix

List of Figures

Figure 1: A Garbage Can Model	14
Figure 2: Decision-making Style.....	17
Figure 3: Three types of matrix.....	23
Figure 4: The theoretical framework	29
Figure 5: The chart department D	46
Figure 6: Involvement in decision-making process.....	54
Figure 7: Vertically information flow in Linköping University.....	57
Figure 8: Horizontal information flow in the Linköping University	59
Figure 9: Information processing in the Linköping University.....	63
Figure 10: The influence of the structure on decision structure in the Linköping University	67
Figure 11: The influence of the structure on access structure in the Linköping University	69
Figure 12: The influence of the structure on decision-making process in Linköping University	72

List of Tables

Table 1: Advantages and Disadvantages of Matrix Structure.....	24
Table 2: Profile of respondents	32
Table 3: Formal meetings in Linköping University	58

1. Introduction

1.1. Background

Through the history an ideal university has been an anonymous institution with aim of searching for truth without external intervention (Pickford, 2011; Tierney and Lechuga, 2010). Teaching and conducting research were the tools to follow the inquiries and to preserve this goal from external interference (Tierney and Lechuga, 2010). The academic freedom however, recently undergoes some threats. Researchers in academia find that due to decline in federal budgets (Blakeslee, 2012), economic pressure of globalization (Hagen, 2002), and the expansion of interactive telecommunication networks across national boundaries (Zilwa, 2001) universities arrive at the point to adapt to these changes to survive and thrive (Aitken, 2001). For instance, in 2000 more than 44 percent of income for Oxford University came from the English Council (Oxford Annual Report 2000, 2000), whereas in 2012 this number decreased to merely 20 percent (Oxford Annual Report 2012, 2012).

Consequently, Marginson and Considine (2000) suggest that universities need to respond and adapt to these external changes through a new practice, and they introduce a new generation of universities called “Enterprise Universities”. The authors further argue that the process of adaption, concerning amount of external changes, consists some institutional reinvention, which has broad range of similarity with business enterprises. The traditional tools, research and teaching, are no longer sufficient to satisfy the new requirements. Thereby, enterprise universities need to act more like business firms and find new sources to compensate the new lines of inquiries. For example, in 2012, 80percentof total income for Oxford University came from trade activities and contracts with external parties such as sponsors for funding researches and student tuition fees (Oxford Annual Report 2012, 2012).

Furthermore, Marginson and Considine (2000) discuss that this reconsideration results in the decline in authority of the traditional academic disciplines and transfer the power to vice-chancellors and people surround them. In addition the authors claim that councils resemble to more like the boards of corporations, and academic boards minimized in size and power. As a consequence of the outlined revolution in goal and power in universities, the decision-making process has been changed.

1.2. Decision-Making in a University

March and Romelaer (1976) describe decision-making process in organizations as a funny soccer game. Employees of organizations are seen like soccer players who play in a round, slope, and multi-goal field. Different employees can join or leave the game at different times. Players can throw or remove balls in the field. People try to kick balls when balls come to them in direction of their desired goals or even shoot balls far from the goals that they do not like. While they are playing the game, slope of the field are changing therefore possibilities of making some goals increase. In this game players are coming and going, goals are ambiguous and changing based on preferences of players. Players do not know what is exactly happening during the game and they are not aware of the rules of the game. Cohen, et al. (1972) characterized these organizations as ‘organized anarchy’ and discuss that these characteristics particularly stand out in public and educational organizations such as universities.

Cohen, et al. (1972) introduce a model named garbage can to provide a theoretical framework to describing decision-making process in organized anarchy. It is primary important to understand that the model in a simplified manner is a metaphor. It illustrates how decisions are made in reality of organizational life and is applicable to examine every day decision-making process in organizations (Styhre, et al., 2010). This model according to Cohen, et al. (1972) consists of four heterogeneous streams including problems, solutions, decision-makers, and choice opportunities. The streams move around an organization and are linked together to form a choice opportunity, which in turn results in making a decision.

1.3. Uncertainty and Decision-Making

Enterprise universities to pursue the new goal become more interactive with their external environment. Therefore, depending on how frequent they interact with their external environment, they face different level of the uncertainty (Daft, 2009). This uncertainty in turn leads to the less predictability about the future consequences of a decision (March, 1991). Moreover, to reduce the uncertainty March (1991) argues that one of the limitations is an insufficient amount of information. Thus the primary task for a university is to provide a sufficient amount of information to respond to the uncertainty associated with new decision-making. Galbraith in his work in 1974 suggests that organizations with uncertain tasks should

be designed in a way that can handle exceeding amount of information that is required for getting those tasks done.

According to Cohen, et al. (1972) in organizations with organized anarchy, organizational structure not only influences the streams of model through access and decision structure, but also establishes linkage among the streams. Access structure determines which problems have access to which choice arenas and the decision structure determines where decision makers can go. In addition, organizational structure creates linkage among problems, solutions, and decision-makers to form a choice opportunity, which in turn leads to make a decision.

The influences of different types of organizational structure on the streams of Garbage Can Model were well studied in some American universities by Cohen and his colleagues in 1972. However, their work was completely based on a computer simulation and excluded from the reality of the organization. “The organization factors to be considered are some that have real-world interpretations and implications and are applicable to the theory of organized anarchy. They are familiar features of organizations, resulting from a mixture of deliberate managerial planning, individual and collective learning, and imitation. Organizational structure changes as a response to such factors as market demand for personnel and the heterogeneity of values, which are external to the model presented here” (Cohen, et al., 1972, p.4).

As it can be seen that each structure has its own characteristics and features (Galbraith, 1973; March and Simon, 1993) that influence the decision-making process in different ways. For instance, how people are grouped, what is an appropriate communication pattern and so forth. Hence, a Garbage Can Model of decision-making works differently under different structure and of course leads to different outcome eventually. Concerning the new goal of the universities as an enterprise, they need to be responsive to the uncertain and complex environment. One of the conventional types of structure is matrix, which is applied by most large multinational companies today (Kates and Galbraith, 2010). Researchers in organization suggest matrix structure as an appropriate solution to respond to complexity and uncertainty of external environment (Galbraith, 1971, 1973; Ford and Randolph, 1992; Burns and Wholey, 1993; Galbraith, 2002; Daft, 2009). The matrix enjoys the advantage of lateral communication, which in turn facilitates the process of information (Galbraith, 1973) and enables the organization focusing on multiple dimensions simultaneously (Kates and

Galbraith, 2010). Matrix structure breaks the unity of command and managing in matrix demonstrates the multiple chain of authority where people have more than one manager (Mintzberg, 1993). Therefore, the matrix with these unique characteristics influences the decision-making process in a different manner.

1.4. Purpose

The purpose of this thesis is to understand the influence of the dynamic and real characteristics of an organizational structure on the decision-making process of a university. Living aside the statistical characteristics of university organization, we found it more interesting to look at the live side of this type of organization in order to relate it to the decision-making process and explore how this dynamism is influential. As a result we have formulated our research question as follows:

How can matrix structure reduce the uncertainty of decision-making in a university?

1.5. Limitation

Apart from the great joy of experience to go deep down into a university this research was encountered (confronted to) with some limitations during its process. First, decision-making in universities is a sensible topic and it is derived by many internal and external factors. The governance of the university is varied in different countries and it is influenced by some particular properties of those countries such as culture, politics and so forth. The case study of this work is a Swedish university. The findings can be changed in different universities, even within Sweden. Thus, the findings of this thesis cannot be widely generalized to other universities with the same structure. Second, Linköping University is a big university thus employees are quite busy with their daily works particularly people in charge. There was a limitation of time to set interview appointments with them due to their tight schedules. However, we manage to go as deep as possible in the amount of time the interviewees gave us. Finally, there were some language issues, as English language is neither official nor a native language in Sweden, therefore it asked us some extra effort to understand at best what our interviewees were trying to explain to avoid misunderstanding.

1.6. Target Group and Contribution

The authors write this thesis based on their own interest and they are not affiliated to any company or institution. The focus of this thesis deals with the decision-making process in universities and the factors that influence on it, particularly organizational structure. People who are in charge in a university those who make decisions are concerned to apply a proper structure to facilitate and simplify the decision-making process. Therefore, this study can help these responsible people including vice-chancellors, deans, heads of departments, and if any heads of divisions to gain better picture of decision-making process in the university.

A university is a complicated organization. It takes quite long time for people who work for the university to understand how it actually works. Hence, this study might provide an overarching view of what is going on in a university and particularly concerning the focus of this thesis how decisions are made in it. Moreover, it can serve some food for thoughts for researchers in academia and also contribute to the latest debate of the definition, formulation of what are the new universities, which is presently going on.

2. Methodology

The object of this chapter is to show the methodology which we used to implement this study. Structure of this chapter commences by research design and further moves to research approach, research reasoning, data collection, and ends up with research quality.

2.1. Research Design

As already mentioned, this thesis intends to observe impacts of matrix structure in order to reduce uncertainty in decision-making process. We tended to specify the existing concept of theory about impacts of organizational structure upon decision-making process therefore we selected the matrix structure as one specific type of organizational structure and a university as one type of organization. As Yin (2009) indicates case study consists a detailed and intensive observing of a single organization, a single location, a person or a single event in time, we think case study is an appropriate research strategy to perform this study.

For this thesis Linköping University was chosen as a case of study because of two important reasons. Firstly, we needed an organization with the organized anarchy characteristics. For this thesis Linköping University was chosen as a case of study because of two important reasons. Firstly, we needed an organization with the organized anarchy characteristics. Researchers in decision-making area acknowledge that public and educational institutions stand out for properties of organized anarchies. As a result a university as an educational institution characterized as an organized anarchy. Besides having organized anarchy characteristic, secondly, the answer to the research question requires an organization with a matrix structure.

Before deciding to choose Linköping University as a case we had a pre-interview with a dean of faculty A to ensure that Linköping University works under a matrix structure. The result was so convincing and he confirmed that there are certain elements of matrix concerning relationship between departments and divisions in Linköping University. As a result Linköping University with organized anarchy and matrix organizational structure provides a proper case to achieve our research aim. Even though Linköping University is a big organization, due to time limitation and accessibility we bounded our unit of analysis to one faculty out of four faculties and its departments and divisions. We kept the appellation of this faculty anonymous because of ethics issue (Flick, 2009) and named it faculty A.

2.2. Research Approach

We aimed to understand the influences of matrix structure on a process of decision-making in Linköping University. In this research data was collected in non-quantitative measurement. Accordingly, the nature of this thesis is to comprehend a phenomenon in real world setting (Golafshani, 2003). Thus data is collected in the natural environment and non-quantitative measurement is employed (Ghauri and Gronhaug, 2005), therefore research approach can be termed as qualitative.

In this study we collected data and information about the process of decision-making in the departments and divisions within faculty A in Linköping University. Obtained data is described in a textual form instead of numbers and figures which would not be needed of analysis and mathematical operations. This type of research is based on observations in natural setting and tries to understand and gain insights in order to construct explanation thus, from the research point of view we emphasis on words of employees in Linköping University instead of numbers and statistical operations. We decided to collect data by interviewing and without use of numerical form. After doing interviews, for presenting the data, we summarized transcriptions based on our theoretical framework's elements in order to analyze and come to a conclusion.

In summarize, based on our research question, the purpose is exploration of matrix structure's influences on the decision-making process.

2.3. Research Reasoning

According to definition of deductive research which goes from theory to findings and ends up with confirmation (Ghauri and Gronhaug, 2005), the type of reasoning for this thesis is deductive. As already mentioned in chapter 1, the reason behind this study is an existence gap between theoretical and empirical findings. What researchers have done up to now is not in the dynamic real-world setting of organizations but it is limited to the comparative statics of the model. The results of previous studies were categorized by some organizational structures like hierarchal¹ and specialized² structure although there are other structures which are

¹ The line of authority moves from top level to the lowest level in this structure. Top manager has the most power and authority in this type of organization (Mintzberg, 1993).

² In this structure division of labor divides into separate task. The first time specialization was introduced by Adam Smith in 1776 (Grant, 2010).

valuable to study. Among those structures our interest was drawn to study a matrix structure. Matrix design became interesting as an organizational structure to grow adaptiveness for organizations in response to their environmental uncertainty. Consequently the propensity of well-known organizations to employ this structure is increasing. Therefore, matrix structure attracts our interests in order to explore its impacts on decision-making process.

In literature it has been claimed that organizational structures influence on the Garbage Can decision process in terms of how decision makers and problems match up in choice opportunity. However, there is a lack of empirical studies in order to elaborate impacts of a matrix structure as an organizational structure on process of making-decision. We thus, aimed to explore influences of matrix structure upon process of decision-making in a university. In addition the existing gap and the importance of decision-making in new generation of universities need to be considered. Therefore this study works from more general to more specific and the research approach falls from theory to confirmation (Ghauri and Gronhaug, 2005).

2.4. Data Collection

In order to achieve the purpose of our study, we used primary data collection through interviews. Among different types of interviews we decided to use semi-structured interview which has a quite flexible framework. This type of interview allows interviewees to explain their thoughts. Additionally, it enables interviewers to ask upcoming questions in a line of interviewee arguments, and also in the case of unclear answers to ask follow-up questions (Byrman and Bell, 2011).

We reviewed related literature to gain sufficient understanding of the subject in order to conduct questions of the interviews. In first step, we sent a copy of our questions with short introduction of our work to the interviewees. The purpose was that predetermined questions made interviewees able to structure their minds beforehand in order to give proper answers during the interviews.

As already mentioned, Linköping University was selected as a case to collect data for answering to the research question. For our study to unite, we selected one faculty out of four and its departments and divisions. We, in this study, tended to investigate our data in regard to managerial level. The reason was the pre-interview demonstrated that departments act as

functions in matrix and serve divisions as projects to deliver the orders from the faculty. We had an interview with the dean of the faculty A which took around two hours and also five heads of departments and each interview took at least 45 minutes. For covering our target we interviewed at least one head of division in each department. However for the biggest department in the faculty which has two times divisions more than the other departments we decided to conduct two interviews with heads of divisions. The reason was to cover as much information from this large department.

2.4.1. Data Analyzing

In our research we implemented Miles and Huberman (1994) data analysis structure which includes three steps; data reduction, data display and conclusion drawing.

As already mentioned data was collected by interviewing the heads of departments, the divisions, and the dean of the faculty A in Linköping University. In order to reduce obtained data, we summarized and stored raw data gotten from the interviews. In the next step which was displaying our data (Miles and Huberman, 1994) we started reading each transcription a few times in order to become familiar with the data and to be sure all required data had been obtained. After that, based on our theoretical framework and going through transcriptions, given codes such as authority and relationship, communication, and outcome were extracted. Miles and Huberman (1994) state codes label different pieces of data in order to make it meaningful. To display our data we categorized acquired data under name of each department and elements of our theoretical framework. Then, due to research ethics (Flick, 2009) the protection of the information of interviewees is essential and should be guaranteed. Therefore, a designed protocol and codes were used instead of the name of the respondents and it would be impossible to identify interviewees' identity. We kept all information from the case study anonymous; therefore we did not refer to interviewees' names not in the text nor in the reference list. We also used "He" subject for every interviewee even it is a woman and we named each department and division alphabetically in order to show our data from departments and divisions. In the last step we came to the conclusion by answering the research question and recommended further research.

2.5. Research Quality

Selected data regardless of procedure for collecting data should be examined to assess for reliability and validity. Bryman and Bell (2011) propose credibility is doing the same as reliability. The authors define credibility in way that how accurate the study is. The qualitative nature of this study led us to be deeply involved in research process. Therefore, the role of us as researchers in this study is remarkable. All procedures of this study are documented. For instance all articles that have been used in theoretical framework are saved and even used parts were highlighted. In addition interview's files with their transcriptions are kept. This documentation is a prerequisite for reliability (Yin, 2009). Moreover, another way to make a research reliable is that authors read transcriptions more than once (Miles and Huberman, 1994). We, first, sent back all transcriptions to interviewees to be checked and confirmed. After that we read transcriptions few times to be sure that all needed information was available.

To continue with validity, all the interviews were recorded with permission of interviewees. After that the interviews were transcribed verbatim therefore this way makes research valid according to Byrman and Bell (2011). Moreover, in this study each of us was coding the same field data thus it makes the study valid (Miles and Huberman, 1994). To validate the accuracy of our research information we followed the steps of the analysis process including organizing and prospering data, reading through all data, coding the data, conducting themes and description, interrelating themes/descriptions, and interpreting the meaning (Byrman and Bell, 2011).

3. Theoretical Framework

This chapter has three main sections including present theories about the Garbage Can Model, matrix structure, and summary of the theoretical framework. In the section of the Garbage Can Model, a brief background of this model and a comprehensive definition and explanation of it is provided. Second section is about matrix structure with elaboration of its properties and implications covering classics and contemporaries literature in this context. In the last section a literature review of these contexts is summarized. The aim of this summary is to build a framework in order to conduct and analyze the empirical part.

3.1. Organized Anarchy in Organizations

“Alice has gone through the looking glass and nothing is as it seems” (Bendor, et al., 2001, p.171).

University as an educational institute, suffers a sever ambiguity in its decision-making process (Padgett, 1980). As a general phenomenon, March and Heath (1994, p.178) refer ambiguity to a “lack of clarity and consistency in reality, causality, or intentionality”. For instance, in terms of talking, a sentence can be ambiguous when it has two or more meanings. “I will give you a ring tomorrow”³ could be understood to receive a call or a piece of jewelry. March and Heath (1994) express ambiguity as a central feature of decision-making life. Under the ambiguity non-linear process of making decisions takes place in organizations hence there is no clear relevance in decision-making process among problems, solutions and decision makers (Styhre, et al. 2010). Linear decision-making process according to Drucker (1955, p.312) means “defining the problem, analyzing the problem, developing alternate solutions, deciding upon the best solution and converting the decision into effective action”. In addition, ambiguity in the university echoes its unique organizational characteristics which Cohen, et al. (1972) termed “organized anarchy”.

Organized anarchy has three properties that according to Cohen, et al. (1972) are mostly manifest in public, educational and illegitimate organizations. The first property is problematic preferences. Cohen, et al. (1972) define this characteristic as a mixture of ambiguous goals from decision makers. People make decisions based on their preferences. In

³ The idea adopted from http://wiki.answers.com/Q/What_is_an_example_of_ambiguity

the situation of vague goals preferences are not basic of decisions but they are coming after a decision is made. Problematic preferences can be defined as inconsistent and ill-defined goals and priorities (Cohen, et al., 1972).

The same authors state a second characteristic, unclear technology, happens when the processes and procedures in organizations are obscure. It means people who are working in organizations do not understand those processes. In this situation the trial-and-error is playing a role therefore employees learn from the accidents of past experience (Cohen, et al., 1972).

Finally, Cohen, et al. (1972) discuss fluid participants as the last characteristic equals to when people put varying amounts of effort and attention to process of decision-making. People are coming and going into a process of making decision and they have different impacts on the process. Sometimes they enter into the process of making decision while are not necessarily related to that process. These pre-conditions provide a setting to occur decisions in the organization (Cohen, et al., 1972).

Unclear technology, fluid participants, and problematic preferences describe most of organizations' activities but not all of them (Cohen, et al., 1972). For understanding and accommodating anarchy there are two major circumstances, which should be considered. Cohen, et al. (1972) point these two circumstances, the first one is the conduct in which organizations make decisions without comprehensible, shared goals. The authors state that in complex organizations it is common to make decision under vague and unclear goals. On the other hand based on Cohen, et al. (1972) it is important to know the way of paying attention to decision-making process by decision makers within an organization.

3.2. The “Birth” of Garbage Can Model

In condition of organized anarchy decision-making process does not follow a neat linear procedure therefore what takes place as decision-making process is recognized Garbage Can Model (Styhre, et al., 2010). Thus, what is Garbage Can Model⁴? Garbage Can Model (GCM) is introduced by the work of Cohen, et al. (1972) in order to explain organizational

⁴ Although in the original idea Cohen and his colleagues named this phenomenon a model, different researchers in their works call it in different ways. In this work we interchangeably mentioned the Garbage Can as both model and process.

decision-making under condition of organized anarchy (problematic preferences, unclear technology, and fluid participants).

Bendor, et al. (2001) state that the original idea of the Garbage Can Model shows two distinct formulations. The first formulation is about “organized anarchies” and process of making decision in organizations with organized anarchy characteristics. The first formulation is known as a verbal theory (Bendor, et al., 2001). The same researchers also say the second formulation is the computer simulation, which is intended to capture the simplified verbal theory. The foundation is a verbal theory and the computer simulation is derived from this verbal theory (Bendor, et al., 2001). Despite GCM is a model named by Cohen, et al. (1972), it is necessary to clear that it is not a definite model. It is an explanation of decision-making process in reality of organization’s life under organized anarchy (Styhre, et al., 2010).

3.2.1. Verbal Theory of Garbage Can Process

To begin, the verbal theory of Garbage Can Process is illustrated. The GCM pinpoints how organizational choices are made rather than the relationships and sequence of decisions (Han and Lai, 2011). The GCM provides a theory framework, which helps to understand how new ideas might diffuse (Fardal and Särnes, 2008).

In simple words, the GCM encompasses four heterogeneous components including problem, solution, decision maker, and choice opportunity. Additionally, the outcome of this procedure is difficult to understand by a person who is not involved. “The motivation claimed behind the GCM is that: although organizations can often be viewed conveniently as vehicles for solving well-defined problems [...] they also provide sets of procedures through which participants arrive at an interpretation of what they are doing and what they have done while in the process of doing it” (Fioretti and Lomi, 2008, p.193). Thus, in this process of the making decisions in form of the GCM, all streams are flying around within the organization and need to match up in the choice opportunities to make decisions (Cohen, et al., 1972). Daft (2009) illustrates the Garbage Can process by using a figure (Figure 1) in order to make the process comprehensible for people who are not involved in the process. As the figure demonstrates, solutions, problems, and decision makers are moving in different levels of an organization and they come in choice opportunities in order to make decisions. Those choice opportunities are shaped in different levels and departments.

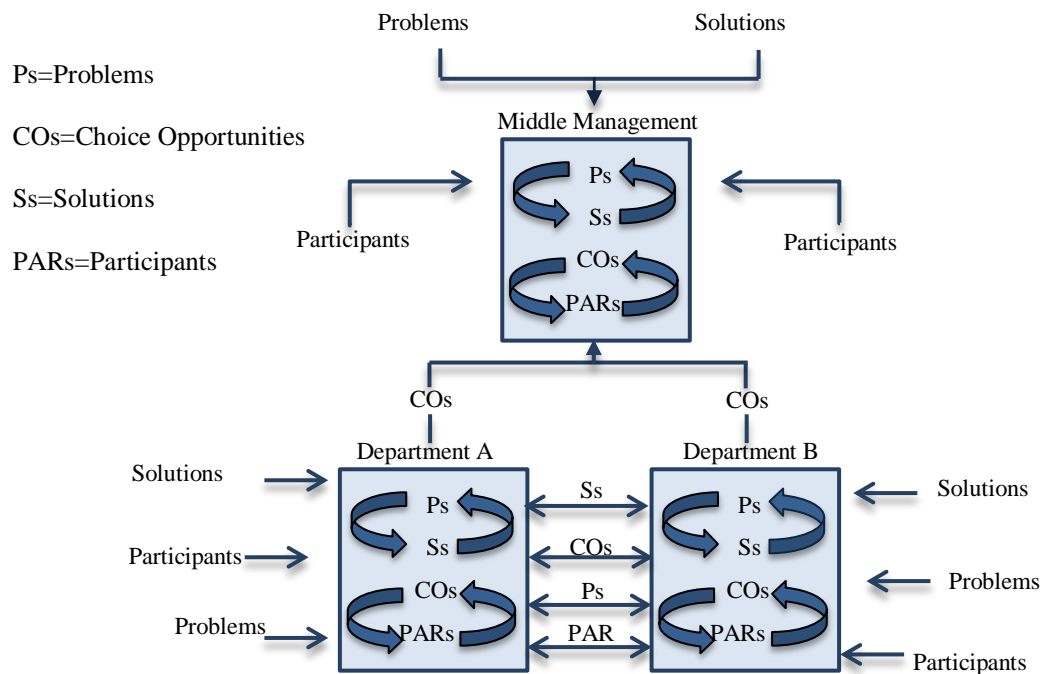


Figure 1: A Garbage Can Model (Daft, 2009, p.406)

Despite making decisions under condition of organized anarchy, a decision in the GCM is an outcome of combination of four independent streams within the organization. These are decision makers (participants), choice opportunities (decision situation), solutions and problems and these aspects are exogenous and exist independently of each other (Cohen, et al., 1972). In other words, when decision makers, problems, and solutions encounter choice opportunities simultaneously, decisions are eventually made. In the work of Cohen, et al. (1972) decision makers (participants) are directed by decision structure. The decision structure refers to how a decision maker enters a choice opportunity to make a decision (Cohen, et al., 1972). Choice opportunity is considered as a garbage can and it could be under the form of contract meetings, budget committees and compensation decisions (March and Heath, 1994). Problems differ by their access to a choice opportunity which is defined as access structure by Cohen, et al. (1972). Lastly, solutions are known as resources offered to decision makers (March and Heath, 1994).

3.2.2. Computer Simulation of Garbage Can Process

The second formulation of Garbage Can Model is about computer simulation. The computer simulation is a way to describe the GCM (Cohen, et al., 1972). The computer model simulates the behavior of an organized anarchy over periods of time, in which the various organizational streams interact to produce outcomes (Cohen, et al., 1972). Although, the original idea posits a central role for streams of choices, decision makers, problems, and solutions, Bendor, et al. (2001) claim that the computer simulation has no stream of solutions. The computer simulation works based on access structure and decision structure which determine how problems and decision makers attach to choice arena respectively (Cohen, et al., 1972). Definition of access and decision structure is essential to clear those concepts. The access structure determines which problem goes to which choice opportunity while the decision structure leads a decision maker to a choice opportunity to make a decision (Cohen, et al., 1972). Bendor, et al. (2001) discuss that the access and decision structures are affected by organizational structure. March (1988) also argues that access and decision structures embody rules of organizational decision based on assumptions about how organizational structure link decision makers, problems, and solutions. Organizational structure is a pattern, which determines how the GCM's streams may take a form for making decisions, for example organizational routines regulate linkage between problems and solutions through decision makers and choice situation (Fioretti and Lomi, 2008).

3.3. Outcomes of the Garbage Can Process

March and Heath (1994) classify decision makers in three categories; reformer, pragmatist and enthusiasts. Reformers have a counterpoint of view and try to eliminate the properties of the Garbage Can. They believe GCM is avoidable and against proper decision-making. Reformers are example of people who believe that a process of decision-making is linear. Pragmatists utilize GCM to state their own conclusion by considering the GCM as an unavoidable phenomenon. These people attempt to keep decision makers and problems away from their choice situation by using the GCM. For instance in university when resources are allocated by the top level, managers start competing for getting more resources by negotiation so they do not want others get involved in this process. As a result they keep away decision-maker, problem, and solution from choice opportunity in order to achieve their goals.

Finally enthusiasts or entrepreneurs deploy GCM to determine a new perspective in the GCM. They try to clear their vague preferences through regulating connections between problems and solutions (March and Heath, 1994).

According to Cohen, et al. (1972) these decision makers produce decisions in three styles. Figure 2 shows relation between these three styles. The first decision style is characterized by the fact that a problem is actually solved intelligibly, which is called resolution. It happens if the participants are able to make a decision sufficiently; or if an appropriate solution is available to them, and the problems that they are assigned to solve are simple (Cohen, et al., 1972). They conclude the resolution is not the most common style for making decisions. An example of resolution is when a simple conflict about research happens between a PhD student and a teacher in a university and it is solved by head of division. The head of division as a person with power and authority makes a decision which solves this problem in appropriate way.

The second decision style is oversight. It is defined as decisions that are made without any attention to existing problems (Cohen, et al., 1972). In better words, choices do not wait till problems get solved; they are made upon the possibilities (the residual of attention). Decisions by oversight are quick and easy to make, and require a minimum of participant's presence and attention (Cohen, et al., 1972). An example for this type of decision-making is when a teacher decides to quit his/her job just a few weeks before a semester starts in university. The quick possible solution for this problem is to hire a teacher for short time while a process of hiring a permanent teacher starts. Temporary teacher solves a problem just for a semester but the main problem still remains.

Finally, Cohen, et al. (1972) say in flight decision making style choices are attached to problems until more appropriate choices for that problem emerge. Then this process moves on until, eventually problems get attached to their proper choices. Consequently, when unsuccessful choices fly from a problem, it in turn helps a decision to be made on the remaining one (Cohen, et al., 1972).

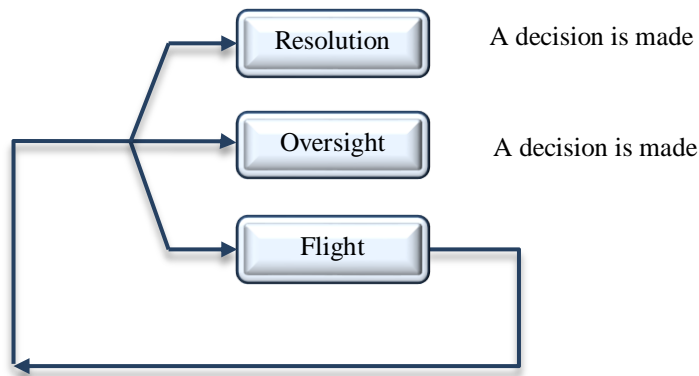


Figure 2: Decision-making Style (Fioretti and Lomi, 2008, p.196)

In their work March and Heath (1994) observe the GCM outcomes in some universities with characteristics of organized anarchy and conclude that flight and oversight styles of making decisions happen in organizations more often and decisions do not solve problems based on flight and oversight.

3.5. Garbage Can Model and Organizational Structure

It is worthwhile to dig into the relation between structure and decision-making. In their work in 1993 March and Simon stated that due to “boundaries of rationality” human’s cognitive capacities might not bear the complexity of the problems that organizations and individuals confront. Therefore, organizational structure by bounding communication channels and authorities, provides a simplified model to obtain “organizationally rational outcomes” to compensate the human’s collective limitation (March and Simon, 1993). Furthermore, design of the organization is critical to its management approaches. In this sense, organizational structure not only helps managers to monitor the decision making setting but also facilitates the flow of information (Fredrickson, 1986).

The literature of the GCM emphasizes that the access of problems, solutions and decision makers to choice opportunities are unrestricted (March and Heath, 1994). However, March (1988) argues that shared beliefs, social norms, network of connection, and organizational structure restrain the abilities of problems, solutions and decision makers to interact with choices.

Cohen, et al. (1972) express in different structure GCM might work differently and structures can also be understood differently. Therefore, Cohen, et al. (1972) state

organizational structure impacts on GCM in two aspects, which are access structure, decision structure, and March and Olson (1979) mention another aspect which is linkage among GCM's streams. What they found is problems, solutions, and decision makers enable to join or separate in choice opportunities in different ways.

Access structure, as defined earlier, refers how problems enter a choice opportunity (Cohen, et al., 1972). In Cohen and his colleagues' work in 1972, they examined how a problem attaches to choice opportunity in three different structures; non-segmentation⁵, specialized, and hierarchical structure. The authors find in non-segmentation structure, the problems can go anywhere thus they can attach themselves to any active choice arena. In the hierarchical structure, problems are ranked by importance: The most important problem can go to any choice arena. Moreover, in the specialized structure, each problem can go only to one particular choice arena.

In addition, decision structure refers to rights of decision makers to enter a choice opportunity are another aspect that Cohen, et al. (1972) study in non-segmentation, specialized, and hierarchical structure as well. They find in the non-segmentation structure, any decision maker can work on any choice. Their findings in the hierarchical structure show that important decision makers have access to more choice arenas than do less important ones. Finally, in the specialized structure, each decision-maker can work in only one particular arena (Cohen, et al., 1972).

The last aspect examined by March and Olson (1979) is linkage among GCM's streams. They state organizational structures work as channels to link the GCM streams. Moreover, organizational structure assigns problems and participants to decision opportunities (Cohen, et al., 1972). What researchers have said about structure and its impacts on the GCM streams are very limited but what it has been left out is critical (Bendor, et al., 2001). Among all other organizational structure that researchers have not considered yet, this research aimed to study matrix structure. In upcoming part the overview of organizational structure is given then matrix structure is considered.

⁵ This structure was not defined in Cohen and his colleagues (1972) work and it was not defined by other researchers as well. The author of this thesis mentioned it to cover all findings of the original research by Cohen, et al. (1972).

3.6. Organizational Structure

In this part the literature in organizational structure particularly matrix structure is reviewed. To begin, we briefly explain what organizational structure is, why it is important for an organization to have a proper design, and what the alternatives are for design of organization structure. However, we do not tend to address all different types of structure and their characteristics in this work. Moreover, we move on with matrix structure and elaborate its properties and implications covering classic and contemporary literature in this context.

Organizational structure is such a broad concept, which is difficult to define in a simplified manner. An elaborative definition of the organizational structure introduced by Thompson (1967) is an organization's internal design of relationships, authority, and communication. Daft (2009) develops this definition to first, the structure of an organization formulates the formal reporting relationships containing the hierarchy level and the range of control of managers. Second, organizational structure determines the grouping of individuals and assigns them to departments and eventually from departments to the whole organization. Finally, organizational structure consists of systems that are responsible for creating effective communication, integration and coordination of efforts among departments. He continues that these components relate to both vertical and horizontal aspects of organizing. The first two are the structural framework, which resembles a vertical hierarchy whereas the last one depicts the pattern of horizontal communication among employees.

Through these adjustments and determinations organizational structure leads an organization to implement its strategy properly, which in turn results in achieving the overall goals of the organization. Chandler (1962) argues that different organizations have their own specific strategies to compete and survive in the environment or industry in which they perform. Therefore, to successfully carry out the strategy it is essential to have an appropriate and supportive structure. In other words, structure should follow the strategy (Chandler, 1962).

There are different alternatives regarding design of the structure for organizations with different types of strategy. Researchers in organization suggest various design for an organization such as the functional structure, the hybrid, the hierarchical, the divisional, the simple and bureaucracy, and the matrix (Galbraith, 1971,1973; Knight, 1976; Williamson, 1991; Mintzberg, 1993; Daft, 2009; Grant, 2010; Robbins and Judge, 2012).

In this study however, all the alternatives and their properties are not addressed. The matrix properties, including a unique way of authority and information flow, enable organizations to tackle the complexity and uncertainty in their external environment. Evidences show that there are certain structure's elements of matrix in Linköping University which can be a response to 'enterprise universities' objectives. Therefore, focus of this study will be on the matrix organizational structure. The upcoming part defines and describes the matrix structure and its characteristics in more detailed.

3.7. Matrix Structure and Story of Birth

"Let's get this country moving again," was the slogan with which John F. Kennedy began his presidential life in United States of America. Later on he committed to his words and in May 25, 1961 President John F. Kennedy announced to the nation the goal of sending a man to land on the moon before the end of the decade. Estimation of approximately \$20 billion for budget and massive personnel mobilization going hand in hand with the strict time limitation were just part of the problems of this project. As a result this situation forced the managers of NASA to make the early decision and open the gate for the outside technicians and researchers and rely on their work to get the Apollo project done. Private industries, research institutions, and universities supported the project massively. (Launius, 2004)

Concerning the time limitation one mission, in fact, was to shorten the procedure of contracting with those organizations. Thus, according to Knight (1976), the American Government set a condition concerning the research and development contracts, in which organizations should have a project manager. Thereby, the representative of government could be able to negotiate with one specific person, who was strictly responsible for the entire cost and deadlines of the project. Knight (1976) continues this in turn avoiding the representative to have a long meeting with numbers of head functional managers, who carried the partial responsibilities. Hence, this condition could be encountered in only two ways: either to diminish all the functions and build up the project-based organization or push up the project manager to the top of the existing functions, thus building matrix.

From another perspective, Ford and Randolph (1992) argue that the matrix has evolved over time through an evolutionary process. In the first step organizations begin with a traditional or a functional hierarchy. Once those structures do not have enough potential to deal with the complex and dynamic conditions, the organization restructures to "project

organization” or “temporary overlay” in the second step. The authors continue that further in the second step, organizations keep the traditional functional hierarchy as the foundation of organization and add the project management as the secondary and temporary overlay to overcome the new condition. The authors further discuss that some organizations move into the third step and make this overlay permanent thus creating the matrix.

3.7.1. Why Matrix

Davis and Lawrence (1978, p.134) state, companies have propensity to apply the matrix structure “when it is absolutely essential that they be highly responsive to two sectors simultaneously, such as markets and technology; when they face uncertainties that generate very high information processing requirements; and when they must deal with strong constraints on financial and/or human resources”. In line with this, Sy and Côté (2004) discuss that markets have become more complex due to the acceleration of business, availability of information, globalization of market, and intensification of the competition. As a result, more organizations have had to design more responsive structure to achieve their global needs, thus adopting matrix.

Galbraith (2008) discuss that the concept of the matrix in the 1970s and early 1980s became popular and entered into the management fashion cycle. Then it has been applied by different companies in different fields and industries such as hospitals, advertising agencies, entertainment companies, and universities and so forth (Robbins and Judge, 2012). For instance, some large and well-known companies such as General Telephone and Electronic, Caterpillar Tractor, Boeing, Intel employed matrix (Gobeli and Larson, 1987; Kates and Galbraith, 2010). Due to new goal of becoming more like enterprises, the public and educational institutes such as universities also started using the matrix.

3.7.2. Definition and Origin of Matrix Structure

The matrix structure is normally identified by its characteristics and specific design. Some researchers (Galbraith, 1971; Sayles, 1976; Teasley III and Ready, 1981; Daft, 2009) have started with traditional form of organizations, which is concentrated on specialization by function or by product. They further have defined the matrix structure enjoying the benefits from both function and product/project. Sy and Côté (2004) and Sy and D’Annunzio (2005) emphasize on the grid-like form of the matrix in which organizations are able to focus on

multiple business dimensions simultaneously. In other words, as Sayles (1976, p.5) says using the matrix structure corresponds to “have your cake and eat it, too”.

Some theories, though, have concentrated on the most common characteristic of the matrix, multiple lines of authority to define the matrix structure (Knight, 1976; Gobeli and Larson, 1987; Ford and Randolph, 1992; Robbins and Judge, 2012). The matrix is a structure that demonstrates some form of dual (Robbins and Judge, 2012) or multiple (Knight, 1976) authority in which employees have to report to two bosses at the same time.

In the work by Gobeli and Larson (1987, p.1) it is stated that the matrix is a “mixed organizational form in which normal hierarchy is overlaid by some form of lateral authority, influence, or communication”. The matrix is also a coordinative structural device (Ford and Randolph, 1992) that formalizes coordination and control across several dimensions (Grant, 2010). Continue with the coordinative role of matrix, in the work by Mintzberg (1993), he introduces the role of “liaison” for the matrix structure as a coordinator among interdependencies in organizations.

Galbraith (1971) argues that in matrix organizations authority is not always equally distributed between project and functional managers. This differentiation results in creating different types of matrix.

3.7.3. Types of Matrix

Students in organizational structure and behavior differentiate several types of the matrix structure such as permanent and temporary (Mintzberg, 1993), simple and complex (Burns and Wholey, 1993), dispersed systems, product management, bipolar management, development projects, internal consulting services (Sayles, 1976). Furthermore, Galbraith (1971; 1973) conducts the most popular distinguishing of the matrix structure types in this field. He discussed that due to how much functional or product consideration affects the performance of the organization, types of the matrix are determined. Later on, Hobday (2000), based on the work of Galbraith (1971, 1973) introduces three types of the matrix (see figure 3) including functional matrix, balanced matrix, and project matrix organization.

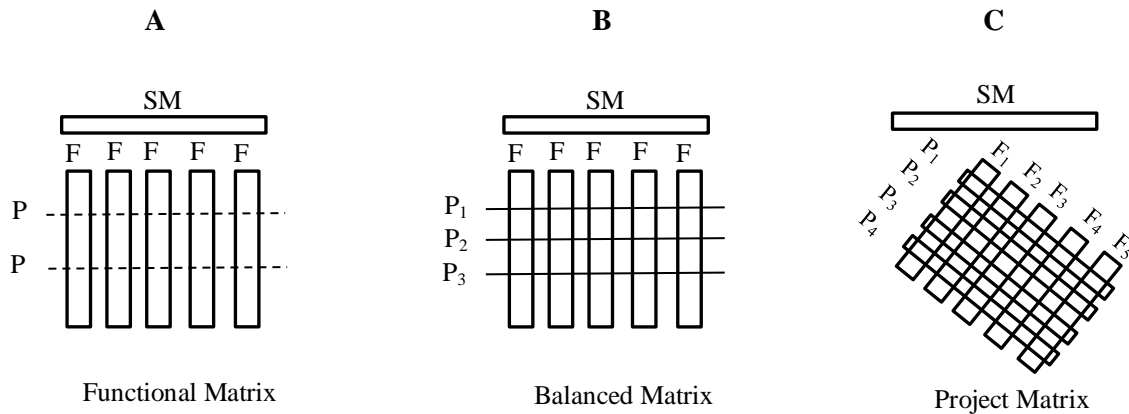


Figure 3: Three types of matrix (Adopted from Hobday, 2000, p.877)

Hobday (2000) maintains that the functional matrix (A) is the one in which the role of the project manager is restricted to coordinate the efforts of functional groups and report to one or more functional managers. The second type is the balanced matrix (B), in this kind the responsibility and authority is equally shared between the project and functional manager. The project manager is accounted to determine what needs to be accomplished and lets the functional manager define how it will be accomplished. Finally, the author adds in the product or project matrix (C), the project manager possesses direct authority over resources, finance, and workflow activities. In this sense, the functional manager is responsible for providing services and advice on demand.

3.7.4. Strengths and Weaknesses

Managers should also weigh advantages and disadvantages that a specific structure carries before deciding to apply it. Galbraith (1971) points out that each organizational structure has its own advantages and disadvantages and the matrix is not an exception. Researchers have identified a number of significant advantages and disadvantages of the matrix structure, which are listed in the Table1.

Table 1: Advantages and Disadvantages of Matrix Structure

Authors	Strengths	Weaknesses
Knight (1976)	<p>Efficient use of resources, Flexibility in conditions of change and uncertainty, Technical excellence ability to balance conflicting objectives,</p> <p>Freeing top management for long-range planning,</p> <p>Improving motivation and commitment, and Giving opportunities for personal development.</p>	<p>The conflicts that exist in them, Achieving balance between their parts,</p> <p>The stresses on people in them, and Administrative and communication costs.</p>
Davis and Lawrence (1978)	<p>Popularity</p>	<p>Tendencies toward anarchy, Power struggles, Severe groupitis, Collapse during economic crunch, Excessive overhead, Sinking to lower levels, Uncontrolled layering, navel gazing, and Decision strangulation.</p>
Teasley III and Ready (1981)	<p>The flexibility to emphasize two organizational demands simultaneously.</p>	<p>Tendencies toward anarchy, Power struggles, Navel gazing, and Decision strangulation.</p>
Gobeli and Larson (1987)	<p>Efficient use of resources, Project integration, Improved information flow, Flexibility, Discipline retention, and Improved motivation and commitment.</p>	<p>Power struggles, Heightened conflict, Competition over scarce resources,</p> <p>Slow reaction time, Heavy emphasis on consultation and shared decision-making, Difficulty in monitoring and controlling, Multidiscipline involvement, Excessive overhead, Double management, Experienced stress, and Dual reporting.</p>
Sy and Côté (2004)	<p>Establishes economies of scale, Facilitates the management of information, Focus on multiple business goals, and Responds more rapidly to the demands of the environment.</p>	<p>Power struggles, Misaligned goals, Unclear roles and responsibilities, Untimely and lack quality decisions, Silo-focus.</p>
Daft (2009)	<p>Coordination for meeting dual demands, Flexibility of human resource, Skills development for both functional and product, and Making decisions in complex and uncertain environment.</p>	<p>Duality of authority, High requirement for skills and training, Time consuming, Problematic maintenance of power balance.</p>

According to Ford and Randolph (1992) the matrix is a permanent overlay on the functional organization that makes temporary groups of organizational members. The authors then argue that using the definition of this overlay for the analysis of advantages and disadvantages of applying matrix structure indicates that most of the advantages of the matrix derived from the creation of horizontal communication linkages, while most of the disadvantages stem from the creation of dual or multiple authorities.

3.8. Communication and Information Flow in Matrix

Roger (1976) argues that some organizations are considered as open systems in which they constantly exchange the information with their environment. He adds that open system organizations act like processors in which they receive the information from their environment, then they process it, and finally they send out to the environment. Universities therefore can be perceived as open systems. New students come to the university every year and study under a particular education and teaching process, and then they become graduated from the university and start their careers. Open system organizations face certain level of uncertainty, which implies lack of information about future possibilities (Goldhaber, 1974). Thus, it is hard to make decisions about what will happen in the future and have a clear perspective of the long-run plan. When organization's tasks are associated with uncertainty, Galbraith (1974) suggests some strategies to absorb more information. He also warns that traditional designs of the organizations might not have a capacity to handle large amount of the information. Therefore he argues that matrix can preserve the organization from information overload through the creation of lateral relationships hence increasing information capacity. Duncan (1979) and Sy and D'Annunzio (2005) argue that this trend of communication facilitates information exchange across the organization, which in turn reduces uncertainty.

Daft (2009) describes the necessity of the information flow in an organization both horizontally and vertically in order to achieve its overall goals.

Vertical Information Sharing: Managers create the information linkages to facilitate the coordination and communication among the organization elements from the top to down. They are deliberated for control of the organization. Roger (1976) argues that managers in matrix sift the information that push down from the top level to prevent later information

overload in the bottom level. Roger (1976) argues that these managers act as ‘gate keepers’ who refuse the unnecessary information to go through the bottom line of the organization.

Horizontal Information Sharing: Horizontal linkages are utilized to provide the opportunities for communication and coordination across organizational departments.

Indeed, Daft (2009) emphasizes the presence of both vertical and horizontal information sharing in order to reach the overall goals of the organization. He further states, “An ideal structure encourages employees to provide horizontal information and coordination where and when it is needed” (p.90). Daft (2009, p.110) maintains, “The matrix is a strong form of horizontal linkage”. In line with this, Sy and Côté (2004) discuss that the matrix accelerates the speed of information both vertically and horizontally through the creation of several information linkages. Furthermore, Goldhaber (1974) argues that although the matrix is formal, through vertical communication, it maintains many of informal advantages of informal structure through cross-functional communication (horizontal) and innovative ideas and actions. Moreover, Sy and Côté (2004) maintain that through lateral communication strategy, decision-making process is pushed down toward the individuals with most relevant information. These individuals possess the information because they are constantly being updated by daily operations. The authors also add that these channels offer more accurate data, which lead to more accurate decisions. As a matter of fact Sy and Côté (2004, p.446) say, “The quality of decisions can be negatively impacted when individuals with key information are not involved”.

3.8.1. Complexity, Uncertainty and Responsiveness

Some researchers (Knight, 1976; Teasley III and Ready, 1981; Gobeli and Larson, 1987; Sy and Côté, 2004; Sy and D’Annunzio, 2005; Daft, 2009) introduce another substantial advantage of lateral communication in the matrix, which is flexibility to respond to the complex and uncertain environment. In addition to uncertainty, open system organizations might face different level of complexity in their external environment. Daft (2009, p.145) states “The more external factors that regularly influence the organization and the greater number of other companies in an organization’s domain, the greater the complexity”. For instance, universities should handle large amount of ongoing government regulation, competition for talented students. Additionally, universities need to cope with external research sponsors, international agencies, foundations, and so forth.

The lateral communication facilitates the flow of information across the organization and in turn enables the organization to respond to its dynamic environment quickly. Knight (1976, p.119) points out the flexibility of the matrix structure and says, “Because of frequent contact between members of different departments, information permeates the organization and more quickly reaches those people who need to take account of it. Decisions can be made more rapidly; changes in the givens of a situation can quickly be translated into changes of plan and acted on”. Nonetheless, this flexibility is not without a price. According to Goldhaber (1974) managers in the matrix are not informed automatically that their attendance is not needed in the communication channel. He adds employees are responsible to keep the managers tuned by communicating directly across the organization. Golhaber (1974, p.55) suggests “ To do this well requires a clear understanding with each manager about what must be discussed before taking action, what should be discussed simply to keep informed, and what can be omitted from discussions when everyone is busy”. Furthermore, Knight (1976) points out that people in the matrix are often occupied by meetings and massive regular communication hence, they simply kept away from their tasks. He therefore warns “The system demands that people have to spend far more time at meetings, discussing rather than doing work, than in a simpler authority structure. There simply is more communicating to be done, more information has to get to more people either by written means or through meetings, or both” (p.126).

3.9. Managing Matrix

The most remarkable characteristic of the matrix structure is to break the “single unity of command” (Mintzberg, 1993; Robbins and Judge, 2012). In other words, unlike the single power orientation in hierarchies in the matrix some managers have to report to “multiple bosses” (Knight, 1976; Kolodny, 1981) which some researchers call “duality of command” (Davis and Lawrence, 1978; Teasley III and Ready, 1981; Gobeli and Larson, 1987). Teasley III and Ready (1981) argue the duality of chain of command promotes flexibility and balanced in decision-making while increases the internal complexity. Galbraith (2002) argues that the root of this complexity is derived from different reasons such as selection decision-making is complicated, goals have to be determined collectively, and the evaluation system is dependent on multiple managers. He suggests that the organization and its individuals should be able to solve the conflicts on the surface, and they do not need to escalate to the upper-level managers all the time.

In such design the number of managers inevitably increases, as a result as Mintzberg (1993) notes the organization encounters high administrative costs. However, the additional information processing required by the matrix is a cheaper solution than a huge information management system (Knight, 1973). These managers as Sy and Côté (2004) discuss normally are not willing to share authority in decision rights thus they are not experienced in working interdependently. Hence, when it comes to matrix structure decisions end up with delay and decline in quality. Authors believe so because they think that decisions are not often implemented and are repeatedly revisited due to the lack of accountability and commitment. In line with this argumentation Davis and Lawrence (1978) discuss that managers in the matrix, due to the nature of its design, could develop too much or too little control. They further discuss the consequence of this bias, which turns to strangulation of decision-making process, where “there are endless delays for debate, for clearing with everybody in sight. Will decisions, no matter how well thought through, be made too late to be of use? Will too many people have power to water down all bold initiatives or veto them outright? Such conditions can arise in a matrix” (p.140).

Nevertheless, Robbins (1990) argues the dual lines of authority reduces the “bureaupathologies”, in which functional employees are prevented from becoming so busy with their “little world” that they substitute organizational goals. In line with this Daft (2009) argues that multiple-authority structure simplifies communication and coordination to manage the fast environmental change and gives the equality of authority to product and functional bosses.

Thereby, the concept of duality in chain of command might influence the decision-making process either positively or negatively. According to Galbraith (1971) organizations can benefit from cross-functional organization by paying attention to their ultimate design.

3.11. Summary of the Theoretical Review

As it is already discussed, Garbage Can Process works differently under different structures. Organizational structure determines authority and communication. Besides, it influences the process of decision-making which is GCM in a university by creating restrictions for solutions, problems, decision makers, and choice opportunities in different ways. First, through authority determination it influences the decision structure, which means organizational structure determines who has right to enter a choice opportunity. Second,

which problems are prior to others to enter a choice opportunity. Finally, organizational structure establishes linkages among problems, solutions, and decision makers to form a choice opportunity in order to make a decision after all. The relation between structure properties and Garbage Can streams is depicted in the following map (See figure 4).

Decision structure: defines how decision-makers enter to the choice opportunity.

Access Structure: defines how problems prioritize to enter to the choice opportunity.

Linkage: Organizational structure creates interactive linkages among solution, problem, and decision maker whether before entering choice opportunity and also during their presence within choice opportunity.

We therefore exhibit our collected data based on intended relation and will discuss and analyze in the next chapter. In the analysis we wear the glasses of the matrix and will indicate particularly how this specific organizational structure behaves in the relation between the structure and the decision-making process.

S: Solution

P: Problem

D: Decision Maker

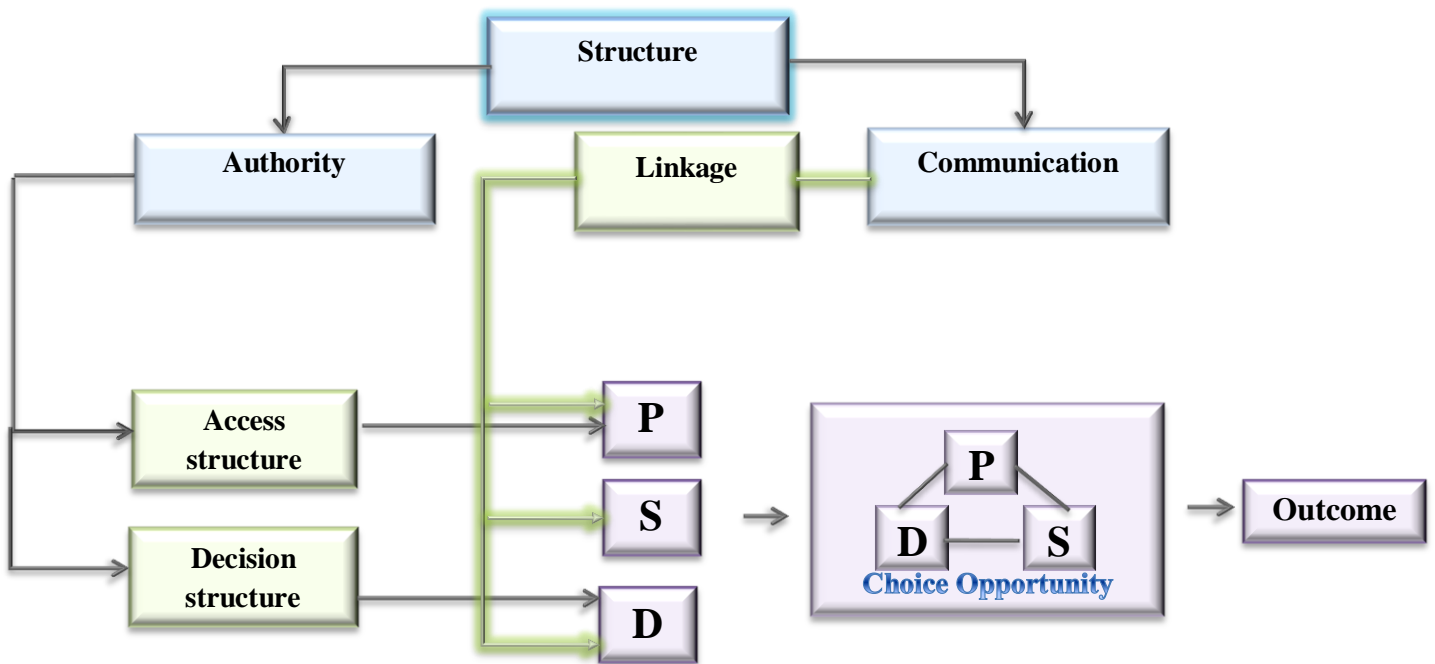


Figure 4: The theoretical framework (Authors' own elaboration)

4. Empirical Data

This chapter presents empirical data regarding our findings in Linköping University. As already mentioned the method of collecting data is interviewing so after coding, findings are shown based on our theoretical framework's elements. All the information in section 4.1. is presented according to Linköping University (2013).

4.1. Linköping University

“The day when a new group of students made one of his life's most crucial choices has recently crossed: His choice of college education” (Nordman, 2012).

Linköping University started to shape in the 1960s when the Swedish National Legislative Assembly wanted to expand higher education in Linköping. Linköping University is one of the most prestigious universities in Sweden and internationally. Linköping is the capital city of Östergötland state; it is situated 200km southwest of Stockholm, the capital city of Sweden. Linköping University consists of three campuses, two in Linköping and one in Norrköping - a neighboring twin city, within 40 km distance from Linköping.

In 2013 Linköping University has around 27,000 students in full time and part time study. In Linköping University 3,900 employees are working and total income of the university is 3,300 million SEK. In addition, this university has been innovative in creating new study programs in multidisciplinary area. Therefore Linköping University is one of the biggest and well-known universities in Sweden.

In terms of organizational design Linköping University has a unique organization which among Swedish universities does not have counterpart. Linköping University also differs from traditional academic institutes. For instance most European universities are divided into separate faculties of humanities, social sciences, philosophy etc. Linköping University instead encompasses four faculties: Institute of Technology, Faculty of Health Sciences, Faculty of Educational Sciences and Faculty of Arts and Sciences.

Besides faculties, the organizational structure of Linköping University was established with departments. Now this university embodies fourteen departments, which are combining the knowledge bases of several contiguous academic disciplines and often belong to more than one faculty. These Departments are divided into different divisions. Each department is

working under supervision of a head and board of the department. The board embodies a head of department, secretary, five teacher representatives, one representative from the administrative staff, one external representative, two PhD students and one undergraduate student. These people are assigned by vice-chancellor.

On the top of faculties and departments there is a top executive official position in Linköping University. This position is vice-chancellor who is appointed by the government for six years. Above the vice-chancellor is the university board which is the highest decision-making body. The board involves thirteen members who are responsible for budget and policies including representatives of teachers, students and public interests, the latter members constituting the majority. Linköping University is in a powerful development through its strong and competent staff.

4.2. Process of Interview

We observed that there are two managers in each department who are responsible; department head and division head. The department heads are mostly responsible for economical, technical, and operative issues and under their supervision division managers are more responsible for quality issues like education. Based on our observation we have found out the matrix structure in department and division level.

We therefore, started to look up the contacts in Linköping University website to find the intended managers to interview. Then we started sending out emails to set interview appointments. In these emails we briefly describe what we tend to do in this work and attached our questions to give them some clues and make them prepare for the interview. We also asked if they would not mind us recording their voice during the interview and ensured them that the duration would not take more than an hour. Unfortunately, the information about employees and their positions in chart of Linköping University were not adequately updated in Linköping University webpage so we got emails back from some people who were not in charge or their departments or divisions and their divisions or departments did not belong to the faculty A. Additionally, we realized that some departments belong to more than one faculty. During this process we received a substantial help from some people who used their relations and connections with other managers to recommend us for interviews. We would like to point out that we just received few emails back thus we had to go door by door and ask the managers to either find or make a break in their calendar

which worked well. Furthermore, we asked interviewees for their permission to use their data and their name and we promised to provide them with a hardcopy or softcopy of transcriptions thus they could read through and felt free to change something that they did not agree with. We got emails back that some interviewees wanted to be anonymous therefore we, based on research ethic, named all interviewees and their positions alphabetically.

In the table below we present the overview of interviewees including their position or positions, educational background, and work experience in their current position. As already mentioned we chose the faculty A so we interviewed the dean of faculty who is also a member of faculty board to achieve a comprehensive image of how this faculty performs. The faculty A has some departments and we set interview appointments with five heads of departments. These people have different background in terms of education and work experience however, their administrative experience was more important for us.

	Name	Position	Administrative Work experience
Faculty A	Person A	Dean of Faculty	8 Years
B Department	Person B	Head of Department	8 Years
	Person B ₁	Head of Division	6 Years
	Person B ₂	Head of Division	10 Years
C Department	Person C	Head of Department	4 Years
	Person C ₁	Head of Division	6 Years
D Department	Person D	Head of Department	5 Years
	Person D ₁	Head of Division	8 Years
E Department	Person E	Head of Department	5 Years
	Person E ₁	Head of Division	8 Years
F Department	Person F	Head of Department	13 Years
	Person F ₁	Head of Division	13 Years

Table 2: Profile of respondents

In the next section we present each department and exhibit our findings based on our theoretical framework. Our findings are sorted based on:

- Authority and Relationship
- Communication
- Outcome

4.3. Faculty A

4.3.1. Person A

Authority and Relationship

“University is a mess. You have to be here for quite long time to understand this organization” (Person A).

Person A notes the organizational structure of this university is not like a proper line organization. It is more like a “triangle”. In this sense it is all about sharing authority and responsibility. The vice-chancellor is top of the deans and the heads of departments in this triangle. Moreover, there is a board in the faculty, whose responsibilities are identified as evaluating research and education and he is chair of this board. Person A directly reports to the vice-chancellor about whether the work is done in the board and his office. Person A says that the faculty puts the order to the department and allocates the resources based on the requirements of the order. However, the head of department can ask for more resources or orders directly to the vice-chancellor.

“It is more about politics and negotiation all the time about getting resources” (Person A).

Person A believes negotiation is constantly happening across the university because it is not like the time when government gave the certain amount of money to each faculty, nowadays after the university gets money each faculty has to compete for it. For instance, in the first stage there are controversial debates to seize more resources among the faculties and every dean comes with his own interests and agenda. Person A then notes that the university is going to perform more like a business firm. As a result, the preferences have been changed in terms of disciplines. The more a faculty offers fashionable disciplines that are aligned with

industry and society tastes and demands, the more it has competitive advantage to get resources.

Person A further points out during past years the authority has been shifted and concentrated towards central power in the university. He maintains that the fundamental factors in decision-making are power and authority together. Moreover, in terms of decision-making people in the university would follow the Swedish culture, which is based on consensus. Person A believes this approach leaves the door open for more negotiation and compromises, which is not really clear to other people from other cultures.

“When we have a meeting in American universities or business firms when you leave that meeting you know what has been decided and who is going to take some actions for fulfill that decision. But when American people are coming to work in Sweden they attend the meeting and they participate to the discussion and suddenly the meeting ends and every Swedish seems to know what the decision was taken and what they are going to do. So Swedish people go to their offices and start working but Americans seem confused” (Person A).

Communication

About what the faculty is supposed to do or not, the information comes from the vice-chancellor office. Complementary to the information from vice-chancellor office person A attends large number of meetings to obtain extra information because he has to deal with different issues. Person A has scheduled meetings once a month with the vice-chancellor and three times per semester with the heads of departments. He also attends to a faculty board meeting once a month. However, Person A emphasizes that every Friday there is a very important meeting with the vice-chancellor and the heads of departments, where most of the decisions are made. Meanwhile, there are lots of interaction and meetings going on informally. Person A meets all the aforementioned people regularly whenever he needs to go to them. For instance Person A has breakfast meeting every Monday with the heads of departments of his faculty. He mentions that his faculty administrative group is very competent and sufficient and he is confident to ask them for any required information. He knows the right person and regarding the issue he calls the right person or persons for throwing a meeting. Besides, he has the open door policy, which means everybody can pass by his office and discuss any issue and has a meeting with him.

Outcome

“The last model of decision-making in university was the planning model and it did not work properly because we are talking about the actual way of making decisions and that model was a normative one trying to care of obstacles that might find from the rational perspective” (Person A).

4.4. Department B

4.4.1. Person B

Authority and Relationship

The authority scope of person B consists of two aspects, educational and administrative. The first aspect covers economic issues, employment, education, guidance for each course, roles of examination for courses, research, general guidance about PhD student’s supervisors, announcing PhD positions, and evaluation of PhD students. In addition, there is an administrative authority, which could be categorized from fairly basic such as deciding the holiday period for the department, to more specific issues such as allowing students to have a dictionary during the exam. Person B sums up that generally his authority covers issues about people, money, and organizational issues. He describes how this authority is handed to him.

“At the university we have guidance about decision-making, and what kind of authority we have in different levels. I would say the vice-chancellor has the main authority, which from her the majority handles to the university director, which is an administrative area. He then assigns different areas to different functional directors of the university. For instance, issues about personnel go to HR director. It is then assigned to me in this manner” (Person B).

Basically person B has a right to make a final decision in his department. He explains every year he receives a certain amount of money and his task is to allocate this money among divisions and other activities taken place in the department. Person B is the one who decides how much money goes to where and also he can go over budget within a fiscal year but then he is responsible to compensate the negative balance in the next year. In some cases the process is out of his hand for instance, the faculty board is responsible for evaluating PhD students, even though he still has a right to accept or deny the board’s decision after the evaluation.

While person B points out the “triangle” form of relationship among the vice-chancellor, the dean and the head of department he emphasizes the dean is not above him. The faculty gives the money to person B for education and put the order for courses and he as a head of department is responsible to distribute the money among the divisions and makes sure that the required courses would be delivered.

“The faculty can go to the divisions and evaluate the quality of education there but they do not have any direct influences on the divisions. There is no formal linkage between faculty and divisions. They are not assigning specific courses to the specific divisions, it is my responsibility. If you take it from the strict perspective there is no linkage between the faculty and the divisions. They are responsible for the content of the courses because it is a quality issue” (Person B).

Furthermore, person B talks about the divisions of department B and the authority that has been delegated to the heads of these divisions. The majority of operational activities are handled in the divisions. However, sometimes when it comes to major decisions about the structural issues he cannot delegate the decision to the divisions for instance, recruitment is one of them.

Communication

Person B believes that he and his colleagues in the university work a lot with having meetings with different people to discuss the materials and backgrounds for taking decisions. These meetings include a mixture of meetings within the department and with the top-level. Person B has between six to eight hours meetings every day including four hours scheduled meetings. He attends to 10 meetings with top-level managers in a year and participants involve the vice-chancellor, the deans, and the other heads of departments. Moreover, person B has two direct meetings with the vice-chancellor per month, and once per month with each dean and with employment committee every six weeks. Furthermore, he has a number of meetings within the department with the management board, the department board, and the heads of divisions.

In addition, he notes the importance of external environment to obtain the required information for making decisions.

“It is also about listening to outside the university to know what is happening in other universities and what kind of decision they are making so that influences our

decisions. Thus, it is a mixture of internal and external issues. For instance, the government specially the education ministry influences decisions” (Person B).

Person B then continues formally information is originated from the vice-chancellor office and the faculties, whereas informal information origins from the external environment and what is happening within the department. He mentions normally, formal information is documented and it is available and also accessible, you just need to look it up when you need for instance you can go to HR for issues about personnel. Whereas the informal one is quite complicated to narrow down due to its characteristic. He thinks to obtain such information you have to work on it and also have to be in the organization for a quite long time because there is no straightforward address to such information to be reached. Moreover, person B has his own way to communicate with people, he writes down what he wants to say to people and hands it out. He thinks most likely people make more comments on written request because they have more time to think and of course sometimes they are conservative in meetings or discussion to express their ideas. Thus, with this approach, innovative ideas will not remain obscure and they will flourish.

Outcome

Person B believes that some problems repeat themselves because they are not influenced by decisions. Those kinds of problem are more attached to employees and particularly individuals. These problems are not arisen from the same individuals, they therefore come back but from other individuals thus in this sense they repeat. Furthermore, those kinds of problems will not necessarily turn into the decision-making process. He says for instance, this department has 480 employees so you cannot make a particular decision for a problem of only one individual then the other 479 employees are ignored and the decision is useless in this sense.

“In general I would say people are following the decisions, what can be problematic is that if you tend to take decisions that are not viewed as essential decisions, then it is very low to accept those decisions and follow it” (Person B).

Person B notes the university has moved into take more formal decisions gradually. He says 10 years back in time there were lots of informal decisions; decisions were not written down and were based on verbal agreement between parties. That approach was a good solution to small organizations and actually it worked very well, but now the university has roughly 4000 employees thus the former approach no longer works. He therefore believes it

has become really easy for people to read through the documents and learn what they need to do. Nonetheless, there are some criteria, in his opinion, which cannot be written down and need to be discussed.

“It is clearer what is right and wrong while it becomes more inflexible because if you have special situation where it has been more difficult to be able to handle that. [...] It has become like black and white whilst the shades of gray is very difficult to cover and handle in new form of decisions” (Person B).

Person B believes that the university becomes more and more like consultant firms in which the overall goal is to deliver solution for client’s problem. Thereby, this new trend leads the university towards a project-based organization.

4.4.2. Person B₁

Authority and Relationship

Person B₁ believes there are too much bureaucratic rules and regulations, which narrow down the liberty of decision-making in his position.

“It has rather been more and more restricted by rules and regulations which are formalized over the years. Today they are still sort of trying to formalize processes increasingly and the problem to my mind is that you replace consensus with rules so when you have a rule tend to stop thinking you do not use your brain any longer” (Person B₁).

Person B₁ is not able to initiate an idea and makes it happen, he has to obey certain rules and in this sense creative ideas are ignored. Even if a new idea is negotiated, it has to follow the process in a formal and structured way. Thus, he expresses the power of his position as a head of division is illusive. He has certain amount of power written in the job description, yet it is illusionary. He reports to the head of department about issues that are important for the operative aspects of his job such as economic issues. Also, if something goes wrong with quality of education and research person B₁ needs to report to the dean. However, his instant superior is the head of department. He explains, formally the head of department possesses the authority to approve the decisions that are made in the division and the faculty cannot influence on these decisions.

Communication

“Information becomes obsolete very quickly, so what is good today maybe not be good tomorrow” (Person B₁).

Person B₁ believes there is a continuous flow of information running through the organization and the major bulk of information is distributed during the meetings. He has formal scheduled meetings including four times a year with the faculty, once a month with the head of department, and every third Thursday in a month with people in the division. Besides these meetings there are lots of informal meetings occur for example there is a “Fika” every Friday at 9 or 10 o’clock. People are gathering in the meeting room with some coffee, bread, and cookies and it is totally up to them to come or not. Person B₁ then adds there is similar culture to other organizations as well.

“The Fika is, as a phenomenon is not like that you need to have a break as such it is, more like you need to interact with somebody. Role of the Fika is to give you this excuse to meet for changing of information, so it is very important. And it is a cultural thing, in France for instance, you would work very late in the evenings and it is not quite unusual anyway, you do not do very much but you go around and chat with people, talk, and it is just nice that but you have long hours so that is for the same purpose I think. You develop it a little bit different” (Person B₁).

Concerning the flow of information, he says that all levels of the hierarchy serve more or less like filters, in better words, they act like funnels. Thus, there is certain amount of information that goes down throughout these funnels and they get filtered depending on who is interested in what kind of information. Moreover, sometimes people have to take the initiative and go for the information they need. To do so they should know who has the intended information. Thus, he believes it is important to have a group of people to call and ask for what is needed or even ask them to help you finding the right person.

“We are trying to push down the information and spread it, and the job is to sort what information could be of interest to you and if you are looking for information that you think I may have you come and ask for it” (Person B₁).

Outcome

Person B₁ believes that in the university people want to be in a safe side by following every single rule and regulation thus nobody can criticize them. As a result, the process is lengthened because when the university grows it is the inevitable situation. Moreover, he says

that taking decision-making process in this division into the consideration, there are few certain elements which are influenced by external environment. Particularly when it is about research funding, in this division there is a little money of that kind. Whereas, in other divisions, which are performing within specific fields, for instance applied science, they are funded by the industry thus they are influenced by industrial change and support.

4.4.3. Person B₂

Authority and Relationship

Person B₂ has a certain amount of freedom within the boundaries of rules and regulation, which are declared by the top-level of the university. He always tries to run the division by getting teachers and PhD students involved. For instance, all the meetings within the division are open for everybody to attend. However, this is different in the upper level and when there is a meeting in the department level, the head of department calls people those who are supposed to be in the meeting concerning their authority. As a matter of fact, Person B₂ can send his deputy to the meeting but not a PhD student. He believes over the time, role of the heads of departments has been changed. For instance, Person B₂ says that ten years ago or a bit longer professors had much authority to do whatever they wanted, while the head of departments were there to make the department run and coordinate the members of the department. Nowadays, in some cases the head of department makes particular decisions, which are applicable for all the professors. To him it seems reasonable, because the head of department is asked to make decisions based on given information from the top-level, which is not available for everybody. Person B₂ continues as a result, there is a shift in which some decisions have been taken from the division and some have been delegated.

“[...] more and more of the economic decisions are taken in the department level, but small scale details about how things should be done are moved to the divisions. So we have to deal with detail of things whereas the department takes some broader perspective. This causes more administrative works” (Person B₂).

Person B₂ thinks that before, management style was more collegial and now it has been shifted to corporate style. For instance, the head of department back in time dedicated 20 percent of his time to the administrative issues and the rest remained for his research and now he is occupied by administrative task 100 percent of his time.

“I am told by some persons older than me that in the old days they had much more time to do their own research, whilst now they are struggling with the huge pile of administrative tasks” (Person B₂).

Communication

Person B₂ maintains that information is available within the university, and in order to reach the information it is necessary to have a network of people. Through interacting with these people the required information will be achieved eventually. He thinks it is important to receive illustrative information from the upper level in order to take a reasonable action.

“Regulations come from dean or university level now you have to do something so I want to be informed. Anything from the department head level has to be very clear then it would help me because if I have to take action I want to have enough information. I want to know if I have to take an action then I have to consider deadlines as well” (Person B₂).

In his division there is ongoing discussion about various subject, for instance Person B₂ and his colleagues constantly share ideas about teaching style. In his opinion this is similar in other division as well, in different style perhaps. As a result, people get involved in lots of communication and in turn they share information.

When it comes to the meetings, Person B₂ meets the head of department and other heads of divisions once a month. He believes these meetings are normally one way communication, where the head of department says what is going on and what will happen. He meets the head of faculty to discuss about the quality of educational issues and to get new information in this aspect. Sometimes information that he receives from the faculty is clashed with what he gets from the department. Person B₂ then has to wrestle with the bias and trust one side which is quite complicated in his opinion. He also calls people in the division for a meeting at least once a month to share the information and discussion. The material for these meetings is normally planned and he goes to the meetings with a structured agenda. In these meetings there are different interests. People are not interested in certain areas thus they do not contribute to the process of decision-making in this manner. In such cases he takes over and makes the final decision to make the process fast.

Outcome

In regular setting, meetings within the division attempt to solve daily problems. In this sense Person B₂ believes these meetings result in solving problems. On the other hand, in the

division there is tendency to move the process of problem solving into the process of decision-making. For instance, he and his colleagues have made a giant excel sheet with all the plans for three years ahead. It consists of who is the responsible teacher, who is the assistant, how many student assistants are needed and so forth. Thus, this division tends to solve upcoming problems through establishing policies beforehand during the process of decision-making.

4.5. Department C

4.5.1. Person C

Authority and Relationship

“I started to do research when I was quite young. I have lived very much in my research glass ball and I did not have to care about things around or what they have decided in the university because I lived in my research life” (Person C).

He points out it is hard to understand how university works and how decisions are really made, unless you have been engaged for quite long time within the organization. He has learned a lot about the organization and its decision-making process since he started to go out of the student mood.

An instant boss of person C is the vice-chancellor who approves final decisions. However, considering the allocation of resources he has to report to the dean, although the dean is not his superior. Person C says that the most important part of the department in terms of decision-making is the board of department, where decisions about recruiting of new teachers and researchers, courses, economy, and organization are made. He is the chair of this board and he makes the ultimate decision. He is also very connected to the management board of his department.

“I, as a head of department, make many decisions in the department level and when I do that I discuss questions with my colleagues at administration” (Person C).

Communication

“Information load is hard to manage sometimes. We have a huge central administration pumping down information, things you suppose to do and delegations. It is really hard to be top of the information” (Person C).

Meeting with the management group (ledningsgrupp) is essential for person C and he meets them regularly and has daily contact with them too. Every second week he also has meeting with the heads of divisions and six meetings with the board of department every year. Person C notes the number is flexible and he can ask for extra or short meetings upon the demand.

Person C further, points out that most formal and administrative information is easy to access for him but good relationship is vital for catching the rest of information in the department.

“As a head of department I have access to most of information. Within the department it is very important for me to have a good relation with people and I mostly get information in meetings with my staff” (Person C).

Moreover, in the department he tries to facilitate and soften the work for people who are responsible in the divisions. Therefore, it is unique in department C that there is another head besides the head of division, who is responsible for the research area. Person C thinks it helps the head of division to focus on administrative issues and does his job better.

Outcome

Person C trusts the process leads to more solving problems within the department level. Because he thinks in this level he does not make so much minor decisions. In other words he mentions the department has to follow the predetermined decisions and solve the problems that are impediments to implement those decisions. However, person C believes mostly decisions solve the problems automatically but in this sense the department is responsible for smoothing the path for decisions to be executed.

4.5.2. Person C₁

Authority and Relationship

“It is hard to say how much authority one person has, because in one way it is an informal organization and in the other way it is a much regulated organization” (Person C₁).

When something with the quality of education and research goes wrong repetitively he, as a head of division, and also later perhaps the head of department are responsible to clarify the situation for the dean.

Person C₁ continues there are lots of regulations and laws declared by the government and the university administration, which person C₁ has to live with accordingly. As long as he keeps moving within those boundaries, there is a liberty for him to do what he perceives is right to do and it feels very free in this manner. He believes with these policies in mind Linköping University is going to be more professional.

“The university is trying to be more transparent on where decisions are taken, and trying to define what different people are supposed to do. It is more professionalized rather before when I was a PhD student. I would not say it has been much more centralized it is going from academic traditional way to managerial working” (Person C₁).

Communication

Since person C₁ is the deputy of the head of department, they meet more often whether formally and informally. In these meetings they share information about the meetings that they have attended. He also receives the regulation and roles which come from the top. He, as a head of division, meets study director, heads of other divisions, and professors. Informally, person C₁ often meets people from his division for “Fika” once a week. This is something informal but formal in a sense in which it is embedded to the culture of the university.

“I meet people informally two or three times a day. And those are important for me to get information. [...] when I keep good dialogue with people around me and get everyone involved then I feel very free and informed to do my job” (Person C₁).

Person C₁ also reads a lot to keep himself up-to-date. He reads through the Liu webpage, all the protocols and regulations either outside the university.

Outcome

In the division what is being done is problem solving. Person C₁ gives an example about the schedule that he prepared for the next semester and it took a lot of time. Then somebody wanted to quit. As a result person C₁ got a gap in the schedule, which was problematic and he had to fill that gap up. Person C₁ says that this is kind of problem that he has to take care of. First he asks the division for successor then the whole department and at last the faculty. If he manages to find somebody across the university problem was solved. Otherwise, Person C₁ has to look outside the university, but in this case there is a limitation, which says he cannot hire somebody over a long period of time (he says it takes at least one and half a year to get

tenure). Thus, Person C_1 solves the problem fast but temporarily and meanwhile he can continue the process of hiring a permanent professor to solve the problem permanently.

4.6. Department D

4.6.1. Person D

Authority and Relationship

As a head of department person D is responsible for the economy, for the personnel, and for the whole setting of what the department is doing to the vice-chancellor and in this sense the dean is not over him. However, person D describes the flow of money in which the central government decides over the budget for the university but not as a whole bunch of money. There is already some outset and certain distribution for the money which determines how money should be distributed among disciplines. Although, when it is delivered to the vice-chancellor, the vice-chancellor can relocate the money and send it to the faculties for the education. Then the dean, considering the competences of the departments, puts the order for different courses hence in this sense the dean has relation with the head of department but still he is not a superior to the head of department. Person D then shows the organizational chart of the department D (See figure 5) and explains that the department consists of six divisions, five for disciplines and one for administration.

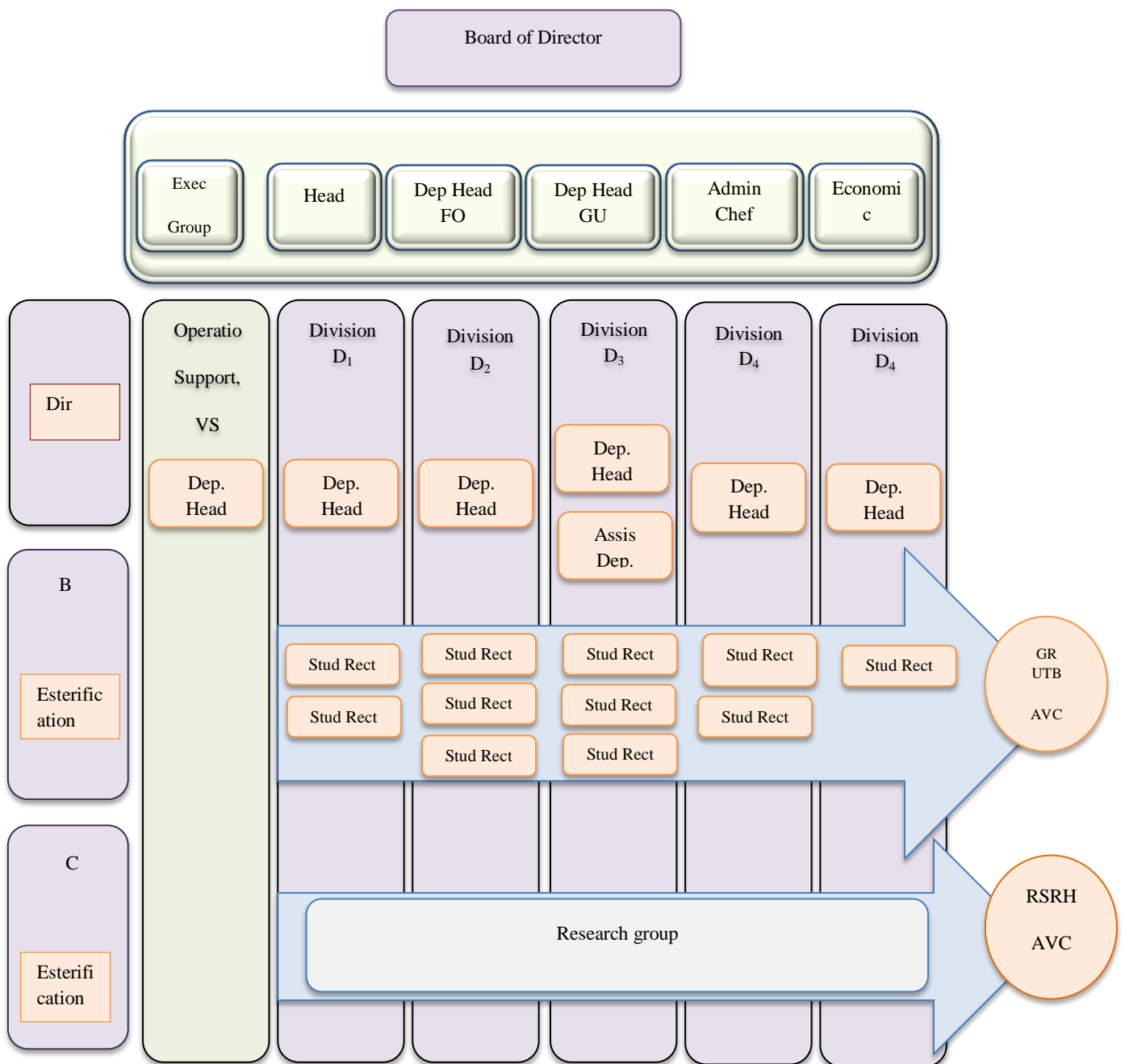


Figure 5: The chart of department D (Person D)

On the top there is a board, which is a formal body and has certain authority according to the university's structure. Furthermore, management group is an informal group without having any protocol or regulation. Person D says in the management group we meet and share information and discuss about policies and so forth frequently. He further notes there is a tendency in the university to abolish the board of the department or to penetrate into it with some external interests.

“I have been to university life in Sweden for 40 years and I have seen a big change coming these last years. I was brought up with the 1968 revolution where the freer university existed and I see the gradual ambition of the authority to have a more strict authority line instead. One of those examples is that I, as a head of department can hire an Adjunkt (a temporal professor) teacher so I am responsible for that and not the board anymore” (Person D).

Person D then continues he keeps the board because there is willingness for democracy and not for a one-person role. The board consists of eleven persons and he is above them, although he has a privilege to prepare and present issues beforehand and even to plead them afterwards.

“I think that is democracy. Now is more like being a hotel host I am not the owner I am the host of the hotel and somebody is boss over me. It has become much more complicated. The whole university structure is so heavy, so many regulations, laws and all kinds of rules that you have to obey” (Person D).

Communication

Person D has more than ten kinds of formal meetings in a year, which have been pre-scheduled by the structure of the university. They include meetings with the vice-chancellor, the dean of faculty A, the dean of faculty B, the vice-chancellor and all heads of departments, the department D board, the D management group, heads of divisions D, D research group, and the Trade Union and Environment. Person D also adds his status as a teacher and researcher encourages him to attend the meetings with other teachers and researchers in the department. He gets information for making decisions from his management group (ledningsgrupp) who gets the information from the heads of divisions. He also uses his common sense, knowledge, and experiences.

He points out the importance of formal meetings where the limitation and resources are clarified.

“Formal meetings give us a structure what we can do what resources we have. It puts a strong limit to us or if the vice-chancellor comes up with the new initiative and so on what is allowed to do with your room facilities or computers and etc. In this sense the formal meetings are the great skeletons of my work, but I could not do without those informal meetings I could not make things work. [...] based on those decisions and those stipulations coming out of formal meetings then we have to adapt

to it. We have to make it work in day to day life and then we have to do those informal meetings to make it happen” (Person D).

Person D sets number of informal meetings with the vice-chancellor and the deans and normally based on these meetings it is more or less predictable what would be the ultimate decisions in the formal meetings.

“I can also be active before those formal decisions but the basic thing is formal decision-making or formal decisions. There is informal structure at the university there are lots of talks going on with the dean and the vice-chancellor but the danger of such talks of course is every head of department comes with his or her agendas” (Person D).

Outcome

“I would prefer not to go for either problem solving or decision-making as a general process term for outcome of the decision-making process. Both components could be applicable. Decisions often do not solve problems; they handle a situation” (Person D).

4.6.2. Person D₁

Authority and Relationship

Person D₁ has the last word in his division for the ultimate decision, but he prefers to get people involved in decision-making process. Sometimes discussion does not go well then he needs to take care of the decision by himself. Person D₁ thinks that his authority does not cover big decisions and it suits for making day-to-day decisions. For example most of the economic issues go to the head of department but he still can decide upon what kinds of people are required or what type of research should be conducted.

“My authority is in the middle. I am the one who is responsible for direction and small decisions we are taking day to day but big decisions go to higher level” (Person D₁).

Each division has to present its processes to the faculty and the faculty evaluates the division. Person D₁ particularly points that programs and courses in divisions are project that departments are responsible to deliver them.

But since 2007 till present person D₁ realizes that decision-making in the university becomes much more bureaucratic. When we ask about the reason he says:

“One reason could be that the university is becoming more like an enterprise. Before it was much more question about informal meetings between colleagues and now it is important to obey the rules. Maybe we have created new kind of university which is not like gathering together people who think and work with research questions but kind of enterprise” (Person D₁).

Communication

Person D₁ thinks that meetings are places where information is shared. Meetings are categorized into administrative and educational ones. Administrative meetings usually involve the head of department and other the heads of divisions. These meetings are scheduled and announced at the beginning of the year. Moreover, person D₁ and his colleagues in the division discuss and share information about research and teaching in the educational meetings.

Person D₁ is sometimes overwhelmed by amount of the information that he receives every day from different arenas of the university. Person D₁ thinks that the level of information accessibility is high. He has to sort out what kind of information is related to his work. Additionally, he feels responsible to send out practical information to his colleagues in the division.

“I have to select I cannot send out everything that get from top. They have impression that there is a lot of information that goes to everyone so it is not only for me but I have looked up and ask myself if this is important for my division to know” (Person D₁).

Outcome

Since decision-making within the division level is limited to daily issues associated with education and research, it is more problem solving for everyday work. Big issues and concerns like economy or hiring tenure are left for the top level to decide.

4.7. Department E

4.7.1. Person E

Authority and Relationship

Person E states that this kind of design is quite unusual for the Swedish system. He already worked for other universities and perceives that Umea University and other Swedish universities follow a proper hierarchy organization. At the top of the university vice-chancellor is positioned, dean works under vice-chancellor, and finally head of department has dean as a direct manager. Person E continues when it comes to his department there are two types of decisions. First some issues that should be brought into the department's board where comprised of the head of department as chair, a secretary, five teachers representatives, one external representative, two PhD students and one undergraduate student. These members are formally assigned by the vice-chancellor. Second, there are some issues that he takes care of by himself.

“It is tricky sometimes to make decisions. Are they big enough to take to the board or I can take care of them in the management group. [...] it is on me to leave something to the board. I would if I could keep the decision to myself. There are two major fields and areas that I always take to the board and it is about economy and employment. I cannot decide on myself to set up a position to hire a professor” (Person E).

Communication

“I am very keen on meetings and try to establish kind of consensus around, it is more effective to agree on something in meeting than putting it on the paper and say, follow this”(Person E).

Besides structural meetings similar to other heads of departments such as meetings person E also tries to be kept in touch with other heads of departments. He usually calls them and collects their opinions about different issues. He believes it is good to have a network of people outside the department who are reliable and can give out some good advices. In his department person E has a tight connection with the members. He also perceives a chain of information where he receives information from the top and spreads it either through e-mails (task is usually done by his secretary) or face-to-face discussion to the heads of divisions. Then, the heads of divisions are responsible to pass it again to the members of their divisions. However, e-mails in his opinion, can mess up people and get them lost under huge pile of

information thus it is better sometimes to take the issues forward in a discussion. In the department if somebody needs to know something which is not among what they have got, he then goes door to door and ask for it. He believes that in this large scale of information sharing, there is always a danger of false information.

“It is really good for decision-making to have that kind of informal dialogue. Of course everyday people come to my office and give me information about this and that. The huge system of sharing information is going on. Sometime there are rumors that you should concern about that” (Person E).

Outcome

Person E trusts decisions that are made in meetings or elsewhere (like in the top level of the university by the vice-chancellor) are truly influenced by the process of problem solving in the bottom level of the university.

“Often those are connected because it is in the beginning you have to solve a problem in a way, before you can make a good decision you have to make some kind of analysis what kind of problem are we dealing with? What kind of consequences would different decisions have? So it is a lot of problem solving initially and in the end when we have done that, it is more like ok we go to this direction let’s do it” (Person E).

Thus, person E mentions if there is a decision in the top level, which is not perfectly implemented, there is always a problem unsolved in the bottom or deeper level. Therefore, it is his job to gather with his staff in the department and tackle the problem eventually. He believes that problem solving is more important because if there is a failure in this step of the process, decisions will not probably be very good. He adds that problems could also be the consequence of decisions then the decision-making process should be reassessed which is not easy.

“I do not think it is possible to have that kind of accuracy in all the decisions that you can actually solve every problem I do not live in that kind of illusion but hopefully decisions can direct things in the right direction maybe be some kind of help at the local level to solve problems” (Person E).

4.7.2. Person E₁

Authority and Relationship

“Most of my power is based on that I have authority of the possibility to negotiate with my co-workers” (Person E₁).

In division of person E₁ there is a board which is an advisory board and person E₁ just need to explain about his decisions and negotiate with the members. The head of division has some certain authority but his performance and decisions within this area would be evaluated and criticized afterwards. He points out that the informal structure is getting shrunk for instance, back in time person E₁ was able to get money for a specific program through direct negotiation with the vice-chancellor which is not usual these days. The university administrative routines have been more formalized and been forced to be done according to the new structure which is more centralized. This pattern is so inspired by international environment and EU regulations and rules.

Communication

Person E₁ obtains the information through a channel. First, it is sent out from the vice-chancellor office or faculty office to the department. Some information specifically sent to him by the head of department. This kind of information is filtered by the head and sent out to the person who needs that. Moreover, information is flowed from word of mouth and general databases such as the university intranet. In his opinion emails have a vital role to stimulate the information to get flowed. In terms of meeting, his door is open and there are almost ten spontaneous meetings every day. Every week there is a meeting with the division board. Specifically there is a weekly meeting with aim of sharing information with people in the division and it is open for all colleagues to attend. Four times per year there is a meeting to discuss about the strategy of the division. Speaking about the dean, he believes that the dean needs to be more active.

“I do not have any regular meeting with the dean if I am not called for that, if I will be critical I think our present dean is neglecting meetings. I think he should be more active in doing that I think he should have meetings with the faculty professors and also he should have meetings with professors individually and he does not have that” (Person E₁).

Outcome

Person E₁ believes sometimes meetings are fruitless. People in administrative level are surrounded by meetings and they feel like they are working, but in reality they are not. Sometimes even meetings make problems and sometimes unrelated problems solve in a

meeting hence types of meetings do not match the same types of problem. Problems solving as one to one is normally more efficient because a problem is determined and shared and eventually if possible solved.

4.8. Department of F

4.8.1. Person F

Authority and Relationship

In Linköping University the relation is like a “triangle” in which the vice-chancellor sits on the top corner and the dean and the head of department sit on each bottom corner of this triangle. Depending on the question, the dean and the vice-chancellor approve his decisions for instance, for budgeting and economic issues he needs an approval from the vice-chancellor whereas for education and PhD student issues it is up to the deans

Person F then showed a picture, which illustrates types of meetings, their participants and their possible outcomes (See figure 6). The picture comes from a leadership course held by a member of the faculty. The aim of the course is to keep the managers up-to-date with latest management and leadership approaches. He actually applies this approach into his department.

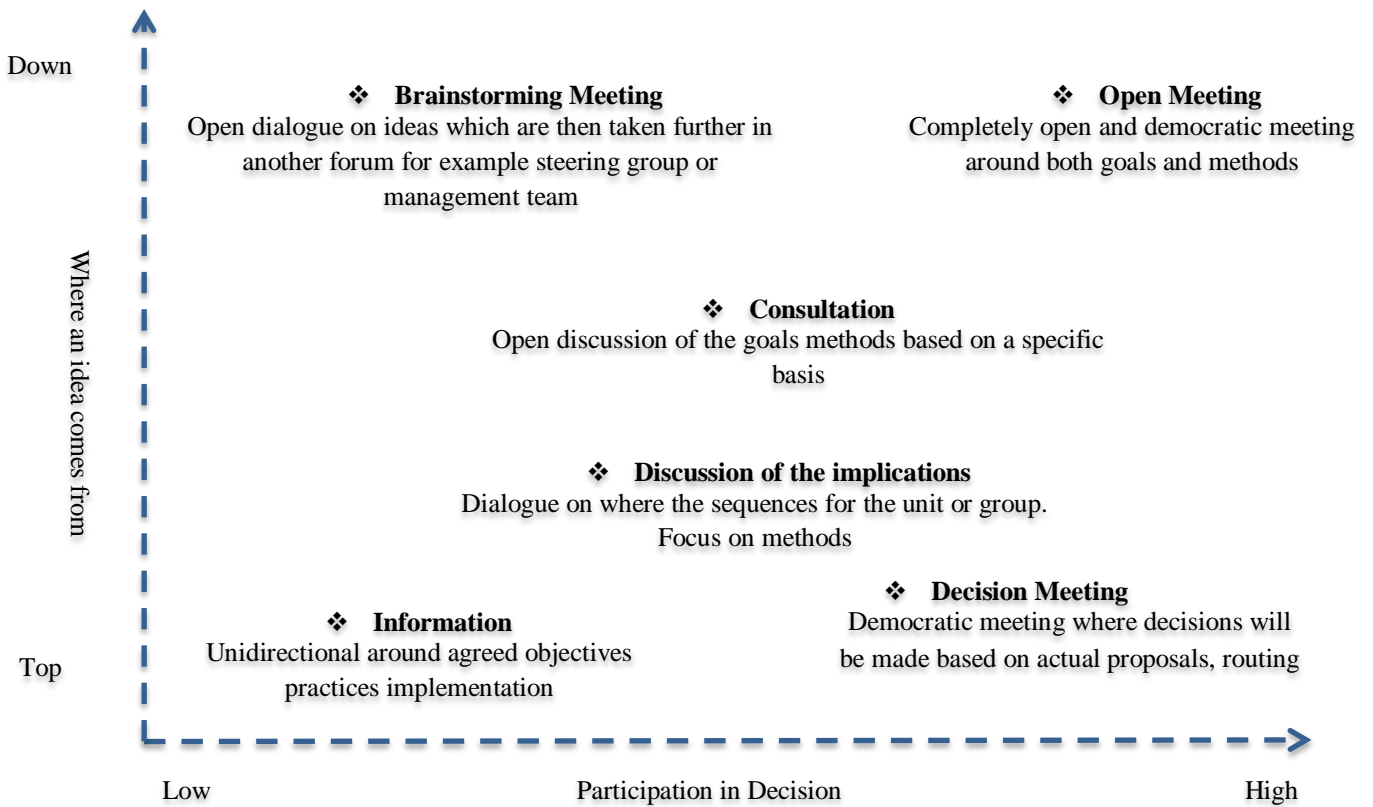


Figure 6: Involvement in decision-making process (Person F)

Person F notes it is important to show people that their opinions are considered in the process of making decisions “...I have informal meeting two times a year I have lunch with all people in the department and we go to number of points, I give information to people that what kind of decision we have until now and these have been your comments so they know if I do not manage to talk to them, they have opportunity to see their roles on made decisions”(Person F).

Beside structured meetings, Person F also goes on trip abroad with the deans and the vice-chancellor. Additionally, he points out those meetings generate other meetings and communications.

“I am living in meetings, my job is meetings. In a meeting we decide about different things” (Person F).

Person F is very open and everyone can go to his door and ask for a meeting or any other issues that Person F is responsible for. He also feels free to obtain his information by knocking every on a door in the department and seek for the information that is required for making a decision.

Outcome

Person F believes that depending on the question usually the process is for problem solving and sometimes there are some decisions that cannot be influenced so much because they originated from the top level of the university. In general, for a daily or even annual work it is easy to make decision as fast as possible whereas in long run the process takes more time. He thinks that this has happened because such decisions need more information gathered before being made.

4.8.2. Person F₁

Authority and Relationship

“Linköping University has three main tasks; education, research, and cooperation with industry and interaction with society. As a head of division I have two main tasks; education and research” (Person F₁).

The head of department is the instant manager to person F₁ and there is no formal interaction or linkage between the head of faculty and the head of division, but for instance if Person F₁, as a head of division, tends to establish a new course then he needs an ultimate approval from the dean. He believes sometimes administrative issues make him occupied and sometimes keep him away from his interest, which is research

Communication

In the division people meet at “Fika” to share the information and in turn try to solve their problems. Person F₁ normally announces these informal meetings beforehand, and to make everybody attends, these meetings usually happen during lunchtime. He, personally communicates with other people to get required information to make decisions, he maintains that this is a democratic way.

Outcome

Person F₁ thinks sometimes decisions are temporal treatments for existing problems.

“Sometimes there is no certain formula to solve problems, particularly when they embedded in individual cases. For instance conflicts between professors and PhD students” (Person F₁).

In the division, they attempt to push the problem solving into the decision-making stage in order to find a strategic way of solving them in long run.

5. Analysis and Discussion

In this part, the empirical data from the case study of Linköping University is analyzed and discussed. To make the analysis sensible, we wear the glasses of our theoretical framework shown in figure 4 in Chapter 3, to analyze and discuss the collected data exhibited in Chapter 4. We also attempt to provide a logical argumentation, firstly to demonstrate a reasonable connection between the theory and the reality. Secondly, to answer the research question which is formulated in Chapter 1. Furthermore, this analysis should yield to a rational and intelligent conclusion, which covers all aspects of the aim of this thesis.

5.1. The Matrix and Establishing Linkages

As it can be seen in figure 4 organizational structure establishes linkages among the streams of GCM including solutions, problems, and decision-makers to form a choice opportunity. Once a choice opportunity is formed, decision(s) will be made as outcome(s). We argue that matrix structure creates these linkages through the information sharing across the organization. Daft (2009) argues that to have a complete information process system, both vertical and horizontal information flows are needed. This information will be used to make decisions and the more the information, the greater the alternatives for decisions thus reducing the uncertainty (Knight, 1976). First, information flows vertically from top to the bottom line of the university. Our findings show that in Linköping University vertical sharing of information occurs based on two ways, documents and formal meetings.

5.2. Vertical Information Sharing (Formal Communication)

5.2.1. E-mails, Written Documents, Figures

In Linköping University one approach to make the information flow towards bottom line is to sending out massive amount of information through documents. These documents are normally distributed through e-mails and written text. The content of these documents can declare how much resources (money, staff and etc.) are currently available. Also it can be the raw material including information from the government, education Minister, numerical figures, statistics, and other different information for different domains in the university. This information is disseminated frequently, nearly every day to the management groups of the faculties and departments see figure 7. The information is then filtered and being distributed

to the next bottom level. Our findings indicate that this information is accessible to everyone in the university and to get extra information people can go to administrative groups of their faculty or department.

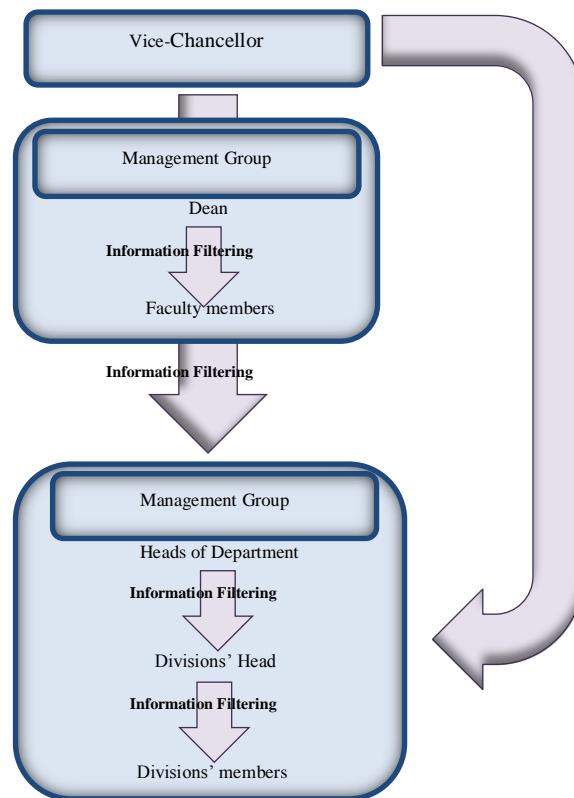


Figure 7: Vertically information flow in Linköping University (Authors' own elaboration)

5.2.2. Formal Meetings

The other way of sharing information in vertical channel is a formal meeting. Our findings show that in Linköping University there are a lot of formal meetings see table 3, which are pre scheduled at the beginning of a year. Normally these meetings take place in top-level of the university in which the vice-chancellor, the dean, and the heads of departments attend to these meetings. For instance, person B has twelve pre-planned meetings with the vice-chancellor and the dean within a year. During these meetings they share the latest information for making decisions and inform each other about what is going on in the university. These meetings are important for the managers⁶ because they want to be informed about the existing resources and new rules and structure for their work. During these meetings, information is shared and distributed and the further task for the dean and the heads of departments is to

⁶ In this analysis we use the term 'the managers' and by that we mean the dean, the heads of departments, and the heads of divisions in Linköping University.

distribute them across the university. For instance, the head of department is responsible to spread out the information to the heads of divisions and through them it goes to teachers and student who are the members of the divisions in bottom line of the university.

Time	Participants
Once a month	Vice-chancellor+ Dean+ Heads of departments
	Vice-chancellor+ Heads of departments
	Dean+ Board of faculty
	Dean+ Heads of departments
	Heads of departments+ Heads of divisions
Once or twice a month	Head of department+ Board of department

Table 3: Formal meetings in Linköping University

Moreover, as we already discussed in Chapter 3 some information can be unnecessary for some people in the university. In this sense, the dean and the heads of departments should be on top of the information. They are responsible to make the information practical because they know who is interested in what kind of information within their area of work. For instance, person B₂ as a head of division wanted to have more illustrative information in which determines who should get the information and what should he do with it. During our research we found that even though this task is fairly tough and time consuming, the dean and the heads of departments are able to handle this task and narrow down the necessary information. The heads of divisions as part of the department are also responsible to make the information more relative and narrow for the division members including teachers, researchers, and students. Managers in the university send filtered information to the right people in order to avoid messing them with huge bulk of random information. As person B₁ said managers in the university act like funnels in terms of information distribution. In other words, as Roger (1976) discusses these managers possess a role as gatekeepers see figure 8.

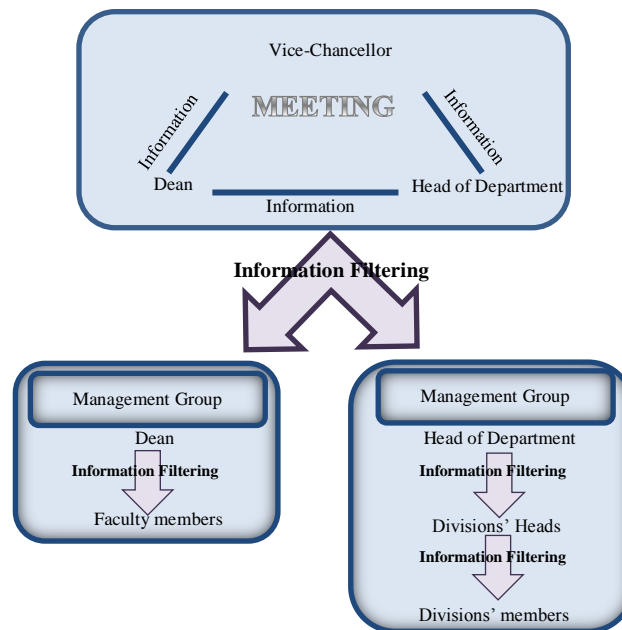


Figure 8: Horizontal information flow in Linköping University (Authors' own elaboration)

5.3. Horizontal Information Sharing (Informal Communication)

The next phase for sharing information occurs through horizontal linkages in which managers, depending on their level, spread out the information from vertical channel(s) across their domain through different approaches. Managers have their particular way to filter the information and spread it out. For instance person E preferred to bring the information forward to a discussion to get better result and not just sending out bunch of e-mails which can be ignored by his employees easily. Goldhaber (1974) argues that although the matrix is formal, through vertical communication, it maintains many of informal advantages of informal structure through lateral communication. Our findings in Linköping University are evident that lateral communication takes place to spread out the information based on different practices.

5.3.1. Informal Meetings

Our findings show that thanks to the informal structure that exists in matrix, people in administrative positions in Linköping University have a lot of informal meetings. These types of meeting can be perceived as complementary to formal meetings. One purpose to have informal meetings is to get prepared for the formal meetings by collecting necessary information that might be needed during formal ones. For instance, the dean has an informal breakfast meeting once per month with the heads of departments in which they share

information and tend to be prepared for the formal meeting with the vice-chancellor. Another purpose is to elaborate the decisions that are already made and information coming out from the formal meetings to the other members in the faculty, the departments, and the divisions. It is one way to avoid dictating the information and decision to other people. For instance, person E wanted to have a general agreement with the heads of divisions and the department members and he did not tend to send out different documents which says do this or do that.

Our data from the interviewees demonstrate that one of the most important informal meetings is 'Fika'. Fika is a conventional phenomenon in Linköping University that gathers people together for spending sometimes together while having some tea, coffee, cookies, bread and so forth. This is an unwritten meeting for everybody and since it usually happens in employees' free (or at least less busy) time, the attendance is often high. For instance, one of our interviewees explained this phenomenon:

“The Fika is, as a phenomenon that is not like that you need to have a break as such it is more like you need to interact with somebody. Role of the Fika is to give you this excuse to meet for changing of information, so it is very important. And it is a cultural thing, in France for instance, you would work very late in the evenings and it is not quite unusual anyway, you do not do very much but you go around and chat with people, talk, and it is just nice that but you have long hours so that is for the same purpose I think. You develop it a little bit different” (Person B₁).

We found out that normally during Fika time people feel free to open up and talk about different issues. They might not be really talkative during the formal meetings and would rather to listen instead. As a result in line with Goldhaber (1974) argumentation informal meetings like Fika, as part of lateral communication, give the opportunity to some conservative but potentially intelligent people to not obscure their innovative ideas. Hence, our findings in Linköping University are evident that mostly new and smart ideas are generated during Fika time.

In addition, the managers emphasize on a united policy. We, in this research, termed this policy 'the open door policy' in which everybody regardless his position has an open door to everybody else. It means people including managers are always ready to answer to different questions and to share different information. This approach works in either ways. For instance, when the head of department is in the office everybody can knock on the door and

ask for a brief meeting (sometimes this is the only way that one can find him, for instance, for doing interviews we used this policy in a really efficient way!). On the other way, if the head of department needs some information then he gets to every door and asks for it. This policy causes a lot of spontaneous meetings and information sharing which in turn results in creating more choice opportunity for making decisions. As a result, the greater the frequency of choice opportunity is the greater the flexibility and responsiveness in making a decision. We can argue that this approach supports the argumentation of Knight (1976) about quick respond and flexibility in making decision in matrix. This flexibility and responsiveness in decision-making is necessary to respond to the complex and changing environment around the university.

5.3.2. Network of People and Right Locus of the Information

Through our research, we found that if someone new starts working for Linköping University, it is quite hard to find a right person with right information across the university. Thus, for people in managerial positions it seems necessary to have an overarching overview of the university and of course some years of working for university. Their experiment can lead them to end up with right person with right information when is needed. Having a network of people with reliable information enables the managers in the university to make more accurate decisions (Sy and Côté 2004). In Linköping University managers have their own particular group of people. This group comprises of various ranges of people with different positions including teachers, students, the heads of departments and divisions, and so forth. Another advantage of such groups is they keep each other up-to-date through ongoing discussions and information sharing. These people also have their own group of people who can have other types of information upon the demand. This chain of people normally is built up over long time and trust is its central core. Thus, this chain is made the process of decision-making and information sharing faster and more reliable for managers in Linköping University. Therefore, this is in line with Goldhaber (1974) argumentation, which argues that more accuracy to find the right person with most relevant information will save time and prevent the unnecessary discussions to take place.

5.3.3. The Management Group (Ledningsgrupp)

Another central part to information sharing through informal communication is the management group. This group is performing in the faculty and the departments in the university. The aim of this management group is to help the dean and the heads of departments in their administrative tasks. It is an informal group without any formal policy and rules from the structure. Therefore, managers depending on the needs comprise this groups differently in different department and faculties. As it can be seen in figure 5 in Chapter 4, in department D the management group is located on top of divisions. Managers choose members of this group with perspective of facilitating the load of administrative works particularly sorting out the information that is primary to make decisions and spread them across other members. As a result this group primary receives the information sent from the central administration of the university (the vice-chancellor office, the faculty). These groups normally involved hard worker and ambitious people. For instance, Person A mentioned that his management group in the faculty is very competent and reliable. Hence, he can count on them whenever he needs some information or some consultancy for making decisions. In the department, management group is also responsible to gather information from each division. In this sense, they facilitate the process of information sharing by articulating all available information in the department and making them accessible for people who need them. This group acts as a facilitator for categorizing and distributing information thus enjoy an advantage of improving the information flow as Gobeli and Larson (1987) discuss.

5.3.4. External Information from Other Sources

As we already discussed in Chapter 1, the university interacts with different parties in external environment to pursue the new goal. There is a lot of information that comes to the top-level of the university and is distributed to the bottom level. We just outlined these ways in pervious subtitles. In addition to this information, managers and employees of the university need to keep their ears to the ground, to obtain extra information that might influence their tasks and decisions. For instance person B noted that the university and its employees should not overestimate the available information. They need to surf personally in the Internet, listen to the public and international news, and be aware of other universities decisions, regulations and policies. We discuss that

through this approach the managers and other employees can be more aware of consequences of their decisions.

In addition, Linköping university webpage is a good source for employees to stay informed about the universities' activities and changes. However, we found that due to the load of work especially for the managers, it rarely happens that they manage to update their personal page. Also, the international part of the webpage is not really fast up-to-date. We discuss that due to the pace of internationalizing among universities including Linköping University, it is vital to dress up the international part of the university webpage with fresh information. This additional information also accelerates the information process and increases the awareness of possibilities for making decision for the managers.

5.4. Information Processing Illustration in Linköping University

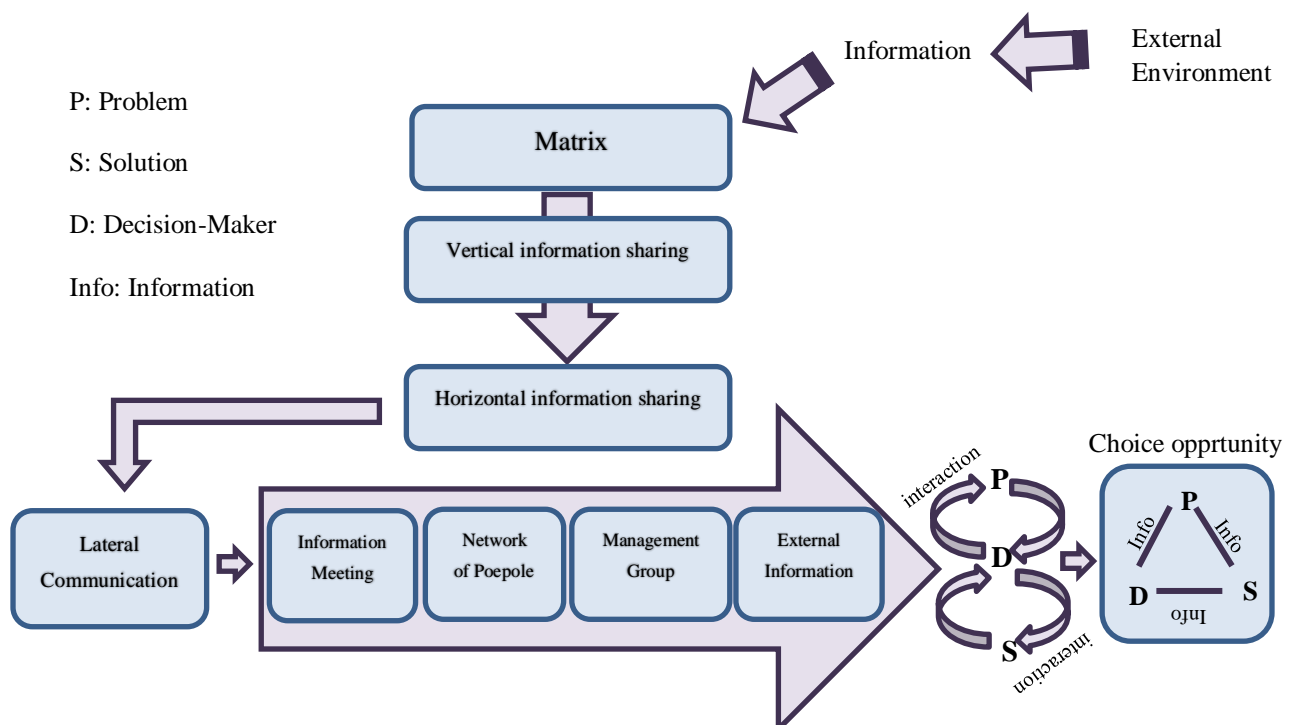


Figure 9: Information processing in Linköping University (Authors' own elaboration)

5.5. Weaknesses

Linköping University attempts to achieve the low uncertainty in decision-making through utilizing the information processing in matrix structure. As it is already discussed in Chapter 3 there are some weaknesses to this system, which inevitably arose. One of them is conflict

(Knight, 1976). This conflict is actually rooted in institution of the matrix structure in which some people have two managers. It can cause different issues, but by conflict here we mean a conflict between given information to the employees. For instance, sometimes the head of division receives some information (informally) from the dean and at the same time he receives the same type of information from the head of department. He expects these two pieces of information to match but they do not thus there is a conflict in information (Person B₂). We discuss that this confusion, influences the reliability of the information and put stress on the employees.

The other conventional problem in Linköping University (which is also rooted in institution of the matrix structure) is that people are surrounded by meetings and discussions and are kept away from their work (Knight, 1976). For instance, person E thought that his job is going to meetings every day, every time. Hence, we argue that massive number of formal and informal meetings can influence the performance of employees in the university and keep their interests and ambitions away.

5.6. Authority and Decision Structure

As it is already discussed in Chapter 3, organizational structure can influence decision-making streams problems, solutions, decision-makers, and choice opportunities in different ways. One of them occurs through decision structure. Organizational structure determines who can enter to a choice opportunity and participate in decision-making by defining the authority of people in the organization (Mintzberg, 1993). Regarding the theory of the matrix it can be argued that this structure is well-known for breaking the single unity of command (Mintzberg, 1993) and share the authority to multiple managers. This fact demonstrates the propensity of matrix structure towards decentralization in decision-making. Matrix structure emphasizes on collection decision-making and involving all employees (Galbraith, 2002). Digging into our findings we can discuss that Linköping University organizational structure shows unusual behavior in terms delegating the right of decision-making to the managers. Thus, we argue that unlike the communication system, which matches the matrix characteristics, the authority distribution does not imply matrix institution.

5.6.1. Centralization

Our findings demonstrate that decision-making in Linköping University has a remarkable tendency towards centralization in structure and it gradually moves into more hierarchy. To clarify this claim we look at two important central authority arenas in Linköping University including the faculty and the department. This overview tends to illustrate the shift in decision-making authority over the time and describe the present authority of the faculty and the department in terms of decision-making. Through our interviews as we exhibited in Chapter 4, we found that role of the head of department has been changed recently. Back in time, let's assume in 2000, the professors (who were tenured by the government) had more authority to make decisions together with the board of the department. The head of department was there to run the department and it was more a formality role (Person B₂). The dean and the faculty board had more authority to control over the department's activities and resource allocation. As it can be seen in authority specification of the heads of departments in chapter 4, nowadays it covered a wide range of arenas, from educational issues to economic ones. Our findings also indicate that the area of authority for the head of department has been expanding gradually. For instance, there is a committee in the faculty that used to be in charge of all types of recruitment in the university (temporary, permanent, junior or senior lecturer, PhD students). Recently some of responsibility has been moved from the board to the head of department.

“I have been to university life in Sweden for 40 years and I have seen a big change coming these last years. I was brought up with the 1968 revolution where the freer university existed and I see the gradual ambition of the authority to have a more strict authority line instead. One of those examples is that I, as a head of department can hire an Adjunkt (a temporal lecturer) teacher so I am responsible for that and not the board anymore” (Person D).

Moreover, our findings show that another way to push the authority towards a central line was the introduction of divisions. The new position, head of division, performs under direct supervision of the head of department, and is delegated some of the responsibility of the head of department. The range of responsibilities is limited to some operative decisions and not major decisions. For instance, person B₂ said that the major economic issues (for instance an expense more than 10,000 SEK) are mostly out of his hand and the head of department is directly responsible for such decisions. The head of division is now a direct supervisor of all

members in the division such as professors, lecturers, PhD students and so forth. He has the last word in making a decision in the division. Unlike the matrix shape of structure in Linköping University there is no formal linkage between the faculty and the heads of divisions. Although the informal structure in communication let the heads of divisions to be in touch with the faculty, the faculty does not have any authority to control the heads of divisions. The faculty authority domain is now limited to evaluate and control 'quality of education and research'. In better words Linköping University keeps the faculty as quality evaluator, and when it comes to issues that are out of the quality determination, and then the department is responsible. The faculty only has control over the money granted by the government but has no authority over the money generated by the departments. It is evident to the fact that the authority has been shifting over time from the dean to the head of department. We argue that this shift is derived from the new goal of the university, which is associated with money and enterprise characteristics. The primary goal of the university, which is finding truth, is the responsibility of the faculty. However, the department tends to pursue the new corporative goal and generates some revenue by applying new activities and trades to the university traditional activities (research and teaching).

In addition, collegial decision-making were more conventional back in time, when mostly decisions were made within the board of departments and faculty. Recently, there have been activities towards the elimination of these boards, which in turn results in more concentration of authority into the central administration of the university. Our findings show that the head of department is truly dominant to the board of department in terms of decision-making. The authority of the board is rooted in how much the head of department believes in democratic way of the decision-making. For instance, person D tended to keep the board because he thought that the board is the only symbol of democracy left for decision-making in the university. We therefore discuss that decision-making in this sense is centralized, first because the head of department is the chair of the board and has the ultimate word to approve or disprove the decisions that are made in the board. Another reason is that the vice-chancellor and people around her (such as university director) are responsible to select the members of the department board. The vice-chancellor and mentioned people also assign the head of department and extend his position period. Thus the board and its chair are also influenced by a central decision.

Another evidence of centralization in Linköping University is a particular leadership course for the managers. In this course the managers are trained by the latest version of the leadership trends in the world. We found that even though this course keeps the managers up-to-date, but at the same time it disseminates the idea of centralizing decision-making. For instance, it can be seen in figure 10, that people in the bottom of the university are appreciated for their ideas and obviously encouraged to participate to open meetings for brainstorming and generating creative thoughts. Nonetheless, it can be seen that actual ideas generated in the top level and decisions are ultimately made by top-level managers (the vice-chancellor, the dean, and the heads of departments). For instance, person A stated that most of the important decisions are made during Friday meetings with involvement of the vice-chancellor, the dean, and the heads of departments.

Finally, through our findings we found that informal structure, as a noticeable characteristic of the matrix structure has been shrunk in Linköping University. As a matter of fact, Person E₁ mentioned that back in time he, as a head of division, was able to go to the dean and vice-chancellor directly and ask for resources for running new courses or programs. This is no longer seen in Linköping University. The head of division has to go to the head of department for asking extra resources and so forth. Nowadays unlikely, the university administrative routines are much more formalized which in turn leads the structure to become more centralized. The process depicts in figure 10 as the following.

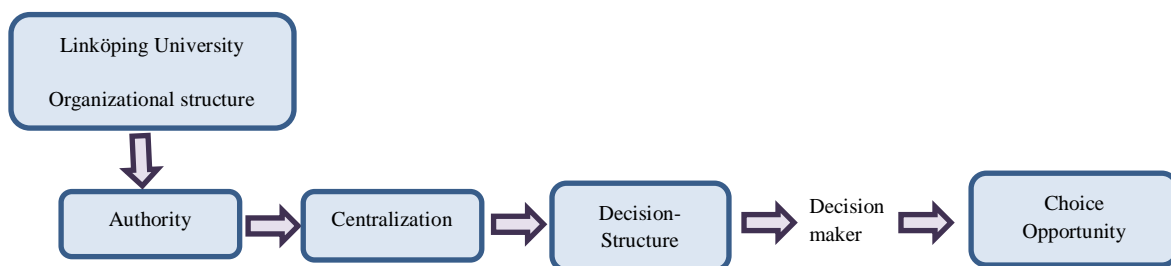


Figure 10: The influence of the structure on decision structure in Linköping University (Authors' own elaboration)

5.7. Authority and Access Structure

According to Cohen, et al. (1972) organizational structure influences on determination of the priority of problems to get into a choice opportunity. It was discussed in Chapter 3 that matrix structure though is a formal structure but has certain level of informality going on in the organization (Goldhaber, 1974). This informality yields to collective decision-making and makes individuals flourish their creative ideas. Hence, in our discussion to this point every

problem should have access to every choice opportunity. In better words, it means there should not be an impediment for a problem of a PhD student in a division to be discussed during a meeting about economy in the division. Notwithstanding, our findings in Linköping University show that too much rules and regulations constrained different ideas to enter to decision-making areas (choice opportunities). We therefore discuss that in this sense Linköping University structure has a propensity towards hierarchy. Cohen and his colleagues in their work in 1972 concluded that problems in hierarchy structure are prioritized based on their importance. In line with this conclusion we realized that organizational structure in Linköping University shows similar behavior towards problems, which is derived from the formalization by rules and regulations.

5.7.1. Rules and Regulations

Almost all the interviews mentioned that there has been a change in management style in Linköping University through the last decades. For instance, person B, as a head of department stated that back in the time decision-making process was more informal in the university. Decisions were made during discussions and were based on verbal agreements. During our interviews the managers used the term ‘consensus’ for such decision-making approach. Our findings show that this approach succeeded because the traditional routines of the university were well established. Also the university was not as big as today, and of course the goal was only finding the truth through research and teaching. The new university becomes bigger in size and becomes more open to its external environment to follow the trend of enterprise universities in order to survive. Hence, the managers in the university believed that consensus style of decision-making were now going aside and replaced by the corporate management style. More specifically, nowadays decision-making process in Linköping University is associated with too many regulations and rules, which in turn restricts the liberty of decision-making based on consensus.

Another effect of the new management style is that nowadays it needs too much administrative work hence the managers are overloaded by administrative work and kept away from their desires (research and teaching).

“I am told by some persons older than me that in the old days they had much more time to do their own research, whilst now they are struggling with the huge pile of administrative tasks” (Person B₂).

Some managers though attempt to keep the traditional approach and get people involved in decision-making but through the interviews they pointed out that the regulations and rules make the process too complicated.

“I think that is democracy. Now is more like being a hotel host I am not the owner I am the host of the hotel and somebody is boss over me. It has become much more complicated. The whole university structure is so heavy, so many regulations, laws and all kinds of rules that you have to obey” (Person D).

Some managers on the other hand tended to make ultimate decisions as much as they can. For instance, person E said that he can categorized problems in which what kind of problem should go to the department board and which he can take over and make decisions by himself. We argue that through this approach problems are prioritized by the managers’ preferences, which must be aligned by the overall goal of the university. Therefore, decision structure is derived by the regulations and rules, which in turn determines the problem’s prioritization.

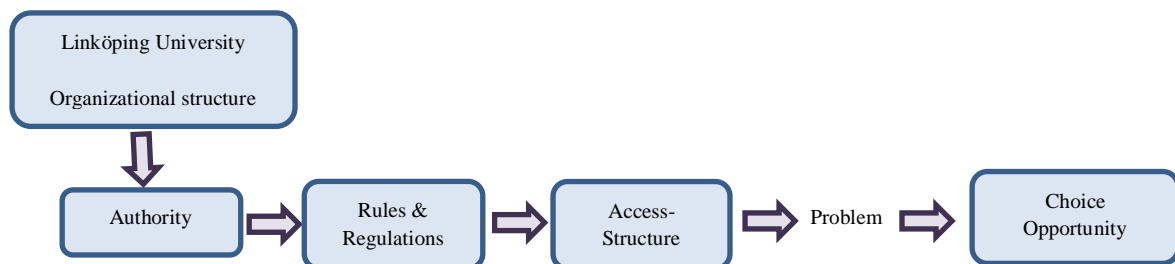


Figure 11: The influence of the structure on access structure in Linköping University (Authors’ own elaboration)

5.8. Outcomes

As it is discussed in Chapter 3 the process of decision-making in form of GCM has three kinds of outcomes. Cohen, et al. (1972) investigate some American universities with a GCM decision-making process and conclude that the outcomes are mostly oversight and flight which means decisions were made but they did not solve the problems. However, the favorable style is resolution in which problems get solved by a decision. Outcomes of decision-making process in Linköping University, which is influenced by its organizational

structure, are mostly problem solving which in turn leads to increasing of resolution style as outcomes. Nonetheless, our findings show that most of the problems are solved temporarily.

Moreover, due to the huge wave of regulations and rules dictated from the central administration of the university the process has lengthened and as a result sometimes the outcome is either flight or oversight. Our findings show that these kind of problems mostly associated with individuals (a conflict between a teacher and a student), which in turn makes the problems repeat themselves. There is no formulated address for such problems and it just can be solved by a quick decision, which is not applicable in a long run.

5.8.1. Lengthy Process

As we already pointed out process of making decision in Linköping University has been lengthened. Our findings show that this problem arose because first, employees have to obey all the rules and regulations to make a decision, which lead the process into a long bureaucratic process. Second, we found that employees want to be in a safe side and not to be evaluated negatively after any decision. They want to carefully apply all the rules and regulations to prevent any negative judgment from their colleagues and managers.

Additionally, due to the new institution of tasks in the university, which is associated with uncertainty sometimes a decision require a huge amount of information. Although the information processing is adequate in the university but interpreting data can always be time consuming.

5.8.2. Problem Solving Within Boundaries of Regulations

Through our findings we found that most of the managers agreed that the process of decision-making often yields to a problem solving. However, the perception about what kind of problems get solved were different in different levels. For instance, person C as a head of department believed that decision-making within his department make a smooth path for the major decisions and regulations to be implemented.

Moreover, almost all the heads of divisions pointed out that their decisions solve daily problems (such as bill payment). Their decisions are limited to the rules and regulations of the university and they have to make decisions within those boundaries. For instance, person C₁ faced a problem in which a member of division wanted to quit. Thus he needed to find a

successor. According to the rules of the university first, he needs to look up within his division, then the department, and finally the whole university. If he could not manage to find anyone then he can ask for a temporary employee. In this sense the problem gets solved but temporarily. Our findings show that the shortest period for hiring a permanent employee for the university is one and half year. Therefore, to solve such problems permanently, it needs a long process.

5.9. Summary of the Analysis Part

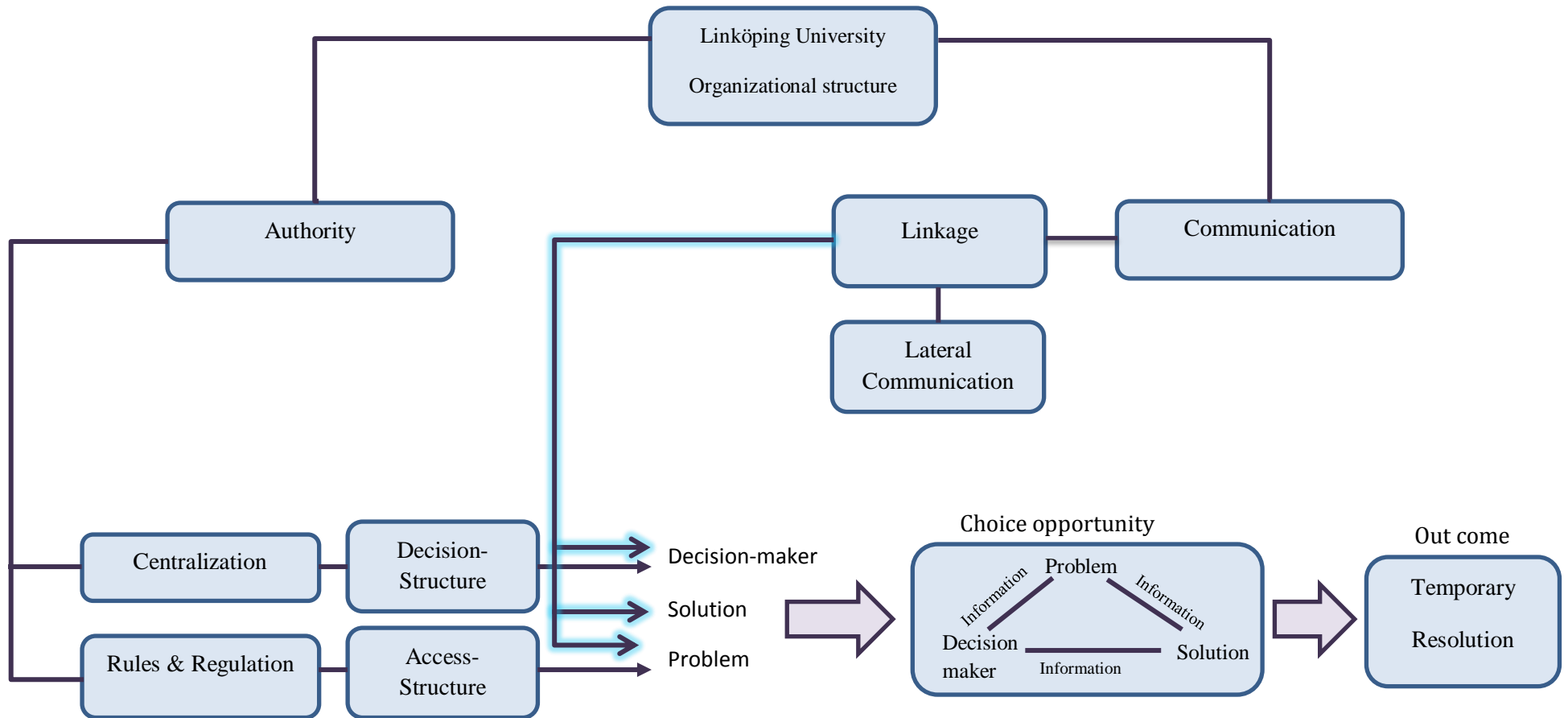


Figure 12: The influence of the structure on decision-making process in Linköping University (Authors' own elaboration)

6. Conclusion

The new generation of the ‘enterprise universities’ have more interactions with external environment. These interactions increase the level of uncertainty in their decision-making. It means that they have hard time to predict the future consequences of their decisions. Matrix structure is one of the organizational structures well-known to respond to the uncertainty of the environment. Hence our research question was formulated as it was shown in Chapter 1.

How can matrix structure reduce the uncertainty of decision-making in a university?

The case study of Linköping University and our frame of references came together to conduct this research, which in turn led us to the answer of our research question.

6.1. Answering the Research Question

Empirical data from the case study was analyzed based on the frame of references. Based on this analysis we came to the conclusion that matrix structure reduces the uncertainty of decision-making in a university through applying lateral communication as an information processing system. However, the role of vertical communication should not be ignored as a skeleton for the lateral one. To process the huge amount of information from inside and outside the university, the lateral communication of matrix structure has been applied. The lateral communication in Linköping takes place through different approaches shown in part 5.3 in Chapter 5 including informal meetings, network of people, management group, and external information. Through these approaches, the management of information flow is facilitated and accelerated which in turn results in flexibility and responsiveness in decision-making process. Linköping University manages to flow the information both in vertical and horizontal ways which in turn results in establishing linkages among problems, solutions and decision makers to create more choice opportunities. Moreover, thanks to the sufficient information, problems get solved more often which means the outcomes are more resolution.

On the other hand through our research we found that although lateral communication for managing information process has been applied from the matrix structure, the authority structure has some contradictory characteristics with matrix structure. It can be seen that a centralized line of authority is dominant for governing the university. Moreover, the university tends to formalize the structure of activities and decision-making by putting

numerous regulations and rules. These characteristics do not match from what can be interpreted about the matrix characteristics in the theory. Thus, we came to the conclusion that Linköping University is using matrix structure as a device to manage the uncertainty associated with its new process of decision-making while it keeps the hierarchical managerial characteristic in process of making decision.

In case study of Linköping University, it can be seen that the faculty is the only elected party left in the university and the central authority of the university directly and indirectly selects the rest. In fact, the faculty is responsible for quality of research and teaching, which are the main devices for the university to find truth. However, recently the authority has been taken from the faculty and transfer to the departments where the money is generated. The faculty seems to be put aside as a quality evaluator and has less power to control over the departments' activities.

Summing up, universities have an important role in the society either by educating young professionals or developing the industry by conducting research. The new generation of universities as it is called 'Enterprise Universities' by Marginson and Considine (2000) step on a way to act like big enterprise companies to fulfill the new goal of making revenue. They attempt to employ large companies' organizational structure to respond to the fast changing environment to thrive and survive. Therefore, universities tend to formalize the traditional routines and dictate regulations to control over all the activities and decisions in the university. This new approach is not really in line with what a university is appreciated for, which is finding truth. The new universities are now seemingly looking for money instead and there is ongoing competition between faculties to capture and earn more money.

6.2. Suggesting for Further Research

The importance of a university and its decision-making process is not ignorable. Recently this importance expanded to the government and other parties in countries. Therefore, the authors of this thesis observed some further research in this area that is worth to be conducted:

❖ As it was discussed in Chapter 1 there is a gap in the area of decision-making in universities. Cohen, et al. (1972) examined GCM model in some structure based on a computer simulation and they excluded the real characteristics of the organizational structure. In this research the authors attempted to found out the characteristics of the matrix structure and their influences on the decision-making process. However, there are still some organizational structure alternatives remain that might be worthy to be studied.

❖ Another interesting area is the way of governing a university in terms of power. Through this research the role of power and negotiation was obviously central to the process of decision-making. Unfortunately due to the limitation of this dissertation this concept was not well studied. Therefore, the authors recommend the researcher in academia to address this issue more appropriately.

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Appendix

Interview Guide

This section describes the process of the interview that used to collect data thorough semi-structured interviews; and it consists of the content of e-mail that was sent to the interviewees, introduction, a set of questions, and interview closure.

First, we contacted all interviewees via an e-mail. The content is presented as the following:

Hello,

Me and my partner are working on our thesis in SMIO program (international business administration) about decision-making process in university. We already talked to the head of faculty and we assume that he mentioned us during the breakfast meeting on last Monday. Thus, we would like to ask you to take a look at your calendar and if it is possible set an appointment with us. We believe that it won't take more than an hour. We also would like to ask you if you do not mind we record your voice meanwhile. Here comes an attachment which describes our work briefly. Additionally there are some questions that might give you some clues about our research. We are aware how tight is your schedule, so we truly appreciate your time and kind consideration in advance.

*Best Regards,
Masoud and Bahareh.*

Introduction

This part is the attachment that was mentioned above in the e-mail content.

Decision-making process in educational and public organizations associated with ambiguity and uncertainty. It is ambiguous because the nature of these organizations characterized as organized anarchy. This characteristic demonstrates the situation in which the preferences are problematic, what it has to be done is unclear, and who it is that should make decision is also not obvious. Moreover it is uncertain because the process influenced by the external environment where technology is growing rapidly and markets and their habits change constantly. Hence, under these circumstances decisions are made in form of Garbage Can Model.

The model which is known as a Garbage Can Model, founded by Cohen, March and Olsen (1972), has four independent streams. These streams are problems, solutions, decision makers and choice opportunities. One important point is the GCM is not a model but it is a process of making decisions, which happens in real life setting in organizations. In this process, all streams are flying around the organization and for making decisions these need to match up in choice opportunities. The GCM works differently under different organizational structure in terms of matching its streams in choice opportunities.

The purpose of this thesis is firstly to describe the process of decision-making in the University based on Garbage Can Model. Secondly, how organizational structure affects the choice opportunities in GCM, where it assigns the streams of the model to make decisions. We investigate the effects based on the organizational communication.

In order to conduct our research, we select Linköping University as one of the educational organizations with GCM decision-making type. This organization also has applied the matrix structure, which is our intended structure in this study.

Questions

Initially we would like to ask you if you have some big current problems in mind that have been either in process or solved. Then we can structure the interview based on them.

- ✓ How are decisions made in your faculty/department/division? (It is a general question to provide an overarching overview about the decision-making process).
- ✓ How much authority do you have to make a decision on your own?
- ✓ Who is approving a final decision that is made? If it is not one person, how many are they? To whom are you responsible to report your work?
- ✓ How do you obtain the information that you need for making decisions?
- ✓ How often do you have meetings? Are they regular or come up when something is wrong? Who normally attends to these meetings?
- ✓ How do you think that your problems have been solved most? Do you recognize the process as problem solving or decision-making?
- ✓ If you worked before for the university what are the differences in the decision-making process you might concern?

Interview Closure

- ✓ Thanks for your time and help
- ✓ We will provide you the transcription of this interview and nothing would be published without your permission
- ✓ We will send you a version of our thesis

