HFS

MARKET IMPACT REPORT

The low-code imperative is crucial to bring speed and agility to software-driven outcomes

Author:

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Foreword

Low-code development is becoming a commonplace platform companies use to accelerate their ability to deliver solutions to the business. Today, organizations are using low-code as an automation tool, a front-end development tool, an integration solution for data and workflows, and a means for building next-generation applications. However, it is vital to stress that low-code isn't just a more straightforward way of developing solutions to meet business requirements and accelerated release cycles. Instead, low-code has become how business and technology teams co-develop, innovate, and drive shared business outcomes.

Software development is essential for a high-performance business. However, with an array of commercial-off-the-shelf (COTS), software-as-a-service (SaaS), and custom-built solutions—some aging not so gracefully—technology teams often struggle to respond to the needs of the business. Turning feature requests into products requires time, resources, and money. While firms turn to IT services partners to augment their software engineering, the effort to work fluidly between teams, meet sprint deadlines, and meet release deadlines can be a struggle.

With these opportunities and challenges in mind, HFS, with support from Infosys, looked at the opportunities, challenges, and outcomes of improving software with low-code development as the vital lever to provide teams with a tool for ideation, collaboration, development, and delivery. Our joint study found three critical items that can benefit every business and technology team:

1. Companies with a defined low-code policy enable their employees to make better, faster decisions by using these tools to adapt what they need to achieve with tools that are intuitive and dynamic.

2. The majority of companies using low-code to significantly improve their ability to deliver the software-enabled tools needed by the business sought guidance from external providers of software engineering and managed IT services.

3. Embracing a community of practice is essential to prepare the business for the shift to co-creation. In our study, HFS found that the best performers leveraged the business, IT organization, and partners to drive change and outcomes effectively by rallying together around standard tools, clear success metrics, and measurable, impactful goals.

Traditional-minded developers may snub low-code, but it is the way forward for organizations that demand faster development cycles, continue to require quality solutions, and expect business and technology teams to collaborate. As there are many low-code models, solutions, and vendors to choose from, HFS advises that the most crucial step for many enterprises is harmonizing coding platforms with their service providers. This enables business, technology, and partner teams to become a collective focused on continuous business optimization.

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Executive Summary

Low-code development continues to change how we create, automate, and deliver competitive advantage with software. In our study with Infosys, HFS found companies are better equipped to accelerate the software development lifecycle by harmonizing their low-code efforts with their IT services partners. After surveying 200 business and technology decision-makers about their usage, challenges, and outcomes of low-code, we identified five important takeaways:

1

Accelerated development and broadened accessibility

Low-code technology significantly reduces development time and makes software development accessible to both professional software developers and non-technical users. This democratization of development processes accelerates deployment and fosters innovation within enterprises.

2

Shifting focus from cost to innovation

Enterprises are increasingly leveraging low-code technologies to cut costs and drive innovation. This shift positions low-code as a strategic tool for enhancing business agility and responsiveness to market demands.

3

Generative AI enhances productivity

Integrating GenAI with low-code software development further automates routine coding tasks, improves error detection, and aids in code documentation. Adding GenAI to their use of low-code boosts developers' ability to focus on more complex and creative aspects of development, improving overall productivity and engagement.

4

Critical need for education and training

Successful adoption of low-code and GenAI technologies depends on comprehensive education and training programs for IT and business users. Ensuring users understand these technologies and how to leverage them effectively is crucial for maximizing their benefits.

5

Anticipated growth in adoption

Over the next year, significant growth will occur from adopting low-code and GenAI technologies as part of a modern software development lifecycle (SDLC). For enterprises, mastering these technologies is imperative for staying competitive, driving innovation, and enhancing their software development capabilities. Robust support systems, including internal IT teams and external service providers, are also essential to support this growth.

The low—code imperative

The world of software development consists of multiple programming languages, a range of platforms, and constant changes and upgrades. Programmers spend hours learning the language and subsequently implementing the software. As a result, traditional programming can be time-consuming, require expansive coding, and be expensive.

Low-code technology simplifies software development by providing a visual development environment and pre-built modules, enabling users to create applications with minimal hand-coding. It accelerates the development process, reduces the need for extensive programming knowledge, and enables faster deployment of

applications, making it accessible for both professional developers and non-technical team members collaborating with their software engineering support teams.

With the advent of generative AI and subsequent implementation of generative coding, the software development landscape will witness significant change in the coming years. HFS Research, with support from Infosys, surveyed 200 enterprise leaders to get their perspectives on low-code development and its motivations. Several themes developed we believe can help technology leaders on this journey (see Exhibit 1).

Exhibit 1: Five attributes of low-code adoption enabling technology and business teams to achieve sustained success and business optimization

Productivity

Ease of implementation and faster decision-making lead to more effective decisions, information management, and employee engagement.

Enhancing the workforce

Adapting to the evolving coding landscape by engaging a growing digitally native workforce, composable IT teams, and knowledgeable partners.

Creation and collaboration

As low-code brings business advantages, the business and technology teams must work together.

Education is key

The shift from traditional code development to visualization tools doesn't mean it's intuitive. The obligation remains to train IT and business teams on how to implement these tools in a robust, secure, and sustainable manner.

Embracing the GenAI imperative

GenAI tools accelerate the capabilities of using low-code solutions to evolve the SDLC.

Source: HFS Research, 2024

Attribute #1 – Productivity

Ease of implementation and faster decision–making lead to more effective information management and employee engagement.

The top objectives executives expect low-code development to address include more straightforward implementation of new software applications and workflows, faster decision-making through dynamic tool creation, making technology teams more responsive to business needs, and supporting technology innovations customers require. Reducing cost isn't seen as a top low-code objective, which will pivot attention toward innovation, making it a value play instead of a cost play.

Business and IT misalignment is a significant reason enterprise transformation initiatives fail. The differing priorities among business and IT teams are due to the groups' disparate objectives. While 64% of business leaders say making tech teams more responsive to business

needs is a top-three objective, just 49% of tech leaders share that opinion.

Enterprises with significant revenues and internal IT teams want more straightforward software and workflow implementation. 76% of respondents from companies with >$20 billion in revenues and more than 500 employees said it is a top-three objective.

Among companies that invest significant amounts (>$500 million) in software engineering, the need to support technology innovation is the key objective, with 72% citing it. These responses reiterate the importance of using low-code technology as a vital tool for driving further innovation.

Exhibit 2: Easy implementation and faster decision-making are top low-code objectives

What are the top 3 objectives you want low-code to address?

Objective	Percentage
Make it easier to implement new software applications and workflows	60%
Enable faster decision-making by letting users create tools dynamically	55%
Make technology teams more responsive to business needs	54%
Support technology innovation required by our customers	54%
Make it easier to migrate applications to the cloud	36%
Reduce costs associated with software development	23%
Improve quality of the software or applications we are developing	19%

Source: HFS Research, 2024, n=200

Adapting to the evolving coding landscape by engaging a growing digital–native workforce, composable IT teams, and knowledgeable partners.

There are four types of coding available today:

- **Professional software development code ("pro-code"):** This is traditional, manually written code by skilled programmers using programming languages such as Python, Java, C++, etc. It offers high flexibility and control but requires extensive knowledge of coding, debugging, and best practices.

- **Low-code:** A development approach requiring minimal hand-coding uses visual interfaces with simple logic and drag-and-drop features. It accelerates development speed, enables less technical users to create applications, and is often applied as part of business process automation and simple application development.

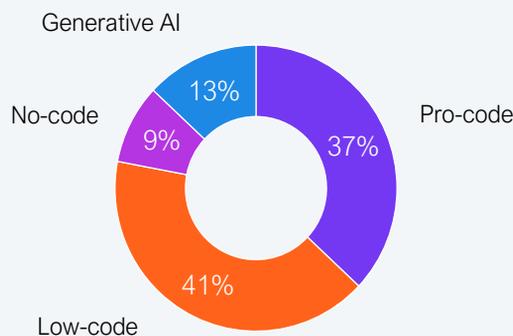- **No-code:** A development methodology that enables users to build applications without writing any code, relying entirely on graphical user interfaces and pre-built components. It is ideal for non-programmers, democratizes app development, and is typically used for building simple apps, websites, and workflow automations.

- **Generative code:** Code generated automatically by AI systems or algorithms based on specific inputs, such as natural language descriptions or existing code snippets. It enhances productivity by automating parts of the coding process and can help with rapid prototyping, code completion, and generating boilerplate code.

Most enterprises use a mix of different types of code for their current software support activities. Pro-code, low-code, no-code, and GenAI tools are increasingly used in rotation in software engineering toolkits.

Exhibit 3: All software development toolkits are part of the average firm's coding mix

What percentage of your current software support is done with the following?

Source: HFS Research, 2024, n=131

Of the four methods, no-code is the least widely adopted, with 54% saying it is used for no more than 10% of all software support, and 20% saying they have never used it.

Low-code makes up a significant share of usage, with 41% saying it's used for 25% to 49% of software support and 19% saying it is used for more than half of their software support.

While still in its early stages, generative code has seen significant uptake, with only 6% saying they have never used it and 34% having used generative code for just 1%-9% of their operations. This shows they are in the early stages of the journey. In comparison, 23% use it 10-24% of the time, and 15% use it 25%-49%.

In the next 12 months, low-code technology adoption is expected to grow. 41% of respondents expect modest increases of up to 10% of respondents, while 28% expect usage to increase by up to 25%. 20% of respondents
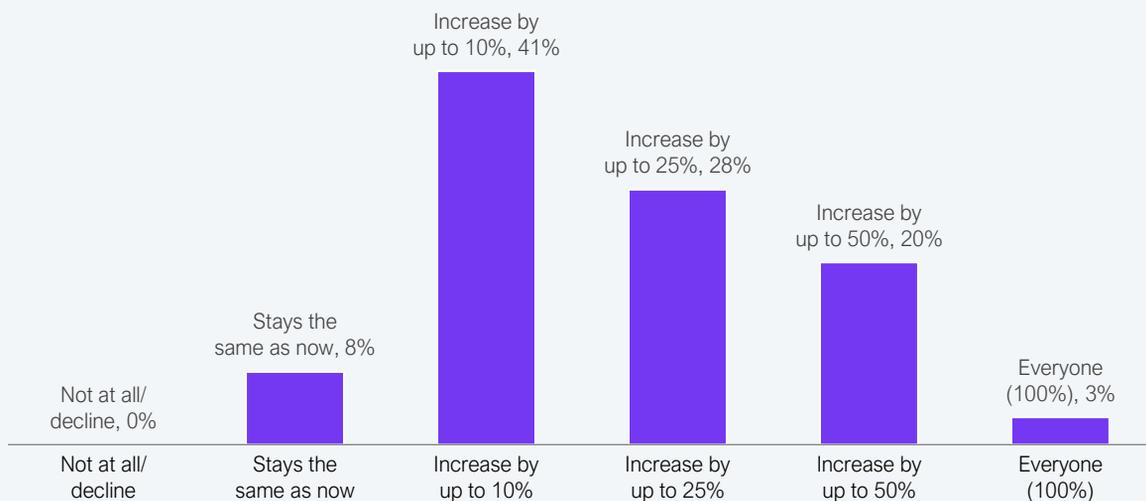
expect adoption to increase by 50%. The figures show that low-code is becoming an enterprise imperative.

The proliferation of low-code and no-code solutions among business and non-IT users is expected to increase significantly in the next two years. Only 17% of organizations provide access to low-code or no-code solutions to more than half of business and non-IT users. This figure is expected to grow to 45% in two years, highlighting the power of low-code and no-code solutions in democratizing software development.

Increasing comfort using low-code in business and technology collaboration efforts may drive this significant growth. However, it underscores the urgency of engaging with your services and software engineering partners to develop policies, training, and support models for the increased software-enabled capabilities resulting from this shift.

Exhibit 4: Low-code technology will see an uptick in users

How much do you expect the number of users of low-code tools to increase in the next 12 months?

Source: HFS Research, 2024, n=200

Software development has emerged as one of the critical areas that generative AI will disrupt. Using a combination of low-code and GenAI solutions, developers' time spent discovering, documenting, and refactoring routine code can be significantly reduced, freeing time for more productive tasks. It also helps update source code, workflow, and integration documentation and assists with error detection that typically comes later in the SDLC.
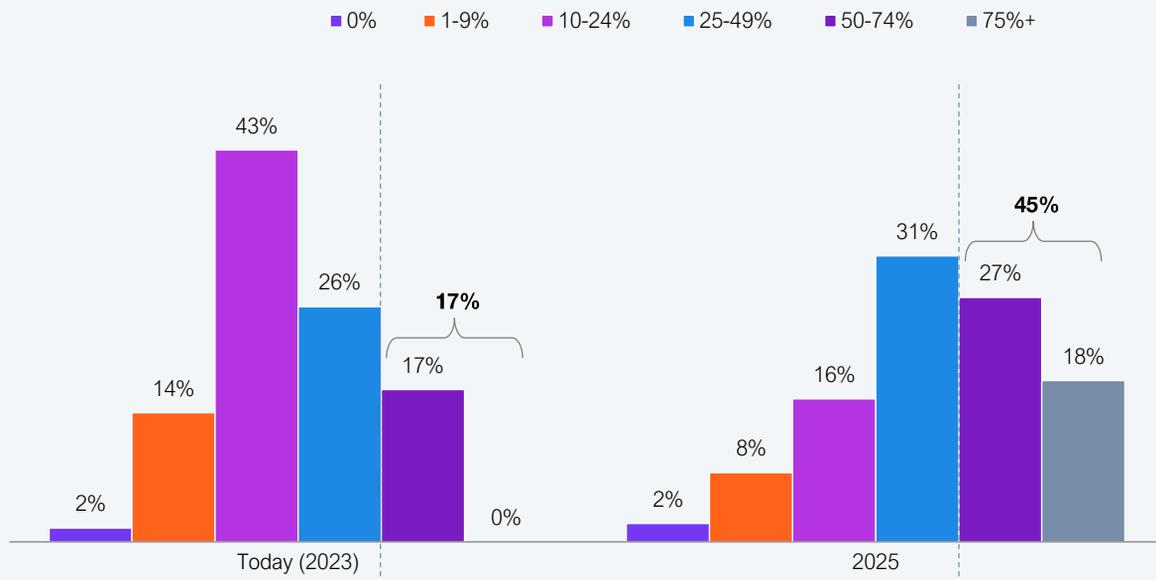
One of the key approaches HFS has seen in firms we have interviewed as part of our ongoing research is the establishment of a "community of practice." A CoP creates a framework for collaborating, publishing, and managing solutions emerging across a company's application portfolio.

The benefit of establishing a CoP is it can be monitored by a combination of IT, super users, and GenAI tools. These administrators can collectively monitor a low-code-generated app's quality, adoption, usage, workflow, automation, and more. By setting thresholds on these three qualifiers, a human-in-the-loop model can be used to address a solution with high business potential (or risk) in the CoP while ignoring those solutions that don't meet these criteria.

A CoP is about facilitating contribution and triggering the proper work for the IT team and centers of excellence (CoE), which must remain abreast of but not inhibit innovation.

Exhibit 5: Business usage of low-code/no-code is projected to increase significantly in two years

What percentage of your firm's business/non-IT users have access to low-code/no-code solutions today? Expected in two years?

Legend: ■ 0% ■ 1-9% ■ 10-24% ■ 25-49% ■ 50-74% ■ 75%+

Today (2023): 2%, 14%, 43%, 26%, 17%, 0% — {17%}

2025: 2%, 8%, 16%, 31%, 27%, 18% — {45%}

Source: HFS Research, 2024, n=200
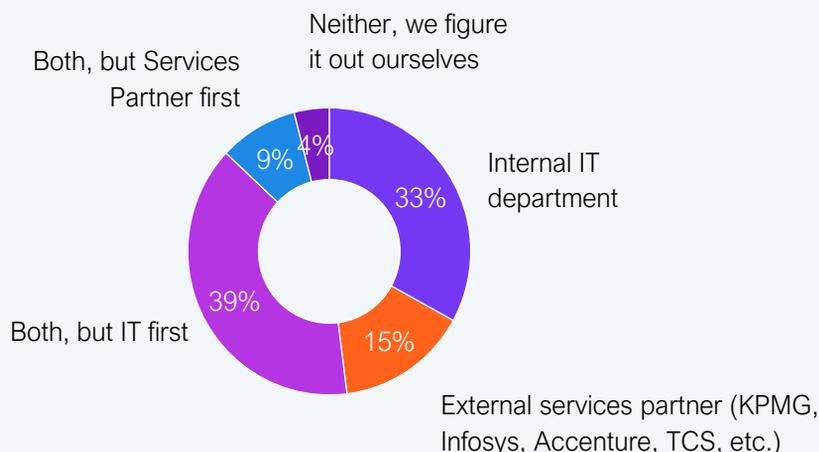
Attribute #3 – Creation and collaboration

As low—code brings business advantage, the business and technology teams must work together.

As with any technology, adequate support is crucial in helping drive satisfaction among employees using the technology. The study shows that Internal IT teams must be equipped to deal with queries around low-code, as they are typically the first port of call. 33% of the respondents said they turned to their IT department exclusively, and a further 39% said they accessed their internal IT and external services partner but with IT first. That means more than 7 in 10 respondents contact their internal IT teams for support with low-code.

Providing support for low-code also offers an opportunity for service partners, as not every enterprise will be willing to invest in training its IT team on low-code. While 48% of respondents reach out to professional IT service partners, only 9% have service partners as their first source of help. This low uptake enables service providers to increase their footprint in providing low-code support services. If they can offer services cost-efficiently, enterprises can spend more with service partners instead of expanding their IT teams.

Exhibit 6: Internal IT teams are the first port of call for low-code queries

Who do you turn to for help with low-code?

- Neither, we figure it out ourselves — 4%
- Both, but Services Partner first — 9%
- Both, but IT first — 39%
- Internal IT department — 33%
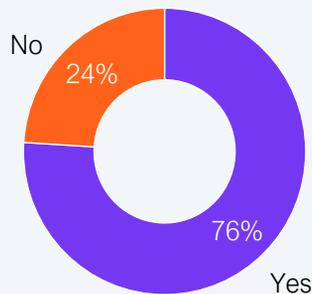- External services partner (KPMG, Infosys, Accenture, TCS, etc.) — 15%

Source: HFS Research, 2024, n=69 Business decision-makers

While internal IT teams are called upon first, companies overwhelmingly indicate their partner's use of low-code solutions is critical to application modernization and software engineering efforts. More than 75% of business and IT leaders told HFS that using low-code to deliver services is important, see Exhibit 7.

While companies are turning to low-code in record numbers, the biggest challenge continues to be readiness and training. 91% of all respondents indicated that while these tools are easier to use than traditional coding, IT and business teams require training. Coding is still coding. Rigor must be applied to ensure that once scoped, built, and delivered, low-code software conforms to business needs and can be supported by IT and the firm's services partners.

Exhibit 7: Enterprises are more likely to use external service partners to support their low-code efforts going forward

Would the use of low-code tools improve the services you receive from your software engineering partners?

No 24%

76% Yes

Source: HFS Research, 2024, n=200

Attribute #4 – Education is key

The shift from traditional code development to visualization tools doesn't mean it is intuitive. There remains an obligation to train IT and business teams to implement these tools in a robust, secure, and sustainable way.

When asked to choose three main challenges preventing or limiting the adoption of low-code solutions, 53% cited the lack of IT training on using it effectively, followed by too many duplicate low-code solutions by 48%, and lack of access to talent or skills by 47%.

With training for business and technology teams as the leading challenge, another critical area of focus is the concern about having too many low-code solutions in their organization. As many software vendors offer their take on low-code solutions and the existence of dedicated low-code platforms, there is an indication that this fragmentation of choice should be a focus area for the IT department and its partners.

Rather than allowing multiple platforms, HFS advises IT leadership, the firm's CoE, and its primary software engineering partner to define which tools to prioritize as a best practice. From our interviews with global multinationals, the typical target is to have no more than five low-code solutions and for these to be part of a CoE best practice policy for specific architecture, integration, and platform support and development needs.

Exhibit 8: Lack of IT training is the most cited challenge to low-code adoption

What are main challenges preventing or limiting your firm from adopting low-code solutions?

Challenge	Percentage
Lack of IT training on how to use low-code effectively	53%
Too many duplicate low-code solutions	48%
Not robust enough for our software development needs	41%
Lack of business user training	38%
Low-code is not seen as a robust software development solution	22%
Not available for our software environment	22%

Source: HFS Research, 2024, n=200

While not all software vendors will benefit, the ability of the business to show and maintain success with low-code will be predicated on doing this homework early in their journey, not later.

The success of any technology depends on how well users adopt the available solutions on which they are trained. Based on the numbers above, HFS recommends firms define the solutions needed for front-office versus back-office application development, isolate one or two solutions for cross-architecture development and integration, and focus on building solutions that can connect across its application architecture, not those optimized for a single application or usage.

One way to assess your application architecture from legacy code to the usage of modern low-code solutions is to have your applications team and partner work together using GenAI tools to evaluate and discover. This model has quickly gained acceptance to augment the firm's or its partner's ability to scan code, applications, custom-built workflows, and application process integration (API) solutions to gain a clear view of the forest for the trees. Where billions of lines of code would have taken forever to assess, GenAI takes just days to collect and present this data to developers and teams.

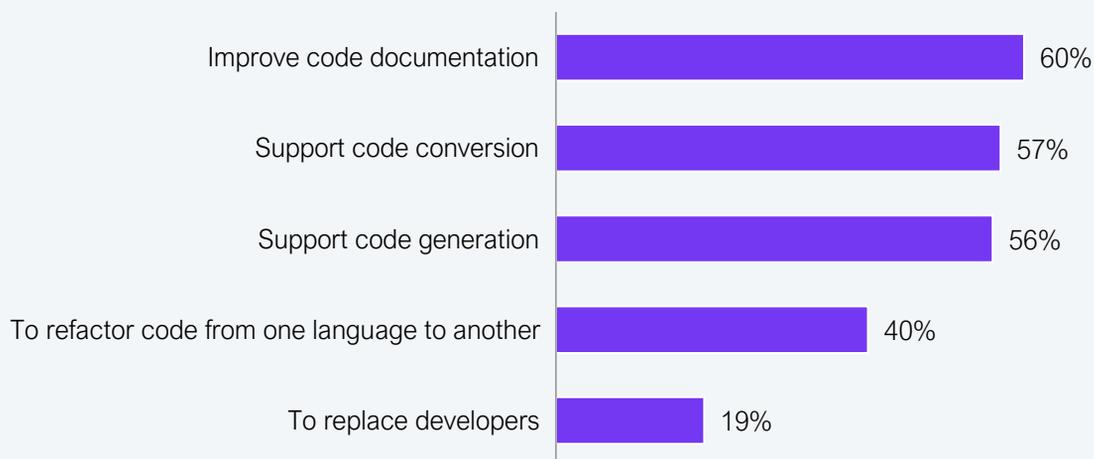## Attribute #5 – Embracing the GenAI imperative

Use GenAI tools to accelerate low−code solutions to evolve the SDLC.

GenAI is top of mind for all companies today. We are now moving to the implementation stage of GenAI, with an overwhelming 93% of enterprises considering how it can help with software engineering. Combining the assessment, discovery, documentation, and refactoring of legacy software code into modern solutions with documentation accelerates the importance of having a well-thought-out low-code practice.

As our interviews show, these tools aren't expected to replace developers. Rather, by supporting the early stages of the SDLC (assess, design, generate, convert), GenAI tools are seen as a way to automate many software development tasks. This is important as it frees technical resources from internal and external teams to focus on the more complex needs when modernizing code to support business needs.

Exhibit 9: The usage of GenAI solutions as part of the SDLC to assess and modernize code alongside the use of low-code development practices is well underway

Are you using generative AI solutions for the following software development solutions?

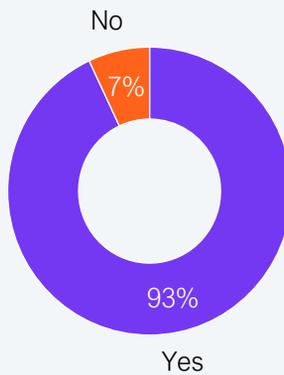|	
Improve code documentation	60%
Support code conversion	57%
Support code generation	56%
To refactor code from one language to another	40%
To replace developers	19%

Source: HFS Research, 2024, n=200

HFS sees this as a watershed moment when application teams in a business finally rise from the codification of business needs into rigorous swim lanes and instead have the time to explore how the business needs the insights from these tools to deliver the revenue-creating opportunities it is pursuing.

This serves as a wake-up call for low-code service providers to showcase how their GenAI tools/capabilities are relevant to their low-code clients, as 47% state that they aren't aware of low-code service providers with GenAI tools that are pertinent to their enterprise. This lack of awareness makes it vital for vendors to showcase how their tools can solve business problems instead of trying to sell technology capabilities.

Beyond low-code tools, are you considering how GenAI can help your firm's software engineering?

No

7%

93%

Yes

Source: HFS Research, 2024, n=200

Driving synergy with the convergence of AI and low-code

Over the past decade, low-code platforms have evolved to provide a range of users the capabilities to create applications, automate tasks, streamline processes, and participate in technology-led innovations. Low-code has established itself as the means to democratize the development and customization of software to build applications. Over the past several years, GenAI tools have further amplified low-code software development and modernization.

A synergy has quickly developed between low-code and GenAI as platforms to discover, assess, develop, customize, and support the SDLC. With the addition of AI, these combined platforms quickly reshape application development by fusing an increasingly digitally fluent workforce with proven engineering skills. This combination accelerates a firm's ability to work with its partners and internal teams to enhance business readiness through more timely and effective design and delivery of software applications that can drive outcomes.

Infosys is going all in with a combined low-code and generative AI SDLC

One partner HFS is watching with interest is Infosys. The IT services and advisory firm is using the combined power of low-code and generative AI tools to change how developers approach programming. Building on decades of software engineering skills, frameworks, and digital engineering expertise, Infosys is using its deep understanding of code syntax and logic to meld both model-based and prompt-based application development. Using both approaches interchangeably is a paradigm shift with the potential to further extend software programming fluidly across how Infosys works with its clients.

This approach brings technology teams and the syntax of applications, data, and code closer to the business syntax of the client's operations teams. By looking at the problem from the start from a business point of view, the outcomes can be achieved more accurately. The vendor refers to its offering as Infosys FluidITy. FluidITy leverages its beginnings in democratized low-code and no-code while embracing GenAI as a force accelerator for the SDLC.

Infosys' FluidITy solutions provide IT leaders with low-code platforms that are proven tools for creating autonomous processes that drive efficiency and innovation. Adding GenAI solutions enhances low-code platforms with intelligent decision-making, machine-based feedback loops, and deep code integration that create self-healing processes. The platforms can learn and self-adjust from past performance, thus increasing agility and adaptability to changing business needs.

The Bottom Line: Strategic implementation of low-code and GenAI is key to driving innovation and competitiveness in both technology and business outcomes.

By adopting the skills and experiences of low-code with the new functionality and capability of generative AI, firms can empower end users to automate and streamline their daily work, leading to increased productivity and efficiency. By weaving AI into the core of low-code platforms, technology teams can create rich, intelligent experiences that become an integral part of their work journey. These capabilities enable technology and business teams to empower users with intuitive interactions, personalized insights, and automated tasks, adapting dynamically to their needs, preferences, and behavior.

HFS believes that low-code platforms' balance of speed, flexibility, and scalability makes them compelling for enterprises across developer, operations, and business user cohorts to drive innovation and improve business outcomes. By making software development more accessible and efficient, low-code and GenAI coding can revolutionize the way businesses operate. It empowers individuals, businesses, and communities to achieve their full potential and create a brighter future.

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Joel Martin is the executive research leader for enabling tech research on software development and the TMT industry practice for HFS Research.

He has nearly three decades of experience as an analyst, consultant, software product manager, and marketing professional. He is driven by a curious mind that has followed, analyzed, consulted, and implemented solutions from data networking to large ERP projects.

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