**Abhishek Pandit**

**EXPLORING LOW-CODE AND NO-CODE DEVELOPMENT WITH POEWRAPPS**

**Thesis**

**CENTRIA UNIVERSITY OF APPLIED SCIENCES**

**Bachelor of Engineering, Information Technology**

**December 2023**

**ABSTRACT**

|  |  |  |
| --- | --- | --- |
| Centria University  of Applied Sciences | Date  December 2023 | Author  Abhishek Pandit |
| Degree programme  Bachelor of Engineering, Information Technology (NITS21K) | | |
| Name of thesis  EXPLORING LOW-CODE AND NO-CODE DEVELOPMENT WITH POWERAPPS | | |
| Centria supervisor  Henry Paananen | | Pages  11 |
| Traditional software development often demands extensive coding expertise, limiting its accessibility to a select group of individuals. Low-code and no-code development platforms (LCDPs) have emerged as game-changers, empowering anyone to create applications without requiring in-depth coding knowledge. PowerApps, a leading LCDP from Microsoft, stands out for its user-friendly drag-and-drop interface, pre-built connectors and templates, and seamless integration with various data sources. This thesis digs deep into the transformative power of PowerApps, exploring its versatility and applicability across a wide range of business scenarios. In conclusion, we summarize the key takeaways from our exploration of PowerApps, emphasizing its ability to rapidly develop applications that enhance productivity, streamline operations, and drive innovation. LCDPs like PowerApps Empower businesses of all sizes to embrace digital transformation without being constrained by coding limitations. | | |
|  | | |
| Key words  Low-code and No-code development, Microsoft, PowerApps, Business Apps, Interface | | |

**CONCEPT DEFINITIONS**

**LCDPs**

Low-code and No-code Development Platforms

RAD

Rapid Application Development

XP

Extreme Programming

**ABSTRACT**

**CONCEPT DEFINITIONS**

**CONTENTS**

[1 INTRODUCTION 1](#_Toc151990240)

[2 Low-code and no-code development 2](#_Toc151990241)

[2.1 Evolution of Development Approaches 2](#_Toc151990242)

[2.2 Conceptuel Framework 2](#_Toc151990243)

[3 Powerapps fundamentals 3](#_Toc151990244)

[3.1 Introduction to PowerApps 3](#_Toc151990245)

[3.2 Key Features 3](#_Toc151990246)

[3.3 PowerApps Components 3](#_Toc151990247)

[4 Building a crud application with powerapps 4](#_Toc151990248)

[4.1 Overview of CRUD Operations 4](#_Toc151990249)

[4.2 PowerApps Design For CRUD 4](#_Toc151990250)

[4.3 Hands-on Demonstration 4](#_Toc151990251)

[5 Conclusion 5](#_Toc151990252)

**REFERENCES 9**

**APPENDICES**

**FIGURES**

FIGURE 1. Success factors for competitive edge 4

**PICTURES**

PICTURE 1. Motorcycling in Finland´s Winter 5

PICTURE 2. Heading 5

**TABLES**

TABLE 1. Age distribution of the respondents 5

TABLE 2. Heading 5

# INTRODUCTION

Businesses are constantly looking for innovations and innovative solutions to grow their businesses effectively. Classical software development often linked with complicated coding skills and heavily dependent on specialized expertise, which has been proven to be a major obstacle for many businesses. To minimize this issue, low-code and no-code development platforms (LCPDs) have been an effective solution, enabling developers or anyone with little to zero coding knowledge to design complex software in lesser time.

Low-code and no-code applications give people and businesses the ability to develop services and solutions for their business without the need for programming skills. The simplicity of use of these application services is a top priority. To narrow down the services the application can offer, the initial step in the application creation process is developing the service using questionnaires (Name of the app, different devices). The next step in the process is creating using a drag and drop choices for pages, data displays, and text buttons. The final steps in the construction process include employee testing, connecting the application to a data source, and determining if the program can do the desired task. LCPDs are not limited to those without any prior coding knowledge. It all boils down to the purpose and the application of the intended application. Professional software developers might reduce their workload and produce prototypes more quickly with the help of such LCPDs.

One of the best LCPDs is PowerApps because it is a collection of applications, services, and connectors, as well as data platform, that enables quick development of custom designs as according to the company’s needs and requirements. Also, with PowerApps, data can be stored either in the provided data platforms by Microsoft itself or in any other online or local data sources. Users can easily construct different app components, connect to various data sources, and personalize user interface without writing a single line of code. This strategy encourages a larger range of people, including non-experienced individuals, to engage in the application development process, boosting the cooperation and creativity throughout the business. PowerApps provides a huge collection of pre-built templates that responds to several business demands while also making the app building process easy, simple, and effective. These templates provide as a strong basis for developing customized apps, saving the time and workload required to carve a fully functional app. Users may simply adapt these templates to match their personal demands, resulting in a unique solution that meets their specific organisational goals. PowerApps has transformed the way corporations approach application creation by simplifying app development and empowering non-technical individuals. This low-code platform has made accessible app development, removing obstacles and allowing businesses to swiftly innovate and adapt to changing business environments. PowerApps is prepared to shape the future of digital transformation by enabling organizations to achieve increased agility, efficiency, and creativity. The application designed by using PowerApps can be shared by a person or groups whoever needs it, without following traditional approach for the application development process with all the stages. This thesis unboxes the power of PowerApps, showing its flexibility and applicability over a broad range of business scenarios.

# Low-code and no-code development

No-code and low-code development are innovative approaches that enables people with variety of technical skills to build software and web applications without using traditional programming. No-code platforms need little or zero coding knowledge, instead relying on visual interfaces and ready-made modules for program development. Low-code systems, on the other hand, require some coding, but at a more abstract level, allowing for faster creation through graphical user interface and pre-assembled modules (Woo, 2020).

The evolution of development approaches has seen a shift from manual coding to higher degrees of abstraction. While conventional coding required skills in languages like Java, C++, Python and many more, the emergence of low-code and no-code techniques has made accessible software production, allowing for more participation in application development from business users and non-developers.

Both no-code and low-code conceptual frameworks focus around shortening the app development cycles, reducing dependency on specialist experts, and encouraging collaboration among technical and non-technical stakeholders. This strategic approach attempts to improve efficiency, agility and

Inclusion in the application development process (Rokis, 2023). These frameworks are positioned to play a crucial role in creating the future landscape of software development as technology advances.

## Evolution of Development Approaches

Advances in innovation, changing advertise needs, and the needs to be speed up the development process that have all fueled the development areas of software development approaches. Early approaches, such as Waterfall model, depended on a consistent, straightforward technique, with each stage wrapped up before moving on to the next one (Petersen, 2009). In any case, within the confront of persistently changing necessities and advertise pattern, this strict system got to be constant. More iterative techniques, such as Rapid Application Development (RAD), replaced the waterfall model around the 1970s (Chrismanto, 2019). In order to enable quick prototyping and adaptability to change requirements, RAD placed a strong emphasis on partner and engineer communication. Businesses seeking to shorten their advancement cycles and provide programs more quicky to demonstrate began to employ the strategy.

In 1990s the generation saw the emergence of agile methodologies such as Scrum and Extreme Programming with XP. Chopping down the development process into smaller periods referred to as sprints, agile methodologies embraced flexibility and responsiveness in its workflow. This approach was suitable for the rapidly developing mod-ern mode of software development because it provided constant feedback and improvement. With the emergence of DevOps – a cooperative model that pairs development application with IT operations, software development lifecycle is now shorter. It supports efficient organization and input rings by its communication, computerization, continuous delivery. The degree of this problem has risen correspondingly with increasing complexity and trade by connectivity of pro-gram.

Platforms for low-code and no-code creations have surfaced recently, expanding software development by enabling non-technical individuals to create web apps and software with little to no programming experience (Böck, 2021). With the use of these platforms’ drag and drop interfaces, prebuilt parts, and visual programming tools, people and organizations may create applications without needing to have much programming skills. The rising need for quicker, more flexible software development that can accommodate the demands of a larger user base is reflected in the trend toward low-code and no-code development. These platforms allow companies of all sizes to develop and adjust to a constantly changing digital world by reducing entrance barriers.

## Conceptuel Framework

Low-code and no- code development are two modern approaches to creating software design applications that aim at simplifying the application creation process, with little or even zero coding knowledge.

Low-code development refers to programming that involves using some visual environment in order to develop an application through drag and drop components, pre-built templates or reusable modules with minimal hand coding. It is such an approach that allows developers to create working apps with pre-packed components and automate almost the whole development process. Low-code platforms will typically provide features for integration with existing systems, automatic business processes and delivery on multiple devices.

In this concept, no-code development takes it one step further by letting non-coding users develop applications through visual interfaces in which logic is simple and building blocks already have been established. No-code platforms are supposed to have no coding required features that allow any business users, citizen developers or tech non-technical people to create helpful applications without a single code line introduction.

However, low-code and no code have essential components such as visuals developmental speed end user accessibility. Such methods have various advantages such as a time to build, less need from main browser developers and adaptability. However, problems can be attributed to the absence of advanced functionality integration restrictions customization as well maintaining and scalability issues once applications become more complicated.

With the low-code development, app creation is made easier because users need not do coding rather interact with visual interface and assemble parts that can be customized. This method is distinguished by the use of graphical instruments instead of complex coding, which serves as a crucial tool for rapid implementation and experimental applications. It enables integration of individuals with disparate technical skillsets to work on projects, thereby bridging the concept-implementation divide. On the contrary, no-code development departs from simplicity by eliminating any need for coding knowledge whatsoever. It offers an intuitive drag-and drop user interface, where users can create programs by linking logical building details. This method can be very useful to businessmen as it allows them quickly design solutions not getting digressed into complexities of programming languages.

Although they significantly reduce the time for project completion and overcome technical barriers considerably, both methods have considerable disadvantages. For the sake of meeting some criteria, sophisticated and highly individualized apps may still require old-fashioned code. Additionally, relying too heavily on such platforms will restrict the functionality of your applications and build up more dependence on the platform provider for changes or maintenance. Notwithstanding these challenges, low-code and no code development is transforming the software industry by providing a new generation of creatives with easy innovations that have democratized app creation.

# Powerapps fundamentals

## Introduction to PowerApps

## Key Features

## PowerApps Components

# Building a crud application with powerapps

## Overview of CRUD Operations

## PowerApps Design For CRUD

## Hands-on Demonstration

# Conclusion

**8 REFERENCES**

Woo, M. Y. (2020). The rise of no/low code software development—no experience needed?. Engineering, Available at [https://doi.org/10.1016/j.eng.2020.07.007](https://www.sciencedirect.com/science/article/pii/S2095809920301843?via%3Dihub) Accessed 27th December 2023

Kienle, H. M. and Distante, D. (2013). Evolution of web systems. Evolving Software Systems, Available at [https://doi.org/10.1007/978-3-642-45398-4\_7](https://link.springer.com/chapter/10.1007/978-3-642-45398-4_7) Accessed 27th December 2023

Rokis, K. and Kirikova, M. (2023). Exploring low-code development: a comprehensive literature review. Complex Systems Informatics and Modeling Quarterly, Available at <https://doi.org/10.7250/csimq.2023-36.04> Accessed 27th December 2023

Petersen, K., Wohlin, C., & Baca, D. (2009). The waterfall model in large-scale development. Lecture Notes in Business Information Processing.  [https://doi.org/10.1007/978-3-642-02152-7\_29](https://link.springer.com/chapter/10.1007/978-3-642-02152-7_29)

Chrismanto, A. R., Santoso, H. B., Wibowo, A., Delima, R., & Kristiawan, R. A. (2019). Developing agriculture land mapping using rapid application development (rad): a case study from Indonesia. International Journal of Advanced Computer Science and Applications. [https://doi.org/10.14569/ijacsa.2019.0101033](https://thesai.org/Publications/ViewPaper?Volume=10&Issue=10&Code=IJACSA&SerialNo=33)

"Agile Development Methodologies" by Simplilearn <https://www.simplilearn.com/tutorials/agile-scrum-tutorial/what-is-agile>

"What is DevOps? A Complete Guide to DevOps Methodology" by Educative <https://www.educative.io/answers/what-exactly-is-devops>

Böck, A. and Frank, U. (2021). Low-code platform. Business Information Systems Engineering. <https://doi.org/10.1007/s12599-021-00726-8>

Lehto Petri (2021). Power Appsin käytön aloittaminen. <https://urn.fi/URN:NBN:fi:amk-2021082017071>

APPENDIX 1

**Instructions for appendices**