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## Exploratory Research Business Models Canvas: Digital Repository of Business Model Templates "Canvas BM"

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### **Abstract:**

**Purpose:** The purpose of this article is to present a methodology for creating a digital repository of business model templates "Canvas BM". The published repository contains a collection of 265 one-page business model templates (canvas) that professionals can use to create, analyze and modify both the templates themselves and the business models developed from them.

**Design/Methodology/Approach:** A four-step model was developed to create the repository. The created card-type database as a repository was registered in the open universal repository Zenodo.

**Findings:** An architectural diversity of templates was identified, which were developed as variants or adaptations of the Business Model Canvas (BMC) reference model created by A. Osterwalder. Each template available in the public repository "Canvas BM" is single-page and features a unique information architecture.

**Practical Implications:** The topic repository should be viewed as a business guide to help select appropriate business model design tools for specific organizations, as well as in the process of creating, analyzing and modifying business model templates. The digital repository of business model templates can be applied in either academic, research, educational and individual contexts, and can also be useful in business practice.

**Originality/Value:** A digital repository of business model templates, contains a collection of diverse documents, providing the largest template database to continue analyzing existing templates, and at the same time can inspire the creation, analysis and modification of new, innovative and unique business model templates.

**Keywords:** Business Modelling, Business Model, Business Architecture Model, Thematic Repository.

**JEL codes:** L21, L26, O30.

**Paper Type:** Research paper.

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## **1. Introduction**

In the creation of formalized new knowledge, the processes of acquiring, capturing, storing, processing, sharing and using it in organizations become crucial. The use of a repository as a tool available to specialists is proving to be one of the more effective ways to manage these processes. Repositories are a key component of the digital infrastructure for knowledge management (Moscoso-Zea *et al.*, 2019), supporting both operational activities and the achievement of the organization's strategic goals.

In the context of knowledge management, two types of repositories can be distinguished, thematic and institutional, which differ in their thematic scope and information architecture. Thematic repositories focus on a specific area of knowledge, facilitating collaboration and exchange. Institutional repositories cover a wide range of materials related to the activities of a specific institution and are aimed at internal stakeholders. They are managed by a single organization, which is responsible for updating and maintaining them.

Institutional repositories can contain a variety of subject collections, making the boundaries between them and subject repositories sometimes ambiguous. Many repositories combine features of both types, taking advantage of the benefits of different approaches to information architecture.

Regardless of the type of repository, their value to audiences depends on accessibility, the quality of the collected data, and the ease of searching and using the stored resources. The key factors affecting the complexity and difficulty of building a repository are:

1. The scope of the subject matter and the type of repository affect the difficulty of organization and structuring, with more extensive and diverse subject matter creating greater challenges, and institutional and subject matter repositories having different goals and requirements.
2. The complexity of the collected data - the variety of formats, types and sources of data requires complex technical solutions and management methods.
3. Technical infrastructure and interoperability - the availability and quality of technology tools to support the storage, processing and sharing of resources, as well as the need to integrate the repository with other platforms, can significantly increase its complexity.
4. Legal and licensing requirements - compliance with data protection and copyright regulations can complicate the process of building and managing a repository.

5. Security and the need for updates - ensuring protection against unauthorized access, as well as the frequency and complexity of the update processes, are key, but also challenging.
6. Scalability and user interface requirements - the need to adapt the repository for future expansion and to create an intuitive and user-friendly interface that allows easy navigation and access to resources present additional challenges.
7. Data quality - the need to ensure the quality of resources, including their consistency, correctness and reliability, requires careful control and validation processes.

Knowledge accumulated in a repository is an important element of an organization's business strategy, as effective knowledge management can lead to improved financial performance and provide a competitive advantage in the marketplace. This is particularly important when introducing innovative solutions, products, services, technologies or processes, as well as creating, spinning off, merging or restructuring networks of organizations or organizations themselves.

The introduction of innovations should be analyzed in various configurations and contexts. For this purpose, business modeling and business models can be used to visualize potential scenarios, enabling accurate planning, implementation and adaptation of these innovations in the organizational structure, taking into account resources, processes and stakeholder relationships.

Business modeling provides the opportunity to create different variations of business models. This is possible because the business model retains its versatility, as it is not limited or tied to a specific methodology (Hartmann *et al.*, 2016), presentation technique (Szopinski *et al.*, 2020), technology, specific tools (Schwarz and Legner, 2020), programming language (John *et al.*, 2017) or digital platform (Fritscher and Pigneur, 2014).

The way a business model is represented can vary, depending on the modeling language used. The use of off-the-shelf solutions can significantly speed up the business modeling process, especially when using thematic repositories, databases, lists or dedicated collections of templates.

A detailed analysis of sources and the research conducted in the area of business models revealed a significant gap in the availability of ready-made, specialized solutions, especially in the existence of thematic repositories that would support professionals in the design, development and implementation of business models.

Within the analysis of available thematic compilations, the research findings most consistent with the area of repositories include the development of a database of patterns with 182 cases (Remane *et al.*, 2017), a hierarchical taxonomy of 164

patterns with 194 elements identified (Weking *et al.*, 2020), a collection of 74 patterns divided into six key elements (Echterhoff *et al.*, 2017), 63 business models with 93 configuration options (Curtis, 2021) and 13 data-driven business models (Kühne and Böhmann, 2018).

The identified small number of thematic repositories aggregating and sharing business model templates inspired the authors to create the "Canvas BM" Digital Repository of Business Model Templates.

The repository is intended to serve in the business modeling process as a practical tool that can significantly facilitate and accelerate the creation of business models, filling the existing gap in available resources.

The purpose of the article is to present a four-step model for creating a digital repository of business model templates, "Canvas BM," containing 265 one-page templates. The scope includes: 1) the development of a methodology for creating the repository, including determining the number and order of stages, naming the stages, and creating the repository's information and document architecture; 2) a description of making the repository available on the open repository ZENODO.org.

This paper presents continuation of research whose results were published in the paper "Exploratory Studies of the Business Model Canvas - Differences in the Visualizations of the Business Model" (Wit and Dresler, 2021). The conclusion of that paper emphasized the need for further in-depth research and the finalization of the project.

## **2. Research Method**

The digital repository of business model templates consists of one-page, diverse compositions of business models that have been constructed as variants or adaptations based on the Business Model Canvas (BMC) reference model (Clark *et al.*, 2012; Osterwalder and Pigneur, 2010). A proprietary repository creation model was used to create the repository. The process of acquiring templates through quantitative and then qualitative research was conducted between November 2020 and October 2022.

The technique of mapping sources and datasets and exploring these datasets with quantitative analysis and qualitative evaluation was used to identify template compositions. The study included resources from digital platforms such as Google Scholar, Scopus, Web of Science and specialized websites that provide templates.

To increase the number of cases, a review was conducted of Google's search engine resources in the "All" and "Images" databases, the social network Pinterest, and social networks such as LinkedIn, Twitter and Fiverr.

Each identified template was verified for compliance with licensing laws. During this period, 265 unique templates were eventually acquired, which were analyzed and cataloged in a card-type database in .DOCX format.

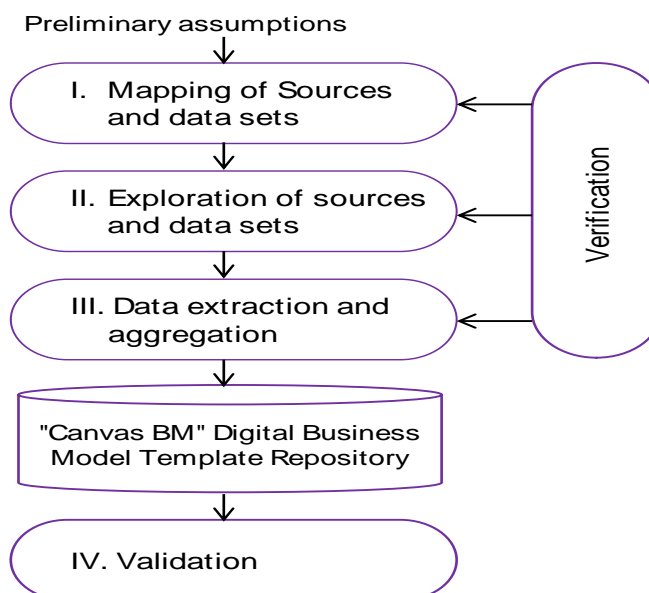
During data extraction and aggregation, the materials were converted to .PDF format, and then words were recovered from the blocks using OCR technology. The retrieved words were stored in a .XLS card database, including all block field names. For the vocabulary density analysis, the Visual Basic Application (VBA) programming language for Microsoft Excel was used, along with keyword density analysis and visualization methods.

The results of this analysis were published in the article "Exploratory Studies of the Business Model Canvas - Differences in the Visualizations of the Business Model" (Wit and Dresler, 2021). All the resulting documents were saved in the institutional cloud repository and subsequently registered in the Zenodo service.

### 3. Research Results

In terms of the methodological aspect for the construction of the repository, the authors developed a four-stage model for the creation of the repository, including the initial development of the assumptions, three main stages with a verification process for each stage, and the final stage - validation. The four-stage model of the digital repository development process is presented in Figure 1.

**Figure 1.** Four-step model for creating a repository of business model templates "Canvas BM"



*Source: Own study.*

Initial assumptions included establishing the boundaries and scope of the research process for producing a subject repository. First, the requirements for the sources to be analyzed were defined, including Google Scholar, Scopus, Web of Science, specialized template sharing websites, Google search resources in the "All" and "Images" categories, social media sites such as Pinterest, LinkedIn, Twitter, and platforms like Fiverr.

Second, key keywords were defined to precisely define the research scope and facilitate the formulation of bibliographic queries, combining "*business model*" with terms such as *canvas*, *languages*, *structure*, *framework*, *archetypes*, *pattern*, *template*, *components*, *concept*, *visual language*, *taxonomy*. Third, requirements were set for the formats of retrieved template documents, including .DOCX, .PPTX, .PDF, and image file types. Fourth, a rule was adopted that the acquired templates must be covered by a Creative Commons (CC) license.

The first stage of the repository development model was **source and dataset mapping**, the purpose of which was to identify and map potential sources and datasets that could provide model templates, according to the assumptions specified in the initial requirements. The measures of success at this stage were the number of mapped data sources (databases, websites, scientific publications and other digital resources), the uniqueness of the identified collections, the time required for data mapping, and compliance with the previously defined assumptions.

The second stage of the repository development model was the **exploration of sources and datasets** to retrieve template documents and additional data. At this stage, both quantitative analysis and qualitative evaluation were applied. Quantitative analysis, based on exploration, was aimed at collecting a set of source documents along with metadata.

Qualitative analysis consisted of evaluating the acquired templates, metadata and interpreting the results. The end result was a collection of resources in various formats, including a list of documents with templates with corresponding metadata and possible publications. The measure of success at this stage was the number of documents in various formats and metadata, treated as source documents, which were then archived. In the case of templates obtained from websites, they were saved in source format or scanned from the screen and saved as image documents.

The third stage of the repository creation model was **data extraction and aggregation**, the goal of which was to extract data from a unified format and aggregate, that is, integrate the selected data into unified, consistent databases. At this stage, all documents containing templates were converted to .PDF format.

Then, the text from the template blocks was recovered from the documents using OCR technology, and the data was stored in the database in .XLS format. At the same time, a master document was created, which consists of a three-level structure:

1) the name of the template, 2) an embedded image of the template, 3) information about the source of obtaining or using the template, and a supporting document with a bibliography.

The measure of success at this stage was to achieve unification into specific data types, and then integrate them into a single structure that allowed easy retrieval, analysis and use in further stages. The result of the process was to obtain three coherent documents that constituted a thematic repository.

To ensure the diligence, quality and usability of the data, verification was performed at each stage of the process. **Verification**, as an accompanying process, is designed to monitor and check the quality of data acquisition and processing. Its task was to make sure that all data sets were appropriate, complete and in line with initial assumptions.

The final stage of the repository creation model was **validation**. Its purpose was to finally confirm the correctness, quality and consistency of the collected data and the integrity of the information obtained from the various templates. Validation ensured that the thematic repository was ready to be published and made available in a public repository, as well as for use in business processes.

The subject repository was made public through registration with the open and universal research data repository Zenodo on July 23, 2023. Zenodo is an open research data repository for storing and sharing various forms of data, and is a good place to locate the repository, allowing resources to be shared widely. A description of the contents of the subject repository is included in Appendix 1.

#### 4. Conclusion

The "Canvas BM" business model template repository is a globally unique collection of verified and validated templates that can be used by organizations to analyze, modify templates and implement business models based on them.

The developed four-step repository development model emphasizes the structured nature of the process, enabling the successful building of a template repository. Its goal was to collect and manage templates based on the BMC reference model, which are ready to be used by organizations for further analysis, adaptation and implementation.

The BMC model created by A. Osterwalder, consisting of 9 blocks or, taking into account aspects of sustainability, 11 blocks (Clark *et al.*, 2012; Osterwalder and Pigneur, 2010), has become an extremely popular single-page template worldwide.

This model has been creatively modified and expanded with additional blocks, each of which provides a different perspective on the perception of business and on the

process of designing business models. An analysis of the number of blocks shows significant variations in their number in the template, taking into account the unique block names (from 3 to 25). With such diversity, users can choose from the repository the templates that best fit their specific business and strategic goals.

The digital repository of business model templates "Canvas BM" will be supplemented with further thematic repositories that will allow for even more comprehensive and detailed support in the development of business models. These repositories will be gradually expanded and updated to provide the latest information and trends from different industries and subject areas.

The whole process is aimed at creating a flexible and scalable tool that can be applied in both academic, research, educational and individual contexts, and can be useful in business practice in effectively creating and verifying a variety of business models.

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**Appendix 1:** Description of the content of the digital repository of business model templates "Canvas BM"

*Characteristics of the subject repository*

Repository Title:	"Canvas BM" Digital Business Model Template Repository.
Types of Files:	Datasets
Files:	1_Thematic_repositories_Canvas_BM.pdf 2_Thematic_repositories_Canvas_BM.xls 3_Thematic_repositories_Canvas_BM_References.xlsx
Publication date:	July 23, 2023
DOI:	10.5281/zenodo.8175725
URL:	<a href="https://doi.org/10.5281/zenodo.8175725">https://doi.org/10.5281/zenodo.8175725</a>
License (for files):	Creative Commons Attribution 4.0 International

*Description of the content of the documents in the repository*

1_Thematic_repositories_Canvas_BM.pdf
The database includes: 1) template name, 2) embedded template image, 3) template source.
2_Thematic_repositories_Canvas_BM.xls
The spreadsheet database contains two sheets: <ol style="list-style-type: none"> <li>1. In the "Elements" sheet, the template name (1..265) is included in the records, with the names of the blocks (Element 1... Element 25) in subsequent fields.</li> <li>2. In the "Date template" sheet, it contains the earliest date of creation or modification of the template (DD.MM.YY), the internet address of the template download source (WWW, PDF), and a bar chart showing the number of identified templates (4...49) in each year (2013-2021).</li> </ol>
3_Thematic_repositories_Canvas_BM_References.xlsx
The spreadsheet database contains the "Canvas BM" sheet: "Name" - the template name (1..265), "Hyperlink" - Hyperlink to the data source, "Source" - the internet address of the template source.