



**Utrecht
University**

MSc Business informatics

Research proposal

The Canvas as a Mechanism for Scientific Impact

Jakub Szulwinski 8894906

First Supervisor: Dr. Slinger Jansen

Second Supervisor: Dr. Siamak Farshidi

2023

Utrecht University
Faculty of Science

Abstract This paper embarks on an exploratory journey into the realm of canvases within a scientific, strategic management and business context. Plagued by their intangibility and abstract nature, canvases pose a unique challenge to their users in terms of definition and comprehension. The core objective of this research is to answer the central question: "What actually is a canvas?" To this end, the paper seeks to establish a robust definition of a canvas through comprehensive research and analysis.

The research process starts with a broad literature review, followed by an extensive survey of existing types of canvases to lay a solid foundation for further analysis. Existing definitions for each canvas type are gathered and compared, with a specific focus on finding commonalities that can contribute to a holistic definition. The structure and characteristics of canvases are meticulously broken down, analyzed and presented to understand their key components.

Simultaneously, the academic status of canvases is investigated, highlighting how they are referenced, utilized, and treated within scientific discourse. Existing and potential evaluation methods for canvases are studied to better understand their current uses, and to shed light on their inherent qualities and effectiveness. Lastly, the research focuses on identifying the typical users and creators of canvases, aiming to gain insight into the contexts of use and the purposes they serve.

The outcome of this extensive exploration is not only a comprehensive definition of a canvas, but also a greater understanding of its components, characteristics, academic status, evaluation methods, and typical users. This research serves to augment both the academic discourse and practical application surrounding canvases, enhancing their effectiveness as tools for strategic management and business visualization.

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Chapter 1

Introduction

In the field of information science, the word “canvas” has come to mean more than a traditional piece of cloth that people can paint on: canvases have become instruments that communicate scientifically grounded concepts in useful ways for society to adopt. However, currently canvases are seen as non-scientific and second grade citizens in the scientific toolbox. This is detrimental, because they frequently serve as successful instruments for science communication towards society. In this work, we perform a survey of canvases in the information science field and try to define them in a scientific manner, including aspects such as design and evaluation of canvases. With such a definition and conceptual framework for understanding, we can raise the status of canvases to acknowledged instruments for scientific communication. If our framework is used by canvas designers, they can ground their design decisions in a more structured and foundational manner.

1.1 Background - Information Science

One cannot simply explain the concept of a canvas without looking at the entire field from which it originates. This short introduction is important for the purpose of better understand what the canvas actually is and how has the concept evolved over the years. We will start the paper by presenting a brief history of information science and visualization. Information science is a scientific discipline that encompasses all theoretical and practical issues related to information activities. Its origins date back to the 1950s [105]. However, the roots of modern scientific and informational activity can be traced back to ancient times, the period of the emergence of the first libraries. The rapid development of bibliography, catalogues and, at the same time, information activities occurred in the 19th century. A period of rapid development in technology and science. It was then that, thanks to Paul Otlet and Henri La Fontaine, the organised information activity known as 'scientific documentation' began to take shape [82].

1.2 Information Visualization

Since information science became a serious field, people have been trying to present the information gathered in a simple and clear way to make it more understandable. Visualization is a general name for graphic methods of creating, analysing and communicating information. Through visual means, people exchange both abstract ideas and messages that have a direct basis in reality [58]. Nowadays, visualisation influences the way scientific research is carried out, is routinely used in technical disciplines and medicine and is used for teaching purposes. The second half of the 20th century is known as a period of 'rebirth of data visualization',

by which point, information processing was done by computers [34]. They gave statisticians the ability to collect and store data in increasingly larger volumes, as well as the ability to visualize the information quickly and easily. The last thirty years was mostly a time during which the fields of data and information visualization rose into massive popularity in hundreds new focus areas. Dashboards, graphs, analytical tools, and other visualization tools enable scientists and businesses investigate and present information in a clear and engaging way.

By combining these two, we get information visualization or information modelling. Information modelling translates to representing concepts and the relationships, constraints, rules, and operations to for a chosen domain [19]. It produces a system of established information structures together with the logic of their interrelationships, i.e. associations. It can provide shareable, stable, and organized structure of information requirements or knowledge for the domain context [52]. Modelling is an essential step towards bringing information to a more intuitive, understandable level [66].

One of the first models was 'Rose diagram' created by Florence Nightingale showing the reduction in the number of deaths in military hospitals during the Crimean War of 1853–1856. Her Rose Chart is still being used until this day for modelling information [94]. Among the most known examples of information visualization is the London Underground Tube Map. It's most known version was first created in 1931 by a famous English technical draughtsman Harry Beck. His method of mapping proved so effective, that the tube map approach has been proposed in many fields completely not related to metro or public transportation, such as software development process, or knowledge transition [13].

Today, information modeling continues to be an important field with a wide range of applications, including data management, software engineering, and business modeling. It plays a critical role in enabling the organization and integration of information in a variety of contexts, including the Internet, databases, and software systems.

One of the modern examples of modelling the organisational structure is Value Chain by Porter [76]. The Value Chain is a sequence of activities undertaken by a company to develop, manufacture, sell and deliver a product and then provide post-sale services. Products pass through all activities of the chain in order and at each activity the product gains some value. The chain of activities gives the products more added value than the sum of the independent activities value [77].

Having explored the history and evolution of information visualization, we will delve into one of its most important tools - the canvas. As we have seen, information visualization plays a critical role in making information more accessible, organized and understandable. In the next section, we will take a closer look at what canvases are, their history and how they are used in modern organizations to support strategy and decision-making.

1.3 What is a canvas? - Problem Statement

When looking for a definition of a canvas, one will most likely be redirected to a Wikipedia article stating, that "A canvas is an extremely durable plain-woven fabric used for making sails, tents, backpacks, as well as in such fashion objects. It is popularly used by artists as a painting surface, typically stretched across a wooden frame". It is not however, the only type of canvas that exists. The other one is less physical, less tangible, and far more challenging to explain clearly. A canvas in a strategic management or business context refers to a specific form of information visualization that provides a graphical representation of a company's business model or strategy. It is a tool that helps organizations clarify, align and communicate their ideas, plans, and objectives. However, this explanation is not exhaustive and does not capture the true nature of canvases. So far, concept of a canvas

cannot be contained in such a quick and compact definition as the traditional canvas. We ourselves, found it difficult to explain to other people what this project is about without several comparisons and examples. We can say how a canvas looks like, how to use it, what is it used for, we can create new canvases, however we still cannot answer a simple question "What actually is a canvas?". The challenge in defining a strategic canvas lies in its abstract and intangible nature. It is often compared to other known canvases or described through examples, but a more comprehensive definition is needed to fully capture its purpose and value. This has prompted us, to start searching for a definition, and if none is found, we will try to construct our own.



Figure 1.1: Unfortunately, the definition of a canvas is ambiguous

1.4 What was the first canvas?

The invention of canvases is typically attributed to Alexander Osterwalder, a Swiss business theorist, who in his 2005 PhD work on business model ontology, supervised by Yves Pigneur, proposed a strategic management and business model starter template, which was later called Business Model Canvas [18] [71]. It was a visual diagram consisting of nine blocks (See figure 1.2). These are elements describing the value position of the company or product, infrastructure, customers and finance assisting businesses to align their activities by illustrating potential trade-offs [72]. BMC is, without a doubt the most popular canvas today.

However, in his paper, Osterwalder refers to a concept of a value curve, created by Kim and Mauborgne in 1997 [47]. They later, in 2002, called it a strategy canvas [48]. A strategy canvas is a visual representation of the value proposition of a business, showing how it delivers unique value to its customers. Alex Osterwalder presents the concept in his paper, and it is the only time he uses the word "canvas" in his paper about what later became the

BMC. We can therefore suspect that he was inspired by the name while creating the BMC.

It was however, not the first time a name "canvas" was used in this way. During our research we have found an even earlier example - the InfoCanvas, proposed in 2001 by Georgia Tech's Todd Miller and John Stasko. In their paper titled "The InfoCanvas: information conveyance through personalized, expressive art" they describe an idea for a versatile way of visualizing information on a virtual canvas. This innovative way of interaction with information was supposed to help people interact with data in a simple, intuitive manner [63]. In their work they reference a paper from year 2000 "Informative Art: Using Amplified Artworks as Information Displays" [80]. It describes expressing information in graphical ways, which can be treated as early attempts of creating a tool similar to a modern canvas.

Going back even further, the oldest example of something that could potentially be called a canvas - an EFQM Excellence Model from 1988 (See figure 1.3). The European Foundation for Quality Management (EFQM) Excellence Model is a framework for organizational excellence that is used by businesses, non-profit organizations, and public sector organizations around the world. It consists of nine criteria and is based on the belief that organizations can achieve excellence by balancing performance in these. The model provides a holistic approach to organizational excellence that can be used to guide decision-making, set goals, and measure progress [67].

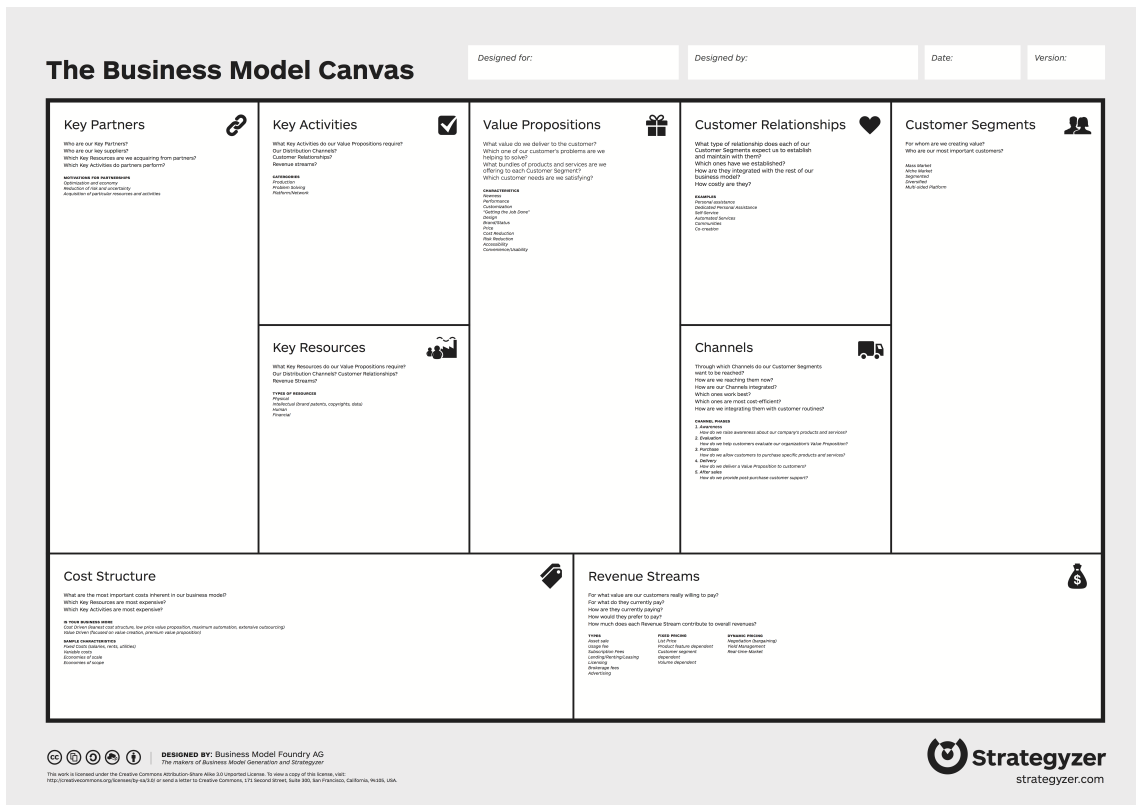


Figure 1.2: Example of a Business Model Canvas

1.5 Aim

However popular the idea of mapping the structure of a given thing on a canvas had gotten, there has been little to no discussion as to what exactly is a canvas. The idea itself is pretty well known to people who work with them, but there is no clear definition available anywhere.

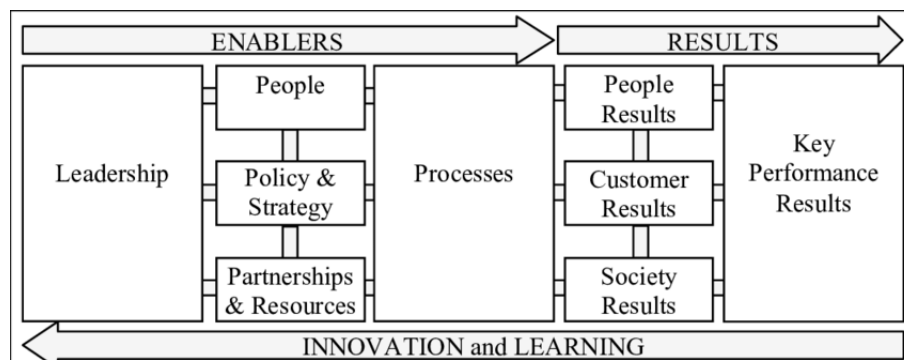


Figure 1.3: Example of an EFQM model

We can see that the BMC has a specific definition and therefore is easily explainable and applicable. However this is not true for most of the other canvases, or the canvas concept as a whole. If this project is successful, we can provide scientists with a standard set of research methods for designing a canvas.

1.6 Research Question

For the purpose of this study, we formulate two research questions. The first one tries to find a definition of a canvas through sub questions and the second one concerns the application of canvasses and their role in scientific communication and impact.

Main Research Question 1: *What is a canvas?*

This is at the core of what needs to be answered through this project. This question is vague, but it reflects how vague the field of canvases actually is. The reality is, that even tough canvases are popular tools, there is not a single scientific definition of it. By answering this question and formulating a definition, we provide the “canvas” concept with an academic status.

To specify the findings, we concluded that several supporting questions also need to be answered:

- **SRQ1.1:** *What types of canvases are available?*

The first supporting research question is meant to be a foundation from which MRQ2 can be answered. We start with a study of the whole field of canvases, looking for what is currently in existence in order to get to know the field better. This step is necessary in order to proceed with finding answers to the following research questions.

- **SRQ1.2:** *What definitions of a canvas exist?*

We try to find existing definitions of existing canvases one by one. This is necessary for answering MRQ1. We then compare them and find similarities in the descriptions of different canvases in order to help find a more comprehensive definition.

- **SRQ1.3:** *What are the components and characteristics of a canvas?*

A thorough breakdown of canvases, with the aim to analyze the most important aspects of a canvas. Identifying the main components is a crucial step towards finding an appropriate definition and answering the MRQ1.

After we find a fitting definition for canvases that can be used, we will study the application of them and their role in scientific communication and impact.

Main Research Question 2: *How are canvases used?*

Answering the second main question can help us understand the purpose of canvases, their usefulness, and the impact they have on the industries which apply them. To do this we have to study the fields in which canvases are used.

- **SRQ2.1:** *What is the current academic status of canvases?*

Through the literature review and the interviews, we can find out how are canvases referred to in scientific world, how are they treated and how utilized. This can help us find a better fit for our definition in the academic world and help answer MRQ1.

- **SRQ2.2:** *How can we evaluate a canvas?*

Studying current and potentially finding new ways of evaluating canvases can be a crucial step towards answering the second main question. Understanding the evaluation methods will shed a light on the current uses of canvases and help answer MRQ2.

- **SRQ2.3:** *Who are the typical users of canvases?*

In order to get the sense of purpose and usefulness of canvases, we need a to gain an understanding of the "target audience" of canvases, as well as who are their creators. This will also allow us to research the field deeper by knowing where to look and who to contact.

We leave out of scope the adoption of canvases in industry contexts. The main reason for this is, that we are interested in the canvas creation and their role in the research process. As mentioned in our aim section and the title, we are studying scientific impact of canvases. We will explain how the canvases are created and how they work, but we will not go into detail on how they are utilized in specific industry fields. Our main scope is a concept of a canvas in general and the purpose is to find definition of it, which can be applied to various canvases, and be used to identify them. For this purpose, delving into specific industry contexts is of secondary importance.

In the table 1.1 we present which questions will be answered at which point in the paper, and using which methods.

Question Code	Question	Background Literature	Canvas Survey	Interviews
SRQ 1.1	What types of canvases are available?	✓	✓	✓
SRQ 1.2	What definitions of a canvas exist?	✓		✓
SRQ 1.3	What are the components and characteristics of a canvas?		✓	✓
SRQ 2.1	What is the current academic status of canvases?	✓	✓	
SRQ 2.2	How can we evaluate a canvas?	✓		✓
SRQ 2.3	Who are the typical users of canvases?	✓	✓	✓

Table 1.1: An overview is given of which research method is used to answer the research questions.

1.7 Contribution

By answering these questions, we hope to provide the scientific world with an accurate and up-to-date definition of a canvas. This can likely contribute to the field of management and entrepreneurship by providing a structured and comprehensive framework for designing

and evaluating visual tools. It can also result in more effective and efficient decision-making, improved communication and collaboration among stakeholders, and increased chances of success for new and existing ventures. Additionally, it can also facilitate scientific research in the area of innovation and entrepreneurship by providing a standardized tool for canvas creation and evaluation.

1.8 Thesis Layout

We start the paper by introducing the concept, our goals and research questions we want to answer in chapter 1. Later, in the next chapter 2, we go over our preferred research methods, try to justify why we chose them, and describe how we are going to use them in order to find answers to our questions. Then, we begin reviewing the literature in chapter 3. We go over all the acquired papers and extract as much information as possible from them. We conduct a thorough survey of canvases in chapter ?? and plan interviews in chapter 4 in order to find answers to the research questions. We summarize all the knowledge and analyze it in chapter 5. In the chapter 6, we discuss the validity of our study, how appropriate and applicable are the results. In the next chapter 7 we try to summarize our findings and the entirety of the paper.

For the purpose of visualizing the process used in creation of the paper, a Process Deliverable Diagram is used. A Process Deliverable Diagram (PDD for short) is a graphical representation of the steps and tasks involved in a particular process [102]. The diagram typically shows the sequence of activities, inputs, outputs, and decisions involved in the process, as well as any inter-dependencies and relationships between them. The purpose of a process deliverable diagram is to help organizations understand and improve their processes, by making them more transparent and easier to understand. We are going to use it to communicating process details of the scientific method used in the paper. The model itself (Figure 1.4) presents the flow if the process, the Activity Table (Table 1.2) describes the activities in more detail, while the Concept Table (Table 1.3) goes more in depth about concepts, which are simply the products of activities.

1.8.1 Process Deliverable Diagram

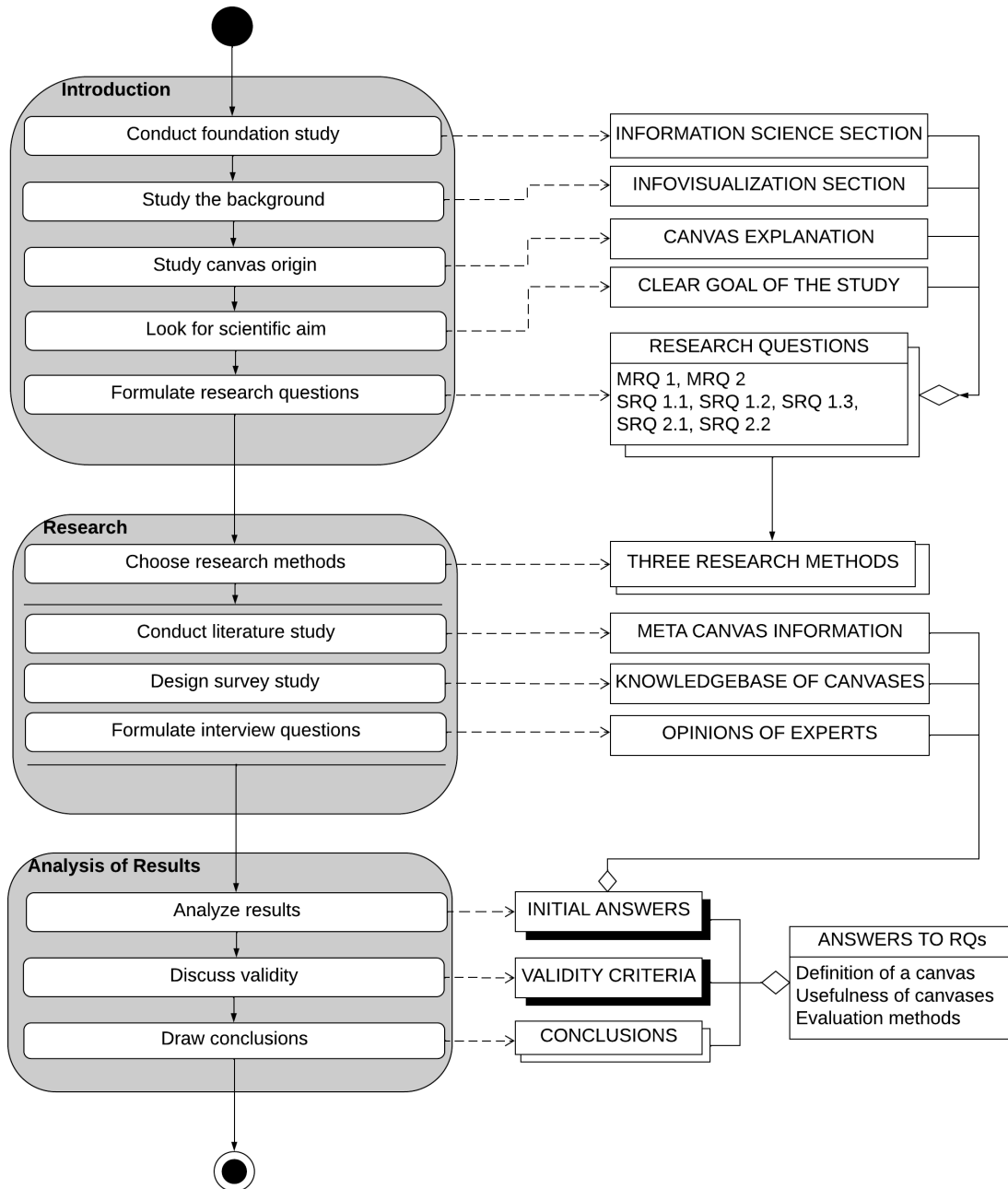


Figure 1.4: Process Deliverable Diagram of the thesis

1.8.2 Activity Table

Activity	Sub-activity	Description
Introduction	Conduct Foundation Study	This is the first step in the process. It opens the paper by introducing the important concepts needed for understanding canvases.
	Study the background	Researching the field of information visualization in order to establish background for the canvas study.
	Study the canvas origin	Investigating the canvas roots and trying to find the "first" canvas.
	Look for scientific aim	Searching for the purpose of the study. Explaining what the current scientific challenge there is regarding canvases, and how this paper can achieve better scientific knowledge and methods.
	Formulate research questions	Crafting a set of questions created with an aim of enabling better understanding of canvases.
Research	Choose research methods	Investigating and choosing the most effective and appropriate methods for answering the research questions.
	Conduct literature study	Thoroughly checking the literature on the topic to find information which can be used to start answering questions.
	Design survey study	Creating and conducting a wide survey on dozens of different canvases, studying and describing each one separately in order to learn more about the general concept of a canvas
	Formulate interview questions	Finding experts who would be willing to give interviews for the paper. Preparing questions and scheduling interviews.
Analysis of results	Analyze results.	Aggregating and comparing findings collected through three different research methods
	Discuss validity	Discussing criteria for the validity of the study.
	Draw conclusions	Analyzing the findings and answering the research questions. Discussing possibility of the future work.

Table 1.2: Activity Table

1.8.3 Concept Table

Concept	Description
INFORMATION SCIENCE SECTION	Section introducing the foundation upon which canvases were constructed.
INFO VISUALISATION SECTION	Continuation of the background which is necessary for a proper understanding of canvas origin.
CANVAS EXPLANATION	Explanation of how canvases were formed and what do they do.
CLEAR GOAL OF THE STUDY	Outlining why this study is important, what are the challenges, and what kind of scientific contributions can it bring.
RESEARCH QUESTIONS	A set of questions created with an aim of enabling better understanding of canvases.
THREE RESEARCH METHODS	Three separate methods for answering different research questions - literature study, canvas survey and interviews.
META CANVAS INFORMATION	Information about the concept of a canvas in general.
KNOWLEDGE BASE OF CANVASES	A comprehensive base of dozens of canvases from various fields which can be deconstructed for the better understanding of the general concept.
OPINIONS OF EXPERTS	Answers to interviews which provide a variety of perspectives from different experts. This is crucial in answering questions which cannot be directly answered through investigation of literature or specific canvases.
INITIAL ANSWERS	Raw, unprocessed answers from the interviews with the experts, which can be later analyzed deeper.
VALIDITY CRITERIA	Criteria for inclusion and exclusion of the results, based on the requirements established earlier.
CONCLUSIONS	Analyzed, aggregated results from all three research methods. Suggestions for possible future work in the field.
ANSWERS TO RESEARCH QUESTIONS	All the collected information and conclusions used to answer the initial research questions.

Table 1.3: Concept Table

Chapter 2

Research Method

2.1 Choice of Research Methods

For the purpose of identifying where can we get answers to our research questions, as presented in the Table 1.1, we have chosen three research methods. These are: a thorough literature review, a comprehensive survey of various canvases and a series of interviews with people representing different canvas roles. If we limited ourselves just to literature study, we would have missed out on some of the important information that is unfortunately not included in scientific papers. By adding the method of surveying many canvases and learning what they are in more detail. This type of information is not included in any literature, it has to be obtained by deconstructing the canvases and analyzing them. Some of the information has to be asked directly from the experts. For example how are canvases used in real organisations, methods and tools of creation and evaluation of canvases which experts have gained from their experience of using canvases in real life settings.

2.2 Literature Study

2.2.1 Snowballing

Finding scientific literature centered specifically around canvases is even more challenging to find. Due to this limitation, in order to conduct the most comprehensive literature review possible, we have decided to use a snowballing method, which is using the reference list of a paper or the citations to the paper to identify additional papers [37]. There are two types of snowballing sampling: backwards and forwards. In both, we first focus on finding a "start set" - scientific papers that are closely linked to the subject. We try to find as much papers as possible using keywords such as: "Canvas Strategic Management", "Canvas Strategic Planning", "Canvas Business", "Inspired by Business Model Canvas". These keywords have allowed us to investigate papers directly investigating canvases in general and also those canvases which have been inspired by business model canvas. We have decided to broaden our search by including "Visual Tools", "Visual Modelling" as one of the keywords, because some papers don't directly reference canvases when talking about them, or call them by different names because of the ambiguity that is surrounding concept of a canvas. This expanded the search area significantly, and we were forced to reject many papers which have no mention of canvases. We have decided to use the backwards snowballing method. It is using the reference list to identify new papers to include. The other

The next stage is to determine each paper's eligibility and acceptability for inclusion in the study after completing an initial literature search and developing a list of possibly relevant

studies. The reference list is first be subjected to fundamental standards including language, year of publication, and publishing type. Publications that don't fit these fundamental requirements won't be considered further.

Then, we work to remove papers that have already been examined earlier in the search process. This makes it easier to ensure that the remaining papers are original and distinct from those that have already been examined.

The remaining papers are then carefully reviewed to see if they fit the requirements for inclusion in the research. We then search the reference list of a paper for possibly relevant articles if it is determined that the paper should be included based on the information already available. This helps to find any other documents that might have been overlooked during the initial search.

The process of reviewing papers and checking reference lists is repeated until no new relevant articles are found. As a result, we can be certain that we have located all potential sources of information on the subject and have incorporated all relevant studies into our paper.

By following this systematic and thorough process, we can ensure that our final analysis is based on the most comprehensive and reliable set of studies available.

2.2.2 Further search

Throughout the research process, we encountered numerous new topics and concepts that provided valuable insights into the field of canvases. As we explored each new concept, we used it as a basis for creating important keywords that helped us to find additional sources of information about canvases and related topics. Each new canvas that we discovered and documented served as a keyword that helped us to uncover more information about canvases in general.

In addition to canvases, we also explored related topics such as "Information Visualization", "Information Modelling", and "Visualizing Business Models". This broadened our search beyond simple canvases and helped us to uncover additional sources of information that were relevant to our research question and write a sound introduction section that explains the background and origin of canvases. We viewed the search for articles as a constant process that continued throughout the course of writing the paper.

Although most of the cited literature is not specifically about canvases, we were able to find relevant information by broadening our search to include areas surrounding canvases and similar concepts. Each new concept led us to the search of new sources with the goal of finding out more about a specific topic. We made a concerted effort to establish a scientific foundation for every claim made in the paper, and as such, the search did not end with the conclusion of the initial literature review.

As a result of our extensive search, we were able to uncover many similar concepts that are discussed in greater detail in the Background Literature chapter 3. While these tools may seem similar at first glance, they are actually used for different purposes and in different contexts. By exploring these related concepts, we were able to gain a deeper understanding of the broader context in which canvases are used and how they fit into the larger landscape of visualizing and modeling business processes.

An incredibly helpful sources from which we were able to source many canvases and information about them was canvanizer.com and thecanvasrevolution.com. Both of these websites have templates of canvases and tools which make it possible to create canvases.

2.3 Empirical Research - Survey Study

2.3.1 Survey process

In order to answer questions 1.1 and 1.3 outlined in section 1.6, we need to conduct a thorough survey of canvases that are already known to us and ideally the ones which have an established definition. We needed to collect a sizeable set of canvases from different fields and many different use cases. We will go through each and every one of them, deconstruct and investigate them for the purpose of learning their common characteristics, distinct features etc.

To adequately address the research questions outlined in section 1.6, a comprehensive survey of known and established canvases was necessary. We recognized the importance of collecting a large number of canvases from a variety of fields and with various uses, in order to ensure a thorough analysis of the data.

We decided to use a methodical process of collecting canvases from a variety of sources, including academic literature and, because these quickly became limited, we gravitated towards online grey literature, such as articles on websites for entrepreneurs. We designed a diverse set of canvases that includes a wide range of fields and areas, with the hope of understanding of the current state of the canvas in science and industry.

Once we had collected the canvases, our next step was to deconstruct and investigate each one in detail. This involved a rigorous process of analysis, in which we examined each canvas for common characteristics, distinct features, and other key attributes that could shed light on the underlying principles and practices of the field.

Throughout this process, we paid close attention to the nuances and intricacies of each canvas, in order to gain a deep understanding of their underlying structures and mechanics. By carefully deconstructing and analyzing each canvas in detail, we were able to identify patterns and trends that helped us to answer the research questions outlined in section 1.6.

We tried to make our approach rigorous, systematic, and comprehensive, to allow us to gain a rich and nuanced understanding of the field and its underlying principles.

2.3.2 Inclusion and exclusion criteria

To do this, we need to define inclusion and exclusion criteria that will help us select a smaller sample of canvases from the hundreds that are available. By doing this, we can ensure that the canvases we select are representative of the area of interest, and that the results of the study will be valid and reliable [74].

Inclusion criteria specify the characteristics that a canvas must possess in order to be eligible for study. These criteria can include factors such as the purpose of the canvas, the industry or sector it belongs to, and the type of information it is designed to capture. By carefully selecting canvases that meet these criteria, we can ensure that the sample we study is relevant and meaningful.

Exclusion criteria, on the other hand, specify the characteristics that make a canvas unsuitable for our study. These might include factors such as a lack of relevance to our area of interest, poor design or usability, or insufficient documentation. By excluding canvases that do not meet our criteria, we can ensure that the sample we study is of high quality and that the results of the study are more reliable and valid [24] [97].

Once we have established our inclusion and exclusion criteria, we can begin the process of selecting canvases for study. This will involve a systematic and rigorous process of review, in which we carefully evaluate each canvas against our criteria to determine whether it should be included in the study.

In addition to selecting canvases for study, we also need to establish the interview process itself. For this, we need to first establish who would be the ideal candidate. Then we need to start identifying potential participants, reaching out to them, and conducting interviews that capture their perspectives and insights on the use of canvases in their field. By carefully planning and executing the interview process, we can ensure that the data we collect is of high quality and relevance, and that it is sufficient to address the research questions outlined in section 1.6.

2.3.3 Inclusion criteria

The following are the inclusion criteria for the canvas survey:

- Canvas has to be mentioned in multiple sources. These sources don't always have to be scientific, as many canvases do not have papers written on them. This helps us ensure that the canvas really exists and is defined to some extent.
- Canvas has to have a defined author, be it an individual researcher or an organization. We need to know who can we cite with the invention or at least definition of the specific canvas. Apart from making the canvas more relevant, it creates an opportunity for a potential interview later.
- Canvas has to be ready to be used, with a graphical template and sufficient instructions. In order to closely analyze a canvas and better understand it, we need it to be a finished and a ready product.

2.3.4 Exclusion criteria

The following are the exclusion criteria for the canvas survey:

- If canvas is only mentioned briefly in grey literature it should not be considered. Thanks to this criteria we can avoid anything canvases which aren't relevant or even exist, apart from the name existing in some context.
- No defined author. By extension of the previous step, without a sound scientific source, or multiple mentions and proof of usage, we should not consider a canvas as a subject for the survey.
- No trace of canvas every being used or any clear indication of how to use it. If we cannot verify that the canvas is actually being used, or at least prepared to be used by any of the roles (Designer, Publisher, User - expanded in section 3.11)

2.4 Interview Process

2.4.1 Interview Methodology

For the third stage of our research we have decided to conduct interviews with experts on the subject of canvases. For the crafting of our interview methods and questions we use the ACM Sigsoft Empirical Standards for Qualitative Surveys [79]. It is a set of standards for conducting research comprising of semi-structured or open-ended interviews [104].

This standard is applicable to all empirical studies which satisfy the requirements listed below:

- Participants are interviewed by researchers on a one by one basis.

- Researchers pose open-ended questions, to which interviewees respond.
- Participants' responses are recorded.
- Answers from participants are subjected to qualitative data analysis by researchers [75].

Our interview process ideally fits into this category. We are planning to have one on one interviews, ask our participants mostly open ended questions. We also intend to record and transcript all the interviews, and include them in the appendix. We will later analyze the data to gain answers. Among the essential attributes that a good interview methodology should have, are:

- explains on what basis where the participants selected
- describes who the interviewees are, for example their demographics or work roles.
- describes the researchers experience and perspective.
- shows how the interview subjects answers led to conclusions and findings [84].
- answers the research questions
- includes a section for discussing potential biases that researchers might have [75].

Provided we stick to this guide, we should end up with a scientifically coherent interview phase which will potentially yield a lot of findings which can be used for answering our research questions.

2.4.2 Sampling

In order to conduct interviews, we need to find several experts who would be willing to commit some of their time to participate in our interview. We considered the following requirements for choosing potential participants:

Relevance: The first requirement is relevance, which involves selecting participants who have relevant knowledge and experience in the field of canvases. To ensure this, we will verify the participants' credentials and previous work in the area. By selecting participants with relevant experience and knowledge, we can ensure that the data we collect is meaningful and relevant to our research question.

Expertise: By selecting participants with expertise in using and creating canvases, we can gain valuable insights and perspectives that may not be available from individuals without such expertise. Additionally, participants with expertise can help us better understand the nuances and complexities of the research topic, as well as provide specific examples and experiences that may be relevant to answering our research question.

Availability: Availability is also a critical requirement in our selection process. We will consider the availability of the participants, and whether they have the time and willingness to participate in the interview. We will ensure that the participants are easily accessible and willing to be interviewed, as this will help us to conduct the interviews more efficiently and effectively.

Informed consent: Lastly, we will ensure that participants give informed consent before being interviewed. This involves making sure that participants understand the topic and purpose of the interview and consent to participating and being recorded. This is an essential requirement to ensure ethical research practices and to protect the privacy of the participants.

We started our search within the Utrecht University, among professors who deal with canvases on a daily basis. We have identified potential subjects and we intend to continue

the search outside of university, in organisations that regularly use canvases, for example consultancy companies. We also aim to contact and interview several canvas authors.

Overall, the interview process is a critical part of our research, as it will enable us to gather valuable insights from experts in the field of canvases. By carefully considering the requirements for selecting participants, we can ensure the quality and reliability of our data, and ultimately achieve meaningful and relevant results for our research question.

2.5 Theory development

The literature review laid the groundwork for initial theoretical frameworks, defining what is currently known about canvases and preparing the ground for exploration. Theory development in science is a complex and iterative process that involves multiple stages. As the theory is applied, new questions are asked, and the development cycle restarts [42]. This review allows us to identify the gaps in existing theories and models related to canvases, and shape the initial theories of what a canvas is and how it is being used within different contexts.

The analysis of various canvases then provides empirical data that can either support or challenge our preliminary theoretical frameworks. By examining the structure, components, and applications of different canvases, we gained real insights into their functions and effectiveness, further refining our theoretical understandings.

The interviews with experts added depth to our theoretical development. We anticipated these interviews to provide subjective experiences and unique perspectives that may challenge, confirm, or enrich the developing theory. Experts may introduce new dimensions to our understanding of canvases, reveal unanticipated contexts for their application, or confirm the importance of elements identified in the literature review and canvas analysis.

As we continuously compare the emerging data from these three research methods, we'll identify patterns, commonalities, and differences that help us refine our theory. In essence, we will be engaging in an ongoing cycle of theory generation, where the data we gather inform our theoretical development, which in turn shapes our understanding and interpretation of subsequent data. This repeated process will ensure that our theory is grounded in and supported by comprehensive data sources.

The objective of this iterative process is to generate a robust, nuanced, and data-driven theory that accurately captures the essence of what a canvas is, how it functions, and its value across a variety of contexts and applications [4].

2.6 Response data analysis technique

In this interview study, we have decided to use the capabilities of GPT4 to conduct a comprehensive analysis of the responses obtained during our interview-based research. We have used a speech to text tool called Audiogest developed by Thomas Mol in order to get the transcripts of our interviews. Audiogest uses GPT4 and Whisper to transcribe text more accurately than many other solutions. After we had all the transcripts we have decided to utilize AI solutions once more and after inputting the full text of the interview with experts, we asked ChatGPT to provide answers to specific questions from the interviewees responses, and give verbatim quotes. This way we could analyze all the interviews much quicker without having to reread all transcripts several times over.

We later inserted the answers into a spreadsheet, creating a separate table for each of the six sub-research questions. We assigned the responses and quotes of the experts to

the questions we intended to answer. This allowed us to analyze the responses in a more structured and efficient way.

Chapter 3

Background Literature

3.1 Similar concepts

In order to find an answer to a very broad question: "What is a canvas?" we need to look for other tools which may offer similar functionalities. We identified four potential tools which may overlap with canvases in usage or structure. These are: templates, blueprints and frameworks, stencils and charts. All of these are tools that are used to plan, strategize, and visualize different aspects of a business or organization. These tools provide structures for organizing and presenting information, and can be used to facilitate brainstorming, idea generation, and decision-making. In this comparison, we will explore the similarities and differences between these tools, and how they are used in different contexts.

3.2 Charts

Charts are graphical representation tools for data or information visualization. It is a visual tool that allows to easily see and understand patterns, trends, and relationships in data. Charts can be created for various types of data, including numerical, categorical, or qualitative data [49].

Charts can take many forms, including line charts, bar charts, pie charts, scatter plots, and many others. Each type of chart is best suited for certain types of data and can be used to convey different types of information [31].

Charts are used in many different fields, including finance, business, science, and education, among others. They are often used to make data accessible and understandable to a wider audience, helping to communicate complex information in a clear and concise way [16].

3.3 Stencils

Digital stencils are pre-designed digital shapes that can be used to create visual designs or documents. They typically include a set of pre-defined layout, formatting, and content elements, such as text and visual placeholders, and allow users to quickly create a professional diagrams, charts, or other visual representations of information without having to start from scratch [12] [15].

The most popular library and environment for digital stencils is Visio, a Microsoft Office application intended for creating diagrams in vector graphics, to communicate information or ideas in a clear and visually appealing way. In this software, stencils are palettes of shapes

that can be used to create almost any diagram you need. Each palette is task-specific making it easier to locate the shapes required.

The main difference between a stencil and a canvas, is in their intended use scenarios. Canvases are tools for strategic planning, stencils typically are only found in visual design field. Stencils are used for quick and convenient visualizations, which can be edited on the go after receiving feedback. They are also much less complex, because they are mostly intended to be a visual help or a placeholder. Stencils could be used as an aid tool for quickly building flowcharts, organisational charts, floor plans, network diagrams and mind maps. They could not be used like a canvas, as a comprehensive tool to plan a company's strategy on its own, but it could certainly provide help for creating visually appealing canvases.

3.4 Templates

A template is a prepared design architecture which can be used as a starting point for creating a new document, process or visualization. It typically includes a pre-defined layout, formatting, and content elements, such as text and visual placeholders, and allows users to quickly create a professional-looking document without having to start from scratch [29].

Terms "template" and "canvas" are often used interchangeably. Stencils are regularly compared to templates. This is because template is a very broad term.

Templates are often used to ensure that documents and presentations have a consistent look and feel, and to save time and effort in creating new content. They can be created in a variety of applications, such as word processing programs, spreadsheet software, and presentation tools.

There are many different types of templates available, including business templates (such as business plans, reports, and proposals), personal templates (such as resumes and cover letters), and project management templates (such as project plans and timelines) [83]. Templates can be used in a wide range of industries and contexts, and can be customized to meet the specific needs and requirements of the user [22].

3.5 Blueprints

A blueprint is a detailed plan or design that serves as a guide for building or constructing something. The term is often used in the context of architecture and engineering, but it can also be used more broadly to refer to any detailed plan or set of instructions for achieving a specific goal. For example, a business might have a blueprint for a new product launch, outlining all of the steps and activities required to bring the product to market. In this case, the blueprint would include details about market research, product development, manufacturing, marketing, and sales. One example is the "The Open Source Software Business Model Blueprint" which was constructed using the results of 10 comparative case studies of open source businesses, using the Software Business Model Framework as the underlying conceptual model. The extracted summarized findings create a blueprint [95].

While both blueprints and canvases are used to communicate and plan complex systems, they are typically used for different purposes and in different contexts. Blueprints are primarily used in engineering and construction to communicate the design and functionality of physical systems, while canvases are used in business and organizational planning to communicate and visualize strategic plans and ideas.

3.6 Frameworks

A framework is a set of practices, guidelines, and tools that provide a structure for addressing a particular problem or issue, and can be used as a reference to help guide the development of solutions or strategies [26]. It can be used in a variety of contexts. For example, a framework can be used to provide a structure or set of guidelines for addressing a particular problem or issue [61]. Some examples of frameworks include:

- Project management frameworks which provide guidelines and most optimal practices for planning and executing projects.
- Research frameworks, which provide a structure for organizing and conducting research in a particular field or discipline.
- Legal frameworks, which provide a set of rules and principles for the interpretation and application of laws.
- Business frameworks, such as Lean, Six Sigma, and Agile, which provide a set of principles and practices for improving efficiency and effectiveness in business operations [59].

One such example of a framework is Business Model Framework. It is a set of practices and guidelines that provide a structure for developing and managing a business. It defines the way a business creates, delivers, and captures value, and describes the relationships and processes that are involved in generating revenue and profits. There are many different business model frameworks that have been developed, each with a different focus and set of practices. [57].

So how are frameworks different from canvases? We can see that by comparing Business Model Framework to the Business Model Canvas. The framework is more broad and robust in its content and usage. Instead of simply visualising and documenting existing business processes and elements, it can also help a business define its strategy, identify potential opportunities and challenges, and plan for growth and sustainability. It can also be used as a reference to help guide decision-making and resource allocation within the organization. Business Model Canvas, unlike framework, is first and foremost a visual tool, one which can be taken into physical world (using post-it notes) and used more intuitively, display complicated organisational structure in a more understandable way. It is mostly a tool used to incite understanding, discussion, creativity, and analysis. The most important difference however, is that a framework does not always have to be represented graphically. A canvas would not be a canvas if it was not in its graphical form.

3.7 Summary

Canvases, blueprints, templates, and frameworks are all tools used in business and innovation planning, but they have different purposes and approaches:

A canvas is a visual tool that provides a structured format for brainstorming and organizing ideas. Canvases are typically used to quickly capture and communicate business concepts, often in a collaborative setting. It is often used to create a one-page overview of content, or to provide a visual representation of a plan or strategy.

A blueprint is a detailed plan or design that outlines the steps required to build or implement a solution, project, product, or process. Blueprints are typically used to guide the development and execution of complex projects.

A framework is a set of guidelines, processes, and practices that provide a systematic approach to solving a particular problem. Frameworks are typically used to standardize problem-solving and decision-making processes across an organization.

A template is a pre-designed structure or format that can be easily adapted for different purposes. Templates are typically used to save time and ensure consistency in formatting and presentation.

In summary, canvases are visual tools to organize and present information in a clear and concise manner, blueprints are detailed plans that guide the construction of a project or product, frameworks are set of guidelines that provide a common approach to solve problems, and templates are pre-made documents that ensure consistency and efficiency in the document creation. Each of these tools serves a different purpose, but they can be used together to support the process of creating a new product, service or strategy.

	Canvas	Template	Blueprint	Framework	Stencil	Chart
Visual Design	✓ [53]	✓ [56]	✓ [23]		✓ [38]	✓
Planning tool	✓ [65]		✓ [23]	✓ [89]		
Evaluation tool	✓ [68]					✓ [1]
Collaborative	✓ [50]					
Guide construction		✓ [70]	✓ [85]	✓ [89]	✓ [98]	
Detailed plan			✓ [85]	✓ [2]		
Ensure consistency		✓ [92]		✓ [25]	✓ [43]	
Simplifying tool	✓ [103]	✓ [20]			✓ [55]	✓ [91]
Brainstorming tool	✓ [9]					
Efficiency improving tool	✓ [45]	✓ [54]			✓ [55]	

Table 3.1: Comparison of concepts similar to a canvas

From our the Table 3.1 we can see that what is unique about canvases compared to the other concepts is their collaborative nature as they are often used as tools for facilitating team collaboration and incorporating multiple perspectives in the design process [44].

By extension of that, they are also brainstorming tools, the canvases can be applied in different parts of the design process to facilitate collaboration between experts of different fields [6].

Canvases are also tools for improving efficiency, as they helps teams sharpen their perspective on challenges from the start and presents a more holistic view on projects [50]. One of the unique characteristics of a canvas is also that it's by nature a simplifying tool. The only other concept that shares this feature is a stencil, but these are much more rigid and less universal in use.

Use of stencils in IT projects, can help with improving computational efficiency without sacrificing numerical accuracy [55]

Templates first and foremost ensure consistency in projects. They can be used to guide project stakeholders through the process of identifying, defining and aligning intangible project outcomes with tangible project outputs. [70]

In project management, charts and simplify the representation of complex project timelines and facilitate tracking progress [91]

3.8 What definitions of a canvas exist?

As mentioned previously, canvases are a concept that is not easy to define, and through literature review we have found out that few attempts have been made to define it. During our research, we were able to find only two scientific definitions. Catarina Lelis defines it as a “designer tool that guides its users towards the creation of something new, is presented and framed in a graphical way, usually decomposing a complex topic or task into simplified activities, and facilitates interactions with different stakeholders. Canvases, games, and diagrams are usually among the most popular tools of such kind.” [53]. She is basing her definition on work done by Thoring, Mueller and Badke-Schaub. The same authors define a canvas “as a two-dimensional, poster-based tool that (...) provides blank areas to be filled by the users, in order to invite co-creation activities and teamwork” [44].

Another definition we have found was coined by Frederik Möller and Barbara Steffen and states that: “Canvases are two-dimensional graphical illustrations that transfer complex issues into mnemonics through ontological decomposition” [64].

Based on our research, previously coined definitions and several comparisons made with comparable concepts we were able to come up with this draft definition:

A canvas is a visual representation of a concept that is used as a planning or brainstorming tool. Canvases are typically organized into a grid or matrix, with various elements or factors that are relevant to the concept or idea being depicted in each cell of the grid. The elements of a canvas can be words, images, diagrams, or any other visual representation that helps to convey the concept or idea being represented.

This definition is not be a sufficient final product yet. However, it incorporates all the knowledge we have gained so far through the literature review, we consider it to be as robust as possible for this stage in the research.

3.9 What types of canvases are available?

Canvases can be grouped into several different categories based mostly on their primary purpose or use.

- **Business and strategy:** Canvases that are used for planning and managing businesses or projects, such as the business model canvas, the strategic planning canvas, and the lean canvas, customer segmentation canvas and resource allocation canvas [71] [48].
- **Customer understanding:** Canvases that are used to understand and analyze customers, such as the empathy map, the user journey map, the value proposition canvas and the customer feedback canvas [73].
- **Ideation and innovation:** Canvases that are used to generate and visualize new ideas, such as the innovation canvas, the problem-solution fit canvas and the idea evaluation canvas [41]
- **Project and process management:** Canvases that are used to plan and manage projects or processes, such as the Kanban board and the SWOT analysis canvas [87].
- **Marketing and branding:** Canvases that are used to plan and execute marketing strategies, such as the marketing mix canvas and the brand identity canvas [3].

Each category represents a field of canvases operations, with the canvases providing a structured, visual means to conceptualize, analyze, and strategize accordingly. This list of

categories will be evaluated in the interviews for completeness. The results can be found in chapter 5.

3.10 How can we evaluate a canvas?

3.10.1 Evaluation Methods

The specific method for evaluating a canvas depend on the type of canvas and the goals it is intended to achieve. In general, though, there are some common steps that we have identified, which could be followed when evaluating any canvas:

- Define the purpose: Identify the purpose of the canvas and what it is intended to achieve.
- Assess the completeness: Check that all relevant elements are included in the canvas.
- Analyze the accuracy: Verify that the information depicted in the canvas is accurate and up-to-date.
- Evaluate the clarity: Ensure that the canvas is easy to understand and interpret.
- Test the effectiveness: Try using the canvas to achieve its intended purpose and assess its effectiveness.
- Seek feedback: Ask others to review the canvas and provide feedback on its effectiveness and any areas for improvement.
- Revise as needed: Make any necessary changes to the canvas based on the feedback and results of the effectiveness test.

It can also be helpful to use a specific set of criteria or evaluation framework when evaluating a canvas, depending on the type of canvas and the goals it is intended to achieve. For example, the Lean Startup framework includes a set of evaluation criteria for the lean canvas [90] [59].

3.11 What Canvas Roles Exist?

In order to research and evaluate canvases, we need to define terminology first. We have decided to define the following stakeholders for canvases.

First, we have the *Canvas Designer*, who is responsible for the design and creation of the canvas. Secondly, we have the *Canvas Publisher*, who promotes the canvas and is typically the same person as the *Canvas Designer*. Thirdly, we have the *Canvas User* who uses the canvas for its purpose and creates one or more versions of an *Instance*. Finally, we have the *Canvas Reader* who interprets the *Instance*, created by the *Canvas User*.

In order to answer supporting presented in the Research Question section 1.6 we need to find and dissect a number of different canvases. This will be particularly useful for answering questions SRQ 1.1 and SRQ 1.3. We start by presenting most notable and known canvases we have identified in a table.

Name	Author	Source	Scholar Citations
Business Model Canvas	Alex Osterwalder	Business model generation: a handbook for visionaries, game changers, and challengers [72]	30,200
DAO Canvas	Felipe Duarte	Setting Up a Decentralized Autonomous Organization [30]	1
Operating model canvas	Andrew Campbell, Mikel Gutierrez and Mark Lancelott	A Shared Vision for Digital Transformation: Codification of The Operating Model Canvas Approach [17]	79
Value proposition canvas	Alexander Osterwalder, Yves Pigneur, Gregory Bernarda, Alan Smith	Value Proposition Design: How to Create Products and Services Customers Want [73]	4,400
Data science canvas	Thomas Neifer, Dennis Lawo, Margarita Esau	Data Science Canvas: Evaluation of a Tool to Manage Data Science Projects [69]	8
Business Data Science Canvas	Swiss Statistical	Business Data Science Canvas: The essentials to create a well thought Data Science project in companies [96]	1
Design Pattern Canvas	Gregor Žavcer, Simon Mayr and Paolo Petta	Design Pattern Canvas: An Introduction to Unified Serious Game Design Patterns [106]	35
Service model canvas	Neil Turner	Introducing the service model canvas [101]	34
Sustainable brand model canvas	FirstWaterBrands	Introducing the Sustainable Brand Model Canvas [33]	0
Relationship model canvas	Elina Lawrie and Linn Vizard	The Relationship Model Canvas: Designing relationships with intention [51]	1
Innovation Challenge Canvas	Jorge Sanz-Llopis, Matthias Ostermann	Innovation in project management through framing and challenge redefinition [86]	3
Customer Experience Canvas	Totango Team	Customer Science: Behavioral Insights for Creating Breakthrough Customer Experiences [21]	8
Microservices Design Canvas	Matt McLarty	The Microservice Design Canvas [60]	3
Lean Canvas	Ash Maurya	Running Lean [59]	4280
Personal leadership canvas	Caleb Dean	Introducing: The Personal Leadership Canvas [28]	1
Ecocanvas	Alain Daou, Camille Mallat, Ghina Chammas, Nicola Cerantola, Sammy Kayed	The Ecocanvas as a business model canvas for a circular economy [27]	164
Data product canvas	Michael Fruhwirth, Gert Breitfuss, Viktoria Pammer-Schindler	The Data Product Canvas: A Visual Collaborative Tool for Designing Data-Driven Business Models [36]	14
DAO planning	Aaron Batchelder	The DAO Planning Canvas v1.0 [8]	0
Loyalty canvas	Karol Bzik	How to design an effective loyalty solution with Loyalty Canvas? [14]	3
Project canvas	Thomas Simon Olesen, Simon Stubben	projectcanvas.dk [100]	541
InfoCanvas	Todd Miller, John Stasko	The InfoCanvas: information conveyance through personalized, expressive art [63]	267
Storytelling canvas	Sebastian Kernbach	Storytelling Canvas: A Visual Framework for Developing and Delivering Resonating Stories [46]	88

Table 3.2: Survey of canvases. Please note this table only shows a selection of canvases. For full collection of investigated canvases see the appendix.

3.12 Overview of canvases

3.12.1 Business Model Canvas

Authors: Alexander Osterwalder and Yves Pigneur

Source: Business model generation: a handbook for visionaries, game changers, and challengers, volume 1. 2010 [72]

Purpose: The primary purpose of the Business Model Canvas is to provide a visual chart with elements describing an organization's value proposition, infrastructure, customers, and finances. It assists firms in aligning their activities by illustrating potential trade-offs [71]. The BMC serves to, among other things:

- understand and organising the business ideas so that they form one clear plan,
- define who the client is, who you are addressing with your product, service, etc.
- identify what needs your idea or business addresses and how you will meet those needs,
- design and understand how your business works, how it makes money,
- identify where and at what stage your idea or business is at,
- analyse the challenges you face and the areas you need to develop,
- visualise the venture, to present its key links to other stakeholders

Description: The Business Model Canvas is a tool that allows a business to depict its current or intended business model. It represents the foundational aspects of a business, including customers, value proposition, infrastructure, and financial viability. It's intended to be a live document, updated as the organization evolves and learns more about its customers and what delivers value to them. BMC itself achieved a tremendous success and is taught in every business school [18]. A couple years later, Osterwalder and Pigneur, published their second book *Value Proposition Design* in which they introduced a Value Proposition Canvas which is a concept similar to BMC, which can help ensure that a product or service is positioned around what the customer values and needs. Since then, there have been many other canvases developed, such as Lean Canvas, Project Canvas, Culture Map and dozens of others, from fields like data science, through machine learning to even fields like tourism and relationships [71].

Key elements: The nine building blocks of the Business Model Canvas are:

1. Customer Segments: Different groups of people or organizations a business aims to reach and serve.
2. Value Propositions: The collection of products and services that create value for a specific customer segment.
3. Channels: How a company communicates with and reaches its customer segments to deliver its value proposition.
4. Customer Relationships: The types of relationships a company establishes with specific customer segments.
5. Revenue Streams: The cash a company generates from each customer segment.

6. Key Resources: The most important assets required to make a business model work.
7. Key Activities: The most important things a company must do to make its business model work.
8. Key Partnerships: The network of suppliers and partners that make the business model work.
9. Cost Structure: All costs incurred to operate a business model.

Usage scenario: Suppose a startup is in the ideation stage and wants to communicate its business idea clearly. In this case, the startup can use the Business Model Canvas to map out key components of their business model, such as who their key customers are, what value propositions they offer, and what channels they plan to use. As the startup evolves, the Canvas can be adjusted accordingly, providing a dynamic, visual representation of the company's business model.

3.12.2 Decentralized Autonomous Organization Canvas

Authors: Felipe Duarte

Source: <https://daocanvas.webflow.io/>

Purpose: The use of a DAO canvas can help organizations to design decentralized organizations that are transparent, democratic, and aligned with the interests of all stakeholders [30].

Description: A DAO (Decentralized Autonomous Organization) Canvas is a tool used to design and build decentralized organizations on blockchain platforms. It helps to describe and analyze the structure, governance, and operational aspects of a DAO, and provides an overview of all design decisions to successfully deploy a DAO. Importantly, no blockchain or coding knowledge needed to work with it [30].

A DAO canvas typically includes building blocks such as the organization's controller, community, governance elements, stakeholder analysis and actors. The DAO canvas provides a visual representation of how the various elements of a DAO fit together, and helps to ensure that all aspects of the organization are aligned and integrated.

It is a valuable tool for organizations looking to create and manage decentralized organizations on blockchain platforms, and can help organizations to create a roadmap for the development and growth of their DAO [30].

Key elements: Controller, Community, Governance elements, Stakeholder analysis, Actors

Usage scenario: Consider a group of tech entrepreneurs looking to create a decentralized marketplace through a Decentralized Autonomous Organization (DAO). To architect this, they turn to the DAO Canvas, a tool designed for precisely such endeavors.

First, they clarify the DAO's purpose: creating a democratic marketplace free from central authority. They then detail the soft governance, deciding on a democratic voting system and regular virtual meetings to keep all members connected.

For hard governance, they turn to Ethereum-based smart contracts, creating a transparent, automated system for enforcing marketplace rules. They also decide on a token system for voting and transactions within the marketplace. By leveraging the DAO Canvas, these entrepreneurs efficiently map out a strong structure for their DAO, ensuring it's ready to respond dynamically to market needs and fulfill their strategic objectives.

3.12.3 Operating model canvas

Authors: Andrew Campbell, Mikel Gutierrez, and Mark Lancelott.

Source: The tool was first introduced in the book "Operating Model Canvas," published in 2017.

Purpose: The purpose of the Operating Model Canvas is to provide organizations with a method for aligning operations with strategic objectives. It serves as a guide for how resources are organized and operated to deliver the organization's strategy [17].

Description: Operating Model Canvas is a visual framework used to design, describe and analyze an organization's operating model, the processes, systems, and structures that enable it to deliver value to customers and stakeholders. It helps organizations align their structure, culture, and capabilities to support the strategy and business model. The OMC can be used at various stages of an organization's life cycle, including start-up, growth, and maturity, to assess the scalability of its operating model, identify bottlenecks and inefficiencies, and continuously improve its operating model. The OMC provides a holistic view of the organization's operating model and helps organizations to identify the interdependencies between the different elements of the operating model [17].

The Operating Model Canvas is a strategic tool that organizations can use to design, describe, and analyze their operating model. It provides a visual representation of the interdependencies between the different elements of the operating model and helps organizations align their structure, culture, and capabilities with their strategy and business model [81].

Key elements: The Operating Model Canvas is divided into six key elements:

Processes: The work that transforms inputs into outputs, which create value for customers.

Organization: How people and systems in the organization are structured and how they work together.

Locations: The geographical sites where work is conducted, including virtual locations.

Information: The data and knowledge required to support the processes.

Suppliers: Organizations or individuals who provide inputs to the processes.

Management System: The planning, budgeting, measuring, and reviewing activities that ensure the operating model runs smoothly and successfully [17].

Usage scenario: Suppose an organization decides to implement a new strategy to respond to market changes. The Operating Model Canvas can be used to design a new operating model that will better deliver the new strategy. The organization's leadership team might review their current operating model, identifying strengths and weaknesses in their processes, organization, locations, information, suppliers, and management system. They can then redesign these elements to better align with their new strategy, creating a new operating model that will help the organization achieve its strategic objectives.

3.12.4 Value proposition canvas

Authors: Alexander Osterwalder, Yves Pigneur, Greg Bernarda, and Alan Smith.

Source: The Value Proposition Canvas is a tool developed by Strategyzer, the same organization behind the Business Model Canvas. It was first introduced in the book "Value Proposition Design," published in 2014.

Purpose: The purpose of the Value Proposition Canvas is to help organizations understand their customers' needs and wants, and ensure that the company's value proposition is directly targeting these. It provides a detailed look into the customer segment and value proposition blocks of the Business Model Canvas [73].

Description: A value proposition canvas is a strategic tool used by businesses to better understand their customers and create products or services that meet their needs. The canvas is a visual representation that helps businesses identify the core components of their value proposition, which is the unique value or benefit that their product or service provides to customers.

The canvas is divided into two main sections: the customer profile and the value map. The customer profile section helps businesses define their target customer by identifying their needs, wants, fears, and challenges. The value map section helps businesses define their value proposition by identifying the benefits, features, and experiences that their product or service provides to the customer.

By using the value proposition canvas, businesses can create a clear and concise understanding of their customers' needs and how their product or service meets those needs. This can help businesses develop more effective marketing and sales strategies, as well as create products or services that are more likely to be successful in the market [73].

Key elements: The Value Proposition Canvas is divided into two main sections:

Customer Profile:

Customer Jobs: The functional, social, and emotional tasks customers are trying to perform, problems they are trying to solve, or needs they wish to satisfy. **Pains:** Negative experiences, risks, and obstacles related to the customer job. **Gains:** The outcomes and benefits that customers want [73].

Value Map:

Products and Services: The products and services that create gain and relieve pains. **Pain Relievers:** How your products and services alleviate customer pains. **Gain Creators:** How your products and services create customer gains.

Usage scenario: A company planning to launch a new product can use the Value Proposition Canvas to ensure that the product meets the needs of their target market. They begin by identifying a specific customer segment and then detailing that segment's jobs, pains, and gains. The company then maps out how their new product relieves customer pains and creates gains. This process allows the company to fine-tune their product and their messaging to ensure it resonates with their customers and meets their needs. It's also useful for existing products to assess and improve their market fit [73].

3.12.5 Data science canvas

Authors: Thomas Neifer, Dennis Lawo, Margarita Esau

Source: Data Science Canvas: Evaluation of a Tool to Manage Data Science Projects, 2021

Purpose: It's a comprehensive tool for effective management of data science projects, used to enhance communication and collaboration between different project stakeholders. It also helps structure and plan data science projects by analyzing the existing data landscape, modeling selection, and resource planning [69].

Description: The Data Science Canvas is a conceptual framework that guides the process of data analysis. It's divided into three parts:

Problem Statement (dark grey): This initial phase involves defining the business problem and the expected value to be derived from solving it. It involves analyzing the existing data landscape of the organization to see if additional data might be needed. It also requires selecting an appropriate model for analysis, defining the requirements of that model (like scaling), and determining what software will be needed [69].

Data Collection and Preparation (light grey): This phase involves gathering any additional data that's needed, using various methods and sources. The data is then checked for quality,

and issues like inconsistencies and outliers are addressed. The data may be aggregated into key figures like mean values, scatter, and correlation measures. The data may also need to be cleaned up, with measures documented for processes like interpolating missing values. The chosen data is then split into training and test sets, and integrated into a system where the model can access it. Generally, a data engineer would carry out these tasks.

Execution and Evaluation (white): This final phase involves running the model and evaluating it with specific quality indicators. Continuous real-time monitoring may be needed for some models. Stakeholder requirements for data presentation, communication, and model usage are also taken into consideration. This phase should support data storytelling to enhance understanding and motivation among stakeholders [69].

The Data Science Canvas serves as a communication base between different project stakeholders and can be used as a structuring element or checklist throughout a data science project. It helps democratize data science by making it accessible for non-data-affine project managers, contributing to the success of a project through a clear presentation of relevant influencing factors.

Key elements: The Data Science Canvas is divided into thirteen key elements: Business Case and Value Added, Data Landscape, Model Selection, Model Requirements, Software and Libraries, Skills, Model Evaluation, Data Storytelling, Data Selection and Cleansing, Data Collection, Data Integration, Explorative Data Analysis, Costs and Revenues.

Usage scenario: An online retailer wants to enhance their product recommendation system to increase sales and customer satisfaction. The decision is made to possibly integrate external data like market trends with existing customer transaction data and to select a model and software tools accordingly. The company collects the needed data and prepares it, ensuring quality, managing outliers, handling missing values, and segregating it into training and test sets. The chosen model is trained, tested, evaluated on quality indicators, and implemented for real-time product recommendation. The results are continuously monitored and communicated to stakeholders.

The Data Science Canvas guides this process, facilitating communication and understanding among stakeholders, and ensuring thoroughness in approach.

3.13 What are the characteristic features of a canvas?

From the survey study of multiple different canvases and a detailed deep dive into five of them, we have identified several characteristics of a canvas. These are the features that canvases share and which can be used to identify whether a tool can be classified as a canvas or not. Here they are presented as follows:

- **Visual:** Most canvases are visual in nature. The use of visual elements in canvases is a key factor in their effectiveness. By using graphical elements such as boxes, arrows, and circles, canvases help to simplify complex information and make it easier to understand. Visualization also enables users to identify relationships and patterns between different elements, improving their ability to analyze and optimize the business model [72] [44].
- **Modular:** Canvases are usually divided into smaller, modular components that can be analyzed and optimized independently. The modular design of canvases allows for a more focused analysis of each component, allowing businesses to identify areas for improvement and make changes incrementally. By breaking down the business model into smaller, manageable components, canvases help companies to prioritize their efforts and focus on the most important aspects of their business [18].

- Iterative: Canvases are designed to be iterative, meaning that they can be updated and refined over time as a company evolves and changes. This allows businesses to continuously improve their strategy and stay agile in a rapidly changing environment.
- Collaborative: Canvases are often used as a tool for collaboration, allowing multiple stakeholders to work together and align on common goals. This is particularly useful in larger organizations where there may be many different departments and teams with different perspectives and objectives. By using a common framework and language, canvases help to foster communication and alignment across the organization [18].
- Holistic: Canvases provide a holistic view of a business, capturing information on different aspects of the business model in one place. This helps businesses to see the big picture and understand how all the different components of their business model fit together. By considering all aspects of the business model in one place, businesses can make more informed decisions and ensure that their strategy is aligned with their overall goals.
- Adaptable: Canvases are flexible and adaptable, allowing companies to apply them to different industries, business models, and contexts. This versatility makes canvases a useful tool for businesses of all sizes and in a wide range of industries.
- Focused: By breaking down complex information into manageable components, canvases help companies to stay focused on their most important priorities. This focus enables companies to allocate their resources and efforts more effectively, resulting in better outcomes and improved performance.

In summary, these seven characteristics - visual, modular, iterative, collaborative, holistic, adaptable, and focused - serve as vital identifiers for canvases. They differentiate canvases from other visual tools and underscore their unique use in a business context. As such, a greater understanding and application of these features can help in the better recognition, selection, and utilization of canvases in the realm of business and scientific communication.

Chapter 4

Interview Study

4.1 Interview Questions

We crafted a script for the interviews we are planning to conclude for our last research phase. They are designed to aid in answering research questions. However, we will not always be able to stick strictly to the script, due to the nature of a conversation, and some answers will be already provided in other moments during the interview, or some will be useless to ask due to the area of expertise of the participant. The interview script can be found in the appendices 8.2.

Research Question	SRQ 1.1	SRQ 1.2	SRQ 1.3	SRQ 2.1	SRQ 2.2	SRQ 2.3
Interview Questions	7, 14	5	8, 13, 16	5	11, 12, 15, 17	6, 9, 10

Table 4.1: Association of interview questions with research questions

Each question was designed with a purpose of directly answering or assisting with research in order to answer one of the research questions. This provides is with a way to use experts knowledge to find out more information or confirm already acquired information in order to find a scientific conclusion. The direct association of the interview questions with the research questions can be found in the table 4.1.

4.1.1 Theoretical Framework

In this section we provide a theoretical framework which is used to frame the answers of our interview participants. We present how we are going to interpret our answers and analyze them keeping in mind findings we have so far from the literature review and the survey of canvases.

For our research we have identified three main quality criteria for grading the answers to our interviews: correctness, consistency, and effectiveness. Correctness ensures that the information obtained from the interviews is accurate, reflecting the participants' actual responses and experiences [39]. It involves verifying the validity of the information by cross-referencing the answers with previously studied literature. Consistency is crucial to identify patterns or themes that emerge across different interviews. It ensures that the findings are coherent and reliable, indicating a robust and unbiased analysis. By comparing responses and identifying common factors or differences, consistency allows us to draw meaningful conclusions. The third aspect, effectiveness, refers to the extent to which the interview

results address the research objectives and contribute to answering the research questions. It ensures that the insights gained from the interviews are valuable, informative, and align with the intended purpose of the study. These quality criteria collectively ensure the credibility and rigor of the research findings, enhancing the trustworthiness and significance of the project.

We decided to use “A Taxonomy of Evaluation Methods for Information Systems Artifacts” by Nicolas Prat. It presents a framework for categorizing and comparing different evaluation methods used in the field of Information Systems. The paper provides a taxonomy of four categories of evaluation methods: analytical, empirical, experimental, and participatory.

Analytical methods involve the inspection of artifacts, such as code or design documents, to assess their quality or suitability. Empirical methods use data collected through observation or surveys to evaluate the performance of information systems artifacts. Experimental methods involve the manipulation of variables to test hypotheses and measure outcomes. Participatory methods involve stakeholders in the evaluation process, such as end-users or developers.

Prat also discusses the advantages and limitations of each method, and suggests that a combination of methods may be most effective for evaluating information systems artifacts. He emphasizes the importance of selecting appropriate methods based on the evaluation objectives, the characteristics of the artifact being evaluated, and the available resources [78].

4.1.2 Framing answers to the framework

In order to appropriately analyze the results we need to frame each question in the context of the interview and overall theory we want to develop. By tailoring the questions to address specific aspects of the research, we can get detailed insights, expertise, and perspectives that contribute directly to the project's objectives. Focused questions help to uncover nuanced details, provide in-depth understanding, and explore specific areas of interest. They enable us to fully utilize the opportunity of the rich experience and expertise of the interviewed experts, guiding us to uncover valuable data and gain unique insights. Additionally, by ensuring that questions are concise, clear, and coherent, we can maximize the efficiency of the interview process, allowing for a more efficient exchange of information and increasing the chances of obtaining meaningful findings. Below we present a table 4.2 where we explain the motivations and justification for every question asked during the interviews.

4.2 Picking interview subjects

The search for experts to participate in our study is carried out mainly in two ways. First, we go through scientific papers related to canvases. The authors of these papers are often leading researchers or professionals in the field and they possess deep knowledge about the subject. We take note of these authors and their contact information, if available. We then send them an invitation to participate in our study (INVITATION LINK), explaining the nature of the research and why their expertise is valuable to us.

Second, we use LinkedIn, a professional networking site where many experts and professionals showcase their work and experience. On LinkedIn, we search for people who have mentioned working with canvases in their roles or have shared relevant content in this field. We reach out to these individuals with a personalized invitation that explains our research, its purpose, and how their contribution can make a significant difference. By using both scientific papers and LinkedIn, we ensure a diverse group of experts to gain a well-rounded understanding of the subject.

4.2.1 Nico Brand

Drs. N.A. (Nico) Brand is an assistant professor in Utrecht University's Faculty of Science, teaching courses such as Digital transformation and architecture, and Strategic management of organisations and ICT. In 2008 he started his own consultancy firm.

Now working over 20 years as Management Consultant, Project/Bid/Interim Manager and Trainer. Focus on helping organizations to make a sustainable transformation. Known as building bridges, integer, result driven, trust worthy and analytic. Experience in several branches. Content focus on Lean, IT Strategy & Architecture, Activity Based Workplace ('the new way of working') and Design Thinking.

4.2.2 Crystal Reijnen

Crystal is a Management Consultant in Anderson McGyver and a Utrecht University alumni. She studied Business Informatics and has written a thesis on Operating Model Canvas. Anderson McGyver is an NL-based Business Consulting and Services company, that advises board members and senior management in shaping and driving their digital agenda.

RQ	Purpose and framing of the answer
1	We ask the study participant to briefly introduce themselves in order to better frame his answers with his level of expertise in the field.
2	We try to find out what sort of engagement the person had with canvases. We can get to know if he is a sole author, a co-author, or only a user of canvases.
3	The answer to this question gives us insight into canvas development, how a canvas is formed from scratch, as well as personal or professional motivations behind its creation.
4	We further try to assess the persons expertise in the field of canvases. Answers to this question also give us another glimpse into how one canvas influences the creation of another.
5	An answer to this question is the core of our research. We want to know how these authors, experts in the field, view and understand canvases. What they say can influence our theory development and the final definition we aim to propose.
6	We want to know what field the person sees as the most important for canvas deployment. It helps frame his answers in a specific light and compare to other answers from the same or different background.
7	Categorizing canvases is one of the toughest and most lenient parts of the research, therefore we aim to use the answers of the experts to see if it is even possible to do so, and if yes, what to base our categories on.
8	Answers to this question can help us get to the core of what canvases really are, how they are viewed scientifically and subjectively by the professional crowd. It can help guide us in the right direction of the definition development.
9	By hearing answers to this question, we learn what sort of experience do the interview subjects have with canvases which helps us frame and understand their answers in the right way.
10	We ask who the experts view as a typical user of canvases, who did they make their canvases for and who do they think benefits the most from them. Thanks to these answers we can better understand what sort of people are the canvas users.
11	We ask the experts to name what are the main flaws and limitations of canvas usage. Because of that we can learn what canvases are not, which will be helpful with defining and differentiating the canvas from other visual tools.
12	By asking the interview subjects for their personal, subjective opinion on what they consider to be a good canvas in a broad sense. Whatever they mention can help guide us in the right direction for the theory development.
13	Answers to this may help guide us into how canvases are created and how what is necessary for their development.
14	There are a lot of other terms being used to refer to canvases. None of them are very clearly defined either. We try to gain answers to how are the other tools different, do they overlap with canvases, and if not what are their distinct qualities.
15	In terms of canvas evaluation, the literature is very limited. By asking this question we aim to get answers which help us understand the current process of canvas evaluation and what metrics are most important.
16	This answer can help us find out which canvas features or characteristics are the most important for the experts.
17	This serves a purpose of finding new interview subjects. As the field of research about canvases is limited, and not every author is easy to contact or available for an interview, this helps us track down and gain connections to new potential interviewees.

Table 4.2: Framing answers to the framework

4.2.3 Mikel Gutierrez

Mikel Gutierrez is a Chief Business Processes Officer at SOLARPACK, specializing in the field of renewables, co-authored a book about Operating Model Canvas [17].

4.2.4 Mark Lancelott

Mark is a consultant focused on helping businesses respond to the opportunities and challenges from the sustainability crises. Previously worked at PA Consulting Group for over 17 years. He co-authored a book about Operating Model Canvas [17]

4.2.5 Neil Turner

Neil is a Lead product Designer at Redgate Software. He has 20 years of commercial experience in design, research and management. He created a Service Model Canvas - a tool to help develop and document service models [101].

4.2.6 Catarina Lelis

Catarina Lelis is a researcher and an impact planner currently working as a External Examiner for MA Design, Innovation Brand Management at the University for the Creative Arts and a Lecturer at Universidade de Aveiro. She specializes in Brand identity and visual narrative, Planning for Impact and communication Design for Science. She is an author of "*Optimised taxonomy for the analysis and design of canvas-based tools*" [53].

4.2.7 Greg Bernanda

Greg Bernanda is an advisor, speaker, strategy innovation designer. His projects have been with the likes of Colgate, Volkswagen, Harvard Business School and Capgemini. Greg is the co-author of Value Proposition Design, the sequel to Business Model Generation and a frequent speaker [73]. Prior to that, he was at the World Economic Forum for eight years setting up initiatives for members to address global issues. He holds an MBA and is a Strategyzer certified business model coach.

4.2.8 John Stasko

Professor at Georgia Tech. He is a co-author of the InfoCanvas concept which he introduced in his paper "*The InfoCanvas: information conveyance through personalized, expressive art*" [63]. His work is one of the earliest examples of the use of canvases and may have pioneered the field.

4.2.9 Dennis Lawo

Dennis Lawo is an External Associated Researcher at the Institut für Verbraucherinformatik Bonn-Rhein-Sieg University of Applied Sciences. He co-authored "*Data science canvas: evaluation of a tool to manage data science projects*" which introduced Data Science Canvas [69].

4.2.10 Alexander Osterwalder

Alexander Osterwalder is a Swiss business theorist, author, speaker, consultant, and entrepreneur, known for his work on business modeling and the development of the Business Model Canvas. This is a strategic management tool which allows organizations to develop, visualize, and assess their business models. Osterwalder is also a co-founder of Strategyzer, a company that provides online tools, workshops, and training for strategic management and innovation. He has authored and co-authored several books, including "Business Model Generation" and "Value Proposition Design", which have been influential in the field of business strategy.

Unfortunately due to time restrictions and tight schedule, Alexander could not participate in a live interview. He instead agreed to share with us a video presentation titled "Developing effective visual tools" of which transcript can be found in the appendices section.

4.3 Expectations

From the semi-structured interviews, we anticipate gaining valuable insights into the subjective experiences of canvas creators and users. The expected responses will serve as a qualitative data source and provide understanding of the contexts, motivations, and challenges related to canvas creation and usage.

In the first question we expect participants to tell us about their background and their current work to assess their involvement and expertise in the field of canvases.

In response to questions 2 and 3, we expect to learn about the specific roles experts played in developing their respective canvases, as well as inspirations for their creation. These answers hopefully will reveal unmet scientific or business needs, limitations of existing planning tools and what facilitates canvases creation.

For questions 4 and 5, we expect responses to deepen our understanding of how a canvas is defined from various perspectives, and how the exposure to and use of other canvases influences the development of new ones.

Answers to questions 6, 7, and 8 should establish the contexts in which canvases are typically applied, the potential categories they might fall into, and their core, universal elements. We anticipate these responses to be very varied, reflecting the diversity of the interviewees' experiences and backgrounds.

Responses to questions 9 and 10 would further show us how canvases are integrated into daily work and organizational routines, their benefits, and their typical users. These findings could be useful in understanding the practicalities of canvas usage.

Question 11 is critical for understanding the limitations and challenges of canvases, which could inform the future improvement and innovation of these tools.

Questions 12, 13, and 14 might reveal criteria for what constitutes a "good" canvas, specific tools or techniques used in canvas creation and manipulation, and a comparative perspective on how canvases compare to other visual planning tools.

Answers to questions 15, 16, and 17 will increase our understanding of how canvases are evaluated and what success metrics are commonly used. This information could contribute to the development of robust assessment strategies for new canvases.

Finally, question 18 will help to expand the network of experts for further interviews.

The information gathered through these interviews will be utilized to cross-reference the findings from the other two phases of the study - the literature review and the canvas survey. For instance, the literature review may reveal themes and theories about canvas design and usage, which can then be compared and contrasted with the data collected through interviews and canvas analysis. Furthermore, the canvas analysis may highlight patterns and features in canvas design that can be further explored through interviews. So, each phase of the research contributes distinct, but connected, insights, resulting in a comprehensive understanding of the role, design, and usage of canvases in various contexts.

Chapter 5

Analysis of Results

5.1 Response analysis

Over the course of three weeks, we successfully conducted a total of eight interviews with various experts in the field of canvas development and information visualization. The scheduling of these interviews was planned to allow for careful preparation for each individual session. Each interview followed our prepared set of questions, aiming to capture the participants' expertise and experiences with canvases. They were all conducted in a respectful and professional manner, ensuring the participants felt comfortable to share their insights openly. Due to scheduling difficulties, two of our participants were unable to participate in a live interview, but offered to answer a couple of questions by email or on a pre-recorded video. We use insights from those as well. Now, in this section, we delve into the detailed analysis of these interviews. We break down the experts' responses, exploring common themes, unique perspectives, and notable insights that emerged during these conversations. We aim to present the information in a clear and comprehensive manner, making it easy for readers to understand the critical takeaways from these expert interactions. In this section, we present the answers to the research questions that guided our study. After a thorough literature review, and comprehensive interview sessions, we are able to answer all questions, combining the knowledge gained.

5.2 Academic status of canvases

Canvases, although most commonly used for businesses and management, are also increasingly finding use in academic settings. Despite this, there is really no tangible academic presence of canvases. Most prominent scientific sources talking about canvases in general are:

"Optimised Taxonomy for the Analysis and Design of Canvas-Based Tools" by Catarina Lelis [53]. It analyses how academic impact, business purpose, and a shift in value perception among younger generations towards a more humanitarian focus are evolving trends in contemporary society. The goal of the research is to identify a visual tool that can streamline the assessment of impact and value in various projects or activities. A benchmark of 35 canvases and diagrams was carried out, based on two chosen analytical frameworks. However, these frameworks were found to be inadequate due to overlaps, contradictory organizing structures, and even missing crucial parameters. As a result, we propose an improved categorization method for both analyzing and creating visual tools based on canvases. This in turn facilitated the desired evaluation of the selected resources and led to the creation of a tool centered on impact and humanitarian values, providing a viable answer to the research question posed.

'License to VIT' - *A Design Taxonomy for Visual Inquiry Tools* by Thoring, Mueller and Badke-Schaub [64]. This paper is a thorough analysis of Visual Inquiry Tools. Authors say they are instrumental in collaboratively addressing and creatively solving complex, ill-defined problems. "With visual inquiry tools, designers can sketch the problem-space of an artifact-to-be-designed and generate solutions in a priori defined ontological elements" [64]. Although there is advice on content-wise design of visual inquiry tools, a clear understanding of the available design options for these tools is lacking. In response, this paper introduces a taxonomy of visual inquiry tools, offering a framework for their design. This taxonomy is developed using a sample of 24 visual inquiry tools identified in scholarly literature, along with 15 real-world empirical examples.

Exploring the Design Space of Innovation Canvases by Frederik Möller and Barbara Steffen [44]. Authors of this paper noticed that canvases, as designerly innovation tools, are extensively employed to streamline team collaboration processes. This study explores the potential design dimensions of such innovation canvases. Conducting a systematic review of 123 existing canvases, we constructed a morphological box that categorizes six pertinent parameters: (1) the process step being addressed, (2) the media involved, (3) the usage sequence, (4) the provided instructions, (5) the number of elements, and (6) specific design aspects, along with their potential alternatives. The examination also reveals several areas where further research is needed. Additionally, they delve into a comprehensive discourse on the potential theoretical foundations of innovation canvases, encapsulating them in a theoretical framework. This paper's findings offer a useful reference for researchers and practitioners alike to gain a deeper understanding of the operational mechanisms and application areas of existing canvases, and to develop such visual innovation tools tailored to their requirements.

5.3 Types of canvases

One of the processes which could help us define a canvas was finding a way to split canvases into different categories. We started this process in section 3.9, however here we try to enrich these findings with opinions from our experts. We asked them how would they categorize canvases and based on what metrics.

Mark Lancelott, Neil Turner, and Dennis Lawo were speaking about different types of canvases or categories primarily used in business model ideation and communication. Their conversation covers several aspects, including the focus of different canvases, the usability and simplicity, and their role in different project phases and among teams.

Mark Lancelott speaks about how some canvases focus on specific aspects of a business model, such as digital business model canvases or sustainability business model canvases. He mentions, "I see a lot of them in the variants of business models, so, you know, digital business model canvas and sustainability business model canvases, those types of things." However, he also implies that not all canvases are valuable, with some being poorly constructed without much thought, implying that canvases could also be qualified based on their quality.

Neil Turner discusses the usability of the canvas. According to him, a good canvas should be self-explanatory, easy to use without much guidance, and shouldn't be overly detailed or complicated. He says, "Need needs to be something that can be utilized without necessarily you know, guided or without sort of outside guidance. You want sort of a canvas to be a little bit kind of self-explanatory to a degree."

Dennis Lawo talks about canvases from the time perspective. He suggests that canvases typically focus on the early stages of project work or ideas, but he questions whether there are canvases for later or earlier steps of a project. He states, "So, from a time perspective, I think they are always focusing on early project work, early ideas, stuff like this. And then

there's like a later step canvas that focuses on things like that." Lawo also mentions the potential categories of canvases based on their purpose: for ideation versus communication. He concludes, "Maybe you could also make an argument for ideation versus communication. There could be canvases that are solely for communication and others for collaboration, ideation."

The answers provided by experts provided insightful perspectives on the categorization and uses of business canvases. They emphasized the subject-specific nature of some canvases, suggesting a possible categorization based on their focus areas and quality. They also underscored the importance of usability in a good canvas, suggesting that an effective canvas should be self-explanatory and not overly detailed. Their remarks contributed to the discussion by adding the dimension of time and purpose, suggesting that canvases can be classified based on their application in various project phases and their specific roles, whether for ideation or communication. The expert opinions enrich the previous findings on canvas categorization, introducing more nuanced dimensions for classification.

5.4 Components and characteristics of a canvas

To truly understand what makes canvas a canvas, we need an analysis of a fundamental structure of a it. We researched it and asked experts about it. Below is a list of required components or characteristics that a tool has to have in order to be classified as a canvas:

- Visual Design [53]: Canvases are typically visual, which means they rely on the arrangement of components in a specific layout. This layout can help with understanding relationships, hierarchy, or sequence. Mark Lancelott suggests that: *"I suppose the thing you're trying to get to is that see, you know, see something complex with multiple components in a single image so that, you know, sort of visual processing, visual thinking as opposed to linear narrative so you can see the whole at once rather than the parts."*
- Segments or Blocks [72]: Canvases are typically broken into different sections or blocks, each representing a specific component of the system or concept being explored. These blocks act as prompts for specific types of information. Mikel Gutierrez says: *"Canvases should have designated empty areas to be filled in, which allows users to engage actively with the tool."*
- Empty Spaces to Fill [71]: The blocks or segments in a canvas are typically left empty for users to fill in. This gives users the freedom to use the canvas as a tool for brainstorming, strategizing, and problem-solving. Greg Bernarda says that emptiness is one of the crucial aspects of a canvas: *"as mentioned before, it's got the minimal guiding framing but no 'answers'."*
- Flexibility [45]: A key feature of a canvas is its flexibility. It allows for modifications, additions, and deletions as and when required. This adaptive nature of canvases allows for dynamic use across different contexts. Alex Osterwalder explains: *"These tools should be flexible... it's a business model canvas, and maps of the business model, but you can use it in very different contexts... these tools should be very flexible"*
- Connectivity [6]: Canvases usually convey the idea that the segments or blocks are not isolated, but are interconnected and influence one another. They help in understanding the holistic view of a system, strategy, or concept. Mikel Gutierrez noted, *"One of the elements are the free spaces... And the second very important element of a canvas*

are the connections... I think that the real value added of a canvas is the connection between those boxes.” and “More importantly, the connections between these areas hold significant value. These connections indicate the interdependencies and interactions among different elements, contributing to a holistic view.” Greg Bernarda adds that a crucial component of a canvas are relationships “they are not always apparent, but any good canvas will help users weave relationships between different elements. Relationships is what weaves elements together and constitute a new whole.”

- **Simplicity [92]:** Despite their ability to handle complex concepts, a hallmark of a good canvas is its simplicity. Alex Osterwalder says that they should be designed to be easy to understand and use, even for those who may not have deep expertise in the area. “These tools should help people of different maturity levels, right? If they’re well done, from beginners to masters, the same tool is going to be useful”. Neil Turner adds that: “It tends to be almost kind of like purposely not trying to catch too much detail.” He also says that they have to be easy to understand and self explanatory: “It needs to be something that someone can understand without having you know someone there, sort of explaining or kind of helping.” Mark Lancelott explains that: “Canvases should simplify complex systems or concepts into a single image that can be easily understood and processed.”
- **Collaborativeness [56]:** Canvases should enable effective brainstorming and collaboration in a team. Neil Turner says that: “some of that kind of Co-design collaboration because I think you know a canvas can be a really great way to bring other people into that process because you can help them to understand.” Dennis Lawo mentioned: “Canvases should provide headings that trigger questions, facilitating the process of brainstorming and discovery.”

Trying to sum it up, the essence of what makes a tool a canvas lies in the myriad of inherent features. At the heart of it, a canvas is built on visual design, which means it uses layouts and arrangements that make it easier to understand complex things. Different sections, or blocks, are another key aspect. These are intended to represent specific parts of a system or concept. What’s also interesting is that these blocks are left empty, giving users the space to fill them in with their ideas and strategies.

In other words, a canvas is a multi-faceted tool that combines visual design, segmentation, fillable spaces, flexibility, interconnectedness, simplicity, and teamwork to foster creative thinking, problem-solving, and collaboration.

5.5 Canvas definition

A canvas is defined by Lelis as a “designer tool that guides its users towards the creation of something new, is presented and framed in a graphical way, usually decomposing a complex topic or task into simplified activities, and facilitates interactions with different stakeholders. Canvases, games, and diagrams are usually among the most popular tools of such kind.” [53]. She is basing her definition on work done by Thoring, Mueller and Badke-Schaub. The same authors define a canvas “as a two-dimensional, poster-based tool that (...) provides blank areas to be filled by the users, in order to invite co-creation activities and teamwork” [44]. Another definition we have found was coined by Frederik Möller and Barbara Steffen and states that: “Canvases are two-dimensional graphical illustrations that transfer complex issues into mnemonics through ontological decomposition” [64].

While both definitions have their merit, both suffer from problems. First, the Lelis definition is overcomplete and combines many duplicate or unrelated terms, such as “topic or task”, “canvases, games, and diagrams”. The Moller and Seffen definition is accurate, but its focus on graphical illustrations may be too strong to apply to the strongly text-based canvases, where only the location on a two-dimensional grid matters.

Our final definition after an analysis of the related work and the interviews is:

A canvas, in the context of information science, is a “two-dimensional, interactive [7] visual tool [53] is used as a planning [65] or brainstorming facilitator [53] It provides a comprehensive framework to map, discuss, and analyze different elements and relationships within a particular area or concept [5]. *Canvases are typically organized into a grid or matrix, with various elements or factors that are relevant to the concept or idea being depicted in each cell of the grid [53] [72] The elements of a canvas can be words, images, diagrams, or any other visual representation that helps to convey the concept or idea being represented [5].*

Justification:

Drawing from the ideas shared by the interviewees, this definition encapsulates the critical aspects of a canvas in the context of tools like the business model canvas or the value proposition canvas.

Alex Osterwalder, one of the co-creators of the business model canvas, highlights that a canvas is conceptually sound and built around a specific domain. He notes, “We define which concepts matter and how they relate to each other... So behind a canvas, there’s a clear conceptual model that is thought through and makes sense”. This idea of a “conceptual model” is fundamental to canvases like the business model canvas or the value proposition canvas, which allow users to visualize, assess and alter business and value creation aspects in a structured manner.

Crystal Reijnen concurs, defining a canvas as “a one-page overview of content” that displays the “basic principles for strategy”. This aligns with the utility of the business model canvas and the value proposition canvas, both of which provide a concise yet holistic view of complex concepts.

Osterwalder also discusses the need for canvases to be “simple and easy to use with building blocks that are mutually exclusive and collectively exhaustive”. This is evident in canvases like the business model canvas, which contains distinct blocks for key partners, activities, resources, value propositions, customer relationships, channels, customer segments, cost structure, and revenue streams. Similarly, the value proposition canvas has separate sections for products, gain creators, pain relievers, customer jobs, pains, and gains.

The interactive nature of the canvas is emphasized by Neil Turner and Mikel Gutierrez. Turner sees the canvas as “a set of prompts” that engages users in populating it with their ideas. Similarly, Gutierrez views the canvas as an “empty space that you need to fill”, underlining the canvas’s ability to spark creativity and facilitate problem-solving.

Finally, the canvas’s adaptability across contexts is stressed by Osterwalder when he mentions how the business model canvas can be used in “very different contexts, startup context, established business context... So these tools should be very flexible”. This is a critical aspect, as it allows these tools to be utilized in a variety of scenarios, regardless of the company’s size or maturity level.

5.6 Methods of canvas evaluation

There exists a tool for evaluating business tools, which includes canvases. It’s called “Business Tool Assessment” created by Strategyzer. It breaks the evaluation process down into four

main categories: Conceptual Model, which encompasses topics like "is the tool appropriately framed to address a clear business challenge", "is the conceptual model grounded in existing academic knowledge" and "is the tool simple and easy to use?" Figure 5.1. The next section is focused on visualization aspect and tries to answer questions about the structure, arrangement and the language (appropriate metaphors, icons, shapes) of the specific business tool. In the third section, the user experience aspect is evaluated by checking how helpful the tool is in mapping the existing business challenges and if the tool is useful for analysing the business challenge, as well as communicating and sharing it. In the last part, the flexibility of the tool is checked. Mainly how well it integrates with other tools, if it can be used within different media, like paper, and if it can be adapted beyond the initial intended application. The tool enables evaluating these aspects using a 5 point Likert scale.

Other than that tool, we have analysed other methods of evaluating a canvas. We asked our experts questions about assessing the utility and effectiveness of a canvas and they proposed a number of methods. These evaluations pivot around five key axes: the quality of the visual tool, its integration with other tools, the process of filling out the canvas, the impact of the canvas on achieving business alignment, and the user experience.

Quality of the Visual Tool: Alex Osterwalder stressed the importance of conceptual model, shared visualization, and user experience as key aspects of the canvas' quality. "We look at these different dimensions, conceptual model, shared visualization, user experience", he said, indicating that these facets of a canvas are central to its evaluation.

Integration with Other Tools: Osterwalder also suggested that the best tools should work in concert with others, indicating that a canvas should not be an all-in-one tool, but rather a component of a broader toolkit. He noted, "Best tools also integrate with others... we shouldn't use Swiss army knives when we develop canvases."

The Filling Process: Nico Brand's perspective on evaluation centered around the process of filling out the canvas. He stated, "The best way to evaluate it is the filling of the canvas... Then you will see if people understand it and how they are using it." Evaluating how users interact with a blank canvas provides insights into the tool's intuitiveness and functionality.

Business Alignment: Crystal Reijnen argued that the success of a canvas lies in its ability to facilitate business alignment. As a consultant, her measure of a successful canvas was whether it helped to achieve "a shared vision or a good facilitated discussion".

User Experience: Satisfaction, enjoyment and visual parameters are also significant factors according to Catarina Lelis. "Did they have a good time, by the way? Because you know, when you're working on a canvas, it shouldn't drain you... it should be an enjoyable experience," she stated.

In addition to these principles, various experts discussed the importance of testing, user feedback, and context-specific metrics. For example, Dennis Lawo emphasized on measuring the quality of the project and the communicative outcome as potential metrics. Similarly, Neil Turner stressed the importance of iterative feedback from users. Greg Bernarda succinctly summed up the main goal of any evaluation method: "Testing them against the objects they are supposed to help build."

Taken together, these approaches provide a robust set of criteria by which to assess the value and effectiveness of a canvas tool in a strategic management or business context.

5.7 Users of canvases

Using the knowledge gained from the interviews with experts, we can identify several user categories for various types of canvases. The categories can be elaborated as follows:

Designers and Creators of Products/Services: These individuals are deeply involved in

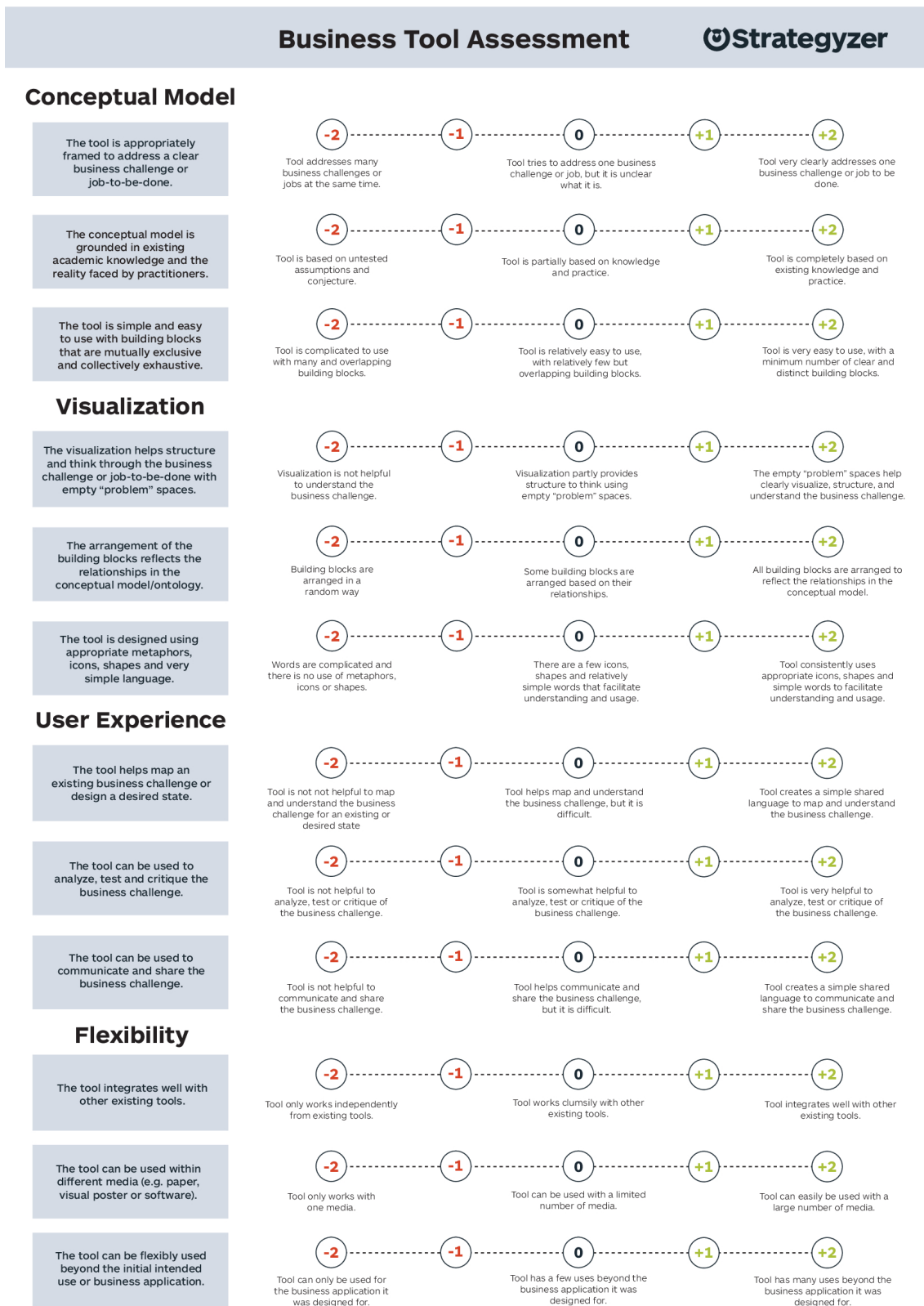


Figure 5.1: Business Tool Assessment [99]

the ideation, creation, and optimization of products or services. As Neil Turner emphasizes, a canvas can be an effective instrument to *"bring other people into that process"* of design

and creation. It serves as a collaborative tool, facilitating a shared understanding among all team members about the essential elements of a digital product or a service. The canvas can guide these professionals by providing structure, thus enabling a comprehensive perspective on the product or service under development. It effectively simplifies the process, allowing for a greater contribution from everyone involved.

Executive Leadership (CEOs): When considering the implementation of canvases across an entire organization, Mikel Gutierrez underlines the vital role of the CEO: *“If you use it for the whole company, obviously the customer is the CEO. The CEO is the one deciding the business model or the operating model...”*. As the main decision-maker in a company, the CEO sets the overarching business model or operating model. The canvas, in this context, is a strategic instrument used to define, visualize, and communicate the chosen models. It becomes a mechanism to ensure alignment between the company’s strategic direction and its day-to-day operations.

Management Consultants and Strategists: Mark Lancelott highlights how management consultants can benefit from using canvases as strategic tools: *“Management consultants, people involved in transformation, design, strategy people...”*. They can use canvases to strategize improvements within their own area of responsibility. This utility transcends the organization’s core business functions and can benefit support areas as well. A canvas becomes a problem-solving tool, allowing consultants to visually map and address specific issues in their domain.

Project and Innovation Managers: Canvases find application in bridging functional gaps and facilitating cross-functional communication, as highlighted by Dennis Lawo. He says, *“So project management, innovation management. I think in my previous role as an innovation manager or project manager in a retail company, we have been using it a lot”*. As managers of projects and innovation, professionals must often serve as translators between various areas of a business. Canvases can assist them in visualizing the project or innovation landscape, thereby promoting understanding across diverse teams. This can be particularly critical in environments where alignment between business, IT, logistics, and other functions is essential for project success. Lawo also highlights that canvases can bridge gaps between business and IT, among other areas: *“It’s also something where you have to translate between two areas. The business people, IT people, or other people involved, logistics people.”*

Furthermore, Alex Osterwalder highlights that canvases should be approachable and easy to use by a wide audience, so that everyone can be a potential user of a canvas - *“So these tools should be very flexible and also help people of different maturity levels, right? If they’re well done, from beginners to masters, the same tool is going to be useful”*. These interviews illuminate the canvas’s versatility, indicating that its usefulness extends to a wide range of professionals, each applying it to their unique requirements.

5.8 Research Challenges

During this research we have encountered several research challenges which needed to be properly addressed or accounted for before the analysis of the results can be conducted.

- **Quality assessment of instances** After reviewing many completed canvases from several organizations it is rarely done in a way that fully follows the modeling standard and highly up for interpretation. It would be beneficial if instruments were devised that support the creation of instances, to guide users in their interpretation of the requested elements.
- **Weak versioning** Each of the canvases studied in our work appears to be canonical,

i.e., only one version exists. It should be possible to evolve canvases with increasing clarity of a research domain or feedback from users, to support the design and creation process of canvases.

- **Representativeness of Interview Participants** One potential challenge is whether the experts we've interviewed truly represent the diversity of users and creators of canvases. If our interviewees were to mostly come from certain industries or roles their views might not accurately reflect the broader experiences in the field.
- **Subjectivity in Qualitative Analysis** Another challenge lies in the qualitative analysis of our interview data. Interpretations of what experts say can be subjective, and different researchers might draw different conclusions from the same data. This could affect the reliability and validity of our findings.
- **Limited Sample of Canvases** The validity of our analysis could also be impacted if the selection of canvases we have taken into consideration is not representative of the wider variety of canvases used in different fields and industries. If our research focuses on a subset of existing canvases, the findings might not be possible to be generalized.
- **Inability to Measure Direct Impact** Assessing the effectiveness and impact of canvases based on expert opinions might not truly reflect their impact in real-world settings. Without direct observation, we might miss some aspects of how canvases affect the decision-making process.
- **Bias in Self-Reported Data** The study relies heavily on self-reported data from experts, who might have inherent biases regarding certain beliefs about canvases based on their personal experiences. This could influence the objectivity of our findings.

We acknowledge that these challenges might make our research less valid, therefore we tried to mitigate them wherever possible, but a variety of mitigation methods were out of our reach due to the limited scope and time limitations. Therefore these are the challenges that we were left with and we account for them in our conclusions.

Chapter 6

Discussion (Validity)

6.1 Validity of the research

In this chapter we are aiming to evaluate the validity of research design and methodology. This is important if we want to make our findings as scientifically viable as possible. By minimizing bias, ensuring reliability of results and making informed decision we can increase our confidence in conclusions. Below we discuss the extent to which the study successfully addressed our research questions or hypotheses. We also identify any potential sources of bias that may have influenced the validity of our results.

6.2 Comparison with previous research

During our literature review we have found one similar paper which attempted to shed some more light onto the general field of canvases: the paper "Optimised Taxonomy for the Analysis and Design of Canvas-Based Tools" by Catarina Leis aims to find a visual tool that can help measure the impact and value of different projects or activities. The importance of impact is growing in academic circles, while businesses are increasingly focusing on purpose. Meanwhile, the younger generation is starting to think about value less in terms of money, and more in terms of helping people.

To identify the best visual tool, the author looked at 35 different canvases and diagrams using two chosen analytical frameworks. However, they found that these frameworks were not enough, due to issues like overlaps, conflicting structures, and missing important factors. Therefore, they suggested a new, improved system to both analyze and create visual tools based on canvases. As a result, they were able to examine the chosen resources and create a tool that focuses on impact and humanitarian values. This tool aims to answer the research question proposed.

Upon initial inspection it seemed like the research we were planning to do was already done by someone else. A lot of the research methods and issues talked were used or discussed in this paper. However, as we analyses it further, we came to the conclusion that it is ultimately trying to answer a different question. Catarina Leis paper aimed at identifying a tool that would help evaluate the impact and value of projects or activities, concentrating on creating an optimized taxonomy for canvas-based tools. They undertook the commendable task of benchmarking 35 canvases and diagrams using selected analysis frameworks. Their primary focus was on the application of canvases to measure impact and humanity-related aspects of business projects.

Our research, however, aims to deepen understanding and create a more comprehensive definition of what a canvas is, delving into its inherent characteristics, usage, and context.

In our view, before applying a tool effectively, it's crucial to understand it fully, which is the gap that our research addresses.

Our approach differs in several ways. First, we are undertaking a broad literature review to establish a strong theoretical background. This sets the stage for our extensive interview sessions with experts in the field. This broader focus is allowed us to learn new perspectives and knowledge which couldn't be gained just from analysing ready products.

Second, we pay particular attention to how canvases are used and treated in academic discourse, which isn't a central focus of the previous research. This academic perspective will give us insights into the accepted norms and standards in the field, aiding in our endeavor to create a robust definition.

Third, we are taking a more detailed approach to understanding the structure and characteristics of canvases, the evaluation methods employed, and their typical users. This granular focus will provide a more rounded understanding of canvases, which could lead to a more effective application in strategic management and business visualization.

The world of canvases is vast and diverse, and each research project contributes to a uncovering more about it. While Lelis research made important steps in identifying impact-focused tools, we believe our comprehensive and foundational study is equally needed to advance the field by understanding canvases more holistically and creating a robust definition.

6.3 Limitations

We acknowledge that there are certain limitations that need to be addressed. These limitations do not necessarily undermine our findings but provide a more balanced view and suggest potential directions for future research.

One limitation is the inherent difficulty in fully defining and categorizing something as complex and varied as a canvas. Despite our comprehensive approach, there are still certain elements and nuances that may not have been captured completely. As a result, some aspects of our definition may remain ambiguous or open to interpretation. This issue underlines the importance of continual study in this field, and we anticipate that our research will evolve and be refined over time with further investigation.

In line with this, some of the answers we obtained through our research process were not as clear-cut as we had hoped. Canvases are used in diverse fields and applications, each with its unique perspective and requirements, making it challenging to pinpoint precise, universally applicable definitions and evaluations. This vagueness does not discredit our work, but rather highlights the complexity of the field and the need for more targeted research in the future.

Our research methodology also presents some constraints. The broad literature review and the extensive survey of existing canvas types, while comprehensive, are still limited to available and accessible resources at the time of our study. There might be canvases or relevant literature that we have not come across or that have been developed after the completion of our study. The fast-paced nature of business and academia necessitates an ongoing revisiting of our findings and updates as and when new information emerges.

Lastly, our exploration into the typical users of canvases might not encompass the full spectrum of users. People and organizations use canvases in creative and unexpected ways, and some of these may have been overlooked in our study.

In conclusion, while our research has broken significant ground in understanding and defining canvases, these limitations emphasize the need for continued study. Future research can delve deeper into the ambiguities and unanswered questions that our study raised, expanding and deepening our understanding of canvases in both academic and business contexts. Another problem that we faced during the entire process was the popularity of business model

canvas. Because it is so widely used and recognizable, it dominates nearly every conversation and paper there is about canvases. Because of this reason it is hard to find any source which doesn't lead us again to business model canvas or doesn't try to explain another canvas by comparing it to BMC.

6.4 Implications and significance

There are broader implications and significance of our research. From a canvas perspective, our comprehensive exploration and definition of canvases establish a solid foundation for subsequent studies in this field. By breaking down the components of canvases, we offer a blueprint that guides future development and refinement of such tools. We hope this contribution can streamline research, reduce ambiguity, and potentially inspire new innovations.

By identifying and understanding the typical users of canvases, and the contexts in which they are employed, we help businesses to better understand how these tools can be tailored to their specific strategic needs. Our insights can be used to optimize the usage of canvases for strategic planning, ideation, and communication, making them more efficient and effective.

Furthermore, our research's insights into evaluation methods for canvases could lead to the development of better assessment techniques, ensuring businesses can measure the effectiveness of their strategic tools more accurately. In the long run, this could lead to improved strategic decision-making, enhancing operational efficiency and potentially driving better business outcomes.

From a scientific communication perspective, our research provides a robust, comprehensive definition of a canvas, offering a common language for researchers to engage in dialogue about this tool. This clarity is vital for the development of the field, allowing for clearer communication and better understanding of research findings. Additionally, understanding the academic status of canvases can provide researchers with insight into how to better incorporate and reference these tools in academic work.

In terms of practical applications, our research could also impact how businesses and researchers choose and use canvases. With our extensive survey and analysis, we provide a reference guide that can help users select the most suitable canvas based on their specific needs and contexts. This could lead to more efficient and targeted use of canvases in various fields.

We believe the findings of our research may have broader implications and significance in the fields of canvases, business, and scientific communication. By deepening understanding, improving practical applications, and contributing to existing knowledge, our research stands to make a notable impact on these fields.

6.5 Ethical considerations

When involving real people in the scientific project, there always comes a time to reflect on ethical issues and ensure that all the necessary protocols are being followed [40]. We ensured that all the participants were properly informed about how and why the data will be used. We also asked them to sign a form which explained everything 8.3. Furthermore, all interviewees agreed to participate willingly and expressed interest in our work.

Chapter 7

Conclusions

7.1 Reason for this research

As we move towards the conclusion of this paper, we should revisit the research's core objectives. This study embarked on an exploration into the realm of the field and identity of canvases, aiming to investigate their abstract and intangible nature. Our central research question - "What actually is a canvas?" - guided us through our journey. This has led us through various landscapes, surveying the diversity of existing canvases, investigating their individual definitions and commonalities, analysing their structure and characteristics, and examining their academic status. We also explored evaluation methods for canvases and the typical profiles of their users and creators. All these efforts were undertaken with a single goal in mind - to deepen our understanding of canvases and solidify their definition, thus enhancing their effectiveness in science and business.

7.2 Answering Research Questions

7.2.1 What is a canvas?

Understanding the structure of a canvas and drawing from the expert opinions gathered in this study, we're able to comprehensively decipher the defining components and characteristics that make a tool a canvas.

At its core, a canvas leverages visual design. Mark Lancelott suggests that canvases encapsulate complex multi-component elements into a singular layout, offering an understanding of the whole rather than fragmented parts [17]. They are composed of various sections or blocks, each signifying a particular facet of the system or concept. These blocks act as prompts for specific types of information, effectively engaging users, as noted by Mikel Gutierrez.

Interestingly, these segments or blocks are left intentionally empty, creating spaces for users to populate with their thoughts, ideas, and strategies. This feature positions the canvas as a brainstorming, strategizing, and problem-solving tool, as highlighted by Greg Bernarda [73].

Moreover, the flexibility of a canvas is a key aspect, enabling the tool to adapt and adjust to diverse contexts. This dynamic characteristic, emphasized by Alex Osterwalder, widens its usability. Canvases also visually depict the interconnectedness and interaction among different elements, providing a holistic view of a system or concept. This concept of connectivity is underlined by both Mikel Gutierrez and Greg Bernarda [73].

Despite handling complexity, a canvas is marked by its simplicity, as articulated by Alex

Osterwalder, Neil Turner, and Mark Lancelott [17]. This quality allows a wide range of users to understand and apply it effectively, regardless of their depth of expertise.

Finally, canvases are inherently collaborative tools, facilitating effective brainstorming and interaction within teams. This feature, mentioned by Neil Turner and Dennis Lawo, further amplifies the canvas's utility as an inclusive problem-solving medium [5].

Understanding these integral components and characteristics enhances our comprehension of what a canvas is. A canvas emerges not merely as a visual aid, but as a multifaceted tool that simplifies complexity, engages users, and facilitates collaboration. By integrating visual design, segmentation, fillable spaces, flexibility, interconnectedness, simplicity, and collaboration, it becomes a robust tool for capturing, conveying, and tackling complex concepts and strategies [93].

When it comes to understanding types and categorization of canvases, two key processes were undertaken: literature review and interviews.

From the perspective of experts like Mark Lancelott, Neil Turner, and Dennis Lawo, canvases can be categorized based on several factors [69]. Lancelott emphasizes the subject-specific nature of some canvases, highlighting that certain canvases are designed for specific aspects of a business model, such as digital or sustainability business model canvases [17]. Yet, he implies that quality is a potential categorization factor, as not all canvases offer value due to their poor construction.

Turner suggests that usability plays a vital role in defining a canvas. A good canvas should be self-explanatory, easy to use, and not overly detailed. On the other hand, Lawo introduces the concept of time and purpose in the categorization of canvases [69]. He suggests that some canvases focus on early project work or ideas, while others may focus on later stages of a project. Furthermore, he proposes a categorization based on purpose: ideation versus communication, highlighting that certain canvases may primarily serve one of these roles.

The literature review approach categorizes canvases based on their primary purpose or use. In this context, there are five key categories. Business and strategy canvases are used for planning and managing businesses or projects. Customer understanding canvases aim to analyze and understand customers [62]. Ideation and innovation canvases serve to generate and visualize new ideas. Project and process management canvases are employed to plan and manage projects or processes. Lastly, marketing and branding canvases are utilized to plan and execute marketing strategies [11].

By integrating these expert perspectives and use-based categorizations, we can define a more comprehensive and nuanced classification system for canvases. These categorizations can significantly contribute to answering research questions by providing a structured framework that enhances understanding of the canvas's role and function in various contexts. They also shed light on the adaptability and versatility of canvases, thereby underlining their potential for wide-ranging applications in business and beyond [68].

Based on the comprehensive examination of different perspectives presented in this study, we are now positioned to address the main research question: "*What **actually** is a canvas?*"

A canvas, as concluded from our analysis, is a structured, interactive visual tool primarily employed for planning or brainstorming purposes. Drawing from various definitions, it serves as a comprehensive framework that aids in mapping, discussing, and analyzing different components and their interconnections within a specific area or concept. Typically organized into a grid or matrix, canvases feature diverse elements or factors, each occupying a specific cell in the grid. These elements could include words, images, diagrams, or any visual representations that effectively convey the concept or idea.

Our definition, derived from multiple sources and validated through the interviews, encapsulates key characteristics of a canvas as a tool, such as those exemplified by the business model canvas or the value proposition canvas. Such canvases are underpinned by a 'concep-

tual model' that defines crucial concepts and their relationships, as highlighted by Alex Osterwalder [72]. Furthering this, Crystal Reijnen recognizes a canvas as a one-page overview encapsulating basic principles for strategy, and Neil Turner and Mikel Gutierrez emphasize the canvas's interactive and engaging nature [81]. Finally, the versatility of a canvas across different contexts, noted by Osterwalder, underlines its adaptability.

Therefore, a canvas, in essence, is an interactive, versatile tool that deconstructs and visually represents complex concepts, facilitating comprehension, discussion, and strategy formulation. Its unique properties of structure, simplicity, and flexibility make it a powerful aid in diverse contexts, from start-ups to established businesses [35].

This all leads us to a conclusion, that canvases can be an effective tool for **dissemination**. Their visually structured format facilitates the clear communication of complex ideas and information. Whether a canvas is used to map out a research project, illustrate a theoretical framework, or summarize findings, its inherent visual clarity can aid in conveying dense academic material in an accessible way [10].

For academic research, a canvas can be an excellent tool for sharing methodologies, hypotheses, and results within the academic community. By creating a visual representation of these components, researchers can more effectively engage their peers, sparking conversation and fostering collaborative inquiry [11].

Businesses often use canvases to visually represent and communicate their strategic initiatives to internal and external stakeholders. By capturing complex strategies in an easy-to-understand visual format, it helps ensure everyone is on the same page, facilitating alignment and engagement [62].

Canvases can be used to summarize project plans, timelines, responsibilities, and progress, making them an effective tool for disseminating project information across teams and departments [93].

Also, canvases can facilitate interdisciplinary dialogue in academia. A canvas's standardized format allows for the presentation of information in a universally comprehensible manner, promoting understanding across different academic fields [53].

Canvases offer an accessible and visually engaging means of presenting complex information. They support the sharing of knowledge among researchers, improve the delivery and comprehension of knowledge, and enhance collaboration [32].

7.2.2 How are canvases used?

To answer this second question, we needed to delve into several topics which could provide us with a comprehensive conclusion as to how are canvases utilized. The first step was to find an answer as to how are canvases currently being viewed in the academic field. We needed to know if they are being studied, by whom and to what extent. The academic status of canvases, despite their growing popularity in business and management fields, remains somewhat undeveloped. Much of the research is still in early stages, focusing on understanding the framework, design, and usage of canvases [93].

For instance, Lelis's work underscores this emergent stage, highlighting the lack of a robust analytical framework for canvases. Her research proposes a new taxonomy for understanding and designing canvas-based tools, acknowledging the inherent inadequacies in existing methods [53].

Meanwhile, Thoring, Mueller, and Badke-Schaub's study reflects the pursuit of understanding the operational mechanisms and potential applications of canvases. Their extensive review of existing canvases underscores the need for further academic discourse in this field [44].

Möller and Steffen's paper adds to this discourse by presenting a taxonomy of visual inquiry tools, reflecting a move toward more standardized structures in canvas design [64].

Taken together, these studies indicate that while canvases are gaining academic attention, research on them is still progressing. There's a clear recognition of the need for more rigorous, systematic methodologies and a deeper understanding of canvas design and application in different contexts [53].

To identify uses of a canvas we had to identify who actually uses them. Our research, enriched by interviews with industry experts, uncovers a diverse range of canvas users, each bringing unique perspectives on how canvases are used.

Designers and creators of products or services are identified as one significant user group. For these professionals, a canvas serves as a tool for ideation and creation, promoting collaboration, and fostering shared understanding amongst team members. The canvas guides them, providing structure to their design process, thereby simplifying and enhancing collective input [69].

In the context of executive leadership, particularly CEOs, canvases play a strategic role [73]. CEOs often use canvases as a tool for defining, visualizing, and communicating business or operating models [83]. This aids in ensuring alignment between an organization's strategic direction and its operational activities [72].

Furthermore, management consultants and strategists also find value in using canvases [17]. These professionals use them as problem-solving tools, visually mapping and addressing specific issues within their area of responsibility. The canvas transcends the organization's core business functions and offers potential benefits to support areas as well [71].

Project and Innovation Managers, too, are significant canvas users [17]. Canvases, in their use, serve to bridge functional gaps and facilitate cross-functional communication. They provide a visual landscape of a project or innovation, promoting shared understanding across diverse teams. Particularly in environments where alignment between various functions is essential for success, canvases play a critical role.

Notably, the canvas is highlighted as a tool that should be approachable and usable by a wide audience, reiterating its flexibility and adaptability to different maturity levels [18]. This point indicates that canvases are not restricted to a specific user group but can be beneficial for a wide range of professionals, each adapting it to their unique requirements [73].

Understanding these diverse user categories and their individual approaches to canvas use significantly informs our research question, "How are canvases used?". It brings to light the canvas's multifaceted utility, demonstrating its function as a collaborative, strategic, problem-solving, and communication tool across various professional roles and domains [88].

7.3 Future Work

In light of our research and the limitations we have acknowledged, there are several compelling avenues for future work that could continue to expand our understanding of canvases and their application in business and academia.

First, given the inherent complexity and vagueness in canvases, studies could aim to explore the aspects and nuances of canvases that our research may not have captured entirely. For instance, more specific research could delve deeper into particular types of canvases, such as digital business model canvases or sustainability business model canvases, to enhance our understanding of these specific categories.

Another possible avenue for future research could involve creating a robust library of canvases. Such a repository would consolidate our findings and the findings of future studies, offering a comprehensive, accessible resource for users. By providing detailed information on

various types of canvases, their applications, strengths, and weaknesses, this library could be an invaluable tool for strategic management and business visualization.

One particularly intriguing idea that we foresee as a possibility for future work is the creation of a canvas meta-model. This meta-model could provide a structured framework for understanding and comparing different types of canvases. It could help identify commonalities and differences between them, providing a 'canvas of canvases' that would offer a high-level view of the field. This kind of meta-model could help researchers and practitioners better navigate the complex world of canvases and choose the most suitable tools for their specific needs.

Chapter 8

Appendices

8.1 Interview Invitation Email

Subject: Invitation for an Interview: Study on Canvases

Dear [Subject's Name],

I am writing to you on behalf of Utrecht University to invite you for an interview as part of our study on canvases. We are conducting a research project on the topic of canvases and their purpose as a tool for scientific communication. We are trying to answer the question of what actually is a canvas in a broader meaning, and how can they be effectively used, created, and evaluated.

We would be delighted to hear your thoughts and insights as a creator of the canvas [CANVASNAME].

Your contributions to the field have been significant and we would love to hear more about your experience and perspective on the matter. The interview will take around 30 minutes and can be conducted over video chat at a mutually convenient time.

Your participation would be of significant value to our research project and your input will be treated with the utmost respect and confidentiality. Please let us know if you are interested in participating, and we can schedule the interview at your convenience.

Thank you for your time and consideration. We look forward to hearing from you soon.

Sincerely, [Our Name] Utrecht University

8.2 Interview Questions

1. Introduce yourself.
2. What was your role in creating the XXX Canvas?
3. What inspired you to create the XXX Canvas?
4. Have you worked with other canvases? Were you inspired by them while creating XXX Canvas?
5. How would you define a canvas?
6. In what contexts or industries do you typically see canvases being used?
7. Do you think there are different types of canvases that can be separated into different categories? If yes, pm what basis would that be and how would they differ from one another?

8. What are the core elements of a canvas, that are universal across all possible industries and fields in which canvases can be used?
9. How do you use canvases in your work or organization, and what benefits do they provide?
10. Who are the typical users of canvases?
11. What challenges or limitations have you encountered when using canvases?
12. In your experience, what makes a good canvas?
13. Are there any specific tools or techniques that you use to create or work with canvases?
14. How do you think canvases compare to other visual planning tools, such as diagrams, flowcharts, framework, blueprint, template?
15. How did you evaluate your canvases and what do you think are the best metrics to evaluate canvases for?
16. What would you recommend to look out for to someone who wants to create a new canvas?
17. If one wanted to create a new canvas, what qualities could they use to evaluate the success of it? How could I know if it actually caught on and is being used as intended?
18. Are there any other people that you would recommend us to contact in order to conduct more similar interviews?

8.3 Privacy notice

Interview protocol details: The interview takes around 30 minutes and will be audio recorded for data analysis purposes. In this interview you'll answer open questions. Your responses to the questions will be kept confidential and are only available to you and the individuals directly involved with this study. The organization and you will also be anonymized unless otherwise stated by you. After data analysis migration patterns may be discovered. Your participation is on a voluntary basis which means that you can withdraw your permission at any time and are free to indicate this at any moment in time. You have the right to refuse to answer particular questions. There is no compensation for participating in this study nor is there any known risk of damage to your organization.

Thank you for agreeing to partake in this interview contributing to research at the Utrecht University. The data collected from this interview will be treated confidentially. Personal information will be anonymized and will not be shared further with persons other than those directly involved in the study (the group members and instructors of the course). Participation in this study is completely voluntary and it is possible to stop at any time during the interview. If you no longer wish to participate in the study after the interview, you can let us know via the following email address: [j.szulwinski@students.uu.nl]. In this case, all stored data will be erased and will not be used further in the study. By filling in your name and checking the box below I indicate that I have taken note of the above. I hereby agree that: I have read and understood the purpose of this study. I have been able to ask questions about the study and these have been answered to my satisfaction. I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason. I agree to this interview being recorded

and transcribed. I understand that personal information collected about me that can identify me, will not be shared beyond the study team.

8.4 Lecture by Alexander Osterwalder

"Hey folks, I'm going to just show you a quick presentation we did. So it's about how to develop visual tools. We came up with a series of visual tools, and we'll go in particular into canvases. So we kind of turned this into an art. It's not just about putting boxes onto a piece of paper, right? So, you know, this idea of tools is always very important to us because we believe the tools structure the thinking, but they need to be very good. So we take the design of a canvas very seriously. So the motivation for us to actually do this presentation, what we did, is that a lot of the canvases out there are really bad conceptually and not very sound. It's just a series of topics on a paper. Important topics, yes, but like, does it make sense? So let's take, you know, this one, the lean canvas. You have unique value proposition and solution, like how are those different? Seem to be very similar concept. Or, you know, key metrics, certainly an important topic in the process of measuring stuff, but are key metrics the, you know, part of a business model? Not really, right? So conceptually, this is not very sound. And then, okay, you have customers on the right hand side, and then you have problems on the left hand side. Well, isn't the customer problem that you're solving? Isn't that the same, you know, shouldn't that be geographically closer to customer segments or even part of that? So there's something weird going on here. So when we make canvases, they need to be conceptually sound, you know, where pieces are in the thing matters. So a lot of these rules are completely broken. So 12 design principles to guide the development of these kinds of visual business tools, including canvases, conceptually sound, super important. They need, when they're visual, to have an easy user interface, so not 29,000 blocks. And the experience needs to be good. So we watch people when they use canvases the first time, and then we iterate based on watching them use it, you know, if they struggle, we change. So let's take the first one conceptually sound, simple and practical. The conceptual model, number one, we focus on a specific domain, we define which concepts matter and how they relate to each other. So initially, right, years ago, in my PhD, we had a value proposition that targets customer segments, and we reach them through distribution channels, right? So there's a clear kind of relationship between these things, so that we can even draw arrows. So behind a canvas, there's a clear conceptual model that is thought through and makes sense. It's not just boxes on a paper. No, it's a conceptual model that is then turned into a visual tool, super important. So the framing here is really important. And we focus on a very specific job to be done. In our case, with a business model canvas, we looked at one job to be done, how to map a business model, we didn't want to integrate the strategy, we didn't want to make it, you know, related to funding or implementation, or how do we test business models? No, no testing is a process for which you will use the business model canvas. So one job to be done, map a business model of a startup of an established company, same thing, it's a business model, one is a fantasy one exists, but all you do is map a business model. So then behind that, when we have the job to be done, we kind of know which domain we're in, we make sure we take all the knowledge that exists. So when I started my PhD on business models, which is underlying the business model canvas, model behind it was the business model ontology, we looked at everything out there, and we took everything since synthesized that and tested it. So we took those concepts, this you can find in my PhD. And then we put them together. For the value proposition canvas, we started with jobs to be done. So that was kind of how how it started. Then this idea of parsimony, the third point, the tool is simple and easy to use with building blocks that are

mutually exclusive and collectively exhaustive. This is extremely important. The concepts need to be mutually exclusive, collectively exhaustive. And you've seen in the example I showed you before, this is not the case. So here, you have nine building blocks, this is kind of the what was underlying the business model canvas is the business model ontology. Okay, these are the nine building blocks of the business. And then for the value proposition canvas, you know, we came up with the jobs to be done, pains and gains, and on the left hand side, products and services, pain relievers and gain creators, right? So mutually, collectively exhaustive, mutually exclusive. So then the second part, visual interface, super important. So we create a visual user interface that makes sense. So how can you see if a user interface makes sense, the way you use space, so how things are related to use, this is the space where things are put up, how you arrange the blocks matters. Again, this is, you know, related to the underlying concept, we have the partners, and then the key activities and resources that allow us to to create a value proposition. And then we deliver that value proposition. And whether things that you have on top and below, you know, feed into the financial model, how do we capture value from above this part here, and lead allows us to capture value. And this part here is what costs us money. So there's a clear kind of layout, where we have the front stage value creation, the backstage that we need to create the value creation, value capture from the value we've created, and the cost of the backstage and all that gives us the financial model, right? Same thing here, we created a different visual shape. Because here actually, it's different, we have a customer segment, which is something you pick, and then you try to understand and map. And on the left hand side is a value proposition, the value map, which you design. So we even really, you know, thought about the space and the layout for these things, with the underlying conceptual model again. Third one, talking about visual, the icons we use to make this clear, because you can reuse these icons, right? The metaphors that I told you, front stage, backstage, the front stage allows you to capture value, the backstage allows you to estimate the costs. And at the end, the you need to make more money than you spend, right? So it's completely integrated, and everything makes sense here. So then the icons, we always make sure we try to find icons that represent specific building block. Business model canvas, we prototyped quite a bit until we came up with this form. So again, the UI UX is something you have to test until it's simple and clear and people use it here, you know, with a value proposition canvas until we got to the final shape, which was this one, we went through a lot of prototypes that we tested with real people to see if that canvas would work. And the first shapes didn't work, they mixed it up with the business model canvas. So we came up with a different shape, a shape that you can actually put into the business model canvas, right, you can put the customer segment into the customer segment block of the business model canvas, the value map, you can put in the value proposition box of the business model canvas. Same with the culture map, Dave Gray, who came up with the concepts came to us with something complicated. We tested and iterated until we came up with a very simple culture map. So prototyping and testing the canvases until they work until people don't ask questions anymore, it's super simple, very important. Portfolio map, same thing. We did a lot of drawing and concepts. And then we started to explore if this would work. And this is the final shape that then really worked. Okay, so let's skip the quick exercise here that we had. We use this whole slide deck in a workshop setting. So these are the kind of things once we have a canvas, we can actually play with it really well. So let me actually just go on, we don't need to go through this exercise. Okay. Now, last one, visual business tool is is provides a great user experience. So what does that mean, you can map in this case, you can map a business model for the business model canvas, you can analyze, you can use the same tool to analyze, you can use the same tool to share. So if the tool is really well done, it will serve all of these purposes. And of course, you know, we tested this. There's the whole testing aspect as well, where

you can do this part. Okay, quality of the visual tool we when we test we look at these different dimensions, conceptual model, shared visualization, user experience, I'll send you this stuff to test canvases. Eve tested this a lot with students, I test this stuff a lot with practitioners, see how it works. And we even did a survey and interviews to understand why people would adopt the business model canvas. So what was the seduction of the business model canvas specifically, you can see visual tool, facilitated discussion was very practical. So we did some research even in 2014 to understand why did people use the business model canvas. So we did quite a bit of this research and you can just consume this stuff afterwards, for your purposes for your research purposes. Then what we also did was getting peers who use these tools together from different companies, MasterCard, Bosch, Philips, and we got them to share, you know, what are their challenges? What are the best practices? So we really got them to get together and talk about these tools and share. So last one, I think that's really important in the user experience, these tools should be flexible, so they shouldn't be, you know, made for a canvas to sketch out a business model and raise money and test and blah, blah, blah should do should be flexible. It's a business model canvas, and maps of the business model, but you can use it in very different contexts, startup context, establish a business context to analyze businesses to generate your hypothesis. So these tools should be very flexible and also help people of different maturity levels, right? If they're well done, from beginners to masters, the same tool is going to be useful. Now, when we kind of apply this and get people to learn at the beginners level, we get them to map out business models and value propositions that, you know, we give them the elements, the expert level, we get them to apply best practices, designing, testing and improving. So that's already a little bit harder. And then the masters, you know, you manage entire programs within companies or teaching. Best tools also integrate with others. So you know, taken a surgeon doesn't use a Swiss army knife to conduct surgery. Tools integrate. So surgeons are masters of using different tools and for surgery. So we shouldn't use Swiss army knives when we develop canvases, we should have this idea that several tools together are going to do the job. So if I just take our little world, business model canvas, you can zoom in, and there's a plugin tool, the value proposition canvas, it integrates with the business model canvas, it's a zoom in into two of the boxes, where you go deeper in the in the concepts. And you can zoom out and you can look at a business model canvas collection with the portfolio map. And you could look at the environment of the business model can with with the environmental map. So we clearly think about how these canvases integrate. And we think of one tool for one job to be done super, super important, right. And here, there's a couple more and we show how they relate to together. We also believe that great canvases can be used in different media. So paper, poster, computer aided, this is a big principle of ours. And that they can be used beyond the initial kind of intent. When I did the PhD with Eve, we did it for entrepreneurs. And this was really adopted also by large companies and for very different purposes, strategizing, dashboard, understanding competition, etc. So our initial intent was just to create a tool for entrepreneurs to map their business model. But because the tool is flexible and allows you to map any business model, and they can be used so you don't you never is a big design principle. Don't, don't design the process into the tool never, because the process is separate. So the business model can be used to strategize to do dashboards to understand competition. Those are all different processes. So never integrate the process into the canvas. That's a big, big rule. So business tool assessment, I'll send you this stuff, we assess the conceptual model, we assess the visualization, we give tools score, look at how they're doing user experience, flexibility, everything that I showed you. This is how we assess if a business tool a canvas is good. Okay, so that was 15 minutes of my time. I'm doing this because you're researching a really interesting topic."

8.5 Interview with Nico Brand

Interviewer: Alright, so you're already kind of familiar with what my thesis is about, right?

Nico Brand: Yeah, I understood something like you do research what uses of a canvas model or a kind of canvas model, but I'm not aware of the specific context of the research. Is it just for software development or is it for something else?

Interviewer: So what me and professor Slinger talked about at first is that there are many different canvases in many different fields, not only software, but in some other fields as well. Business, strategic management, and sometimes even not connected to science at all, or connected to business at all. But there is no clear definition of what a canvas really is. And I looked a lot for papers, for articles, in dictionaries, and it's never defined. Only the physical canvas that you paint on that's, that's the only thing you can find. And also the definitions of specific canvases. So business model canvas, a value proposition canvas. And it's that they are defined. Not all of them, but they are defined. But just the idea of a canvas is not really defined. And even when you have to explain to someone what the canvas is, you have to kind of give examples first and oh, it's something like BMC, but a bit different and so on. And it makes the discussions and conveying the idea a bit difficult. So we decided to answer, first of all the question what really is a canvas in a broad sense of this understanding? And then answer some other questions. So, for example, one of our research questions is what is a canvas? But also what types of canvases are there? What are the components of a canvas? How are canvas is used? What is the current academic status of canvases? How can we evaluate canvases? And so on. Okay, so since you know more than me about this, I would like you to use your expertise about some questions that I have struggled answering. For example, how would you define a canvas in your own words and how do you understand?

Nico Brand: Yeah, before that I know there was a definition of a canvas. I believe it's called the conceptual canvas that is part of design thinking. Maybe we can also have a look at that. Design thinking is a more creative approach that has been used in the industrial world a lot since ten years. It's also been used more in our world, more the conceptual world. And the idea is that it helps you with thinking about problems and especially about creating solutions. And they also use different kind of context models to get an understanding of the environment, to think about solutions, to think ahead, et cetera. So this may be that you can have a look at design thinking, then look at the definitions that they are using for canvas. Okay, but the way I see it myself, and the way I've also encountered it and have used myself. The most important thing is that the canvas gives you an overview of the area that you are dealing with. So whatever it is, business management or process management or quality management or whatever, and I think it is most important as being a consultant is that it is a communication tool. So it gives you an overview of all the elements that are relevant, all the elements that you want to focus your attention on, and then you can discuss that with someone. So it is a communication tool. I guess that may be the most important goal.

Interviewer: And what are different types of canvas that you are aware of and how they differ from one another?

Nico Brand: The first canvas I encountered was somewhere in the 1990s. That was the European foundation quality model. EFQM model. And at that moment, also a little bit later, I was also teaching in TU Delft, and I had transformed that model into an IT Confidence canvas. And I remember there was quite some discussion because canvases were not really used. Also the EFQM model was very specific for quality management people. It was not really used in broader sense. But I noticed that when the students and the other were managers with mostly 5-10 years experience, when they had to use that canvas, the

IT Confidence that I created for that assignment, it was quite useful that you really cut an overview of all the elements that should be in It canvases. So you could very easily point out is that box also present in your organization? So for example, is management culture or something like that, is that something you look at when you talk about IT Confidence? But for the models that I know well, I said if EFQM was the first one, then of course the Business Model Canvas that was the large breakthrough. And based upon that, you had a lot of different canvases and really a lot I've seen process model canvass, I've seen sustainability model canvass. I now work with a small consulting company. They have an operating model canvas. When first looking at the operating model canvas, I've noticed there are different operating model canvases. The same for process model canvases, there are different types, et cetera, et cetera. But I guess top of my mind, these are the ones that I've encountered and I've worked with.

Interviewer: Okay. And back then, when you worked with the EFQM at the university, did you use the name canvas or did you use any other name?

Nico Brand: Model. Yeah, it was the model. It was not really a canvas at that moment.

Interviewer: Because the first mention of canvas in this sense I found was from 2001 and it was the info canvas. So I was trying to find the earliest example of when something very good but I also researched the EFQM model as well.

Nico Brand: I think it was still pretty good and if you look at the Business Model Canvas first it's more or less the same. I think they just copied it and changed a few words. But the EFQM was never that popular. It was really in the area of quality management experts and never came across the boundaries, so to speak.

Interviewer: In which context or industries do you see the canvas being used the most?

Nico Brand: I am not sure if I can answer that question. I guess the EFQM was used within the quality management. And myself I've worked mostly in the surface area so in banking, finance, government, telecom, utilities. I've never worked really in production logistics, I've been told and I've read that also. I'm sure that quality management is very important in that area but I can't give you many examples of the use of EFQM in that area. I don't know that if it is used in one sector more than in other sector. But what I've seen especially since the BMC it has become quite popular and everyone's now making canvases. I've also have guest lecturers and one of them in the area of customer relationship management, he made a customer canvas a week before just for our lecture. So everyone's creating its own canvas at the moment.

Interviewer: All right, so you use canvas and how do you use them in your work or organization and what benefits do they provide at this moment?

Nico Brand: Mostly from of course university perspective, but we work together for my research with small consultancy firm and they have done operating model canvas and they are used especially as an overview tool and a communication tool and that's also my experience. The way I've used it in the past is that you have kind of a land map, map of the world so to speak, a map of countries, but then you have a map of all the elements that are relevant for your assignment and then you have all the areas you have to fill out. Then you can discuss all the areas with a customer that they know of. Then you can say okay, but this box is still empty or this box is also still empty and what do you think about that one? That's the eye opener in communication with the customer. That's the most important part and maybe a little bit because we're doing at this moment we're doing also research within students by the using of the operating model canvas is mostly used for examples "as is" situations or it's also being used for "to be" situations. So you're not only using it for as it is at the moment but also the way you would like it to be. So are there a difference used possible of course.

Interviewer: And what challenges or limitations have you encountered with canvases? Where do they come short and something else needs to be used?

Nico Brand: Yes, they come short, of course, because you take a certain window on the world and if you have something not in that canvas, what is important then yes, it is not in the canvas, so it's more or less out of scope. But that is, I guess, a risk when you are working with the canvas. And also most of these canvases, they have been designed in a way that you cannot add a box to it very easily. It's so it's not that you can extend it very easily. I guess that is the most important limitation. I think it was quite fine, especially for communication sometimes in the past we didn't call them canvases at the moment. We also made a process overview. We called it again process models and it looked a bit like the canvases we have nowadays. And then we printed it out on a large paper, A1 one format or A0 format and we put it on the wall at the customer. And then we had some pencils, we put them beside them and we had a large sign above it that we said if you have any remarks about this process model, please put it on the model. So if people walked by, they had to look at the model and said now this is wrong or this is missing or this should be different. So it was also used as a way to collect information with customers.

Interviewer: So in your experience, what makes a good canvas?

Nico Brand: That's a good question. I think, first of all, it should be fairly clear that you don't have too much discussion about the name of the boxes. The other one, it should be distinct. So you do not have two boxes that overlap with each other. That makes it very difficult. And ideally it should be related to some kind of literature that if you can use some other formal models that have already thought about this topic and that are good in the essence of all the elements that are distinct and are easy to understand again, you can use that as a foundation for making canvas use of colors might be useful. It's not always. Sometimes it distracts, especially if you use a lot of colors. Color red is always a difficult color to use, but that can help. But especially it should be clear, could give you an overview. Also the number of boxes. Yeah, that is also maybe an interesting question that like the BMC, it has 13 boxes, I believe, on top of my mind, the EFQM model had, I believe, nine. But I guess somewhere around ten boxes. That might be ideal. Also, of course, the discussion you also have is more or less the abstraction level, because if you call one level up, then it is more abstract. So you can put more things together, but also if you find the right balance between the number of boxes and abstraction level, that you don't get too much information, but still you get enough information to talk about it. But for example, within the Business Model Canvas, you have what's called customer channels and customer experience, I believe on the right side. And these two, we always have discussion about what is now the difference between the customer experience and the customer channels. So I think that's a design flaw on that model that could have been done easier. All right, maybe a lot of last remark about it is that with Business Model Canvas, then you have the cost and the profit on the top level. I'm not sure always if that is helpful to put the financial component directly in the canvas. I can understand it from a management perspective because as a manager, you only have some managers will only look at the bottom level immediately and you think of above. Is that okay? But from a consultant point of view and also from an academic point of view, you're more interested in the content first and then in the output later on mostly. So the financial aspect is something that might distract from the discussion.

Interviewer: And how do you think canvas compare to other visual planning tools such as diagrams or flowcharts?

Nico Brand: Yeah, the idea of communication is more or less the same, I guess. But the idea of canvas is more formal. It gives a certain flow. Also the business start on the left and you end up the right, more or less the idea. But when designing it, you should start in the middle. There's also something for some people difficult to understand, but I guess the ideal of an ideal canvas has a good overview of all the elements that are in there, and you can explain it easily. So you design it in a way that you can talk through it. And if you

don't talk through it from left to right or right to left, that's fine. But yeah, I see it. Most importantly, as in the communication tool.

Interviewer: I was researching many canvases. I think I found at least 30 or 35 that I have read about. And I classified them in some categories, but some that I found were a bit different than others, and I want to ask you about it. So we have the Kanban board and we're wondering if it can be considered a canvas. So can canvas be dynamic because Kanban board is very dynamic?

Nico Brand: Can it be considered a canvas? Yeah, it is a kind of a canvas, but it's not used as a management communication tool. It's more an operational board. So I don't consider that really as a canvas. I think the idea for me as a canvas is really to have it as a communication tool, get an overview of your company, of a part of your company, and that you can make decisions about that. There are more operational tools, especially in logistics, that give you an overview of your production process and your warehouse capabilities in your stock, et cetera. But those are more operational tools. I wouldn't consider them as a canvas. Of course, everything that has a structure, you could see as a canvas that the use is totally different.

Interviewer: Next question is kind of connected to that is when I was looking for many different definitions of canvases people to define certain canvases. People have been using words such as a framework, a tool, a blueprint or a template. These were the most frequently used words. And how do you think they are very overlapping with kind of like framework, blueprint, template, they are overlapping with canvases or they are something distinctly different?

Nico Brand: I guess that's a nice definition question. Yeah, like a model is per definition and obstruction of reality. So all for canvas is there for a model, a framework? I'm not sure what the definition of that one is, but yeah, frameworks also and structure with canvas is the same. So I think there's a lot of overlap between those. But I guess that all of them have in common that it is an abstraction of reality. So they are all models and they have a certain view on the world. I think if you look at the way it is being used, I think you can find a difference. That canvas is mostly used, in my opinion, for discussions, management discussions, that you can make decisions. A framework, as I think used in a lot of ways, also good for discussions, also could for management decisions, et cetera. But there's a lot of different frameworks. Everything is a model, every picture you can say is a model. So I guess that is a nice definition description. That can be an interesting part of your research.

Interviewer: Okay, thanks. So one other question, which can be a bit harder, I guess is we were discussing with Slinger how can we evaluate canvases and would you consider evaluation of an instance of a canvas? So would it be to evaluate the canvas, would you use an empty model like BMC, but an empty one or a filled out one already for a specific use filled out by the user that has already all the elements filled out? So you use an empty one or an already filled out one? Which one would be better for evaluation of an effectiveness of the canvas?

Nico Brand: Yeah, I think for the evaluation, the best way to evaluate it is the filling of the canvas. So not the empty one, not the filled out one, but the filling process itself. These are different kinds of evaluations, I guess. So if you have an empty one and you start filling. Then you will see if people understand it and how they are using it. And then you can have a discussion about the abstraction levels, how many instances in each box are allowed, things like that. If you present someone with complete canvas that's already filled out, you say then can you understand this? I think then you are asking something different. Then you are asking more if he or she understands what is on the paper. But I'm not I think that, for example, if you have the BMC and it's already filled out for the company, it gives it to someone, then he or she will not check in detail if it is distinct or are there any overlaps. Or

they will more try to see if the picture, if they can understand it. And if you have to fill it out, it's much harder because then you have to think which box should I put something? And also choosing the right names. So the question is, are you evaluating just the understandability of the canvas as a whole, so to speak, or are you going to evaluate the usage, the way it is being used, the way people use the canvas? But then also you think you are evaluating more or less the analysis process because for example, not operating model canvas that we are using, there's an overview of processes, business activities. Then always you have a discussion what is a good name for business activity? Should he have these three business activities merged into one in the canvas or should we leave them alone? Well, that is an analysis evaluation, how you should do that. But if you give them a filled out operating model canvas then people won't ask these questions. They will just have to look at all the best activities that are in that canvas and they will say, okay, I understand you have procurement and you have production and you have transport and okay, it's fine, it's fine, it's fine. I think you are evaluating two different things. All right, does that make sense?

Interviewer: Yes, that makes sense. So kind of connect that if I was creating a new canvas for some other use that I think it's necessary, what qualities should I look out for that would be best used to evaluate if it might canvas would be successful. So would be the clarity or the understandability and stuff like that?

Nico Brand: Yeah, well, yeah, as I said, I guess the terms used should be clear immediately. So not too difficult and not too much overlap with other terms that are being used. Because at this moment I'm also for my own research topic, I've also tried to design a canvas for digital transformation. I also found out it's quite difficult in the sense that you want to give an overview. So you want to have all elements that are relevant in your area in that canvas and then you have to make a decision which elements are relevant or which not. Well, that's the thing that I'm struggling with. So I guess this could name giving to have an overview of all elements that's relevant for your scope, for your topic. Ideally, I said it has a certain speaker's flow that you start from the top to bottom, or come from left to right, et cetera. You have a way of talking through it. I guess that's a human thing. Maybe it's just something to have a discussion with our colleagues from Human Interaction Science. I have the feeling that people like to have a certain flow, that they have shorter structure in their mind. I guess these are the most important. And the number of boxes I said, yeah, ideally twelve, maybe. Also the size of the boxes is also an important thing, of course, because if you have a larger box and immediately you kind of think this is more important, which is not always the case the size of the box is also important. Of course, colors that can be used can be helpful if you want to address certain sub parts in the canvas. I guess these are the most important ones. And ideally I also made the canvas for research methods, also for my own understanding of research methods. I noticed there that I wanted to have it mirrored, right? So most canvases, they are mirrored. It's not that you have six boxes on the left side or two boxes on the right side. It is imbalanced with each other. And so I guess that's more or less the human thing that we like to have a nice structure. Or at least human beings. Most human beings like to have a nice structure. I guess these are the most important ones.

Interviewer: Yeah. Okay, so we were discussing with Slinger how can you evaluate the success of a canvas? And for example, would you count it as if you publish the paper about a canvas? How many citations does it have? Or would you count in how many times it's Googled? How would you evaluate if your canvas was successful or not?

Nico Brand: Yeah, and then this question of is of course what is successful? Is it successful in an academic world or is it successful in the organizations outside the university? I guess the references is of course important for the academic world and I guess if there's being Googled by a lot of people, that's more a reference to the success in other organizations.

Interviewer: All right, so you mentioned you're creating your own canvas and are there

any specific tools or techniques that you used to create it?

Nico Brand: PowerPoint.

Interviewer: I think that's all my questions that I have prepared here. Okay. It was really useful for me and thank you for taking the time to talk with me about this. Yeah, you're welcome.

Nico Brand: I hope it will be a good research. I'm looking forward to the outcome. Yeah, especially guidelines for designing that can be very useful.

Interviewer: Yeah, we already planned it a bit. So, yes, that will also be a part of it. I will send you when I finish. All right. So thank you and see you later.

Nico Brand: Yes. Okay. Bye bye.

Interviewer: Goodbye.

8.6 Interview with Crystal Reijnen

Crystal Reijnen: So the recording has started and I hereby give my consent for recording.

Interviewer: All right, thank you. So I am under the supervision of Dr. Slinger Jansen, and we are trying to define what the canvas is in a general sense because business model canvas, operational model canvas, these are pretty well known concepts and it's kind of easy to find their definition online. But canvas in general, we have noticed that it's not really easy to find the definition of it. It's actually never it has never been defined in any scientific source, not on any Wikipedia page. It's not defined. It's what the canvas is. It's always compared to any new canvas, is always compared to business model. Basically, that's how it's explained. So one of our main research question is what is the canvas? And there are other ones about how to build an effective canvas, how to evaluate canvas and so on. I have a couple of questions because you worked on the thesis about OMC. Professor Nico Brand, he recommended me to contact you. I have a couple of questions. In your thesis, you define what the OMC is and how would you from your experience, from your knowledge, how would you define a canvas in general? How would you explain it to someone?

Crystal Reijnen: I think in the most basic form, a canvas is just a one page overview of content and the contents can depend. But that's the basic if you look, for example, at BMC, it shows all the basic principles for strategy. If you look at OMC, it shows all the essence for creating more digital transformation strategies. The OMC, I think that for me is like the one picture.

Interviewer: Okay, all right. And what are different categories of canvas that you know of and that you have encountered? Let me find because we have defined it into business and strategy, customer understanding, ideation and innovation, project and process management, and marketing and branding. These are the categories. So do you know maybe of any more that you can think of and that you would categorize it somehow?

Crystal Reijnen: Okay, well, the things that you mentioned seem fitting. It's kind of hard for me from the top of my head to just throw out some categories there without having some sort of visualization. But I think what you mean is if you want to categorize the types of canvases that are often used in business, I would say that it's determined by its objective, not per se by its content. So, for example, we use the OMC to try to create business and IT alignments. Very old fashioned term, I know, but sometimes our clients still use the term. So therefore we do as well. So therefore if you go from a purpose point of view, so what you want to achieve with the canvas would be a nice categorization of canvases. So develop a strategy, communicates in general ideation is indeed a good one. I think there's more than that. But is that something you were looking for? Because I'm not sure if I'm helping you with this answer.

Interviewer: Yeah, actually the follow up question is very connected to it. In what context or industry do you typically see canvas is being used? So I think it's connected with the categories.

Crystal Reijnen: Right, yeah, sort of, yeah. I think that the canvassing is something that's often used by consultants in general, management consultants. And I think canvassing is something that is used more on strategic level, so an executive level within organizations. And to be honest, we do it for all for our clients. So I have created operating model canvases for most of our clients who are in very different industries. They are in retail, energy, natural resources, transport and logistics, NGOs, business services, et cetera, et cetera. Like all industries, I think the industry doesn't really shape the use for a canvas. It's more the organizational level that you're at. And for me it's really the executive level where you notice that canvassing is a good method to get people thinking or to communicate or to convey your message.

Interviewer: Our next question is how do you use canvas in your work organization? But you can say what benefits do they provide for you?

Crystal Reijnen: Okay, so I'm going to answer the other one anyway because we are a management consultant, so we use canvassing internally, but as well for our clients, what we often do is that depending on the goal, we conduct workshops with our clients. And for me, the main goal of a canvas is that people physically stand around one overview of the topic of the workshop and have some sort of structured discussion about the problem at hand. That's kind of the value of it bringing people together and giving them some structure to talk about their issues or the business problem or the IT problem or anything that's happening within our own organization. We used a lot as well, actually. Last week we had what we call the Ambition Fair, where all our internal teams and guilds presented their year plan. So we all made A0 size posters describing and really visualizing what the plans for this year were, what we're going to achieve, what the value of those plans is, and then providing our other colleagues with the opportunity to place a sticker where they want to contribute. We actually made stickers with everyone's picture on it and then everyone got his own picture and you could place a sticker on the poster where you thought you would like to contribute because it was your interest. So for me, the value of canvassing is basically the visualization part. I think it speaks way more to the imagination than us writing. So how do we use it in our organization? Well, for communication, for collaboration, both with our clients and within our own organization.

Interviewer: All right, thank you. And what sort of challenges or limitations do you think canvases have?

Crystal Reijnen: The risk at least is over simplification because you only have, in my opinion, the one paper size. And you really have to make a selection of what you present and what information you don't present. And the risk is that you have to leave too much out or by omitting details, you kind of leave out certain nuances that are there. So that is a risk. Other downside is if you do it like us sometimes physically, that we have to print a lot of paper, which also is really beneficial. But overall, I'm quite pleased with canvassing. What I noticed with our clients, they really like the physical aspect of it, where if you want to provide input, we often give people post-its or stickers or markers. And by actually being able to perform physical actions like writing something down or sticking or drawing lines between concepts, you really notice people are way more engaged in, for example, aviation sessions than they would be if they were more in a just talking mode.

Interviewer: And in your experience, what makes a good canvas? How would you qualify a good canvas instead of a bad one?

Crystal Reijnen: Well, that really depends on its purpose and on the content. But in general, I would say less is more. People tend to clutter a canvas, and if you don't know

where you have to look as an audience, then I think you're not doing the right job as a canvasser (creator of the canvas). You really have to help people guide the reader basically through your storyline. What we often do with visualization is it use, for example, arrows to create a sort of roadmap line which helps in guiding the reader through your canvas. I think that's the most important thing that needs to be appealing and it does not need to be cluttered what you already said.

Interviewer: All right. And are there any specific tools, either physical or software tools or techniques that you use to create and work with canvases?

Crystal Reijnen: Yeah, well, the basic things are the basic one is PowerPoint or any version from Apple or other providers. Mural is also an option which is an online whiteboard which has been become really popular since COVID. And I think there's another one called Miro Board, which is basically the same thing like these online, almost unlimited collaboration tools where people have this huge whiteboard which is unlimited in size, where you can well together paste things, use the whiteboard, draw things, et cetera. And we have developed a tool for ourselves as well, because we really want to make our canvases more data driven. So we have developed, in collaboration with developing a party in Sweden, developed their own tool where we can by first inserting the data in our tool and then generating a canvas and then doing the layout in a different tool, we actually are creating data driven operating model canvases. So that's pretty cool. But that's a tool that's not on the market available. So I don't think that would be the best advice for your thesis.

Interviewer: While I was searching for, I found like 30 or 40 canvases, I think described in papers. But there is more that I don't have any scientific papers connected to them. And I've seen a lot of different words used to describe canvases. So some describe it as a model, some describe as a diagram, flowchart, framework, blueprint, template. Do you think these words are very different from each other or they have a lot of in common with the word canvas?

Crystal Reijnen: The definition? Well, I think my definition of canvas was an overview within a large visualization. Blueprint fits that one as well. A model in my head, it's something different. A model is not per se canvas, but can be. I think a template is for me, a template is more of a preset structure that you can reuse not by definition a canvas. I can also get an Excel template with for analysis. For example, I think the most the ones most close to me are blueprints and poster, maybe.

Interviewer: When you are creating canvas and what qualities do you think can be used to evaluate the success of it? So, if you were developing a completely new canvas, and do you think it would be beneficial to see it being quote as a scientific paper, being quoted many times, or being Googled many times, or what other qualities do you think would be used best to evaluate the success of it? So if you were to create a new canvas, for example, something like BMC, but for some other industry, and what qualities would you most look for to find if it was successful or not?

Crystal Reijnen: Well, for me, as a consultant, the success is more in what I achieved with it, with my clients, than it is in the canvas itself. So a canvas is a means to an end for me. And although I really like creating a pretty picture or a pretty visual, I think what we achieve with it is more important. So if we want to achieve a shared vision or a good facilitated discussion or some might even say business alignment, if that has been the case, then I'm happy with my canvas. That would determine the success, the higher goal of it.

Interviewer: And do you think that canvases can be dynamic? For example, can a Kanban board be defined as a canvas?

Crystal Reijnen: Yeah, why not? But a canvas board is a tool. Right, but it's kind of difficult for me to compare a tool with a concept. I don't think that's a really fair comparison. Well, if you mean that for me, the content on a canvas does not need to be fixated, because

in a workshop, we often create canvases together as well. And we also know that situations change over time. So what we often do is that we, after a year, maybe two years, we do like this readjustment of a canvas where we try to, with the clients, discuss in what way at least operating model canvas is still accurate or needs to be adjusted.

Interviewer: Yeah, because after we were searching for new terms and new definitions, Kanban board was kind of on a verge of we didn't know whether to classify it as a canvas or not. So that's why I included in this interview to ask some other people, what do they think about it?

Crystal Reijnen: Well, not really with canvas board, but I think it's just a tool. So I'm not sure if it's fair to put it in your comparison, because you're comparing concepts, not tools, right? Yeah, but there are many examples. And the most important part here was that you said that it can be dynamic in your opinion, which is why also we were discussing whether it should be fixed. Not everything should be fixed, or it can be more modifiable while being filled. I think you're creating more results if you have something that is more dynamic, but it really depends on the purpose of your canvas.

Interviewer: All right. And I have one more question. Do you know someone or can you recommend someone for me to contact in order to conduct a similar interview that who would be helpful or willing to answer such similar questions?

Crystal Reijnen: Well, not that I know of directly, because all my colleagues will provide you probably with the same answers. So that's not really useful for you. If I think of someone, I will definitely let you know. I think in your search, it will help to think of who uses canvases. So right now you're talking to a consultant who creates canvases. But it might be useful as well to talk to more executive level board members if you have those in your network where you can actually ask them about their experiences because they're on the receiving end and they might provide a very different perspective.

Interviewer: All right, that's actually a good point. All right, thank you. So I'm not going to keep you any longer.

Crystal Reijnen: No worries. Yeah. See you. Enjoy. Say hi to Slinger for me. Okay?

Interviewer: I will. Goodbye.

8.7 Interview with Mikel Gutierrez

Interviewer: Okay, so thank you for your interest in our project and taking the time to answer some of our questions. I will tell you quickly what our project is about. So it's essentially about the core of what canvases are. We noticed that even though scientists and entrepreneurs are using canvases more and more, there is no clear definition of what and set of rules of what really makes canvas a canvas. So in this work, we want to evaluate a large set of canvases and see what canvas really are. What defines a canvas? What are its common elements? What is their status in scientific and business communications? What are canvas qualities now? How can they be evaluated? And we help we can provide scientists and entrepreneurs with a standard set of methods for designing canvas and provide the canvas concept with an academic status. So I have about 15 questions for you and I would like to start asking what was your role in creating the book about operating model canvas?

Mikel Gutierrez: Well actually the book is a result of we have been teaching operating models in Asterix for a number of years now, around 15. And the first work was, of course, to create the canvas to establish a way of thinking and a way of representing what an operating model is. And we found out that it was useful for the people who were teaching to have a clear way of thinking about what are the steps and how things are connected. So that's where the idea of the canvas of the operating model came from. And the book then was

somehow the explicit representation of the training that we were doing.

Interviewer: Okay and have you worked with other canvases before and if yes then were you inspired by specific ones when creating operating model canvas?

Mikel Gutierrez: Well actually there are quite a number of them and pretty good ones. And I think in general what the canvases are is a way of representing things and a way of thinking about things. So in a way there is one that is also the business model canvas of which our canvas is a small piece of that. The business model canvas represents how the business is, how your customers are, how your products are. And our canvas is in a way one of the squares of that canvas.

Interviewer: So you already kind of answered that question. How would you define a canvas, not a specific one but in general?

Mikel Gutierrez: Well if you think about an artist, an artist faces a canvas and then expresses what he or she has in mind in that canvas. And the fact of having the canvas in front of him or her helps define the job. And for me it's the same. I mean when you're talking about a business or a business model or an operating model or whatever your problem is, if you have in front of you an empty space that you need to fill, I think that helps pretty much.

Interviewer: And in what context or industries do you typically see canvases being used the most? In the OMC in your case?

Mikel Gutierrez: Well canvases in general I think you can apply them everywhere. I don't think there is really a limit to apply canvas. If we specifically talk about operating model canvas, we have used it in public sector, in private sector, in any type of industry. I think where it is really helpful is more than in specific businesses is sizes of companies. The bigger and more complex that an organization is, probably the more helpful that the use of an operating model is because it helps you understand how to connect your processes, your people, your roles and responsibilities, your IT systems, suppliers and so on. So it depends on the complexity and that normally usually depends on the size of the organization.

Interviewer: Okay, and do you think there are different types of canvases that can be separated into different categories? And if yes, on what basis would you separate them?

Mikel Gutierrez: Well I'm really not an expert in the rest of the canvases. I know ours, I know the business model one, I know a few, but I'm not a researcher or I don't feel that I can talk of the rest of the canvases. That I cannot answer, sorry about that.

Interviewer: All right, and so kind of also about general in canvases, but maybe you can answer that. So apart from OMC, what do you think are the core elements of a canvas that both OMC has and for example business model canvas and any other canvas, the core elements that are universal across most canvases?

Mikel Gutierrez: Well I think there are two main things in a canvas. One are the free spaces. So normally you have three spaces that you need to fill. There are certain areas that you need to fill with things. So that's one of the elements. So you need to face that and then fill everything. And the second very important element of a canvas are the connections. And that's probably the most useful one. First of all you fill the spaces with things that are important. But then what is really important is the connections between things. I think that the real value added of a canvas is the connection between those boxes.

Interviewer: And how do you use canvases in your work or organization? And what kind of benefits do they provide?

Mikel Gutierrez: Well I use it a lot, both the business model one and the operating model one. I have used it in different businesses, not only for training or helping companies, but also in my professional life. I'm not a trainer myself, I'm not a teacher myself, I just help doing it. But in the companies where I have worked, which are a few, I have used it in electricity distribution, I have used it in infrastructures, I have used it in aeolic business, I

have used it also in photovoltaic business. And for me there are two types of uses, or I use it in two ways. One is to define what your operating model is. I mean, when you're really thinking about what your operating model is, so two main uses, as I was telling you, one is to define and to set your operating model, and the other one could be then to communicate, for example, in the organization how your operating model is, or what your business model is, and so on. It's also a pretty powerful communication tool, yeah.

Interviewer: And who would be the typical users in this case? So would it be consultants, or would it be the CEOs, or who would be the person that uses the canvas in their daily work?

Mikel Gutierrez: Well, it really depends into what type of canvas you are using, yeah, and then it can be used for the whole company. I mean, if you use it for the whole company, obviously the customer is the CEO. The CEO is the one deciding the business model or the operating model, but definitely you can use it also in a part of the organization, in human resources, for example, in a support area, or you can use it in the development area, or whatever, and then the customer could be the head of that piece of the organization, yeah. So actually, it does not only work for a business itself, but also for small pieces of it, and then it can also be used not as a whole, so sometimes you don't need to just do the whole canvas, in this case the operating model one, but just to fix one of the pieces. So let's say that you have a problem with your IT systems, so I think that then you go to the operating model, you draw your IT systems, but then the canvas is very much in what is the relationship with the organization and with the processes, yeah, so it also helps you as a piece.

Interviewer: Alright. So, I was asking who are the typical users of Canvas and I think you answered. So maybe we can go into another question. What challenges or limitations have you encountered when using Canvas?

Mikel Gutierrez: Well, obviously to fill each of the spaces you do need to be I don't know if you need to be an expert or not but there are tools that help fill each of the spaces but Canvas itself does not help. So, for example, if we talk about the Operating Model Canvas it asks you about the strategy, it asks you about the processes the organization and so on. Obviously to be able to answer those questions you need to be able to and the Canvas does not help. So there are tools to design processes there are tools to design organizations and so on that are not Canvas itself. So I think Canvas is a very powerful tool to correlate and find relationships and links between things but not to define them.

Interviewer: Alright. And in your experience, what makes a good Canvas? How would you say if Canvas is good or not?

Mikel Gutierrez: I think it's the team that is filling it and is defining it. I think that if you have the right team with the right knowledge and the right representation of the organization probably the result that you're going to get is good. And not only the result itself but also the acceptance of the organisation of the result. So if you are able to fill it with the right people, representing most important pieces of the organisation, probably the organisation will accept and adopt the result. And the implementation of, in this case, the operating model will be way easier because people will have the feeling that they defined it and it was not done or given by someone else.

Interviewer: OK, and how did you evaluate after creating an operating model canvas? How did you evaluate it? If it's effective, if it does its job?

Mikel Gutierrez: Well, we use it, as I told you, in a training, in a course in Astrids University where we have a course that is called Designing Operating Models, where we use it, where we teach it and where we have trained hundreds of organisations and consultants in using it. So the course is successful, which tells in a way that people find it helpful. And that's the reason why I think people keep on coming through the years. And on the other side, that's one thing that is more academic. But on the other side, I personally use it for

my daily job. For example, one of the uses that I've done lately is the company where I work. We have bought another company and we have used it to join both companies. We have used it to build an operating model that will be used in the merge of both companies. So I personally find it useful in my job. And I think that companies who have adopted it find it also because they keep sending people to the training.

Interviewer: OK, what would if someone was wanted to create a new canvas, what would you recommend them to look out for and what to pay attention to?

Mikel Gutierrez: Do you mean a new canvas for operating model?

Interviewer: No, something different, not operating model, not business model, but something new.

Mikel Gutierrez: Yeah. Yeah, I think as I was telling you before, there are there could be two main steps. If you are creating a new canvas to solve a problem, to solve an issue. And the first question is, what are the key elements that influence that issue? Yeah. And those could be the boxes that you would have or the spaces that you would have in your canvas. So first would be to place those boxes, to place those spaces in your empty canvas. And the next question you need to answer and you need to research is how to link those boxes. What are the relationships between those boxes? What is the right order of answering those questions? So which could should be the boxes that you feel first, second, third and so on. And what are the links between them? Yeah. And once you have the boxes, the right order and the links, probably you have a new you have your canvas. The ones that is going to help you solve your problem.

Interviewer: OK. And are there any specific tools or techniques that you use to create or work with canvases?

Mikel Gutierrez: Not really. I don't know if there are any. I can tell you the history of ours. That was we were we were training in another course of Astrids that is advanced organization design. So we were, I think, pretty skilled in designing organizations and types of organizations and so on. But we reached to a point where we really needed to link those organizations with the processes, with the strategy, with the IT systems and so on. And we were lacking a tool that would help us do it. So the origin actually of the operating model canvas was to find how to link the organization to the rest of the key tools of a company. And that was the origin. We did it, I would say, pretty intuitive. Of course, there were quite a number of interactions and the how the canvas is shaped today and how it was at the beginning is pretty different. We have improved it by by using it in different companies, different businesses and so on. Yeah. So if there is, let's say, a scientific approach to create it from zero, I don't know. In our case, it was more kind of an intuitive thing.

Interviewer: OK, and how do you because there are many different words used for visual planning tools such as diagrams, flowcharts, frameworks, blueprints, templates. Do you think these can be used interchangeably with canvas or is canvas totally different from them?

Mikel Gutierrez: No, I think canvas is one more. Yeah, it's one more. And probably I think the canvas is the one that puts them all together. Because if you are talking, for example, about the operating model, the box of the processes would be filled with flowcharts. I think that's the best tool you have for that. The box of the organization could probably fill with organigrams. I think that's the best visual tool that you have to define it. When you talk about roles and responsibilities, I think it's a matrix. The one that helps you when you talk about the IT systems. Also, the matrix really helps a lot when you talk about suppliers. It's a different it's a different chart that is visual. So for each of the boxes containing the canvas, we use different visual tools that help you more for that specific question that you're asking. But I think that the power of the canvas is that it's one more, of course, but it's probably the one that helps you put them all together.

Interviewer: All right. Thank you. So I have one more question. I have contacted also

the other authors of the book. So Andrew Campbell and Mark Lancelot. And they also agreed for an interview. But I would like to ask you if there are any other people that you know that I could re-interview, that could help me answer similar questions that you answered and help me with my research on canvases?

Mikel Gutierrez: Well, as I told you, I'm not an academic person. I'm more a professional that helps training and coaching people. And from from from my experience, from my limited experience in canvases, the one I was really spending time with to create the operating model canvas was Andrew. Andrew and I spent quite a lot of time. Mark was not so much in the creation, but I know that he's using it quite a lot. And he is a consultant, so he has a broad experience, probably more than me, in everything that is consulting. So probably he can also help you very, very much. But I cannot give you additional names. Sorry about that.

Interviewer: All right. That's OK. So thank you for all your answers. It was very helpful. And yeah, that's thank you for for your time.

Mikel Gutierrez: Oh, thank you, Jakub. And enjoy it, because I think you are you're doing something that is beautiful about the canvas. And then good luck with the research. Yeah. Thank you very much. Thank you. And when you have it finished, if there is something that you think it can help me or conclusions that are interesting and you can share them, that could be great.

Interviewer: Oh, I can send you the finished work. I thank you for that. Yeah, there is still a lot to do for me.

Mikel Gutierrez: So very good, Jakub. Thank you so much. Thank you for your time. Bye. Have a great evening. Bye. Yeah, you too. Bye.

8.8 Interview with Catarina Lelis

Interviewer: Hi, thank you for your interest in our project and taking the time to answer some of our questions. I will tell you quickly what our project is about. So it's essentially about the core of what canvases are. We noticed that even though scientists and entrepreneurs are using canvases more and more, there is no clear definition of what and set of rules of what really makes canvas a canvas. So in this work, we want to evaluate a large set of canvases and see what canvas really are. What defines a canvas? What are its common elements? What is their status in scientific and business communications? What are canvas qualities now? How can they be evaluated? And we help we can provide scientists and entrepreneurs with a standard set of methods for designing canvas and provide the canvas concept with an academic status. So my first question would be, what inspired you to work on Taxonomy for Canvas based tools?

Catarina Lelis: It it's because I was dealing with this really complex dilemma that was affecting the students which you know they were studying something that was extremely commercial oriented and advertising usually has been used to promote Products and services, many of which people don't really need. So they were very becoming very environmentally conscious and really concerned with the responsibility that was gonna be put on their shoulders in terms of, you know, saving the planet. And they really wanted to work in the in this industry, but they didn't want to continue the industry as it was. The whole thing came about this kind of problem and they couldn't really Commit to a final project which you know by the way, just to give you a some information which might be relevant in the UK, a master's degree usually, it takes one year, so in most countries you have two years for for a master's degree. In the UK you have one and they had, you know, just a couple of months to after, you know, going through all the subjects that they had to go through to get their heads and their hands on a must project or dissertation. So it's a very short period of time and

they couldn't commit to anything because they were in this dilemma. So basically just to, you know. Long story short, what I did was I built a canvas to help the students anticipate the impact that their projects their potential projects, because they were always considering more than one could have. Umm. On the planet if you want, but also on their own well-being on their own experience as as learners. So that was the reason why sorry I have my dog eating the carpet. OK, that was the reason why I ended up developing my own canvases, my own canvas because. From the research I did, there was nothing that could support students on this very particular matter, you know, anticipating impacts. That was the main reason I ended up with the impact plan Canvas.

Interviewer: Alright, thank you and have you worked professionally with the other canvases and you were, I mean, you obviously listed a lot of them in your paper, but have you worked professionally with other and which ones?

Catarina Lelis: Yeah, well, the answer is yes. Which ones? Oh my God, I've worked with so many. Well, the business canvas model is the one that really pops into my head immediately because I was involved in a few entrepreneurial projects or had to startups, and I was about to to have a third one. So I did go through the business model canvas a lot. So that was in a very industry kind of setting. With my students in academia, I've worked with the brand thinking canvas. I've worked with the. What's the name of that one? Which is the business model, model canvas me or something along these lines which is on personal branding. I work ohh. We work a lot with the value proposition canvas. And and I think these are the the most meaningful that the the four most meaningful ones from from what I have been doing recently, yeah.

Interviewer: And the you in in your work you site you cite another paper which defines a canvas as a two dimensional poster based tool that provides blank areas to be filled by the users. And this is this is one of the very few definitions of a canvas available out there. And how would you define a canvas in your own words?

Catarina Lelis: Well, in my, in my own words, I would like to think of a canvas as. As a physical element, uh, we all now have Miro and Mural. With loads of canvases you know available, I think these are really great tools, especially since COVID hit us, but I think that the physicality of a canvas is something that is really, really important, especially if you have a team working together. So I would. Besides all that. That is already uh, that has already been published in terms of what defines a canvas. To me a canvas should. You know to have A to to allow a an optimal experience and get the best results. It should be physical. It should be something. Then you can actually, it should be tangible. Basically you can. You should always have the opportunity to manna canvas on the wall and looking to things and. You know get get the. And the full dimension and the the making. Perspective and opportunity on your side, which you have, but in in digital environments, but it's not exactly the same, it fills, it feels so different it it the the canvas is supposed to be a supporting. Uh resource for for people to build on their ideas and to create combinations and to look at things in a sort of a radar view. And the digital setting, I feel like people are more reserved towards changing things in a canvas. Because it feels very. High profile, high end, high fidelity prototype already. Whereas in the paper based one you feel like it's a more crafty thing, so you you more easily you go back and change things and positions because you're not afraid of you know. Dismantling the color codes and whatever features you have there because you chose the font that you're gonna be using in the campus, that's one of the things that really annoys me is that the students get, you know. Into the the selection of a font to to work on the campus on the digital. Environment and that's not really the purpose purpose of the canvas is to you know, it's an exploration space.

Interviewer: Alright. And do you think there are different types of canvases and if yes, can they be no different types of canvases that can be separated into different categories?

I know when your article you separate diagrams into nine kind of contexts contexts and is it, would you stick to those categories and on what basis would you differ canvases on what metrics?

Catarina Lelis: Ah, I should have done my homework. Probably I should have revisited the paper. I don't have an answer to that. I don't have an answer to that because I I haven't gone back to that. You know, dismantling account as and structuring a canvas again anytime you know. The more than a year I think that I haven't been looking into that so. Yes, I would stick to the categories. I define that that time because in the meantime I didn't do anything related about that, that would change my opinion.

Interviewer: All right. And then what would you say are the core elements of a canvas that would be universal across all canvases? In, in any industry, any any field.

Catarina Lelis: The core elements.

Interviewer: Yes, like what would be, no matter what canvas it is, it would have those those elements.

Catarina Lelis: OK, it they have well as any other visual exploration tool because they're very visual. That's the. That's one of the beautiful things about canvases. Did you study semiotics?

Interviewer: No, sorry.

Catarina Lelis: You haven't. No, it's it's not your in your field.

Interviewer: No, I know what it is, but I, but I never studied. No.

Catarina Lelis: OK, well, in in semiotics we learn or we teach the students that when you're dealing with written language, verbal, oral language, you are hardwired to know where the message begins and where the message ends. So you know where the beginning of a sentence is and you know where the sentence is gonna end because the structure and what you've learned in terms of you know, how to deal with. Language, you know, written language tells you how it works. In the Western societies communities, you know using the Latin alphabet you write from left, top to bottom, right, right. And you read that way as well. In visual elements you don't get those clues all the time, so you can start reading and you know working on a canvas. Either on the top left, either at the center, or you know it really depends on how the canvas is structured. So I would say that the core elements in a canvas are. That's it. Must provide users with a very clear hint on where they have to start. Because otherwise they may get lost, right?

And one of the things about the the business model Canvas. That strikes me. And I really don't understand why it hasn't been resolved yet is on the the indication on where people should start without having to read instructions so it's not self-explanatory in that point. From that point of view, because if you start reading, you know the model the. The the book, which is the the business model generator. I think the the title of the book by Strategyzer. Umm, you get a very clear sense that you you're not starting from the top left, which is from where Western people would start. You would have to start somewhere at the top center, you know by defining the value proposition. So yeah that that's one of the core things that I think should always be very clear on any canvas.

Interviewer: And then, OK, another question that I have is what challenges or limitations have you encountered while working with canvases?

Catarina Lelis: Time. Some canvases. Especially with younger people. So when I have to work with students. Younger, younger people in general, even in industry, it's not easy it it's a generational thing. When canvases are not to be completed within one hour, they stress out. So it's it's and this is something that is really tricky because even the business model canvas, you may need a couple of days. To get it sorted, you know. Even there may implicate some research, it may need some. You know, for you to get some confirmations until you get it. Umm. Completely. Uh, done, and you may need to revisit it at at later stages, so it's

not, it's not a fixed thing. And it's not a quick thing. It's not in with many campuses. You need to dedicate time to those campuses and to whatever you're gonna explore. In them and to some people, especially younger generations, who want things really quickly, you know the immediate reward, I find that very difficult. That that's probably another core element that should be at a campus, which is a very clear indication on the time that to build that you know to, to manage expectations on the time that it is expected in average to take for, you know to get a good sense of, OK, I got this done. So that to me is a real. Uh backlash on the use of canvases.

Interviewer: OK. And then you used in your in your paper used and but also a lot of other people use in the association with canvases. People use words such as diagrams, frameworks, blueprints, templates. Do you think these these can be used interchangeably with canvas? Do they overlap? Are they something distinctly different?

Catarina Lelis: No, I don't think they can be used as synonyms. Diagrams do not have the same function that canvas do. Diagrams are are, are finished. Products diagrams are supposed to explain how something a model for example works OK. They are explanations, they're not exploratory spaces, and I think that's what a canvas is. So. Ohh frameworks, I don't like the term blueprint. I don't have a A it could be but. To me, a blueprint is also something that is almost finished. A framework. No, I think a framework is something that would sustain a canvas. You can have a framework. But framework and model at a similar level. So you can you, you may need a canvas. To put people working on the framework or on the model you developed or or or a model that they can be developing right as in the business model canvas. OK, so it's different things. The model is something that explains how things are expected to work. The canvas is where you explore that model. And finally, the other word which was template. No, it's not the same thing, because the template is a placeholder or is a a group of place placeholders where you can put different things in them and you know, again resorting to the the business model canvas. You can find many different templates, not just the official one. To there's several templates available. In the worldwide web, which you can use just around the same model to explore the same canvas. So no, they're not the same thing. None of them.

Interviewer: What do you think are the best metrics to evaluate canvases for?

Catarina Lelis: Ah, OK well it that sounds like a final kind of question. I would go to the core elements. The expectation management which has to do with efficiency and UM effectiveness of the canvas. And if you go into, you know, broader latitudes, you can include satisfaction in terms of how people feel about using that canvas. Do they feel like whatever they got out of it is satisfactory? And did they have a good time, by the way? Because you know, when you're working on a canvas, it shouldn't drain you. It shouldn't be something that you you feel miserable about. You know, it's something that, from my perspective, should be an enjoyable experience. And then all the visual parameters which I think are absolutely essential in which were, you know, many of the things that I addressed in my paper.

Interviewer: OK, umm, what would you recommend to look out for to someone who wants to create a new canvas?

Catarina Lelis: So what I did so I had to create a new canvas. The first thing that I had to do was. No. OK, let's go back. I didn't know I had to create a new campus. I knew that I needed a canvas for a specific kind of problem for my students to explore a specific. Uh. Problematic. So what I did was I looked up all over the Internet. I was. I dedicated myself a week around exploring, you know, everything that had to do with canvases. Uh, until I reach the conclusion that there was nothing available on what I needed. So that's when I decided that I didn't need a new camper. So you you can't jump into the. OK, I'm gonna design a new canvas without knowing that there are no canvases available for what

you need. And then you have to, you know, get a good sense of what a canvas should look like, which is basically again what I did. I looked into all the different. Umm offers from me from all the the navigation that I had done around what existed and what did not. I got a lot of interesting insights on what the canvas should look like. I it became clear that it canvas was not a diagram, it was not a template, it was not what it was not. And then I brought into my canvas the model or the framework that I had in mind, and that I wanted my students to explore. OK, so. In a summary, you have to have a framework. Which she wants to see explored on a campus and you have to make sure that there are no canvases available for that, because otherwise you will be reinventing the wheel and you have to know what a canvas is and what a canvas is not so that you build, you know the right thing and you don't call.

Interviewer: All right, so I I know, I know you have to be ready in 2 minutes, so I'm not gonna hold you any longer. I like to thank you for answering my questions and taking the time of your day for this.

Catarina Lelis: No worries, please keep me posted on the on on the outcomes of your research. I would. I would love to. I would love to. I would love to read about it. So yeah. Thank you for reaching out. It was really good to meet you. I wish you the best of luck. And please get keep me posted.

Interviewer: I think I will have a have a nice day.

Catarina Lelis: You too, enjoy the weekend. Bye bye.

8.9 Interview with Mark Lancelott

Interviewer: Alright, so first I want to explain you a little bit more about what our research is about and then I have some questions to ask you. So our project is essentially about the core of what canvases are. We noticed that even though they're increasingly more used by scientists and entrepreneurs, there is a gap in what can actually be classified as a canvas and what cannot be. There is not a clear definition or set of rules on what can be a canvas or what can't be. So in this work we are trying to evaluate a large set of canvases and see what constitutes a canvas. We try to figure out what defines a canvas, what are its common elements, what is their status in scientific and business communication, what are canvas qualities and how can they be evaluated. And if this project is successful we can provide scientists and entrepreneurs with a standard set of methods for designing a canvas. So first of all I'd like to ask you what was your role in creating the operating model canvas?

Mark Lancelott: Yeah, so I set up with chef Andrew Campbell, I'm an academic, we've set up a program, a sort of executive development program, a program on operating model design. And over the course of a couple of years we kind of developed some tools on the back of it, one of which was the canvas as a way of trying to show there were different elements, different interrelated elements on it and lay it out in a simple way. So it was a process over a couple of years of working in that space and at one point getting to the point where we wanted a single visual representation of the whole rather than the parts that we were looking at.

Interviewer: Okay and what inspired you to create the, why did you feel the need to create such a tool?

Mark Lancelott: I think two things, one that you know how do you show in a single visual the different components of it, and I think we're also taking a lead from the business model canvas which had gained some, you know, some visibility and was something that a lot of the audience were familiar with. So a bit about replicating that as a successful way and then also being able to align to it. So the operating model canvas is really a kind of

expanded view of the left-hand side of the business model canvas.

Interviewer: Okay and so you've already kind of answered my other question but it's have you worked with other canvases and were you inspired by them while creating OMC?

Mark Lancelott: Yeah I mean the business model canvas and I suppose the value proposition ones would be the two obvious ones and I guess the viewers, you know, almost like the three of those fit together.

Interviewer: Okay so one of the main questions of our research is what is the definition of a canvas, so how would you define a canvas in general, not just OMC, not BMC, but a canvas in general?

Mark Lancelott: Yeah so I mean it's, you know, it's on a page and visual, so a way of showing multiple components around a, I suppose, kind of related topic. It's, you know, so it's kind of a showing a collection of things. There's some logic in terms of how they relate to each other given the sort of placement and layout but it, you know, it doesn't get into precise definitions of what the relationships are, more probably showing that they are related in some way.

Interviewer: Okay and in what context or industries do you typically see canvases being used?

Mark Lancelott: Well, sorry, just to say a little bit more on the previous point, so you know, when I've done this work, so I often talk about just these three things you need in a, so it's kind of a methodology, so if you're designing an operating model, you know, there's a framework which is a sort of perspective or a way of looking at the world, so what are the things you look at, so I think the canvas is one way of doing that. Secondly, there's a development process, so how do you go from the start and then go through a design process, what does that look like to get to a point where you've got a populated design or canvas and then thirdly, there's often a collection of tools to help you make choices and do the design work, some of which will be specific to elements of the canvas, some of which might be about how they fit together around it, so those, you know, you need those three things and the canvas is only one.

Interviewer: Yeah, so and do you think there are different types of canvases that can be separated into different categories and if yes, then what would be the main basis of how to categorize them?

Mark Lancelott: I don't know, I don't have a strong view on that, so I know there's loads of canvases out there, a lot of them strike me as not having had a great deal of thought into them and just chucked a lot of different things at them and some even kind of mix a bit around design process as well as what I'd call a framework as well. You know, some of the work, I've also done other work around sort of business design methodologies and not necessarily kind of a canvas view but a similar thing where I've got a framework, development methodologies and toolkits and if you look at, you know, things like TOGAF as an architectural development framework, you know, has tools and it's got like a kind of bubble diagram that TOGAF 9 has got a mix both of framework and development process, so it gets a bit confused. So, I mean, you know, I see a lot of them in the variants of business models, so, you know, digital business model canvas and sustainability business model canvases, those types of things. Yeah, but as I said, you know, some of them don't particularly add much and some of them are just a collection of things that have loosely been thrown together without much thought about whether they're the right things.

Interviewer: Okay, thank you and what do you think are the core elements of a canvas that is pretty much universal between yours and the business model and value proposition and other ones?

Mark Lancelott: I don't know, I guess it's, you know, a number of elements and not too many and some kind of layout where there's some logic for how they're arranged that points

towards their relationships, you know, it's on a page, it's in some sense it's visual because it's a collection of things even though it might have, you know, text in the boxes as opposed to being a single collection of visuals and I guess, you know, I suppose the thing you're trying to get to is that see, you know, see something complex with multiple components in a single image so that, you know, sort of visual processing, visual thinking as opposed to linear narrative so you can see the whole at once rather than the parts.

Interviewer: Okay, thanks and how do you use canvas in your work or organization and what kind of benefits do they provide?

Mark Lancelott: Use a business model canvas sometimes, use the kind of app model canvas, you know, it's one of, you know, a number of tools or visual methods that I use, you know, where things like the business model canvas or app model canvas are useful because there might be some familiarity of the audience with it so that can help and if not, you know, back to what we were saying before, it's a way of laying out multiple things and looking at the whole rather than the part which particularly in the, you know, early stages of whether it's kind of app model or or design a business model design work is useful because you're trying to think about how the whole fits together and what's in it as opposed to the parts and components.

Interviewer: And what kind of challenges or limitations have you encountered when using canvases?

Mark Lancelott: If you're creating one, it's, you know, how do you define the components of it in a, I suppose, kind of a messy way so we don't overlap, you know, how do you decide which ones to give visibility to so whether you bundle things up or unbundle them so they're kind of aggregation, disaggregation question. Probably the main ones and then, you know, what's a, what's the kind of logical way of laying things out so which one, which ones are close versus far apart and how do you, what are you showing by that? So what are the key things you're trying to highlight?

Interviewer: Okay, and in your experience, what makes a good canvas? What is the main quality that you would say it makes?

Mark Lancelott: Yeah, so I think that, you know, getting the components right and messy, being, you know, emphasizing the right things, so getting the kind of bundling and unbundling levels right and, you know, making sure nothing's missing. So, I guess, as an example, so in my previous firm at PA, we kind of built this business design methodology and, you know, the framework we use for that was, you know, we started off by trying to say how do you, how do you bring together, you know, kind of organization design, a view of the world with business architecture, so kind of IT and business and you kind of get a richer picture, you know, because if you were in, you know, in a, in an architectural framework, you'd have, you know, processes and applications and data infrastructure and then a box that might say, you know, the business or organization and not very rich and then an org design world, you'd have, you know, culture, leadership, structure, incentives and a box that says, you know, IT and again it's, you know, too aggregate. So, kind of how do you exploit those to get to a insightful view and then we realized we've got another box that said strategy and, you know, how do you put finance in it. So, that kind of scaping and putting a boundary and what's in versus out of what you think about an important thing and then which ones do you give prominence to. Okay, thanks. And you use a lot of, you know, you use a lot of, you know, an important thing and then which ones do you give prominence to.

Interviewer: Okay, thanks. And you use the word framework a lot and so how do you think canvas is compared to other visual planning tools such as frameworks, diagrams, flowcharts, blueprints or templates? Do you think it's the same? It can be overlapped?

Mark Lancelott: It's an example of one of them, you know, some of it's a bit ill-defined what the differences are between them, you know, for me the kind of canvas is, you know,

a boxy diagram with and you can put text or pictures in to represent it that way without necessarily describing the relationships between things. So, it's kind of like a collection of interrelated things you're trying to communicate, you know, whereas, you know, flow diagrams and process diagrams trying to show stuff, you know, three times of a progression piece rather than a whatever different things I look at. Yeah, I don't know, you know, you probably need a taxonomy of visual representation. Yeah, I don't quite know what I would look like.

Interviewer: And when you were creating OMC, how did you evaluate it and what do you think are the best metrics to evaluate canvases for? Probably, kind of, sort of, through feedback and people using it, you know, what was the response from people.

Mark Lancelott: I don't know if we ever defined formal metrics and tracked them, yeah.

Interviewer: So, if I wanted to create a new canvas, I should mostly look at the, to take the feedback from the users. Is there anything else that could be used to evaluate the success of a canvas?

Mark Lancelott: Yeah, how easy is it to understand, how easy is it to use, what are the results from using it, those types of things. I think, you know, what's the, what's the best way to evaluate a canvas, I think, you know, what's the best way to evaluate a canvas, I think, you know, what's the, you know, why are you creating it, so what's the perspective, what's the problem, what's the insight you're trying to create, you know, what are the elements or factors that are important, and that you want to or need to make visible, yeah, and then, you know, how do they, how do they relate to each other, you know, how's a user going to understand it, and I guess there's a bit about, you know, the right level of granularity to be insightful, so, you know, if you look at a business model canvas, the left-hand side of it's got resources, activities and partners, so, you know, so, you know, we could have just used that, but our view was that's actually too simple and doesn't relate to the design work that people do in organisations, so, you know, design work will be about organisation structure and work processes or value chains and location and people, so those are the things that get designed individually, so, you know, your model canvas was a bit of one, trying to make it easier for people to relate it to things that they might do in their day jobs and then and show that they're related, so you can't just think about processes on your own, you need to also think about the value chain, you think about locations, so that's why you ended up with a different view with, I mean, a seven or nine rather than three things and the view that a richer view will be more insightful and easier to relate to what people do and therefore more productive.

Interviewer: All right, thank you. So, throughout your professional career, you worked with canvases a lot, right, so who do you think are the typical users of canvases most of the time?

Mark Lancelott: Management consultants, people involved in transformation, design, strategy people, change people, yeah, maybe, you know, people thinking about startups, early stage businesses can be using them as well.

Interviewer: Okay, and are there any specific tools or techniques that you use to create or work with canvases?

Mark Lancelott: A blank chart and a pen, a piece of paper and a pen, yeah, nothing else. PowerPoint, I guess, probably a better, more accurate answer.

Interviewer: So, I guess this is kind of the last question I have, is I already contacted your co-authors, so Mikel and Andrew, I also talked with Mikel already two days ago and I'm planning also to interview Andrew, so is there anyone else that you know that I could interview in the same manner to get some interesting answers from them? Or would you, not in a specific person but... Around that model, please, specifically or other canvases.

Mark Lancelott: Yeah, I mean, you know, I'm sure you tried to sort of, Osterwalder and the gang, who did the business model canvas.

Interviewer: Yeah, I contacted him as well, so yeah.

Mark Lancelott: Yeah, he's the author of value proposition as well. Yeah, so those, there's, I suppose my other thought, you know, there's quite a few, there used to be quite a few, you know, sort of specialists, one-man sort of boutique type consultancies who would use business model canvas and things like that. Do you want to talk to some of those people who, you know, they have workshop offerings around using business model canvas and things like that on a regular basis? I'm already doing it, but if you're not, you know, I'm pretty sure there's a, I think you can get trained to do it, can you, on a business model canvas? I'm sure there's some certification program or something you could do.

Interviewer: Right, so thank you for your answers, they were very insightful, and yes, I guess thank you for your time, thank you for the time to talk to us, and that will be it, I think.

Mark Lancelott: Okay, no problem, good luck with it.

Interviewer: Yeah, thank you, have a good day, bye. Bye.

8.10 Interview with Neil Turner

Interviewer: OK. Uh, so my first question for you would be can you quickly introduce yourself and tell me what are your responsibilities at the company that you're working at?

Neil Turner: Yeah, sure. So my name's uh Neil Turner. , so I'm currently a lead product designer at a company called Redgate Software. Redgate software is a software provider for database software so it tends to be sort of enterprise level kind of database software and there's a lead product designer. Well, the design of that software from a user perspective, so in terms of the, the UI design, the kind of user research for that. And sort of working very closely with the engineers that right and developed the software, but also product managers, other designers, lots of other, you know, sort of cross functional teams I guess.

Interviewer: All right. And what, what inspired you? Why did you decide to create a service model canvas?

Neil Turner: Uhm, uh, good question. So I mean that was. Uh, a few years ago now, and I've, I've kind of created a few, , sort of canvases I guess. . I mean in, in that instance it was really so I think that was. Uh, based on using the business model canvas or having previously used the business model Canvas? And I think that well, two things one is. You know a big believer in, you know, seeing what's of tools and frameworks are out there, you know, in terms of helping either individuals or teams thinking about the A product or a service, but also not just kind of taking them and using them. You know, to the letter, but really saying, well, actually you know, is it covering what we need to cover are the areas that really don't necessarily kind of make sense. So in that instance, I think I felt that the there were aspects of the business model canvas that. When thinking about a product or a wider service, you know, it was kind of missing some of those kind of key questions or those kind of key elements. So I guess that's where the kind of service model sort of canvas came about.

Interviewer: OK. And you mentioned the created other canvases, So what kind of other canvases have you create?

Neil Turner: And yes, so for example, Redgate, I guess part of my role is actually working very closely with sort of cross functional teams, but also helping to drive kind of best practice and good processes across the organization. So for example. , something that, my, my sort of created working with some other designers was a simple research canvas a little while ago. Quite a few years ago. And that's again, really some prompts to get either designers or teams thinking about if they are undertaking some user research or thinking about some user research. What are some of the key kind of elements and things to think about. So that's,

you know in, in terms of maybe like a key learning questions, you know, what are the goals of the research, what research methods, maybe they could consider, who are the stakeholders? Who are they need to speak to so it's. I guess kind of helping to form a bit of that structure around some of those conversations, that teams will have.

Interviewer: Alright, thank you. And so that another question is connected to that, have you worked with other canvases previously and were you inspired by them while creating service model canvas? So obviously you cited BMC as your main inspiration where there are any others that you worked with before.

Neil Turner: Yeah, so the kind of value proposition canvas. I've certainly used in the past and have. Yeah. Again found that useful in terms of. And getting people thinking about, you know from a user perspective, you know what are, you know, things like some of the, you know user needs or user jobs you know. And pains, and they might have potential kind of gains and that sort of thing. It's probably the kind of business model and the sort of proposition canvas. So are the main ones that I've kind of utilized.

Interviewer: OK. And what kind of feedback did you get on the service model canvas?

Neil Turner: I think uh few. So I think I think I think one thing is, I think when you're I think there's almost like 2 modes of using a canvas. There's one where maybe you've got a, you know, let's say, like a facilitated session. So you've got someone that can MM, you know, maybe take a group through or sort of help a group through in terms of some of those kind of questions. And if they need clarification, you can help answer that. Or in terms of the logical order of doing things. And I think also you've got kind of more of the use case where someone is, you know either a group or an individual using that canvas and obviously you know there's not that sort of help and guidance provided and certainly so like with the service model Canvas, I think it found that in terms of the order to be. I don't think it's necessarily normally in an order for a canvas, but sometimes there's kind of like a logical order that might make sense. And in terms of just making sure it's clear what sort of information you know, what to think about, some of those kind of questions and some of those prompts because I think some. Sometimes that can be quite open to interpretation. Which isn't necessarily a bad thing, but I guess in terms of you know, making sure that if groups are discussing, say, like an element of the canvas, there's clarity in terms of what you know, what does that mean, what what's the kind of prompts and sort of questions to be answered.

Interviewer: OK, so I think you now we'll move on. I'll move into another more general questions about canvases and first would be how would you define what the canvas.

Neil Turner: Excellent question. I mean, I mean, I think in a in a sense, I was kind of define a canvas as maybe it's a, it's almost like a sort of a set of prompts, which are almost more like a kind of a more structured sort of set of prompts, I guess. . So I think you know. On one hand, you could kind of almost distill a canvas into, you know, a set of questions to ask, but I think that there's something about. A physical canvas. So maybe you're, you know, you got something, you know to print out and stick up, and people can put notes or sort of post it notes or even a kind of a virtual canvas, you know, something quite kind of tactile about asking people to. To think about some of those elements and to kind of see that that sort of canvas become populated. And so it's, you know, I think it's more engaging than say giving someone a you know a page of questions which kind of in in a sense a canvas you know. Kind of. It is a set of questions. A lot of the time. So it's, you know, intend to provide a more of that engagement and . I guess some sometimes in terms of that. Even kind of visually, you know, select the kind of value proposition canvas. I suppose it's, you know, there's kind of a visual element in terms of being able to kind of see you know how some of the information fits together?

Interviewer: All right. And then do you think there are the you, you can categorize

canvases into different groups, would you say that business model canvases should be in the same group as service model canvas or?

Neil Turner: Yeah, I mean, I guess you could you could you could probably categorize them in terms of, you know, maybe to a degree in terms of what their, you know, the sort of information or the sort of part of or even. The kind of focus I guess you know you have some canvases which are probably more focused on the you know the business side should maybe more focused on the you know, so like the technology side or the kind of the more sort of user side. Yeah, I guess, I guess it wouldn't necessarily be clear cut, but I think you probably could do it, agree.

Interviewer: OK. And what contexts or industries do you typically see canvases being used?

Neil Turner: I mean I can only, I guess kind of speak for my own experience which is really been you know working on some digital products. I've certainly seen, you know, seen them used. And you know in terms of, so certainly my current organization and it kind of previous organizations working in kind of similar roles, I think it tends to be more. I guess of that sort of technology, you know, I think I think there's in a sense there's no reason why. , you know, you couldn't utilize a sort of a canvas for something that, you know was didn't touch technology at all or was. I'm not sure if that's that you know, I think it tends to be, more of that sort of technology space and certainly what I've seen I guess.

Interviewer: And what would you say are the core elements of a canvas? Characteristics of it.

Neil Turner: OK. Yep, almost some of those kind of principles. I suppose, like I said, I think there's an element of it need it. Need needs to be something that can be utilized without necessarily you know, guide it or without sort of outside guidance. So I think. It you know it needs to be something that someone can understand. Uhm, you know, without having you know someone there, sort of explaining or kind of helping. I think that's often helpful, but I think that you really you want sort of a canvas to be a little bit kind of self-explanatory to a degree. Kind of a visual element. OK? You know, I suppose you could have something that's, you know, very simple. You know, just kind of like, you know, almost kind of boxes to something a little bit more sort of elaborate. But I guess you know it is. You know, you know, so it's almost like , you know, a more sort of visual document, whether it's a, you know, physical, physical sort of canvas or something, you know, more digital like, you know, mural or mirror, what have you. I think I think it's, uh, you know, aside from that, I mean, I guess. I would say that. Yeah, I mean, it's probably not hard and fast. You could have a canvas which you know captures a lot of information. But you know, I would, I would say generally it's not, it's not about. you know, capturing too much information, you know, it's kind of like you know if it takes more than let's say an hour to fill out a canvas, it's probably, you know, there's probably too much detail in there. If it's like you know. And it's you know, it's I think typically what I'm saying that you know tends to be almost kind of like purposely not trying to catch a too much detail.

Interviewer: Then how do you use canvases in your work or organization and what benefits do they provide?

Neil Turner: Typically we'll use them. , uh, in a kind of a team context so often. So, like with a with a research canvas, uh, you know, , research will be driven, we'll probably design is my organization will lead a lot of that research, but it will be sort of heavily involving other members of cross functional teams, whether they're engineers or kind of product mostly engineers but sort of product managers and another kind of stakeholders. And so the so often used in, you know, workshops or those sort of meetings in terms of helping to build a shared understanding of what are the goals here, what does success look like, when does it need to be done by and similarly with, you know, like sort of versions of the uh, you know,

value proposition. I'm not sure. I used the service model. Uh, sort of red gate. , because it tends to be more sort of less kind of service, more sort of product. And but certainly I guess in in terms of that often kind of early on in a in a project or in a piece of work so to help. Build some of that shared understanding to have some of the you know kind of a framework for some of those conversations. You know, in terms of like well, you know, who are, you know, like who, who are key users, you know, what are the sort of key panes that we want to sort of target or whatever the key opportunities gains that we feel. We could we could exploit.

Interviewer: OK. And what kind of challenges or limitations have you encountered when using canvases?

Neil Turner: I think sending one of the challenges is around, UM, sort of clarity and, you know, making sure that, you know, there's alignment in terms of what do we mean by this or. If, in terms of the kind of information that that we're talking about sort of capturing, I think sometimes there is a challenge around the degree of detail. So I guess if you're running a workshop and you've got some people that really, you know, they love getting into the detail and they you know they. And I capture everything they can think of. So in terms of trying to not you know, we just want to mean in terms of, you know I think a canvas is not generally. You know, it's not about capturing every piece of detail or every piece of information. It's about the, you know, something kind of quickly capturing something that you know for discussion or for sort of shared agreement. So I think that can be a challenge in terms of getting that level of detail right. Again, maybe where it's less of a facilitated session. The kind of order or you know whether there's a kind of a flow that can sometimes be a challenge as well. You know, I think teams a little bit like, well, I'm not really sure where do we start here is there are kind of like do we start at the top left and work forwards or is there kind of a logical? Flow of that sort of conversation. So that that could be a challenge, I think as well.

Interviewer: OK. And who would you say are the typical users of canvases?

Neil Turner: I guess in my experience it tends to be, I guess those people that very closely involved in either kind of you know, A creating kind of designing sort of products and services. Uh, you know that that sort of almost some, some of that kind of Co design collaboration because I think you know a canvas is a can be a really great way to bring other people into that process because you can help them to understand, the these are some of the elements that are really important when it comes to, you know, like a digital product or a kind of a service, you know, rather than, you know, not knowing kind of where to start or where they can start thinking about and kind of bring in their input helps provide some of that framework and some of that sort of structure.

Interviewer: Alright. And in your experience, what makes a good canvas?

Neil Turner: I think is, as I said, I think a good canvas it's, you know, it's kind of like largely self-explanatory. I think it's something that probably you know can be completed probably within an hour or so. You know, I think it's something which, is capturing the kind of key information but it's not trying to catch it. All of the information. I think that's probably the there's a key things. UM.

Interviewer: All right. And the there is many other words used for a visual planning tools such as diagrams, flowcharts, frameworks, blueprints, templates. Do you think any of these terms can be overlapping with canvases or would you say canvas is something completely different?

Neil Turner: And I think, I think canvas is a bit different when I guess a what I have seen is as. Digital sort of, tools and digital whiteboarding tools or digital boarding tools like I say, like we use Mural. And I know that there's Miro and other sort of tools and what I've what I've seen is that people start referring almost to that tool. So they'll talk about,

you know, let's create a mural rather than maybe previously they might say, you know, let's whiteboard this or let's kind of use a kind of a canvas. So I guess in terms of. You know, with a lot of work now. Moving into a kind of digital space is certainly, you know, my current organization, uh, there's much more sort of hybrid working now. So a mixture of in the office now to the office. So rather than physically working, let's say, on a whiteboard, it tends to now be collaborating on a virtual. You know virtual build like a mural board or something like that.

Interviewer: So you kind of already answered that question just now. I wanted to ask are there any specific tools or techniques that you use to create or work with canvases. So this would be one of them, right?

Neil Turner: Yes. Yeah. So I think I, I think certainly Mural. I guess more of a kind of a physical sort of canvas. I'd probably use something like , sort of Figma, just to you know create something that that could then be , you know, sort of printed out a large scale.

Interviewer: Alright. And the when you were creating or canvas, how did you evaluate them and what do you think are the best metrics to evaluate the kind of uses for?

Neil Turner: I mean that that was, you know, that was really a case of, you know, try. Let if you if you kind of teams try it and you know get their feedback and see you know what they understood but they didn't understood. You know what they if there was going to be information that they think they probably should have been discussing it wasn't on there information that they were discussing that probably didn't need to be on there in terms of metrics yeah I'm not really sure I mean I guess it's kind of more on that sort of qualitative sort of feedback side. Yeah. Tonight be an interesting one in terms of, you know, how would you sort of evaluate the performance of a of a canvas?

Interviewer: What would you recommend to look out for to someone who wants to create a new canvas?

Neil Turner: I think it's worth seeing what you know what's already out there. I guess, you know, I think that. Like I said, I don't think it's a case of right. Just, you know, just take something and you know. And follow it. You know, to the letter, I think you know, you can take something, you can tweak it, but it's kind of like a lot of the time people have teams and organizations and people have been, you know, they face kind of similar. Similar sort of challenges similar sort of situation. So it's kind of like we're seeing you know what's already out there that maybe we can utilize or we can kind of build on. and I think you know it's kind of like , you know. Try something out. You know, test it, get some feedback and then kind of iterate I guess.

Interviewer: OK. And that would be my last question is do you think there are, do you know any other people that you would recommend me to contact in order to conduct similar interviews, some other canvas creators or someone who works with canvases heavily?

Neil Turner: The I think the the design community, certainly. Probably are, you know, quite, quite heavily kind of utilized sort of canvases. And I guess from a from a I think from a creation in terms of you know maybe their version of. I'm not sure creation and creation in terms of right, you know this is something that I want to kind of create and instead of put out there but yeah certainly. You know, I think quite a lot of the, you know, you know, I'm certainly not, you know, I know plenty of other kind of product designers that you know that will utilize canvases as well.

Interviewer: OK. So thank you for your time. Your responses were very helpful and insightful. And yes, thank you for, for, for taking the time to talk to me.

Neil Turner: Yes. It's nice. Nice to be of help.

Interviewer: Yes. OK, thanks. Have a good day.

Neil Turner: Go. You too. Good chatting. Thank you. Bye.

8.11 Interview with Dennis Lawo

Interviewer: First, I will shortly tell you what my thesis is about. We are essentially trying to discover the core of what canvases are. We notice that even though they are increasingly used, there is a gap in what can actually be classified as a canvas and what cannot. There is no clear definition or a set of rules of what makes a canvas a canvas. We want to evaluate the large set of canvases and see what a canvas actually is. What defines a canvas? What are its common elements? What is their status in scientific and business communication? What are canvas qualities and how can they be evaluated? We hope that if this is successful, we can provide scientists and entrepreneurs with a standard set of methods for designing a canvas. First, would you like to start by introducing yourself?

Dennis Lawo: Let me introduce myself. I'm Dennis, 28 years old, currently working as an IT desk officer in Federal Foreign Office. So, foreign ministry of Germany, especially focusing on digital policy, IT project management in the fields of digital sovereignty, green IT. What else to say? Yeah, I hold a PhD in information systems. I did the work on canvases during my PhD. It was more of a side project because we did a lot of data focused projects. And we noticed that there is a communication gap between the business people or the people focusing on the case and the people from the technical implementation partners. So, our main interest was finding a tool on how to communicate requirements, initiate a project, stuff like this.

Interviewer: All right. And what was your role in creating the data science canvas?

Dennis Lawo: Yeah, basically, I participated in all of the steps. It's been a few years, so hard to say what's my particular contribution. But, I mean, it was a multi-step design science process. Once we noticed that we need kind of a tool, we started reviewing literature, which is, I think, described in a paper where we found several models focusing on canvases focusing on roughly the same thing. So, we built this kind of conceptual metrics. We had the workshops, the evaluation. The interviews were done by the other authors. I was involved in the analysis later on, but also the workshops, the literature research. So, multiple steps. Besides the interviews where I didn't do any of those, I think it's fairly distributed. So, teamwork.

Interviewer: Okay. And what inspired you? You kind of answered already that question, but what inspired you to create the data science canvas?

Dennis Lawo: Yeah, we saw the need during our project work, basically. That's what, at least from my perspective, I mean, I cannot speak for the co-authors. Maybe they had different motivations. So, the general situation at our chair back then was that we were kind of working on the same project, but, yeah, I think we were at least on two of the same project. Probably they had their own projects, but at least the realm was set with data-driven innovation, projects in a smart environment, consumer projects. So, the overlap was there, and I think we all suffered from this lack of a tool to communicate requirements, having kind of starter for project initiation.

Interviewer: Okay. And have you worked with other canvases professionally or before that?

Dennis Lawo: Yes, yes, yes. Mostly the business model canvas. I think that's the most prominent one. Yeah, yeah. Probably I've heard that a lot. And that was probably our inspiration, to be honest, because when we started projects, in particular with the business people, they often started with business model canvas, thinking about what we can do. I mean, costs and revenue wasn't that interesting at this time, but more of understanding the inner logic of a use case, how we can narrow down what needs to happen, what is our particular role in the project, what's the role of the algorithm, the service, stuff like this.

Interviewer: Okay, thank you. And that's what we noticed during our research, that

you can find the definition of a business model canvas, because that's the most popular one. And I'm also planning to interview the author, Alexander Osterwalder, the author of business model canvas. How cool. But what we noticed also is that you cannot find a definition of what just a canvas is. It's impossible. I tried in scientific articles and dictionaries. There is nothing like it. So how would you define a canvas in your own words?

Dennis Lawo: Yeah, as said, it's quite difficult now that you said it, because spontaneously I think we all have a picture of a canvas. Yeah, let me think of it. From my perspective, it's easier to say what is not a canvas, because a canvas is not a well-defined method. It's more of a roughly defined frame that gives a lot of space for creativity, but asks the right questions. So if we think of our canvas or also the business model canvas, there is no method. I think you can approach it from different directions. Basically, it's just a table that asks the right questions, and it's meant to initiate a project or open a space for discussions. When thinking about how the users in our evaluation used the canvas, I think we saw a similar thing. There was no one approach to the whole thing or one use case. I think some even used it to create their job descriptions. So it's a tool that asks the right questions for a particular field. Maybe that's the short definition.

Interviewer: All right, that's good. It's the most difficult question that I asked everyone so far. Glad that we've done it. Yeah, because everyone is like, oh, actually, that's not that easy. So the other question is, in what contexts or industries do you typically see canvases being used?

Dennis Lawo: I think business people like it. So project management, innovation management. I think in my previous role as an innovation manager or project manager in a retail company, we have been using it a lot, because it's also something where you have to translate between two areas. The business people, IT people, or other people involved, logistics people. I think that's the functional gap where it's used a lot. And given the popularity of business model canvas, the broader field of innovation is probably the way to go. But given that, I mean, there are multiple data machine learning canvases out there, I think there are at least some people using it, including myself. So, yeah, but short answer, business.

Interviewer: And since there are so many of canvases used in not only one industry, but many, do you think they could be separated into different categories? And if yes, then what kind of basis would you use to categorize them?

Dennis Lawo: Oh, that's interesting. Because I thought of canvases, especially given my definition earlier, or my attempt to provide a definition, as a tool for creativity. And I think it's always somehow in a context of a project and where you try to do something innovative, something new. And I've never thought of a canvas that provides a well-defined method. And I think all the canvases that we reviewed are kind of focusing on early steps where it's about discussing ideas. So, from a time perspective, I think they are always focusing on early project work, early ideas, stuff like this. Maybe you could make an argument for innovation with project, like in a sense of innovation has nothing to do with revenue, cost structure, stuff like this. And then there's like a later step canvas that focuses on things like that. But I'm not sure if there's something that focuses on later steps of a project or even earlier steps. So, from time perspective, maybe two categories. Yeah, and focus will always be creativity from my perspective.

Interviewer: All right. And what would you say are the core elements of a canvas that would be universal in all canvases?

Dennis Lawo: I mean, it's like drawing on a canvas. So, there shouldn't be too much of given lines or given path. It's a concept that is based on the gaps or on the question. So, I think if I really have to pin it down on a concept, I think it's quite similar to table. And it basically provides headers, headings that trigger questions. So, I'm not even sure if the data science canvas is asking questions or if it's also just headings plus some questions. But

I think that's the basic concept. You have an overview in a condensed way and it is asking questions or triggering questions if they are using headings.

Interviewer: Okay. So, how do you use or used previously in your work or organization canvases and what benefits do they provide?

Dennis Lawo: Yes, we've been mostly using it in a context where you have to translate between different teams because the simplicity of the canvas and the fields it provides makes it quite easy to discuss a certain concept between several teams. For example, like cost revenue. It's maybe a concept that's quite difficult for IT people, but in relation to, I don't know, an algorithm or a business model, it makes it more approachable. And an ideation, like in an ideation phase where you really want to bring different people into a room, start developing something new. And maybe when giving this answer, I think about the previous question or one of the previous questions, what is different categories? Maybe you could also make an argument for ideation versus communication. There could be canvases that are solely for communication and others for collaboration, ideation.

Interviewer: You know, we actually, we kind of separated initially and the canvas into some categories and one is ideation and the other is communication. So, there is more, but there are two that you mentioned.

Dennis Lawo: Yeah, I think it's a topic where we really have to think about it because it's very prominent in our lives. I think whenever you do projects, you have contact to at least business model canvas, but also other canvases, but you never really critically reflect on the concept itself. It's just there.

Interviewer: Yeah. So, that's why I think no one's tried to answer it so far.

Dennis Lawo: It's like the whiteboard in a room. You just start drawing, but it's not like somebody asked the question, why do we have a whiteboard when we have our kickoff meeting?

Interviewer: Yeah, true. And what challenges or limitations have you encountered when using canvases?

Dennis Lawo: Yeah, there might be a communicative barrier. I think that's also true for our canvas because we were particularly involved in the algorithmic sphere and we do not provide any further definition of what is an algorithm, what kind of algorithms are there. So, when trying to bridge the gap between business people and IT people, it's obviously quite difficult if the one side knows very well what kind of algorithms are out there, what kind of algorithm to use, and the other side is just sitting there and doesn't understand anything. So, I think most canvases kind of lack deeper provision of knowledge or explanation. The difficulty is the approach itself. Some people are very creative. They just see the blank canvas and start writing and finding their own approach. But others are probably afraid or even shocked from the appearance of all those questions and they don't know how to approach it, like where to start, how to derive certain things. And yeah, I think sometimes the next steps are missing. So, now we have the canvas, we've answered everything, we probably also have a broader understanding of the field, but what to do next? Is there something like a translation into a project plan or into my next step, into implementation? I think that's missing a lot and people expect methods or tools to provide this kind of support. And that's probably where a canvas as something very loosely defined lacks definition and lacks support and differs from methods because a method is usually something where you can just follow the steps and a canvas is not a method. At least not so far, maybe you can resolve that issue.

Interviewer: Actually, I'll come back to that in the next question, but first I need to ask you, are there any specific tools or techniques that you use to create or work with canvases?

Dennis Lawo: Implicitly, probably. I think you require some kind of moderation skills if you want to do a workshop with a canvas, because people tend to focus on certain details. And what you want to achieve with a canvas is the broad picture, the relation between

the different fields, and you need to enable the people such that they can discuss concepts that you really bridge the gap between different communities. I think a canvas is just like a visualization that supports somebody who is good in moderating a workshop, but without the moderator as the basic requirement, you will not achieve anything. Sorry, what was the question again?

Interviewer: The question was, are there any specific tools or techniques that you use to create or work with canvases?

Dennis Lawo: The second thing I want to add is for business model canvas, I think there is a little booklet that aims to support your work, but I'm not sure if it's from Most of All Air itself or if somebody else did this. But I think it basically explains certain paths that you can take. You can start with the customer and their needs, and then you can go this and this way. There is also another way where you can, I don't know, start with the cost whatsoever. But probably most canvases lack such a booklet or explanation.

Interviewer: Okay. And you already mentioned a model, but there's many other terms that kind of maybe overlap or maybe are totally different from canvases, but they often appear when someone talks about canvases. They are such as diagrams, flowcharts, frameworks, blueprints, or templates. Do you think any of these terms are overlapping with canvases, or are they all distinct?

Dennis Lawo: What I like about the idea of a canvas is that it has this overlap with the blank canvas, at least language-wise. When we have a look at a canvas, it's really blank. There is really very less content, to be honest. It's just these questions, and you have a few lines, the fields, but there's really no guidance, no detailed information. So, that would make it distinct from my perspective to the other things, like a flowchart. A flowchart gives you guidance in a sense of you can see a flow or you have certain steps. When we think about a blueprint, from my perspective, a blueprint is something that you can repeat on and on again, and a blueprint helps you to achieve a certain thing. I think without moderating skills, as I said, a canvas will never support you in achieving a certain thing in repeatable quality. So, it really depends on the people involved. Probably also the same for a template, but I would see when thinking about template or framework, I would probably find an argument for an overlap, because I'm not sure if template is well-defined either. We use it often and say, yeah, we can use this template for something, but I think a template can be a very high-level template. It can be very detailed. It can, I don't know, describe a certain algorithm or a certain pattern.

Interviewer: Most of these terms here are kind of loosely defined. Blueprint is often used when it comes to architecture, but other blueprints are not really well-defined. It's a problem with all of these terms, but I'm focusing on canvases.

Dennis Lawo: Interesting. You really found an issue here with modern work.

Interviewer: How did you evaluate your canvas and what do you think are the best metrics to evaluate canvases for?

Dennis Lawo: Coming from a qualitative research background mostly, that was our initial approach. We basically gave it to our project partners and kind of snowball system-wide other people and asked them to actually use it in their companies and to just try it out in workshops. Then we had qualitative interviews with them as the new experts or the users of our canvas to see what is working well, what are the downsides, how did they actually use it, because it was interesting as well to see. From our perspective, that helped us to understand the field, but this is not a particular metrics, of course. From a very strong positivistic stance, you could argue that to really evaluate the benefit of a canvas, you would need to have a metrics that reflects the outcome. For example, a canvas being used in communicative situations, you would need to have a survey that measures communicative quality, communicative outcome. In an ideation phase, you would really need to measure,

I don't know, the quality of the project, the innovativeness. If there is a measure for that, I'm not sure. I think given that most canvases are kind of used in those blurry fields like communication or ideation, I think it's hard to measure. For ideation, what do you measure? Do you measure the quality of an idea or do you take a measure 10 years later where you try to measure if it really provides the revenue that you predicted early on in the project? It would be interesting, of course, to see if companies that use, for example, a canvas to come up with an innovative idea really perform better than other companies. Probably it's a soft factor, kind of. How do people feel using it? Does it really help them? Maybe you could measure that.

Interviewer: What would you recommend to look out for to someone who wants to create a new canvas? What to pay attention to?

Dennis Lawo: Now that you kind of highlighted that canvas is not well defined, I would really ask myself, like doing the project again, I would really ask myself, what is a canvas? Is there certain things that I need to involve? For example, let me give the example. When creating a taxonomy or something like this, I think those terms are very well defined. There are papers out there that tell you a taxonomy needs to do this and this and that. Probably we would need the same for a canvas to really ensure quality. But in a loosely defined space, I would ask myself the questions like, are there other canvases out there similar to what we did? We tried to do literature research to see if there are other canvases. And last but not least, probably you need to early on figure out what is the use case, because probably it kind of differs from use case to use case. An ideation canvas might look different from a communication canvas. But to be honest, when we started our project, we just had a feeling that there is a need, but we didn't really think about the concept itself. So, maybe it was more of a lucky coincidence that we came up with the canvas itself in a certain form than prior thoughts or prior conceptualization in a sense of having a real theory behind it.

Interviewer: Okay. And when you were creating your canvas, first of all, did you try to evaluate the success of it? And if yes, then what qualities did you use? Did you look at how many citations did it get or did someone contact you in order to use it? Did you see it being used somewhere?

Dennis Lawo: Yeah, I really feel honored by your request. So, it must have been a really good project. Well, difficult to say. I think, first of all, it was a tool where we thought it might help ourselves, but it might be interesting for others. And having it published on a conference that is at least one of the better conferences, I think that's something where you see, okay, that there is kind of a demand for such a tool and people might be interested in the evaluative results of our study. But we did not really take a measure of how many people use it. Are there even people using it? Some of the people from our evaluation are probably still using it, but it would be interesting to ask them, like, a few years later, are you still using the tool from time to time? Because, obviously, in the interview, some of them told us that it's valuable in a certain context. So, it would be interesting to see, is it still valuable or did they come up with other tools? But given the fact that it's a side project or it was a side project for us, we did not take any further steps.

Interviewer: All right. And we're almost at the end. I just wanted to ask you, because so far I've been only interviewing creators of canvases, and who else would you think, what kind of person would know a lot about canvases apart from creators? Would there be a person that would know a lot about canvases?

Dennis Lawo: The users, obviously. So, maybe that's just my own perspective, because I like things like business ethnography, and I think it's always helpful to understand the users. Interviewing them might be a good idea, but probably would also be better to have a look into the context or different contexts where people are using a canvas to really record a meeting where people sit around a context, use it to communicate or to do the ideation.

Maybe to work with the artifact itself differs. That would be interesting from my perspective, because it's one thing that experts like myself tell something or creators tell you something about what they intend a canvas to be. But on the other hand, a canvas might be something very different from a user perspective. I don't know if you stumbled across the concept of boundary objects.

Interviewer: Boundary objects? No.

Dennis Lawo: That's a particular theory in computer-supported collaborative work. It might be interesting for you. I think you have a computer science background, don't you?

Interviewer: Yes, software development.

Dennis Lawo: Software development. And boundary objects, I think it doesn't stem from computer-supported collaborative work, but it's used there. And it's basically a theory to describe artifacts that are at the boundary between two communities. There is the community of creators, there is the community of users, and it might be interesting to see the different perspectives on the same artifact and how maybe the intention to create something for ideation is used very differently in another community. Maybe an ideation artifact from a creator's perspective is used as a communication artifact in the user's community or different user communities even. I don't know. Maybe the project manager's community is using it very differently from the developer's community, and it's even something at the boundary of those communities. So, from my perspective, that might be helpful.

Interviewer: All right. Thank you for your answers and for taking the time to talk with me. You're welcome. And your responses were very insightful, so thank you for that.

Dennis Lawo: I'm glad that you said that, because when you first approached me, I thought, am I really an expert or somebody who can tell something about canvases? So, I'm glad that at least it was helpful and it's worth the time. I mean, doing the transcription of our interview might be a pain, so hopefully I didn't say too much of useless stuff.

Interviewer: No, it's okay.

Dennis Lawo: I would really be interested in your results. I can send you my thesis. Yeah, that would be perfect. I would be really interested in what you find out.

Interviewer: All right. So, thank you, and have a good rest of your day.

Dennis Lawo: Yeah, you too, and if there's anything I can be of support with, just let me know.

8.12 Interview with John Stasko

Interviewer: Alright, so firstly I'd like to shortly introduce you to what I'm working on and then I can ask you a couple of questions about your work. Thank you for your interest in our project. Our project is essentially about the core of what canvases are. We noticed that there is a research gap in what can actually be classified and what cannot be classified as a canvas and there is no clear definition or set of rules. So in this research we aim to answer what defines a canvas, what are its common elements, what is their status in scientific and business communication, what are canvas qualities and how can they be evaluated. And if it's successful we hope we can provide scientists and entrepreneurs with a standard set of methods for designing a canvas. So first of all I'd like to, can you briefly introduce yourself?

John Stasko: Sure I'm John Stasko, I'm a professor at Georgia Tech in Atlanta in the US and I primarily work in the data and info viz research areas.

Interviewer: Okay and what inspired you to create the info canvas?

John Stasko: Oh good, so I have to admit on one thing that project's 20 years old so my memories on it may not be quite perfect in some sense but I think it was two different ideas. One, I was always interested in awareness applications and certain kinds of information

awareness, just very pragmatic, you know the traffic on the way home or how's the weather going to be tomorrow, you know things like that. And at the time some of the UI software systems, windowing, you know etc. started developing these kind of corner of the window apps that would show you that information. And we thought about could we do something that wouldn't use up that screen real estate and that might do it in a more kind of ambient calm sense. And so just kind of put two and two together and the idea came up with this, it was really kind of like electronic painting idea where different elements in the painting could represent pieces of information that you cared about and they would slowly change state over time. So I think it was really all of those ideas kind of mashed together that motivated the project.

Interviewer: All right and I noticed you wrote several papers on info canvas and the last one I found I think was from 2005. Have you continued your work after publishing that paper?

John Stasko: That was pretty much the end of it, yeah.

Interviewer: All right and in the field of information visualization have you worked with other canvases like business model canvas, value proposition canvas sort of stuff?

John Stasko: I don't think that I have formally and it's interesting because when I hear the word canvas I do not think of it in any kind of formalized sense. I think of it as a really general term and that a lot of things would be called a canvas. So I don't in my mind I don't think of it having an even a somewhat rigorous definition yeah like that so and to be honest for our project the info canvas that was just a name we came up with I think largely yeah.

Interviewer: Yeah because that's what you mentioned is that it's a very broad term and there is not really a definition for it. There is obviously a definition of a physical canvas but when you want to define something like a business model canvas or many many others it's really difficult to find like there is really not a definite definition for it so this was one of the starting points.

John Stasko: I think you know in like viz tools or our project when I think in my mind of a canvas I think kind of different elements you know it's a space where we can put things and I think of you know different elements being brought together. I think of some kind of human personal kind of control or it's like an authoring notion seems like some not necessarily like in writing a paper or whatever but in a creative endeavor right where I as the creator bring together these different elements and I think that aligns somewhat to our project on the info canvas that we had that you know we wanted people to pick their scene and what were the individual elements in it and say how did they change to reflect the information so I think that kind of aligned with my mindset on what really a canvas is about but I think it's you know there could be a lot of different things that fit that somewhat broad definition.

Interviewer: And when I was searching for literature about canvases actually your paper was the first the oldest one that I could find that actually mentioned the word canvas in this term so interesting but other my other speakers I asked were you inspired by other canvases but I guess I can't ask you about it because the first one I wasn't aware of prior work that used that word somehow in it yeah and so I have to kind of now modify that question did you see any other work continued other work citing your work someone else working on the basis of what you established?

John Stasko: You know I can't really remember much I over the years I've seen a few almost more like commercial tools like you know products that you could buy that had some kind of notion of an electronic painting but a lot of them you could just put pictures there you couldn't really control it the the kind of information modifying there was the old what was it called like the ambient orb or something that was a little glowing ball and you could you know the color meant something different but that was really just one piece of information one source but I don't I don't remember follow-on research projects that that were along

those lines of the thing we did you know.

Interviewer: And then when you were when you were creating it did you intend it for use in certain industries or was it a very broad?

John Stasko: No very broad I think we kind of envisioned it primarily as someone at work in their office you know but but that could be kind of any industry or any kind of you know just just kind of work office but for that matter we could we could have even envisioned it at home you know somebody have one of those things on their wall in their house as well but the one the one paper where we did a user study where we really deployed it to a few different people it was very much in a work office setting.

Interviewer: So so following up on that on the study how did you evaluate your canvases how how what about the metrics and?

John Stasko: Yeah again the the 20 years is taxing me a little bit but we decided well we did a couple of different things we had I remember us having two very different evaluation styles of papers you know follow on the work so the one paper was a much more formal kind of laboratory study where we compared well we had a number of different information sources that were changing you know baseball score weather traffic things like that and if I recall we had three different conditions a very textual you know classical here you know here's what they were a kind of an iconic information you know with a little image a little icon image or a little thumbnail picture and then our our canvas like display and we had people come in it was a very much a lab study and I think it was a between subjects experiment where they were only in one of the three conditions and we explained the technique and stuff and then we would show them a picture for a very short time by picture I meant whatever the three conditions were and then they had to recall like you know what was the traffic what were the stocks what was the weather and we compared them and the info canvas style display did quite well in that so that was that formal sense so that was really trying to look at more at a glance for a very short period of time could someone you know kind of digest one of these scenes and take in the different pieces of information and understand what was being communicated to them so that was really about that the other study as I mentioned was very much a deployment we you know talk to people we I forget exactly how we found we ended up with four or five here at our university people some were you know administrative type people staff there may have been a couple professors and I forget how we found them but it was it was literally hey here's this idea could we you know could we build this bring it into your office and you run it for a month and they were like you know sure and and so we did that and then that was very much a kind of qualitative observational almost hinting toward an ethnographic style of evaluation and at the end you know it wasn't really a quantitative numbers type study it was it was much more qualitative about what was it like you know did you enjoy having it what kinds of experiences did you have and we just interviewed them and talked to them about it and for the most part I remember they really kind of liked it and enjoyed having it there and the one guy in particular was in the building next door to me here and he was it was kind of a the building is kind of an incubator research startup corporate you know type going and he was kind of a manager overseer so he had a lot of people coming you know new people coming into his office every day to meet and talk about things what they were doing and he talked about it as a kind of breaking the ice tool a lot of time people be like hey what's that thing there oh let me tell you about it you know whatever and it just it was this kind of conversation piece item and he thought it was really quite nice in that respect.

Interviewer: All right and now I'd like to move a little bit broadly into your field so information visualization. Sure. And how do you think people use information visualization tools in their work organizations and what benefits do they provide?

John Stasko: Yeah so that can be kind of almost anybody with data you know that

that has data and they need to to understand it better. I would say that kind of over my career quite a few years now the commercial tools for DataVis and InfoVis have improved tremendously to where it used to be you know only tools that were custom built by students and academics to now tools like Tableau, Power BI from Microsoft, many others have become quite well known you know kind of broadly used and popular and their their applications really range from people doing data analysis and you know really trying to understand some things better to to people who maybe have some kind of analysis and understanding already but now they just need to communicate it to people in their group their team to the public so they're using viz and charts and graphs and so on to to kind of help a kind have a conversation about data in that way. Yeah so there's there's many different domains, application areas, you know topics of everyday life that it could be applicable to.

Interviewer: All right and what challenges or limitations have you encountered when using visual planning tools?

John Stasko: There's the learning curve you know that that's typically the big thing and again I think they've improved and they've gotten better but like any piece of software that you know there's an interface and learning and and what are the applications sometimes for them there is a bit of a data wrangling step before using the tool so you've got to get your data which oftentimes is messy unstructured into some kind of you know spreadsheet csv in a more formal sense maybe a database some kind of data warehousing format and then the tool reads that in and then kind of work with it and use it and and I think some of the tools like Tableau are a little more like oh here's your data and we're going to recommend good you know charts views things on it other tools there's still a bit of a creative endeavor and again if if someone's not so much up on different visualizations and viz techniques then they may not know like which ones to use to to present it and the tools are trying to help out with that a little bit now making recommendations things like that yeah so so I feel like that's that's kind of a general challenge in a way that that we deal with in software broadly but on the on the viz side more specifically I think it comes into knowing which techniques are the best for communicating that data.

Interviewer: All right and in your experience what makes a good infoviz tool?

John Stasko: Oh um I think a balance right there's this a lot of times we think of having a kind of learnability usability versus expressive expressivity expressiveness kind of power trade-off it's like oh this tool's really easy to learn and work with but it just can't do that much it doesn't but versus wow this is really powerful and you can see a lot of this is but it has a steep learning curve so one of our primary challenges to try to get the best of both worlds you know something that's powerful flexible expressive but is also easy to pick up and and work with so that's a that's a key challenge there just authoring in general right in it if someone's building a custom viz right now the most popular toolkit and everybody wants it on the web so it's a toolkit called d3 you may or may not know about d3 it's quite well known these days but it's a very steep learning curve to to actually author new custom visualizations with it so that's got a whole you know there's a whole uh big background to picking up on that um the the tools themselves for the most part they have you know tutorials user manual course things like that and you can follow and they're not too bad to learn i think all right i i know a bit what you're talking about because i work as a data analyst now so okay yes i know i know a bit but uh there is apart from the very specific ones like power bi tableau and the one you mentioned d3 there's a lot of terms which are used in information visualization but they're not really defined or maybe you you will tell me that they are defined clearly they're like diagrams flowcharts frameworks blueprints or templates do you think these are also very broad terms or could they be defined somehow better yeah so i think most of them are pretty general maybe flowchart you know i think of flowchart as being a pretty precise you know you get your little iconic you know in you know glyphs circles and triangles and diamonds and

stuff and we usually use flowcharts as some kind of process flow you know it's it's well known in software obviously but i think flowcharts apply in other industries and topics as well but it's very much a a kind of process step by step with conditionals things like that some of the other terms framework very generic diagram very generic um a template i think was one you used a very general term i think in some specific instances people call something a template and they mean a very specific thing but across a lot of areas they they use that term.

Interviewer: What do you think are the best metrics to evaluate InfoVis tools?

John Stasko: That's a great question and it's also in my research and InfoVis research this whole how do we evaluate is an entire sub field in fact it has a workshop that's just on that topic that's every other year um it's it's challenging the most traditional measures have been kind of someone you know you get example data sets you you get the visualization they have a series of benchmark tasks and you measure things like completion like task completion amount of errors in doing so and completion time but our field has moved to a view that that's perhaps too narrow of a way to evaluate these tools um one of the most popular i say most popular maybe that's not the right term but but a way to evaluate that's clearly gaining a lot of men and views is that you have to deploy it that it has to be in the in the field we talk about kind of case studies long-term deployment studies so people work with a work with a visualization tool for an extended period of time and then you interview them again in often a very qualitative sense what was it like you know was it helpful to you in doing data analysis or communication that's a way there are some other um more heuristic based kind of expert review type evaluation methodologies that have come about for visualization and a couple of those have been proposed over the last five to 10 years um yeah but but in general there's this trade-off between the you know the closed lab study with participants coming in for a you know at a half an hour or an hour period of time versus an in the field type case study deployment that's the big trade-off obviously the one is a bit easier to do as scientists etc but i think there's a view that that the latter one really will get you more useful information.

Interviewer: What do you see are the current trends and emerging new things in the infovis?.

John Stasko: This overall trend of working toward tools that make it easier to author create new visualizations by new i don't mean you know brand new techniques but just for a particular data a particular problem um so we want to you know we want to make it easier to build things that are more sophisticated you know that that general uh goal that i was talking about before that's one in the community there is um uh there's a whole suite of all of the machine learning progress and developments over the last five to ten years now large language models ml etc many machine learning techniques work as a black box you know you get a result you get a prediction you get something and visualization and visualization has been theorized to be a good tool to help maybe open up that black box and understand the workings on the inside of some of these algorithms that's a current hot topic in our community uh there is some lower level uh evaluation work on more just visual perception studies uh you know just if if someone has you know lines their slope this way versus that way or can i you know if if we use the the color versus the length of this you know do people visually perceive that better that's a very kind of hot topic in the viz community these days um there's been uh another area uh that i've done a little bit of work with a kind of influence of visualization communication with natural language so either just using natural language to control a visualization to issue queries about what you want to see to interact with an interface in a viz tool through natural language rather than direct manipulation that's kind of a hot research topic area now too um yeah well that's a few that's three or four there yeah all right all right.

Interviewer: Thank you and i think that's gonna be it for my questions because the the

other ones i have are more more more about canvases in terms of uh business model canvas and stuff so it hasn't worked on yeah that is uh experienced on that side of it yeah so so your your responses about the info viz were really insightful and thank you for them.

John Stasko: Sure i'm glad to help out hopefully yeah.

Interviewer: Thank you for your time then and have a good day.

John Stasko: You too bye.

8.13 Question session with Greg Bernarda

How would you define a canvas?

It's a tool that weaves different blocks of information in a coherent way so that the user can play with the parts that make up the whole to be designed. Even though a canvas provides a structure (and any structure will have an influence on thinking), it is not a framework that orients an answer in a particular way. A good canvas therefore supports and frees creativity in the user.

What are the core elements of a canvas, that are universal across all possible canvases no matter what field it is used in?

I would say the following:

- Atomic parts: the most essential components that are constitutive of the thing we are trying to create
- Order: a sense of logical order, geography you could say that helps understand where the parts are in relation to each other
- Relationships: they are not always apparent, but any good canvas will help users weave relationships between different elements. Relationships is what weaves elements together and constitute a new whole. It's the secret :)
- A sense of the whole: a definition of what the ultimate object of design is i.e. a business model, an ecosystem, etc
- Emptiness: as mentioned before, it's got the minimal guiding framing but no 'answers'

What do you think are the best methods for evaluating canvases and its impact?

A canvas is a tool, any tool is meant to be practical, so using them is the best way to see how helpful they are at arriving at a better destination than without one. Testing them against the objects they are supposed to help build. For a business model, you can test the BMC's strength by trying to map any kind of business model you find out there. If it works well, this means the canvas is doing a good job at layout out the underlying patterns of a great business model. One other metric is usability. As Alex Osterwalder says, a tool should do one job well, it shouldn't be a Swiss army knife trying to do too many things.

8.14 List of investigated canvases

1. Business model canvas

2. DAO Canvas
3. Operating model canvas
4. Value proposition canvas
5. Data science canvas
6. Design pattern canvas
7. Serious games design canvas
8. Future of work canvas
9. Social business model canvas
10. HPC service model canvas
11. Service model canvas
12. Sustainable brand model
13. Relationship model canvas
14. Global education challenge canvas
15. Innovation Challenge Canvas
16. Idea Challenge Canvas
17. Corporate Challenge Canvas
18. Customer Experience Canvas
19. Scientific Research Canvas
20. Microservices Design Canvas
21. Lean Canvas
22. HR service delivery canvas
23. Personal leadership canvas
24. Ecocanvas
25. Data product canvas
26. DAO planning
27. Recruitment planning
28. Loyalty canvas
29. Group definition
30. Project canvas
31. Tourism model canvas
32. AI Project Canvas

33. ML Lifecycle Canvas
34. Strategic Model Canvas
35. InfoCanvas
36. Storytelling canvas
37. The Blitz Canvas
38. Feedback Canvas
39. SWOT Analysis
40. Canvas4Change
41. Disruption by design canvas
42. Open innovation canvas
43. Customer journey canvas
44. Service blueprint canvas
45. User-Centered Design canvas
46. Gamification model canvas
47. Internal communication model canvas
48. Empathy map canvas
49. Kanban board
50. Project canvas
51. Contract canvas
52. Product vision board canvas
53. Requirements discovery canvas
54. Meeting facilitator canvas
55. Software testing canvas
56. Lean procurement canvas
57. Organization canvas
58. CV/Resume canvas
59. Content strategy canvas
60. Wise Cluster Canvas
61. Wealth Management Canvas
62. UX Strategy Canvas
63. User Knowledge Canvas

64. Timebound Project Canvas
65. Mobius Loop Canvas
66. Machine learning canvas
67. Team Working Agreement Canvas
68. Social Media Strategy Canvas
69. Startup Ecosystem Canvas
70. Prototype Canvas
71. Product Discovery Canvas
72. Process Model Canvas
73. Product Market Fit Canvas
74. Problem-Solution Fit Canvas
75. Design Ops Canvas
76. Commercial Scan Canvas
77. Design Criteria Canvas
78. Coaching Canvas
79. Digital Strategy Canvas
80. Interview Feedback Canvas
81. Investment Readiness Level Canvas
82. Marketing Campaign Model Canvas
83. Learning Experience Canvas
84. Market Analysis Canvas
85. Minimum Viable Product MVP Canvas
86. Media Planning Canvas
87. Minimum Viable Brand Canvas

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