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Studying Benefits and Challenges of Using Java based platform by Startups

KUSHAGRA JAIN[1], PRITHVIRAJ SINGH CHAUHAN[2] ,Dr. VISHAL SHRIVASTAVA[3], Dr. AKHIL PANDEY[4]

B.TECH. Scholar, Professor, Assistant Professor Computer Science & Engineering Arya College of Engineering & I.T. India, Jaipur

jkush6802@gmail.com, vishalshrivastava.cs@aryacollege.in, akhil@aryacollege.in

ABSTRACT :

The utilization of Java is receiving a lot of attention in the modern digital world due to the rapid rise of startups and the constantly shifting needs of the market. This study attempts to look into the advantages and difficulties that startups encounter when using Java for web and mobile application development.

The study examines how to effectively use Java to achieve benefits like reduced development times, lower costs, and improved accessibility for non-technical individuals. The report also explores the difficulties faced by startups, such as their steep learning curve, scalability issues, and potential vendor lock-in.

Through a detailed investigation of the available literature and case studies, this study provides insights into the role that Java plays in assisting startups in developing and deploying apps more successfully. By raising awareness of both the potential gains and challenges of adopting Java in the startup ecosystem, the study's findings assist decision-makers in making well-informed judgments regarding their software development strategy.

Keywords: startups, Java, software development, put to good use, challenges, learning curve, scalability, vendor lock-in.

Introduction :

1. **Background of startups and their need for efficient software development**
   Startups are essential in today's fast-paced digital environment for encouraging innovation and satisfying the always shifting market expectations. Startups must overcome special obstacles such as constrained resources, constrained schedules, and the requirement for quick scalability as they work to quickly develop and launch software solutions. The rise of Java has received a lot of attention in this context as a potential way to help companies expedite their software development process.

2. **Introduction to Java and their relevance to startups**
   Java are visual development tools that let users build apps using a drag-and-drop interface and pre-built components, even if they have little to no coding experience. These platforms provide a number of advantages, such as quicker development times, lower costs, and greater accessibility for non-technical people. Startups can use Java to quickly develop, test, and launch apps without the requirement for traditional coding, maintaining their agility and responsiveness to market needs.

3. **put to good use and Challenges of Java**

Advantages

a) **Economical:** Businesses don't need to hire as many developers when using no-code, which dramatically reduces event time and costs. Additionally, you gain from the flexibility of the Agile technique while adopting no-code development for your product because these platforms allow versioning for any modifications made to the application.

b) **Quickness:** It makes it possible for firms to advance and make changes more swiftly. No-code products require fewer skills than bespoke application development since they teach configuration-based design.

c) **Improved Risk Administration:** When employing a no-code strategy, businesses may quickly make modifications to be in compliance with continuously changing regulations. Additionally, all setup procedures in this case—including code review, compilation, and debugging—are far quicker than they would be using traditional development methods.

d) **Increased Productivity:** Java enable IT and business teams to communicate more effectively and handle urgent company issues. Using this technique, business organizations may create their own apps without working with developers. It eliminates the requirement for complex code, allowing access to more team members and increasing productivity.

Disadvantages

a) **Dependence on Third Parties:** With a low-code or no-code platform, the vendor would be primarily responsible for lowering risks, securing vulnerabilities, and coordinating updates.

b) **Limited Customization:** No-code development platforms typically provide businesses with shockingly few alternatives for creating bespoke or customized software programs or products.

c) **Limited Integration Options:** Developers' integration options are constrained by the options for building apps in a no-code development environment. This could present a significant barrier for organizations that rely on older technology to run their daily operations.

d) **Lack of Developers:** It might be difficult for businesses to find developers with no-code development experience because it is not a readily apparent area of expertise.

2. Literature Review

2.1 No-Code development platform (NCDP) characteristics

Businesses must adapt their strategy and operational methods to the volatile environment in which they currently operate. The rapidly advancing IT sector and the rapid pace of digital transformation necessitate the development of new tools to manage environmental volatility and facilitate internal changes.

The shift from a labor-intensive strategy to an agile one based on digital technologies is encouraged by digital transformation for businesses. Such a strategy advocates a more adaptable working style and supports grabbing new market possibilities and meeting client demands by being competitive.

Additionally, more mobile-based applications are being released as a result of rising smartphone adoption. Therefore, businesses must employ solutions that enable them to quickly adapt to user expectations and operational requirements. In fact, businesses might choose disruptive technologies like NCDPs that help alter the application development process rather than investing in pricey customized IT solutions. These technologies are growing in popularity as a result of the increasing digitization brought about by the COVID-19 pandemic, which made remote working necessary and compelled the digitization of many processes and workflows.

NCDPs are platforms that can be used in the cloud or on-premises. They make it possible to develop applications more quickly by eliminating the need for hand-coding languages and by requiring less time for "installation and configuration of environments, training, and implementation". They serve as crucial tools for people who want to construct software solutions and automate operations without having IT knowledge. In fact, users can develop applications by dragging and dropping various pieces using pre-coded components, visual diagrams, declarative languages, modules, and templates.

Additionally, when compared to traditional coding programming, the expenses and time required to develop applications employing LCDPs and NCDPs are lower. For instance, using conventional programming languages, developing software and apps often takes nine to twelve months, whereas LCDPS or NCDPs only require a few weeks.

2.2 Methodology

1. **Qualitative Research and Case-Based Research Strategy**

The study uses a qualitative exploratory research methodology to assess the uniqueness of a topic and offer in-depth insight from the viewpoints of key informants. The case study approach is employed to analyze current occurrences and define the setting. By comparing cases and understanding key informants' perspectives and experiences about the adoption of NCDP technologies in various contexts, this technique facilitates the development of a cooperative relationship with key informants.

2. **Case Selection and Data Collection**

To ensure data reliability, the author created a case study methodology. To find the study's main informants, they used a purposive sampling technique. The analysis was conducted by two businesses from the software and banking industries, Alpha and Beta. Semi-structured interviews with key informants were used to get the data. Four individuals were questioned about their use of LCDPs and NCDPs as well as their strategy for collaborating between IT and business specialists. While the author had direct contact with the director of the IT department in Beta, the major informants in Alpha had varying backgrounds in IT and business. The interviews took place online through Microsoft Teams and lasted about 60 minutes each in English and Italian.

Essential Sources	Education	position within the company	Expertise
1° company Alpha	Administrative Engineer	Organizational Process Analyst	gathering functional specifications to address particular client needs and offering advice on digitization projects.

2° company Alpha	Computer Scientist	System Architect	Developing software, keeping track of job orders throughout their life cycles, and conducting process analysis from a technological standpoint as opposed to an information-flow perspective.
3° company Alpha	Degree in Economics	Business Process Analyst	Analysis of organizational structures and business processes
1° company Beta	Computer Scientist	liable for Digitalization of the Processes	Process digitization and the business strategy of the company directing development teams or software project teams

Some of the twelve essential characteristics of NCDPs that were identified include Process Automation, Time-To-Market, Lack of Technical Skills, Reduced Costs, Cross-Platform Functionality, Vendor Lock-In, and Collaboration Between It And Business Departments. The game style promotes active engagement and makes it easier to acquire detailed information about suggested characteristics.

Card concepts and explanation:

NCDPS critical aspects	Explanation
Process Automation	Controlling the digitisation of business processes
Time-To-Market	By using graphical interfaces rather than hand-coding, you can accelerate the development of apps.
Inadequate technical Skills	No prior IT experience or understanding of handcoding is required.
Decreased Costs	Costs fall along with the need for skilled developers, which lowers or eliminates hiring expenses as more apps can be created in less time.
Cross-Platform Functionality	Numerous devices support the deployment of applications.
Vendor Lock-In [Platform Providers' Dependency]	Vendor lock-in, or the strict dependence on platform providers, differs between vendors. It can be challenging for users to maintain an application outside of the vendor's platform because the vendor occasionally makes it difficult to make software or app changes once the user leaves its platform.
Easy changes	Apps and software are easily modified to fit new specifications, enabling quick adjustments as needed to meet customer or market demands.
Better Customer Experience	Improved customer experiences are a result of faster innovation in business processes and apps.

Data Analysis

The two case studies were produced before the data analysis began, and each case study report was shared with the interview subjects in order to ensure the veracity of the information and go forward with the data analysis (Ghauri, 2004).

In order to give a preliminary idea of important areas to explore after the respondents confirmed the accuracy of the data, the author coded the content of each case and read it as a single case before starting data analysis. In addition, after the cross-case analysis, which was done to find similarities and contrasts between the two cases (Eisenhardt, 1989) and eliminate the irrelevant parts, potentially irrelevant components were marked to be removed.

2.3 The company profile's short description

1.   Alpha

Founded in 2006, Company Alpha is a cooperative society with ten workers and a number of external partnerships with independent contractors.

With the primary goal of conducting industrial research or experimental development activities independently and disseminating the results through instruction, publication, or knowledge transfer activities, it has changed into a private research facility as of 2017.

The company was created in the Southern Italian university region. It is the end product of a group of researchers' combining various academic and professional experiences. They made the decision to expand their business outside of the institution by making use of the knowledge they had obtained.

In fact, they combined their expertise and experience in a variety of sectors to provide public and private actors with high-value services both domestically and abroad.

2. Beta

As a free-standing savings institution eager to improve the lives of its patrons, Company Beta was founded in 1825. The business, which has a staff of about 1,100, provides 400,000 private customers with financial and advisory services on matters relating to asset management, retirement, and real estate. It actively promotes the expansion of about 25,000 small and medium-sized businesses, putting a constant emphasis on its clients to strengthen the relationship already in place. As a result, the preferences of clients expressed to the business serve as a significant non-financial performance indicator that, when compared to other competitors, positions the business as a leader in its interactions with corporate customers.

In order to continue offering client put to good use in a setting affected by digitization and intense competition, the company changed its hierarchical organization into a network organization in 2019.

Observations from a Case Study

1. Accelerating the Development of Applications and Process Automation

For businesses to fulfill customer needs and require less work to get worthwhile results, digitalization is essential. National Content Delivery (NCDP) is a strategy used by businesses like Alpha and Beta to facilitate process changes in the development of solutions and lower costs. Using an Italian platform for functionality and quick development, Alpha used an NCDP to display results to clients right away. Beta, on the other hand, used the Microsoft Power Automate platform to automate procedures in an effort to cut back on the time and expenses involved with manual management of activities. With the aid of a guided interface, this technology enables users to build chatbots that can effectively handle repetitive chores. In order to better serve their clients and streamline their operations, both businesses have adopted NCDPs.

2. Autonomous Training and Platform Providers' Support

Software development is a difficult process that takes time and expertise. However, process automation and application development can be done without the use of software developers by utilizing an NCDP (Non-Destructive Development Platform). NCDPs are simple to use and enable staff to use them independently. Company Alpha has a direct connection to NCDP's Italian platform provider, which offers ongoing assistance and updates. The platform supplier provides technical materials and training sessions that help users comprehend the NCDP's primary features. Additionally, the business can ask for application functionality consulting and extra training to solve certain issues faced by staff members.

Through Microsoft-certified partners, Company Alpha enables its staff to receive Power Automate platform training. The business seeks to achieve this by utilizing the Microsoft Power Suite.

3. Departmental cooperation and empowering business users

The National Computer Data Modeling (NCDP) system's adoption in businesses Alpha and Beta has significantly sped up the development process by utilizing untrained IT team members. The implementation of the NCDP in Alpha encouraged more collaboration by allowing business experts to participate more in tasks that are typically handled by IT specialists. By improving consultants' understanding of the vertical and technological aspects of IT and the IT department's understanding of business processes, this method has promoted bidirectionality.

The influence of NCDPs in Beta results in critical enhancements to departmental collaboration between the IT unit and other departments. In order to gather suggestions for prospective procedures to automate, the center of excellence overseeing process automation began talking with and interviewing personnel in various departments.

The center of excellence has started digitalizing processes by encouraging staff to describe time-consuming and repetitive tasks in order to raise the IT unit is awareness of the processes and the likelihood of automating them. Through increased communication and the development of proactive collaborators among the staff, this strategy brings the IT department into contact with other departments. In general, the introduction of NCDPs has improved communication between business and IT professionals, promoting a more effective and efficient digitalization of operations.

4. NCDP's Limits and Potential Resistances

It has been demonstrated that NCDPs accelerate digitalization by facilitating modifications more quickly than conventional software development approaches. However, a crucial step in the process has been to integrate them with custom software created using conventional technology. Finding a common language for both programs, which employed separate programming languages, was the first challenge. In comparison to conventional development technologies, NCDPs have a drawback in that they do not permit customization of solutions in response to particular client needs. NCDPs have never caused Company Alpha any problems, and there are no real technological obstacles in the way of their adoption. The goal of Company Beta was to build chatbots and automate operations, but several employees were worried that they would lose their jobs as a result. However, the business encountered no real resistance.

4. Discussion of findings

No-code technology (NCDP) has completely changed how businesses make adjustments and respond to client needs. Solutions can be created by businesses independently and quickly, linking them with outside technologies to increase their value and suitability for certain company needs. Rapid

prototype techniques used by NCDPs not only make it possible to access necessary features quickly, but they also promote the involvement of people with a variety of backgrounds and areas of expertise in application development and digitization. This enables quicker transformation, a decrease in repetitive tasks, and improved staff communication. Because NCDPs allow for quicker application development and process automation, they have also resulted in greater flexibility and lower costs. Additionally, this method has decreased the need for expert developers and the time and effort needed for manual management.

Conclusions, restrictions, and recommendations for additional study

This paper presents a novel analysis of the pay-off of LCDPS and NCDPS on business and IT collaboration across various industries. It uses a qualitative approach, a case study method built on interviews, and a game-based method that focuses on a specific social component. This novel strategy has been crucial in highlighting important facets of the phenomenon and encouraging openness and interpretation in data collection. However, results cannot be generalized due to the small number of cases. Future studies should examine the societal impact of LCDPs and NCDPs, taking into account the advantages and challenges of their implementation. Adding more instances and incorporating a mixed-methods approach should also be done to support the case study technique.

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