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Future of Application Development: Low Code as a Catalyst for Digital Transformation

Bhaumik Shah

Future of Application Development, Low-code as a Catalyst for Digital Transformation, Business Development Manager at Vyom Labs. Email: bhaumikshah.sitm@gmail.com

Abstract

It has been more than a decade since enterprises are talking about digital transformation. They are investing heavily in it with the aim of improving their competitiveness and adapting to the changing consumer behavior resulting due to increased technology adoption in their day-to-day lives.

But it is very difficult to measure the alignment and execution of this digitization investment with the needs of the business users of those enterprises. Also, with an increasing backlog of application releases pending for production at various stages (like design /testing/ UAT), coupled with increased time-to-market (TTM), the drive for innovation is minimal. This is where Low Code tools shift the balance. Low code is basically a product and/or cloud service for application development that has a visual drag-and-drop functionality to create and configure an application workflow. In short, low code platforms make application development simple.

The objective of this Paper is:

a) To understand the drivers for Low code tools and how can they catalyze the digital transformation of organizations. b) To explore how low code affects the alignment of multiple stakeholders for the development and modification of products and services by enabling them to work more closely on digitization projects.

The Paper adopts a case-study-based approach wherein it focuses on the use cases for Low code platforms for multiple industries and the type of applications for which these tools can be leveraged to the fullest.

The Paper will be useful for non-IT users as it touches on the security and governance aspects that enable non-IT users to utilize the platform and give life to their requirements. It will be useful for practitioners to understand how enterprises are utilizing low code for differentiating their offerings from their competitors through increased digitization of their services.

Keywords: Low Code, Digital Transformation, Application development, Citizen Developers

Introduction

Globally, enterprises spent more than $1.3 trillion on digital transformation technologies (hardware, software, and services combined), as per IDC, and it expects this spend to cross $2.1 trillion in 2021.

These investments in digitization are also expected to generate value. Considering the value of digital transformation for industry and society, it is expected to reach $100 trillion by 2025 (Davos & Klosters, 2016).

So, digitization is very much a thing, and Big-Data, Cloud, AI, IoT are not just buzzwords but technologies that can help the entrepreneurs in developing new business models and thus disrupting the way of running existing services. But there are many executives in traditional enterprises who still are finding it hard to adjust to the idea of digital transformation (Mark, 2021). They are fixed on policy and processes rather than information and insight, and such firms can be left behind pretty quickly. However, picking up the pace of digitization itself is a challenge as there are only a few experts who can understand. Also case studies of delivered digitization projects on the ground are much less than one can anticipate. So there is an open question about ‘what to do?’ or ‘where to start ?’ and the initiative itself can look quite daunting.

Low code and no code tools can give the digital transformation effort a series of quick wins with relatively much lesser time and financial resources. Many companies have a long list of requests going to IT and development

teams. It is relatively common to hear that many projects will not be on their radar for another 6 months and when they do, the estimate is generally higher than expected. By the time the project gets approved after multiple revisions on scope and cost, the business case may have changed. But with Low code/No code tools, the teams can get started for a project in days instead of weeks and can go live within weeks instead of months.

This is possible because these low code platforms employ visual/declarative techniques for application development instead of writing lines of code. This empowers many employees who have little to no coding experience to convert their ideas into applications through the intuitive interface of these platforms, thereby creating an ecosystem of citizen developers. These citizen developers are much closer to the business users (or can be business users themselves) who can create applications based on the business requirements (BRs) in a very short time (usually weeks). This leads to lower time-to-market (TTM) for products/services, thereby increasing the overall organizational competitiveness. It also encourages more business users to try new ideas, thereby fostering a culture of innovation within the organization.

Literature Review

There is a lot of research and analysis done on this technology platform which analyzes the scope, need, use cases, and benefits of a Low Code Platform and its impact on digitization within enterprises

For Instance, Forbes technology Council in their article "Process Meets Intelligence: From Workflow To Automated Enterprise" highlights how Low code platform can open doors for deployment of Intelligent Automation within Enterprises by developing full blown applications that have state of the art interfaces and leveraging technologies (like AI/ML) outside the platform (Johan Den, 2021).

In Gartner's report on "Strategic roadmap for the composable future of Application development", it is mentioned how Low code application and integration platforms come close to supporting the new model developing applications which are role specific (and individual specific) essential to facilitate dynamic business-IT collaboration toward continuously assembled application experiences (Yefim et al., 2021).

Even in ZDNet's article on "Low-code and no-code is shifting the balance between technology and business professionals" they have focused on how the very definition of a developer is changing and how with low-code and no-code, business domain experts can sit alongside professional developers and share the same visual representation of business logic (Joe, 2021).

Research Methodology

The Paper adopts a case study-based approach where, after having analyzed the need for a low-code platform at a generic and high level, we deep dive into the individual use cases that are present within various industry segments for such a platform. It also evaluates the various types of applications for which this platform can be leveraged to the fullest and how it affects organizational productivity (in terms of satisfaction of its internal and external stakeholders).

The Paper also investigates how the execution of one such use case (or a set of use cases) through a low –code platform causes a ripple effect of multiple such projects from stakeholders from the various other departments, thereby causing a wave of digitization within the enterprise

Use Cases

There are multiple use cases for Low code platforms, and here we will discuss some of the use cases within various industry verticals where low code can be a very relevant solution for digitization ambitions within organizations

Use case # 1: Digitization of Insurance Services

Onboarding of small businesses, payments and billing, claims, adjustments, and renewals are some of the common activities done by both underwriters and insurance brokers. (*Digital Insurance Suite | Mendix*, n.d.).

Some of the challenges that hinder the produ-ctivity of an Insurance organization, thereby affecting its competitiveness, are as below:

- Rigidity in connectivity of applications/new services to core systems.
- Lack of proper platform for collaboration between broker, underwriter, and product manager.
- Lengthy Quotation request management process due to lack of structured data management.
- Inefficient claims management and settlement process where agents and adjusters.
- The dearth of a comprehensive and integrated policy lifecycle management platform which is static and is challenging to keep up with the new business rules.

Low code platforms can address the above-mentioned challenges by giving seamless connectivity options to the core systems that can be added to modern digital platforms, hence catering to the ever-evolving needs of digitization of insurance services.

Some of the ways through which this can happen are as below :

- A client-centric and Omnichannel portal can be created to facilitate collaboration between broker, underwriter, and product manager enabling rapid responses to meet new market demands.
- Policy administration can be dynamic and intuitive with the capability of addressing all lifecycle events and financial handling.
- New insurance products can be quickly configured and launched through low code platforms thereby enabling the organization(s) to rise to ever-evolving customer expectations. An insurance product can be configured within no time to make it instantly available for brokers, which can be used to generate a quotation for the customers.
- Seamless managed integrations and open API structures are present within low code platforms to facilitate an easy connection between other enterprise hardware such as legacy systems, dedicated rating engines and external payment service providers.
- An out of the box framework within Low code platforms will enable rapid customization of implementation to best fit the business needs of an organization, thereby enabling it to maintain or extend its competitive advantage.
- The entire policy lifecycle from Quote to Claim can be managed with customizable workflows based on dynamic business rules and enhanced case management due to the agility of rapid development these low code platforms provide.

Use case # 2 : SAP Supply Chain Mobility

Manufacturing firms can eliminate manual processes or outdated RF technology within their warehouses, manufacturing sites or distribution centre (*SAP Supply Chain Mobility | Mendix*, n.d.). Many Low code products offer out of the box solutions that can cover the end to end SAP Supply chain processes.

Some of the typical challenges which organizations face within supply chain management are:

- Inaccurate Stock data.
- Poor user experience for internal & external stakeholders/customers.
- IT architecture is too complex and overwhelming.
- IT projects/initiatives are too lengthy and always treated as a cost center.
- Staff onboarding issues.
- Administrative processes are too cumbersome and unproductive.

Low code platforms have inbuilt solutions with the below-mentioned capabilities:

- Addon features optimum supporting utilization of existing mobile RFID investment like image capture, sign on glass, picture display, GPS etc.
- Applications can become device agnostic by supporting most mobile devices including smartphones, barcode data capture terminals, tablets and ruggedized mobile devices as well as wallboards for analytics.
- Low code platforms also deliver a no-code solution for use within the SAP supply chain – no SAP ABAP (advanced business application programming) skills are required. So the focus is on configuration rather than development.
- Supply chain management ability becomes end to end with the capability to develop a suite of applications for each of the SAP supply chain modules like Inventory management (IM), Warehouse Management (WM), extended warehouse management (EWM) etc.
- Some low code platforms have a ready platform for developing an intelligent ERP system through Embedded AI and machine learning integration with SAP / S4 HANA cloud. Intelligent automation can also be embedded into mission-critical business processes, thereby driving improvement in time to market

Use Case # 3: Smart Banking

With the rapid adoption of computers and handheld devices, continuous digitization in Banking services has become a necessity for any banking entity that wants to

remain competitive and relevant in this dynamic banking services arena. (*AI Smart Banking App | Low-Code Banking & Finance Solution*, n.d.) This poses unique challenges as below:

- Consumers and prospective users prefer not to go to a banking branch and want all services at their fingertips through a few taps on their mobile phones.
- Also to remain competitive, banking entities want to understand the quality of the service that they have provided and optimize them at regular intervals to create a mind share.
- But enhancement in customer experience through improvement in service quality is easier said than done for banks. Many relatively smaller banking systems are outdated and difficult to be updated since the IT landscape varies with unique IT instances placed at various locations.
- Also, many times, modernization of IT services within Banks needs to be balanced with banking regulations and compliance, thereby affecting upgradation of applications and systems.
- Hence the gap between large and small banks increases when it comes to providing quality digital banking services, and no amount of interest rate advantage offered by smaller banks can contain the churn of customers within them.

Hence Low code solutions become key for the transformation of Banking services across the Banking industry through the below factors:

- Capability to build mobile first applications with very small time to market that provides customers with rich and engaging experiences. Also, innovating and engaging user interfaces can be created directly in the low code platform with the in-built UI or through custom extensions.
- Many Low code platforms are service agnostic, enabling interfaces with a range of cognitive service options like IBM Watson, Amazon Alexa or Microsoft Azure. Such services can be utilized for sentiment analysis by understanding the sentiment of the proactive customer contacts.
- Seamless real-time integration with enterprise software platforms help realize operational excellence without the need of complex and timely integrations.
- The speed, flexibility and control low code systems can bring, enable banks to focus on methods of differentiation and systems of records. The former is where the services become unique and competitive. Therefore rather than outsourcing the process of development of such applications, IT team can build the online presence by mixing the content of web content management system and user interface from the application built on low-code at HTML level. This call can be done without building custom code.
- Rather than employing code-oriented developers, business-oriented developers can be used to build the functionality of the applications using low code and release them with faster cycles by engaging relatively smaller teams. Thus IT team can have good cooperation with end users, product owners and business executives.

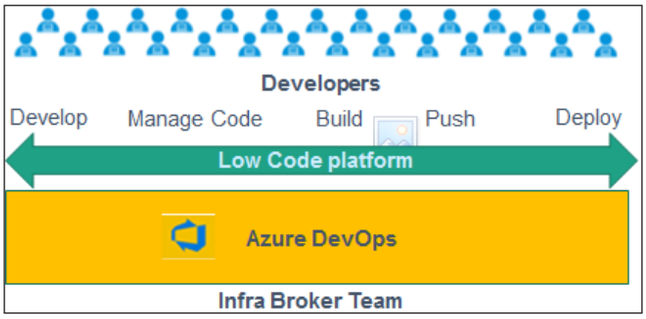

Fig. 1: A Typical Overhauled Architecture that Banks (or Many Enterprises) Can Adopt that can Result in Developer Empowerment

SUGGESTIONS

Some use cases have been mentioned in the above section. Low-code can be used in the BFSI sector to develop customer onboarding applications that ensure compliance with data protection rights, at the same time it enhances the customer's experience and meets their expectations.

Many Demo applications can be swiftly developed to check their feasibility, user interface, intuitiveness and usability. This approach will garner much more accurate feedback from the business stakeholders (in line with their requirements).

By leveraging Optical character recognition integration, organizations can save time on identifying delivery vehicles, thereby improving the process of identifying, inspecting and processing delivered goods. This can also include leveraging QR-Codes to retrieve information from SAP.

Instead of investing and customizing the latest commercial off-the-shelf applications or substantially update / rebuild their existing legacy systems in-house with traditional coding, organizations can modernize core applications on legacy systems through low code. This approach makes sure that businesses and IT professionals work together in reducing the risk of project failure and deliver machine-critical applications in record time.

Organizations are constantly looking for ways to deliver new IoT functionalities and leverage the plethora of benefits they provide. However, IoT applications are complicated since they require integration with numerous devices which include - Iot sensors, cars, communication devices etc., from where the data is collected. This data is then processed and analyzed by platforms like AWS, Mindsphere, IBM Watson IoT that provide APIs to connect and consume information from customer-facing IoT end devices. Low-code helps developers to seamlessly integrate their web or mobile applications with IoT platforms that transform their data to meaningful, context-aware information which helps them gain actionable insights from end-user's consumption. Furthermore they can seamlessly integrate with IoT apps and other enterprise systems and third-party systems like traffic or weather monitoring apps to raise a trigger when the temperature is reached a certain threshold.

Conclusion

As one can infer from this Paper, onboarding Low code solutions can show many organizations what digital transformation truly looks like. Low-code enables automation and abstraction of every step of the application development cycle to streamline the delivery of various solutions. Companies can develop solutions that meet the business needs by breaking down the traditional silos of business and IT (promoting continuous collaboration).

According to Gartner, it is estimated that the application development activity of low code will account for more than 65% by 2024.

Hence low code solution industry is set to boom. Yet like any other technology, companies need to use it correctly to realize its potential value.. Organizations need to carefully analyze the direction of transition from traditional software development to Low-code with the correct use cases and accurate timeframe. They need to be aware of the exact benefits they want to realize form the defined timeframe, be it IT-business collaboration, agility, experimentation & innovation, multi-user development or any other benefit.

The final aim should be adoption readiness for Low code within the organization before this technology becomes a mainstream and de-facto model of application development.

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