# **A blue logo with a black background Description automatically generated**

**BUCHAREST UNIVERSITY OF ECONOMIC STUDIES**

Faculty of Cybernetics, Statistics and Economic Informatics

Specialization: Economic Informatics (in English)

**The virtual library**

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# Chapter I – The economic Field of Reading

## Presenting the Topic

Reading has long been a means of expanding one's mind, gaining knowledge, and developing oneself. It is a foundational ability that fosters empathy, critical thinking, and the capacity to understand and analyze complex data. The main reason why I chose this topic is represented by my passion for it, which has grown from when I was a child to this day and I saw how it has been constantly changing being overly influenced by technology. Nowadays, the industry of reading is facing some problems due to the other alternatives of spending time, such as gaming, social media, etc. Passionate readers, though, still remained loyal to books and some of them even found alternatives to integrate reading in people’s lives throughout technology.

Some approaches that were successfully integrated by developers in order to encourage reading among people are Bookster (https://landing.bookster.ro/), BorrowBox (https://www.borrowbox.com/) and Hoopla (https://www.hoopladigital.com/). These applications serve the same purpose, which is encouraging people to read, but they do it in different ways.

First of all, the Bookster app is an application designed for corporations based on a subscription that allows employees to borrow books. By offering online borrowing, personalized recommendations, and a community-driven platform, Bookster addresses fosters a culture of continuous learning and literary engagement. This is an innovative approach to the traditional library system and it is not only convenient but also vital in cultivating a habit of reading. (https://landing.bookster.ro/)

A screen shot of a computer

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Figure 1 - Bookster Landing Page

The next platform is BorrowBox, which is an application designed to help users borrow books in digital formats based on their subscription ID from their local library. The platform wishes to adapt the classic reading experience to a digital one, offering a various range of books in formats as eBook or eAudiobook. Readers can access the books whenever they want, wherever they want and offers accessibility to many different devices, including smartphones, tablets and computers.

A group of cell phones with text on the screen

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Figure 2 - BorrowBox Platform

The next competitor in the field of improving the quality of reading is Hoopla, which is also a digita platform that offers access to a variety of content, the difference being that it offers a quite larger range of content than Bookster and BorrowBox. The diverse content of it exceeds a number of 800,000 titles from eBooks, audiobooks and comics to music albums and movies. One of the best features of Hoopla is its “instant borrowing” one, which means that users receive instant access to their preferred content, no matter the time and place making the application extremely convenient for readers. There is also a feature that offers access to offline content based on downloads, so if a user download a type of content, it is available no matter the internet connection.

A screenshot of a computer

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Figure 3 - Hoopla home page

The competitors presented focus on one purpose: to encourage reading, integrating different digital features to make users engaged with easy access to content.

## 1.2 Stating and resolving the Problem

We acknowledged that the traditional reading habits have become very rare especially among youngsters, which prefer participating in any other activities. Also, this problem is spreading across the world, since the era of Internet has evolved so much that, therefore, it became one of the primary issues contributing to the decline of reading. The presence of various digital platforms are more appealing to the people rather than putting effort into engaging with a book.

Alternatively, the traditional library system is facing challenges in terms of customers simply because its accessibility in our times and the effort required to actually be present physically in order to borrow a book overcome the reading problem.

These challenges could be altered for the better by using innovative technological solutions so that reading will become more accessible and engaging to the public. This is where the virtual library comes into play.

This project is suitable for any type of user, the main purpose of it being to create an interactive and accessible way to borrow and enjoy books, promoting reading among people by developing a web application easy to use, which facilitates collaboration such as: jobs section, online reservation, books evaluation, recommendations, etc. What is innovative about the virtual library application unlike the competitors is the fact that it offers books in physical format throughout an exclusively online interaction with readers. The virtual library promotes the experience of physical reading, of flipping the pages, which is unique compared to reading an e-Book or any other virtual book format.

Due to technology being so advanced lately and developing constantly with new features, it goes without saying that it became a “must-have” for each company. Technological developments helped us with many various tools which can integrate very well this type of projects.

ASP .Net represents a good example of a strongly developed application to every functionality (on the Back-End part) and view (on the Front-End part). I chose to create this project because it can be developed in production, helping small libraries to promote reading, and it implies many open source technologies.

# Chapter II – Technologies Used for the Application

## 2.1 Environment

### 2.1.1 Visual Studio Community 2022

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It includes a comprehensive set of development tools for creating ASP.NET applications, XML Web Services, desktop applications, and mobile applications. Visual Basic, Visual C++, Visual C#, and Visual J# all utilize the same integrated development environment (IDE), allowing them to share tools and facilitate the creation of solutions using multiple programming languages. These languages benefit from the .NET Framework features, which provide access to key technologies that simplify the development of ASP.NET web applications and XML Web Services using Visual Web Developer. (Microsoft)

Microsoft Visual Studio offers an editor, compiler/debugger, and design environment for multiple programming languages. The included programming languages are Microsoft Visual C++, Microsoft Visual C#, Microsoft Visual Basic, Microsoft Visual Web Developer, and Team Foundation Server. Previous languages included Visual FoxPro (discontinued in 2007), Visual SourceSafe (discontinued starting with Visual Studio 2008), Microsoft Visual J++/Microsoft Visual J# (discontinued starting with Visual Studio 2008), and Visual InterDev (replaced by Microsoft Visual Web Developer).

In addition to the aforementioned languages, Microsoft Visual Studio also supports other languages such as M, Python, and Ruby. It also supports XML/XSLT, HTML/XHTML, JavaScript, and CSS. Visual Studio is offered in several editions: Express, Professional, Premium, Ultimate, and Test Professional.

The .NET Framework is a unified software development platform equipped with a large set of classes, structures, enumerations, etc., organized into a set of namespaces based on a common language. The .NET Framework is a component delivered with the Windows operating system. (Microsoft, 2013)

The .NET technology brings together several technologies (ASP, XML, OOP, SOAP, WDSL, UDDI) and programming languages (e.g., C++, VB, C#), ensuring both the portability of compiled code between different computers with the Windows system and code reuse in programs, regardless of the programming language used. The aforementioned programming languages must meet certain requirements in order to be integrated into the.NET platform. These requirements are outlined in the Common Language Specification (CLS), which guarantees application interoperability regardless of the language used to construct it. Additionally, the Common Type System (CTS) is a set of types defined by the CLS. Basic elements of programming languages include classes, interfaces, delegates, value types, and reference types, and mechanisms such as inheritance, polymorphism, and exception handling. These languages share a common execution platform called the Common Language Runtime (CLR). All these languages use a set of libraries necessary for creating desktop or web applications, known as the Framework Class Library (FCL). The following figure shows the architecture for the .NET Framework:

A computer code with many different languages

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### 2.1.2 PostgreSQL

## 2.2 Model View Controller (MVC)

## 2.3 IIS Express

## 2.4 Entity Framework

## 2.5 ML .NET (Machine Learning)

## 2.6 CSHTML

# Chapter III – Application Overview

## 3.1 Description

## 3.2 Database schema and structure

# Chapter IV – Features and Implementations

# Bibliography

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