



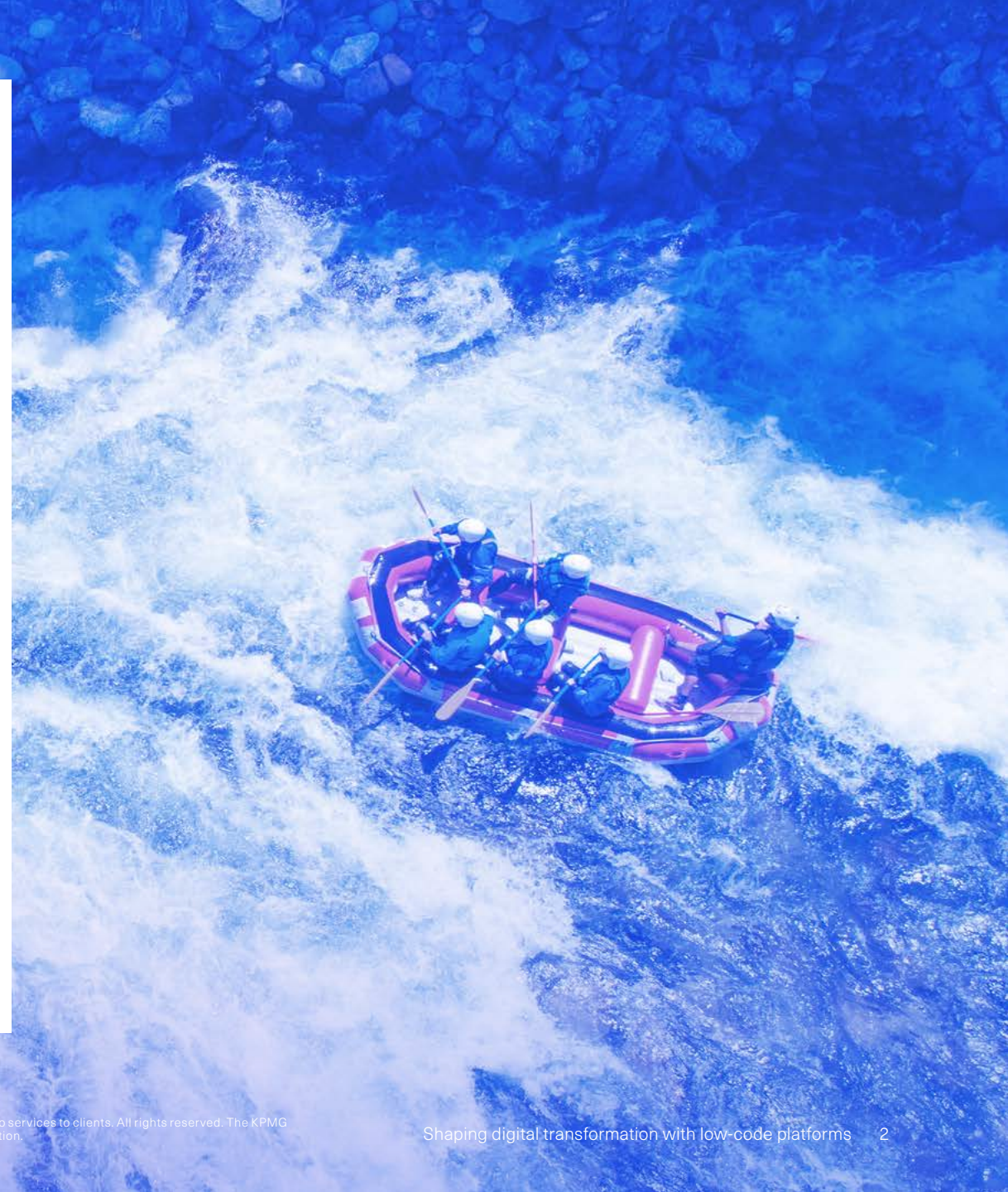
Shaping digital transformation with low-code platforms

Comprehensive market overview of EMA from a large-scale survey



Table of contents

Introduction	3
Executive summary	4
<hr/>	
01. Low-code as an enabler for digital transformation	6
<hr/>	
02. Relevant low-code areas	12
<hr/>	
03. Challenges in using low-code	17
<hr/>	
04. Benefits of low-code platforms	20
<hr/>	
05. Low-code governance	22
<hr/>	
06. Decision factors for using low-code	27
<hr/>	
07. Conclusion	30
<hr/>	
Study design and sample	33
About KPMG International	35



Introduction

The increasing digital transformation and rapidly changing business requirements alongside global economical and political instability are increasingly challenging corporate IT teams. A future-proof, agile and flexible IT infrastructure is essential to remain competitive. In particular, flexible and modern software solutions are the foundation for digital processes and one of the key success factors for further digitization.

In the context of ongoing digitization, ever higher expectations are being placed on the development and provision of applications. Not only are high performance, scalability and usability expected, but also dynamic development that integrates the wishes of individual users as well. First and foremost though, an increasingly faster time-to-market and ever shorter update cycles are expected.

These challenges are increasingly being addressed using agile development methods. Meanwhile, technologies and procedures have evolved that make software more flexible and cost-effective, resulting in a change in software development as well. Massive, time-consuming, and cost-intensive software roll-outs will be replaced by iterative integration and delivery through agile development of fully automated processes.

In the fast-moving environment of digitization, this is a necessary step in order to be able to develop and provide software with the required quality, speed and efficiency, even in times of tight budgets and resources. This also raises software development as a whole to a new level in terms of real-time capability.

One of the key technologies here are low-code platforms. These enable professional developers as well as business users without specific programming knowledge to create and adapt applications of varying complexity in order to be able to quickly and easily implement the dynamic demands from the business on software development.

KPMG conducted a large-scale survey in 2022 to assess the status of adaptation and perspective of low-code.

The results of the study conducted among 715 companies in EMA (Europe, Middle East, Africa) show how significant this topic has already become. About 60 percent of the company managers surveyed rate low-code development as "critical to very critical" for the further performance of their companies, both from an operational and a strategic point of view.



But where do companies currently stand in the development of software and the use of low-code platforms, and what are their future plans? What challenges do business and IT face? What measures are companies taking to ensure fast and secure application? How is this being implemented within the companies? And what are the key success factors for the successful integration of low-code platforms into companies' software development processes? These and other questions are analyzed and answered in this study.



Low-code has made its way into companies

Companies are being challenged now more than ever to provide digital applications and services in order to be competitive in the future. Low-code platforms make more agile, flexible, efficient, and automated software development possible for companies.

43% of EMA companies are using low-code and for 20 percent it is already a key component of the software development strategy.

While 14 percent are still in the evaluation phase, almost a quarter of companies have already implemented initial projects and another 33 percent of companies plan to integrate low-code development within the next few years.



Low-code is becoming more and more common, even for complex applications

Currently, low-code is mainly used in customer-centric areas and employee management in order to digitize processes and workflows in smaller projects and to be able to react quickly.

42% of the EMA companies use low-code for the application segments: Customer relationship management and e-commerce / sales & marketing.

Other key business areas for over a third of decision-makers are the development of their customer portals and customer services. In future, the usage is expected to be significantly extended to more complex applications such as enterprise resource planning and production solutions.



Low-code demonstrates many potential benefits

Companies see a wide range of advantages in the use of low-code platforms. Increased process efficiency (44 percent), higher employee productivity (39 percent), and reduced costs (36 percent) are the top three benefits reported.

For **64%** of the EMA companies, low-code is critical to success in order to make development processes more efficient and reliable.

The majority of current low-code users (53 percent) confirmed that they have lowered their overall software development costs, reduced their IT backlog (55 percent), and confirmed the positive impact of low-code platforms for the software development processes in their companies.



But success doesn't come by itself

Companies consider a wide range of measures and concepts to be important for increasing acceptance and the successful use of low-code.

43% of the EMA companies pay particular attention to special training and the continuing education of employees as an essential basis for the successful realization of agile development processes.

The use of low-code requires numerous measures to achieve the desired goals. These must disrupt traditional development processes and promote a change in mindset in the company, the departments, and the employees.



Low-code challenges to overcome

Companies still have a number of concerns and reservations about the use or expansion of low-code in their software development processes.

48% of the EMA companies have a high percentage of data silos that are not available to all departments and make it difficult to share data company-wide.

The top three low-code challenges faced by enterprises are concerns that implementation and maintenance are too complex (43 percent), and 42 percent see both a lack of developer and management acceptance as key barriers to implementing low-code.



Successful low-code integration requires an appropriate governance model and guidelines

In particular, company-wide coordinated and implemented guidelines and governance rules are among the essential factors for the successful implementation of low-code to achieve the digitalization goals.

But **73%** of low-code planners (and 65 percent of low-code users) have not yet defined governance rules for their low-code usage.

On this basis, it is difficult for companies to realize the existing digitization potential and to establish low-code strategically in the company.



01

Low-code as an enabler for digital transformation

Digitization has gained momentum

The current markets and business environments of companies today are characterized by rapid changes, new competitive structures, uncertainties and rapidly changing customer requirements. In times of crisis, it becomes particularly clear that digitization is one of the most important requirements to make business processes more productive, provide more efficient value chains and create new business models.

47% of EMA companies do not have a formulated digital strategy yet

Companies must face up to the digital transformation and find answers in order to remain competitive on the market. However, this is often a long and not always easy path. Due to the COVID-19 pandemic, digitization has become much more important.

Although IT projects have also been postponed or stopped, many companies have also recognized this as an opportunity and pushed ahead with numerous digitization projects much more resolutely and quickly in order to create the necessary environment to offer new products and services, optimize internal workflows, or customer relationships.

At the same time, however, other global challenges such as fragile supply chains, skyrocketing energy and raw material prices or climate change show how important it is to continue to drive digitization forward in a sustainable manner to make one's own company much more resilient to all kinds of future adversities in the future.

Almost one third (27 percent) of the companies surveyed are in the process of implementing their first digitalization projects and investments (digital users). These have an above-average share in the public administration (39 percent), utilities (35 percent) and services (32 percent) sectors, as well as in companies with 500 – 4,999 employees (30 percent). In contrast, companies with formulated digital strategies / more extensive projects and investments (digital advanced) are represented with above-average frequency in the banking/insurance (41 percent), information/communication technology (42 percent), transportation/logistics (52 percent) segments and in large companies with more than 5,000 employees (41 percent).

Almost one-fifth of the companies in each of these sectors and 23 percent of the large companies also see themselves as digital leaders with a full strategic focus on digital transformation, new business models, and high investments.

The industry (26 percent) and trade (28 percent) sectors have the highest proportion of companies that are still at the beginning of their digital journey and still classify themselves as analog or digital beginners.

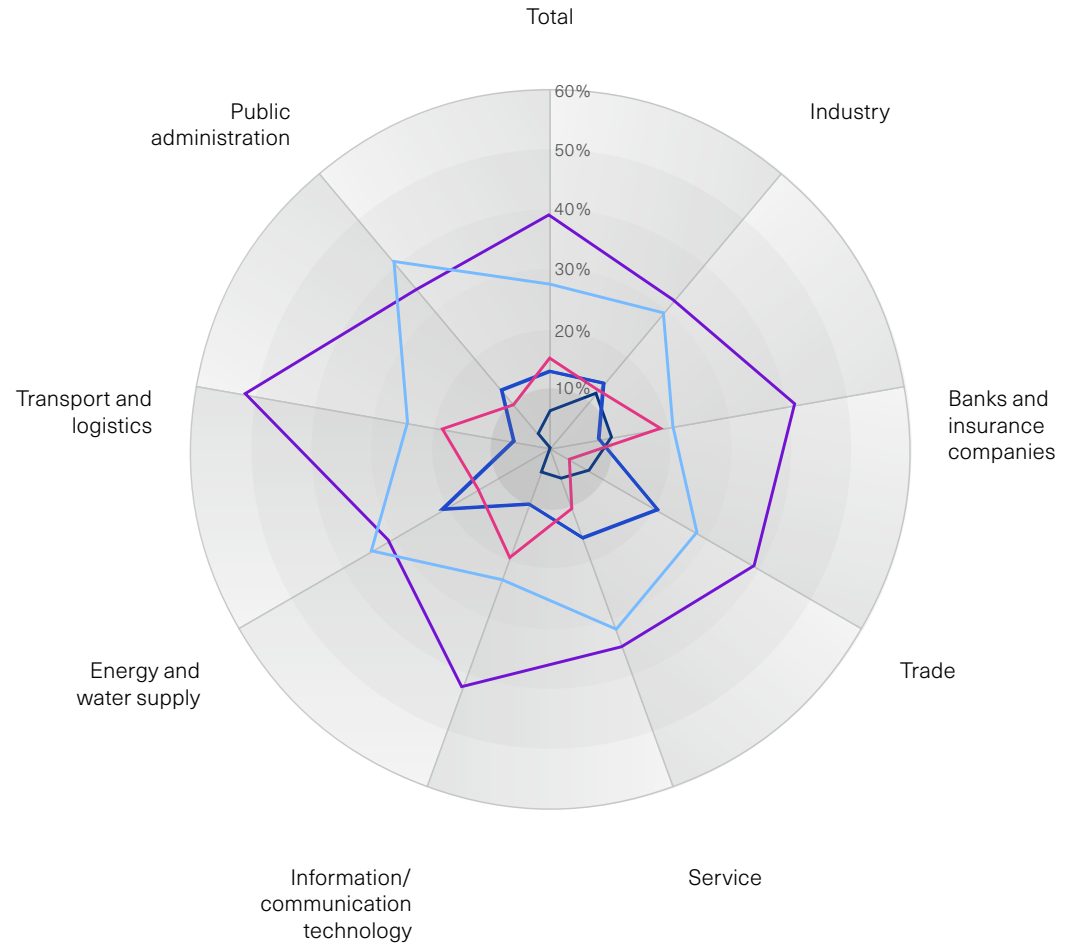


Therefore, the majority of companies have at least already started initial digitization projects (80 percent), but almost half of the companies have not yet firmly anchored their digitization efforts in their corporate strategy or made significant investments. However, a long-term successful business orientation requires a clearly defined digital strategy. With a clear roadmap, these digitization projects can be planned and implemented as part of the business strategy, completely or with the help of individual projects.

Figure 1:
At what stage of development would you see your company on the path to digitization?

Numbers in % = Share of companies with respective maturity level.

- Rather analog company**
 No plans, strategies or investments in digitization
- Digital beginner**
 Careful planning, still very little investment
- Digital user**
 Initial implementations and investments
- Digital advanced**
 Formulated digital strategies, larger projects and investments
- Digital leader**
 Full focus on digital transformation and business models with high investments



Hover over the legend to see the exact values.

Base: 708 companies
 Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Low-code finds its way into companies

Traditional software development is characterized by long, inflexible and complex development processes, which has made software delivery a very time, cost and resource-intensive factor in many companies. To enable digital transformation and meet the resulting requirements, even software development must change to provide applications that are faster, more cost-effective, and more flexible by using agile development methods and automated processes. In many cases, traditional development processes can no longer meet the requirements for flexibility, scalability, availability, time-to-market, costs and security.

One of the approaches that promises to help on this front is low-code development, which offers new ways to simplify programming while leveraging the benefits of modern technology and the power of advanced programming languages. There are many different platforms on the market, from startups to established providers, which should make it possible to create software faster and more effectively than with traditional development methods.

For enterprises, these platforms enable rapid app development and automation that accelerates digital transformation and optimizes business processes to help drive efficiency and growth.

Low-code and no-code development are often used synonymously in this context and are software development approaches that require little to zero coding to create applications and processes.

Figure 2:

Do you already use low-code or no-code development platforms in your company or are you planning to use low-code/no-code development in future as part of your software development?

	Total	50 to 499 employees	500 to 4,999 employees	5,000 or more employees	
Is already a key component of our software development strategy	20%	16%	21%	21%	Low-code users
First projects have already been implemented	23%	26%	21%	25%	
We are planning the first concrete projects within the next 12 months	21%	20%	22%	19%	
We are planning the first projects within the next 2 – 5 years	12%	13%	12%	12%	Low-code planners
We are currently still in the evaluation phase	14%	13%	15%	14%	
We can basically imagine the use in our company in future	6%	7%	5%	6%	
We have not looked at the topic yet or I am not familiar with the topic	2%	1%	1%	3%	
Not specified	2%	2%	2%	1%	
Base	715	208	345	162	

Rounding differences possible, Base: 715 companies
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Low-code users: companies currently using low-code platforms
Low-code planners: companies who will only use low-code in the future / can imagine doing so

A low-code/no-code development platform uses visual interfaces with simplified logic and drag-and-drop functionality instead of extensive coding languages. This also allows users with no formal knowledge of coding or software development (citizen developers) to create applications for many purposes such as mobile and business apps.

The main difference between low-code and no-code platforms is that no-code platforms require absolutely no coding, while low-code platforms additionally allow manual coding. This enables them to create larger and more complex applications than no-code platforms typically can. Therefore, no-code platforms are specifically designed for citizen developers, while low-code solutions appeal to both non-developers and professional IT developers.

But to what extent have low-code platforms already found their way into companies in EMA? The results of the study show a very differentiated picture here. Only two percent of EMA company managers stated that they had not yet dealt with the topic or were not yet aware of it. Another six percent have not yet looked at low-code platforms as an alternative to existing technologies, but can at least imagine using them in the future.

While 14 percent are currently still in the evaluation phase, three quarters of the companies are therefore already actively engaged with corresponding solutions, which are either already integrated into the software development processes or the usage is planned within the next five years.

The comparison across the company segments shows that the enterprises are still in different phases of implementation and planning. While slightly more than a fifth of medium-sized and large companies are already using low-code platforms strategically as part of their application development, corresponding solutions have been integrated centrally much less frequently in the smaller companies (16 percent).

In a cross-industry comparison, the segments in which low-code development plays the lowest role in their software development strategies to date are retail, services and public administration. Only 9 percent of companies in each of these sectors have defined a corresponding strategy. By contrast, low-code is already much more strategic for the companies surveyed in information and communication (26 percent), manufacturing (24 percent) and banking / insurance (20 percent). Companies in the services (32 percent), utilities (31 percent) and public administration (39 percent) sectors, on the other hand, have already implemented their first projects with above-average frequency. Within the next five years, it will be the retail (39 percent), information and communication (36 percent) and transport/logistics (36 percent) sectors in particular that are planning their first projects during this period in order to develop software solutions faster, more efficiently, and more cost-effectively according to the modular principle using drag and drop and reusable functions and modules.

In **20%** of EMA companies, low-code is already a central component of their software development processes

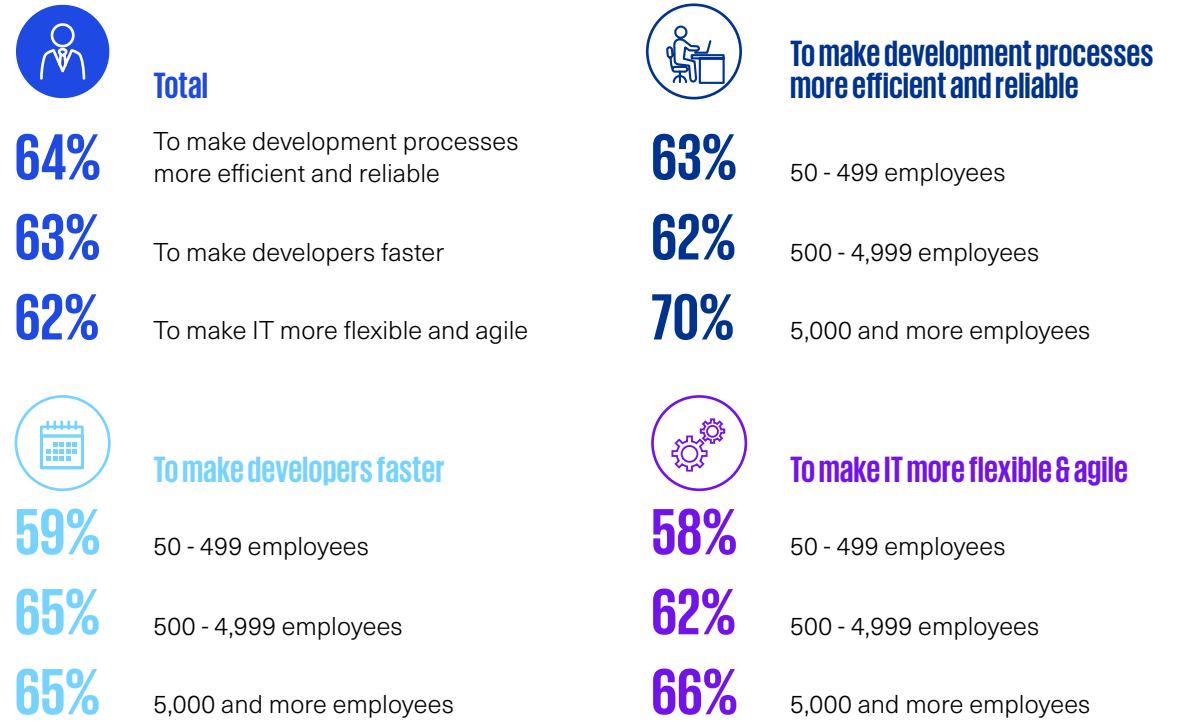


The processes in software development are complex and require a lot of effort. No company operates its applications just for fun, but links their use to concrete goals. Accordingly, the goals that the companies surveyed pursue with the customization, modernization or new development of their applications are broadly diversified and the responsible company decision-makers usually pursue several goals parallel to each other.

Almost two-thirds of the companies rate the increase in process security as well as the increase in development speed through low-code as critical to very critical to the success of their company. Another important factor for 62 percent of the companies is ensuring IT operations to make IT more flexible. By using low-code platforms in the business departments, additional development resources can be leveraged and professional developers can focus on much more demanding, technical work due to the easier and faster implementation of business processes and workflows, which adds significant value to the company and at the same time also increases employee satisfaction.

Comparing the ratings of the IT and business decision-makers with each other, slightly different expectations within the top three factors can be seen here as well. While more efficient and reliable development processes are a key factor in both groups and are at the top of the list, the EMA business decision-makers surveyed rate low-code as significantly more critical to success than their IT colleagues, especially for their upcoming transformation projects and for collaboration between IT and business.

Figure 3:
How relevant is the topic of low-code development for your company regarding the following aspects?



Share of responses with "critical to success" and "very critical to success"; Top 3; Multiple responses; Base: 715 companies
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

The top three are also prioritized somewhat differently in the evaluation of low-code users and low-code planners.

While process security, increasing development speed and ensuring flexible IT operations are also the top three factors for planners, the strategic use of corresponding platforms is the main focus for low-code users and shows the key importance for companies as part of their digitization efforts.



02

Relevant low-code areas

Applications are increasingly becoming an essential component of a sustainable digital strategy to increase productivity, efficiency, and the competitiveness of the entire company. Modern apps can enable customers to contact the company from any location and at any time, to call up information about the products, and even to operate or communicate with products via mobile apps. Field staff can record maintenance or service data at the customer's site and transfer it in real time, as well as view and change order data and delivery data. By automating work and business processes, modern applications can support and optimize internal cooperation through collaboration possibilities.

The integration of low-code development in various areas of activity shows how strongly low-code is already integrated into the companies' software development processes. About half of the companies already use low-code technologies frequently or very frequently when programming smaller, less complex applications, mapping workflows or in the areas of optical character recognition (OCR), automation or AI / ML. Many of today's low-code platforms offer easy-to-use yet comprehensive AI or ML mechanisms that also help IT developers easily configure new predictive models, re-train them to keep models up-to-date, and look at predictive results to analyze some of the most influential factors.

The current and future focus of many companies is primarily on developing their internal and external applications to simplify processes, for example with regard to project management, sales and service activities, or even for controlling and maintaining machines.

In comparison, current low-code users are still much more reluctant to develop or adapt their complex business applications using low-code. But here, too, a quarter of EMA respondents attest to the topic's high relevance and 18 percent to its very high importance. In many cases, however, this does not involve the completely new development of corresponding applications, but rather the adaptation of existing solutions, for example in the area of interfaces or the integration of additional functions or workflows.

It is worth taking a look at the planned future areas of application. Based on their experience to date, low-code users want to benefit more from the use of their low-code solutions in the environment of their business-critical applications as well. Fifty-two percent of this group want to integrate low-code technologies very frequently or frequently within these development processes in future. This is almost as frequent as in the areas of optimizing workflows and the use of artificial intelligence and machine learning.



Top five areas where low-code development is significantly used today

- Development of less complex apps **50%**
- Workflows **50%**
- Optical Character Recognition (OCR) **50%**
- Automation **49%**
- Artificial Intelligence, Machine Learning **48%**

Base: 309 companies currently using low-code platforms; Multiple responses; Share of responses with "very frequently" and "frequently"
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

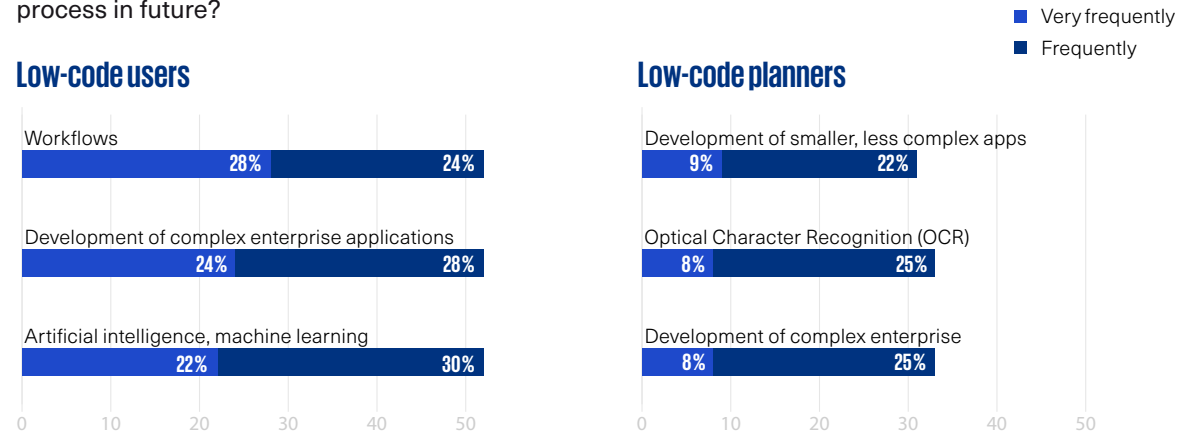
Future users are much more cautious in their assessment of low-code in the areas of application considered. Due to a lack of experience regarding the actual performance of the solutions as well as a shift of these activities to other employees, two-thirds of the low-code planners initially only want to implement smaller projects and gain some initial experience. One in ten EMA companies with future low-code planning can imagine using corresponding platforms very frequently as part of the software development processes right from the start.

The list of relevant application scenarios is long and depends on the strategy pursued with application development in the company. A look at the respective solution areas shows that the use of low-code is preferred especially in the operational application areas, particularly in customer-centric business processes. In this way, the daily processes necessary for business operations develop and optimize over time and become company-specific workflows with the aim of achieving higher automation. Due to dynamic and rapidly changing customer requirements, with an ever-increasing importance of individual customer needs, fast response times and flexible adjustments are required in this area in particular, in order to be able to provide customers with optimal integrated support along their individual customer journey.

Thus, 42 percent of the surveyed decision-makers state that they currently use low-code for the application segments customer relationship management and e-commerce / sales and marketing.



Figure 4: Do you plan to use low-code development in the following areas as part of your software development process in future?



Base: 309 low-code users, 380 low-code planners; Multiple responses
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

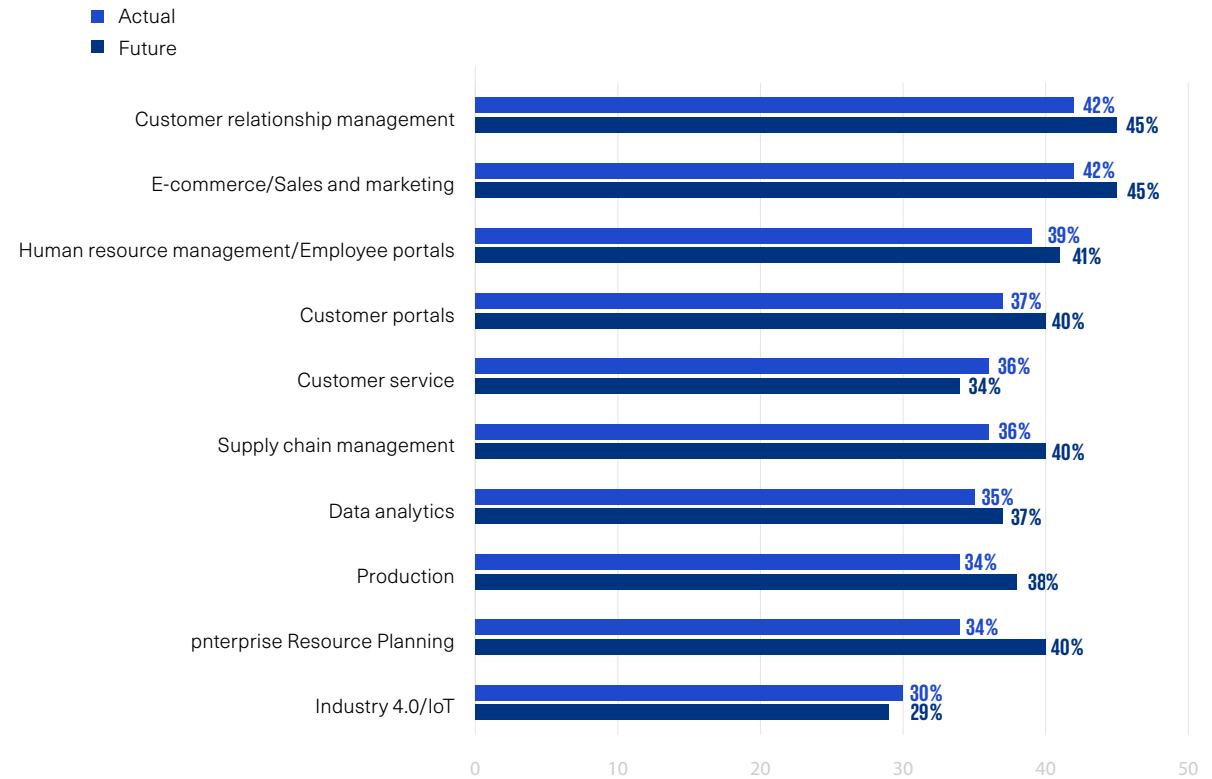
In addition, more than one third of EMA respondents use low-code for the development of their customer portals (37 percent) and customer services (36 percent), which underlines the high importance of low-code development in the customer-centric business areas.

Another key area in which low-code is used for the development of applications is HR management.

39% of EMA companies use low-code platforms to develop solutions for improved HR processes.

Low-code applications in HR are versatile. HR processes that could be significantly improved include payroll, accounting, time-tracking, digital personnel files, talent management, onboarding processes, and employee self-services. While the core tasks are often well mapped, numerous approaches have so far only been poorly automated and are still associated with many manual service processes, particularly in the creation of documents. The processes remain cumbersome and inefficient, with the corresponding risks. Using low-code, HR departments can adapt their digital solutions so that they can react to increasing demands of employees for instantaneous flexibility. Interfaces have to be convenient. Subsequent workflows should be seamlessly integrated as well as automated and contain a contemporary document management system.

Figure 5: In which areas of the company/processes do you plan to deploy applications with low-code development?



Base: Actual 309 companies, Future 715 companies; Multiple responses, Threshold and confidence of differences/variance
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Overall, the trend can be observed that EMA companies will likely use low-code more and more frequently in various application areas and gradually expand the share of applications developed in this way. According to the plans of the low-code users surveyed, ERP systems and production solutions will play a key role and will be the areas of application in which low-code development could increase the most in the future. This confirms the forecast that low-code should also be used more in the development of complex, business-critical applications in future. The further significant growth areas are CRM, customer service, e-commerce / sales and marketing and customer portals, in order to be able to make immediate adjustments to customer needs or other areas, even within departments, without having to wait weeks or months.

In addition to HR (36 percent), those are also the application areas in which the low-code planners most frequently want to use suitable platforms in the future. In first place (in EMA companies) are e-commerce solutions (38 percent), followed by CRM (35 percent) and customer portals and services with 33 percent each in places three to five. Low-code is expected to first be used in customer-centric areas and employee management, so that department employees can drive their digitization projects forward in smaller projects and react quickly before complex applications are also included based on concrete experience and emerging initial successes.





03

Challenges in using low-code

Even though the application and general use of low-code platforms has already found its way into many companies around the world and their popularity has received a significant boost, EMA companies still have a number of concerns and reservations about the use or expansion of the platforms in their software development processes. Across all companies surveyed, the top three challenges of the company managers are primarily the concerns that the implementation and maintenance are too complex (43 percent), and 42 percent see both the lack of employee and management acceptance as the main obstacle to integrating the corresponding platforms in their companies.

In addition to the high maintenance/implementation costs, the surveyed business managers see the lack of customization options (40 percent) as well as the lack of transparency about the offer of corresponding low-code tools and the associated opportunities for use in their company as other key reasons. In comparison, IT managers named the lack of management and employee transparency, the complexity of implementation and maintenance, the high proportion of their individual developments, and above all, the danger of shadow IT (42 percent) significantly more frequently than their business colleagues, all of which are among the top five challenges of this group.

Shifting tasks outside of IT responsibility can quickly lead to a mountain of applications and to increasing security risks if they are not centrally coordinated.

Figure 6: What challenges do you see when using low-code development in your company?



EMA Companies that already already work with low-code platforms currently consider the lack of suitability of the existing tools for mapping complex issues or processes and ensuring security within their development processes to be the main challenges for further expansion in their companies.

On the other hand, low-code planners struggle primarily with the lack of employee acceptance and have only a limited overview about how they can successfully enhance their existing individual applications and which platforms are suitable for their company-specific requirements.

Successful implementation in companies can be achieved through a broad set of measures and concepts:

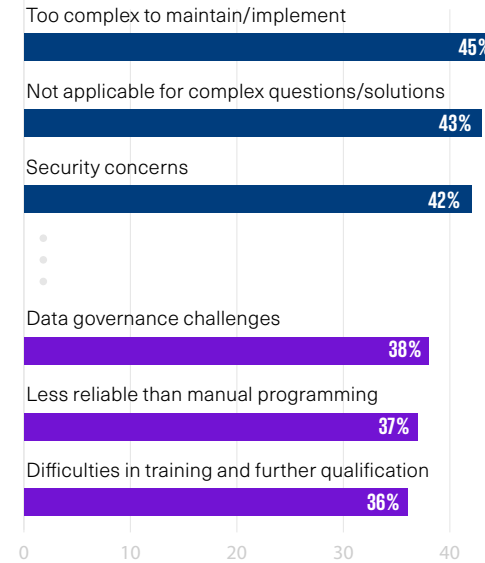
- Training measures
- Quick wins
- Communicating successes to the entire workforce
- Building multifunctional teams
- Idea workshops
- Promoting independent digital learning
- etc.

However, in addition to the employees, this should also address IT and business management levels in order to provide coordinated guidelines and show promising ways to be able to implement the topic strategically.

Figure 7: What challenges do you see when using low-code development in your company?

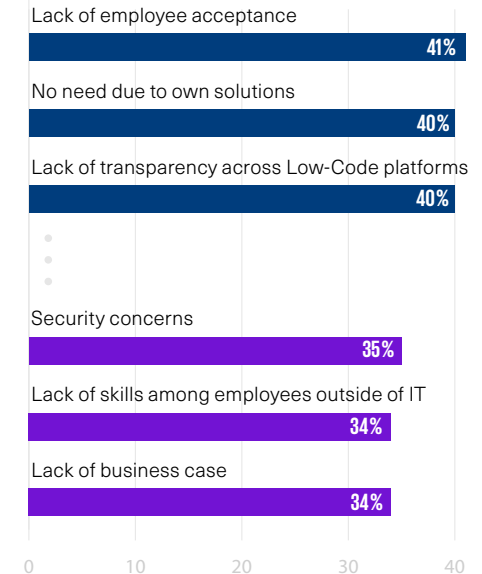
Low-code users

Basis: 309 companies



Low-code planners

Basis: 380 companies



Share of responses with "very high challenge" and "high challenge"; Multiple responses
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Through coordinated and sustainable strategies, coupled with motivated employees within a changed corporate culture, can it be possible to realize the corresponding synergies in order to support and achieve the set digitization goals in the long term.



04

Benefits of low-code platforms



According to EMA respondents, the challenges they expressed in using low-code platforms are also offset by a wide range of advantages. The greatest advantage of using these platforms is seen first and foremost in the increase in process efficiency within the software development processes. Parts of the development tasks that do not necessarily require the programming of individual code can be taken over by non-specialist employees, and professional developers can complete certain routine tasks faster and more efficiently, thus creating more time for more important or higher-value tasks. Forty-four percent of all respondents have this as a pro-argument on their list.

The second and third most important benefits of low-code, and all the companies surveyed agree on this, are higher employee productivity (39 percent) and cost reduction (36 percent). For all the company executives surveyed, these characteristics form the top three arguments in favor of using low-code. The exception here are smaller companies with up to 499 employees, for whom the high flexibility and scalability of the applications stand out slightly more often than the prospect of reducing development costs. Higher flexibility, scalability, and degree of automation conclude the top five key benefits. Interestingly, the rankings of low-code users, i.e. those companies whose ratings are based on concrete experience, are significantly higher than the ratings of future users, especially for the top five benefits, and confirm the performance of the solutions with regard to the expected benefits. The actual experience of actual low-code users emphasizes the realization their expectations using this technology.

As part of this, business decision-makers were also specifically asked about the impact on the total cost of ownership (TCO) compared to traditional software development and a possible reduction of the existing IT backlog in the companies. Forty-two percent of the low-code planners expect to be able to reduce their overall costs in the future and 45 percent see low-code as an opportunity to carry out projects faster and thus significantly reduce the backlog. The expectations of the business decision-makers on these two points are somewhat stronger than those of the surveyed IT decision-makers. Comparing the expectations of future users with the

53% of actual EMA low-code users: **“Low-code has helped us reduce our total cost of ownership compared to traditional development“**

answers of current users, a rather diversified opinion emerges. The majority of users (53 percent) could confirm that they had lowered their TCO and reduced the IT backlog (55 percent) and consider the use of corresponding platforms to be a success.

55% of current EMA low-code users: **“Low-code has helped us reduce or better manage our IT backlog“**

On the other hand, 47 percent (reduction of TCO) and 45 percent (reduction of IT backlog) could not report any significant progress. Projects without proper guidance are probable to fail.



Key benefits of low-code development

- Increase in process efficiency **44%**
- Increase employee productivity **39%**
- Cost reduction **36%**
- High flexibility and scalability **33%**
- Higher degree of automation **33%**
- Improving services and product quality **30%**
- Faster time to solution **30%**
- Increasing digital skills **30%**
- Shorter release cycles **29%**
- Expansion of product and service portfolio **26%**

Base: 715 companies; Multiple responses
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Implementing a low-code approach is not an insignificant task and just selecting and using the right technology will likely not lead to the desired success. This can be achieved through a combination of technology, process transformation towards agile development structures, cultural change among employees and management, accompanied by a broad set of organizational measurements.



05

Low-code governance

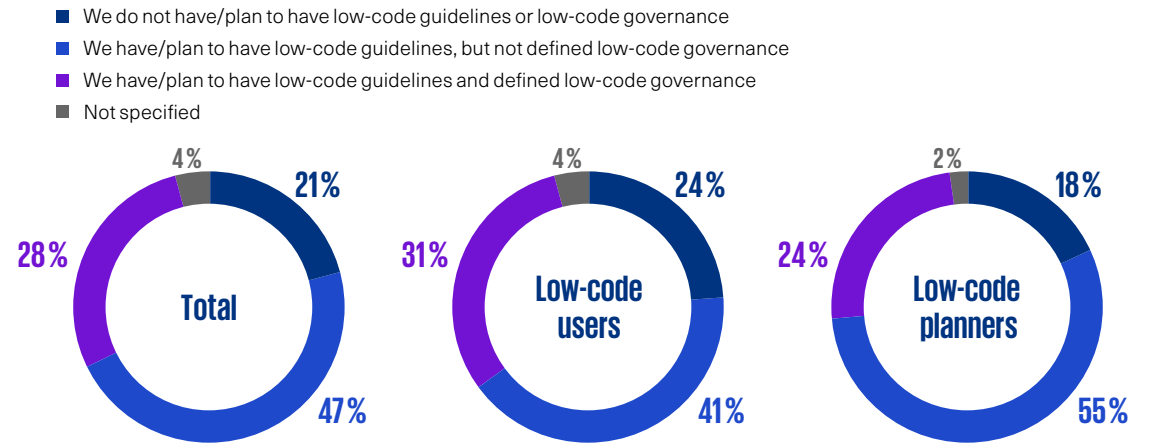


Low-code enables companies to reduce costs and the time required to develop solutions, fostering innovation and agility. Based on agile development methodologies, cross-functional teams from business and IT can be empowered to innovate, experiment, make mistakes without fear, and develop faster, accelerating their digital transformation journey.

In order to be able to realize the expected benefits of low-code development described in the previous chapter, a change in thinking and culture is necessary in many companies. Successful low-code implementation must address not only the employees, but also IT and business managers, in order to provide coordinated guidelines and show promising ways to be able to transform the topic strategically. This requires a proper governance model in order to achieve the full value of low-code. This helps ensure that IT and business stakeholders are aligned with business goals, and business value is created. At the same time, it should foster innovation and productivity and not hinder process stakeholders through excessive bureaucracy.

Governance awareness has to be advanced throughout the workforce to achieve an even level. Almost 25 percent of business managers, unlike their IT colleagues, show increased negligence towards governance and lack defined guidelines for integration of low-code into their company's governance strategy.

Figure 8: In what way are low-code guidelines and low-code governance managed or do you plan to manage them?



Base: Total 715 companies, Low-code users: 309 companies, Low-code planners: 380 companies; Rounding differences possible
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Low-code teams consist of business professionals and professional developers. This allows these cross-functional teams to develop new applications much faster, with higher quality and more in line with the specific needs of the business.

This breaks down the silos between IT and business and enhances business value. A proper governance model provides the necessary framework to help ensure that the applications and the way they are built comply with company-wide IT standards.

Therefore, it is surprising that within the group of current low-code users, still only just under a third of companies (31 percent) have created corresponding guidelines and defined a governance strategy, while almost one in four (24 percent) does without them altogether.

68% of EMA companies have no defined governance for using low-code in their companies, and one-fifth have not even defined and specified guidelines or governance

Figure 9:
To what extent do you agree with the following statements?

Numbers in % = Percentage of companies with respective maturity level that agreed with these statements.

- Rather analog company**
 No plans, strategies or investments in digitization
- Digital beginner**
 Careful planning, still very little investment
- Digital user**
 Initial implementations and investments
- Digital advanced**
 Formulated digital strategies, larger projects and investments
- Digital leader**
 Full focus on digital transformation and business models with high investments



Hover over the legend to see the exact values.

Base: 708 companies
 Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

In comparison, planners address the issue somewhat more consciously. Eighteen percent of EMA companies plan to use low-code completely without any specific guidelines or defined governance, while more than half of the companies will at least provide company-wide guideline for the use of low-code. However, only just under a quarter (24 percent) of the companies surveyed are planning strategic use with guidelines and integration into the company-wide governance strategy.

77% of low-code users with existing low-code guidelines / governance were able to reduce their development costs. At companies without corresponding regulations, this proportion is only 39 percent

To help ensure that low-code can be successfully implemented, more than half of the companies (52 percent) have at least defined coordinated and company-wide processes for app development with low-code for IT and business. The higher the digital maturity of the companies, the greater this will be. Fifty-six percent of current users are much further along in this respect than low-code planners, only 49 percent plan corresponding processes. However, without a company-wide governance strategy, which only exists or is planned in 27 percent of the companies, it will likely be difficult to successfully implement and control these processes throughout the company.

Another point that complicates the company-wide implementation of these processes in almost half of the companies is the high proportion of data silos that are not available to all departments or the entire company and make sharing data difficult (48 percent).

In contrast, 46 percent of companies say they have no problems sharing all data between departments. Companies without any plans, strategies or investments in digitization (75 percent) and digital beginners (64 percent) still have the greatest challenges here. Companies should therefore define data management in their governance model, in addition to clear roles, responsibilities and interaction models. Low-code platforms can help remedy this and enable low-code development on a single platform, bringing departments together and simplifying and automating workflows. The unifying aspect of low-code platforms can help to align different business units, which can lead to better collaboration and communication between them.

Even though agile development methods are already being used in many companies, they are by no means a foregone conclusion. Companies must be aware that agility goals can not be achieved simply with the introduction of an agile method or framework. Agile transformation includes the transformation of corporate culture, structures, and processes up to technologies and products as well as intensive education and training.



Activities to promote the use of low-code development

- Special training for IT staff **43%**
- Organization of idea workshops/Hackathons **35%**
- Incentive programs **35%**
- Special training **34%**
- General training on employee digital literacy **34%**
- Definition of key users and multipliers **33%**
- Creation of quick wins **29%**
- Creation of interdisciplinary teams **27%**
- Strengthening the trial & error culture **26%**

Base: 715 companies; Multiple responses
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Companies consider a broad set of measures and concepts to be important for the successful use of low-code and increasing acceptance. With 43 percent of the responses, the company managers pay particular attention to special training and the further education of IT employees, which represent the essential basis for the successful design of the new areas of responsibility for both the IT and business decision-makers surveyed.

The business decision-makers surveyed in the EMA also focus on the definition of key users in the departments and the implementation of ideation workshops (with 38 percent of the responses in each case), as well as special training for citizen developers (34 percent) and general training for the digital competence of employees (33 percent).

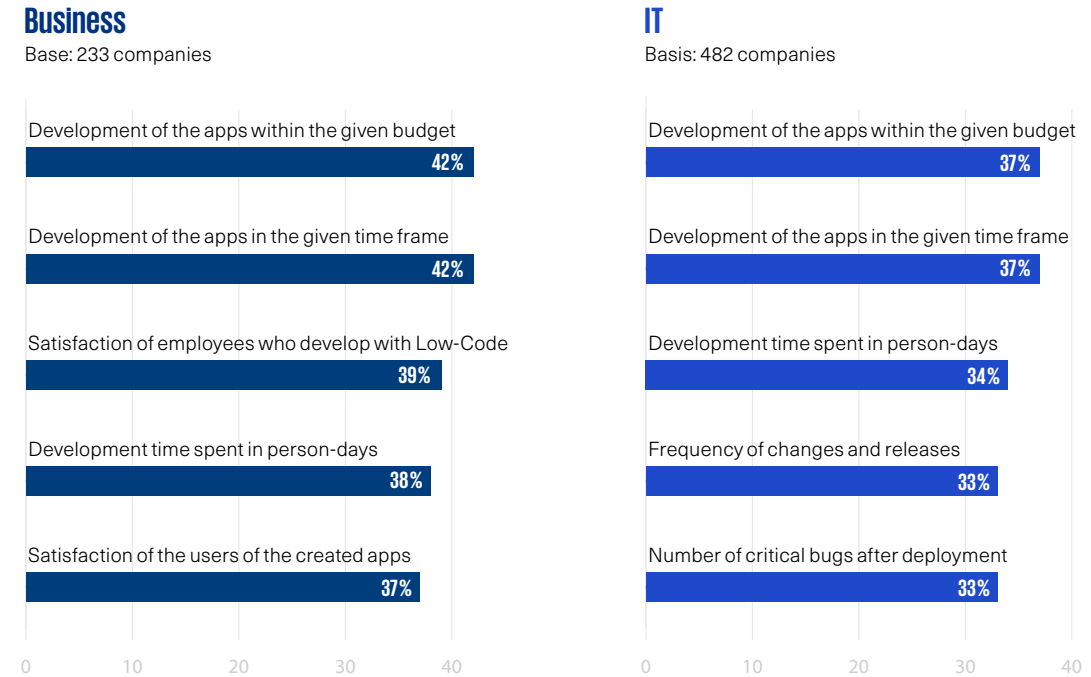
This confirms the statement that almost half of all companies (46 percent) offer or plan extensive training and education programs to promote low-code development, even if the focus of many companies here is apparently on IT.

The IT managers surveyed, on the other hand, see incentive programs (36 percent) and the strengthening of general digital skills (35 percent) as further key success factors. Here, too, training for citizen developers and ideation workshops are among the top five measures to increase the adoption speed of low-code in their companies

But how do companies quantify the success of the platforms they use, which also represent considerable investments for each company?

Clear metrics must be defined and monitored for this, which objectively prove the effects. Companies should set clear key performance indicators (KPIs) in advance that are also relevant for their individual digitization strategy in order to achieve the strategic goals. For the EMA companies surveyed, meeting the specified budget (39 percent) and the specified timelines (38 percent) are the two key metrics.

Figure 10: What KPIs do you use/plan to measure the success of low-code development?



Multiple responses; Top five
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

This is hardly surprising, as these are also among the biggest problems in the companies' software development processes. The top five KPIs also include the number of development days required (35 percent), employee satisfaction when working with low-code (35 percent) and the frequency of changes and releases (33 percent). Behind the budget and time criteria, the relevant metrics differ for IT and business.

While user satisfaction is the third most common metric for business managers (39 percent), followed by the number of development days spent and end-user satisfaction with the developed app, the number of person-days required is the third most important metric for IT managers. The next most relevant KPIs are the number of critical bugs after the application has been used and the number of changes and releases made.



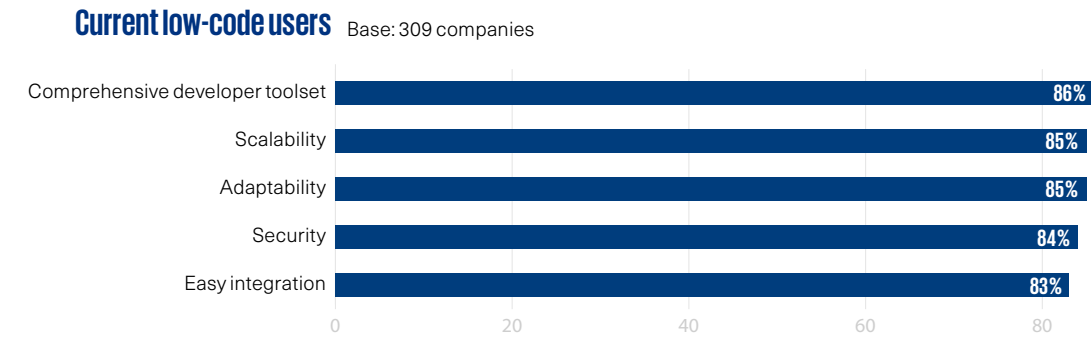
06

Decision factors for using low-code

Companies have very specific expectations about the characteristics that providers of low-code platforms must have in order to be considered by them as project partners. In addition to the provider's profile, the low-code platform must also fit the company's specific requirements and goals. Therefore, it is important for decision-makers to aim to ensure that certain technical features and functions are in place before selecting a low-code platform. For more than three quarters of companies surveyed (78 percent), the top three priorities of the company managers are primarily the scalability of the platform, comprehensive security functions, and increased data availability.

Scalability plays an essential role to enable applications developed with low-code to be tailored to modern technologies and complex application scenarios in the future. Most of the solutions that are available on the market today, especially the long established platforms, are well positioned in this area and allow smooth scaling of existing applications. Many of the low-code solutions on the market also include important security features such as admin tools, access control, and threat analysis. This makes it easy to configure and monitor the system's security. In addition, industry best practices can help ensure that user data and applications are protected from security breaches.

Figure 11:
How important are the following factors for you when deciding on a low-code platform for your business?

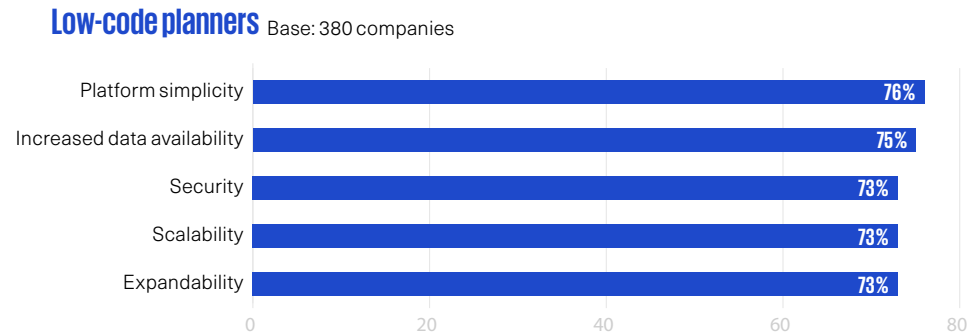


Share of responses with "very important" and "important"; Top five; Multiple responses
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Low-code users indicate that, in addition to scalability, high adaptability, a comprehensive set of development features and toolset are the top three most important selection criteria when choosing a platform. In contrast, for low-code planners, the simplicity of the platform ranks first among their selection criteria, followed by high data availability and the security of the platform.

Security is also a central decision criterion for 84 percent of the smaller EMA companies surveyed (50 to 499 employees), ahead of the required scalability and the simple integration of a corresponding solution, completing the top three evaluation criteria for this segment. In comparison, medium-sized EMA companies (500 to 4,999 employees) place a much stronger focus on the expandability of a platform when selecting a solution, which is also one of the top three selection criteria for the large EMA companies (more than 5,000 employees).

Figure 12:
How important are the following factors for you when deciding on a low-code platform for your business?



Share of responses with "very important" and "important"; Top five; Multiple responses
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

With 82 percent each, the first and second place selection criteria among large companies are a high level of data availability and the simplicity of the platform, which must offer a high level of user-experience (UX) - usually via a visual user interface (drag and drop) - and be able to be applied and used by both professional developers and citizen developers equally.

There is a wide range of providers on the low-code market - from start-ups to long-established companies. Some of the platforms are universally applicable, while others have specific strengths and weaknesses in a number of areas, such as multi-platform deployment (e.g., develop once for web and mobile), process automation, integration, data modeling, etc.

Some vendors specifically target more employees without specific development skills, while others focus more on professional developers who want to speed up their daily workload and make it more efficient.

One particular platform does not fit all purposes. Just as a programming language may not be suitable for every development project, the advantages and disadvantages of each low-code platform indicate the purpose for which it is intended. Both currently and in the future, the surveyed companies primarily rely on low-code solutions from the following companies, which are also partially applied and used in parallel by the various departments.

Companies should fully evaluate and test the various low-code platforms before adopting them. In particular, the respective advantages and disadvantages of each solution must be compared with the individual project or business requirements.



07

Conclusion



Low-code platforms enable professional developers as well as business users without specific programming skills to create and customize applications of varying complexity in order to implement dynamic business requirements for software development in a flexible and fast way. For enterprises, these platforms enable faster app development, intelligent automation of business processes, accelerating digital transformation efforts, driving efficiency and growth. Due to these features, skills shortage and the ever-increasing time and budget constraints, low-code platforms have now become a strategic option within many companies' app development processes. It is easier and less expensive for companies to train professional low-code developers compared to traditional developers, which counteracts the skills shortage and budget constraints. This should also help ensure agility and strengthen the competitiveness of the company in the long term. However, low-code is not the solution to all problems. Extensive customization will likely still be necessary by professional developers with a profound understanding of traditional software development.

As the EMA results show, the challenges in using low-code platforms are primarily the complexity of implementing appropriate solutions, the lack of acceptance among employees and management, the lack of transparency, the strong presence of customized developments, fears of shadow IT and a lack of internal expertise. Overcoming these hurdles is not easy for many companies.

53% of EMA low-code users have made good progress in reducing their development costs, and 55 percent said they have been able to reduce their IT backlog

Companies can learn to exploit the potential with the support of professionals. Successful implementation requires careful planning and numerous supporting measures. In addition to the choice of technological platform, organizational implementation and comprehensive change management are also relevant for success in order to help ensure the necessary cultural change.

The various platforms available on the market offer different advantages and disadvantages depending on their scope. Therefore, when choosing a suitable low-code platform, it is important to make sure that the technical specifications and features are relevant to your individual requirements and goals, and that the provider's profile fits your company. Prioritize your requirements and focus on key factors such as scalability, security, sustainability, reusability of templates, plug-ins or widgets, automation, visual development, interoperability, application lifecycle management, usability and costs, which, in combination with other individual criteria, provide a good basis for comparison when making your investments.



In addition to these technological aspects, the implementation of a low-code platform and its successful usage to actually make the development processes faster, more flexible, and more cost-effective also requires a company-wide cultural change and transformation process. Low-code, application development is no longer just the responsibility of professional software developers alone, but normal business employees are also involved in the development processes. Low-code helps companies break down silos between IT and business by enabling agile and collaborative development methods where IT and business work together on new products and solutions, resulting in faster and more efficient deployments.

This must be supported by IT and departmental employees and accompanied by management in a targeted manner. Open and transparent communication is essential here, which must not just be “top down” but also “bottom up”.

It is important to create an open and structured organization as well as communication culture between the different departments so the business, IT, and external service providers work together efficiently as a team using agile organization methods. Above all, this also means encouraging employees to innovate new things, to experiment, and to learn from mistakes. The implementation requires extensive defined measures and proper preparation.



Guidelines and framework conditions that provide guidance to each employee should be developed to help ensure that the defined processes are harmonized and aligned throughout the company. It is important to integrate the required initiative of the departments into the overarching IT strategy. All employees must have the right tools, guidelines, frameworks, reference materials and training, as well as a clear knowledge of what responsibilities exist within the development processes and what the different business units' goals are. This empowers and encourages business unit employees to take over development activities. For cross-functional collaboration, departmental silos must be eliminated and the tools used should aim to ensure a seamless exchange of data.

The IT department must be transformed into a coordinating and controlling body for the created solutions to be continuously monitored centrally by the IT department, meet the security requirements, and be developed in line with the company's governance requirements.

Transferring development tasks to a low-code solution as a central and overarching platform can simplify or automate workflows and lead to better, coordinated collaboration and communication between all process members from business and IT. At the same time, it helps eliminate shadow IT, the development processes and the quality of the developed applications comply with existing corporate standards and governance guidelines.

Under these conditions, low-code is one of the possible essential enablers that can accelerate the digital transformation in companies and strengthen the required agility, flexibility, and resilience at the same time to help ensure long-term competitiveness and growth.

Study design and sample

The "Shaping digital transformation with low-code platforms" study was designed and conducted by techconsult GmbH on behalf of KPMG AG Wirtschaftsprüfungsgesellschaft. For this purpose, 715 user companies that develop software themselves or have it developed for their company by external service providers were surveyed on the use, development and challenges, trends and requirements of low-code platforms as well as their role in the provision of modern applications in companies. The resulting findings are described in this study report.

Industry distribution

Within the regions, all relevant industry segments were taken into account in order to be able to present a holistic overview.

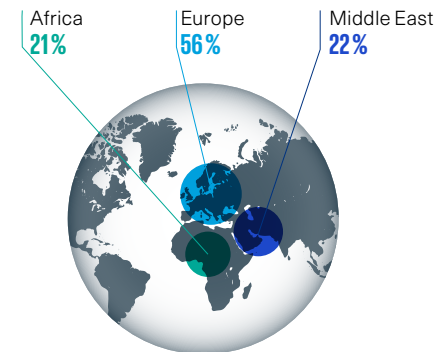
- Information/Communication technology **39%**
- Industry **20%**
- Service **13%**
- Trade **7%**
- Banks and insurance companies **7%**
- Transport and logistics **5%**
- Public administration **5%**
- Energy and water supply **4%**

Base: 715 companies; Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

Regions surveyed

For this study, 403 interviews were conducted in Europe, 160 interviews in the Middle East and 152 interviews in Africa.

Figure 13:
In which region is your company's headquarters located?



Distribution of employee size classes

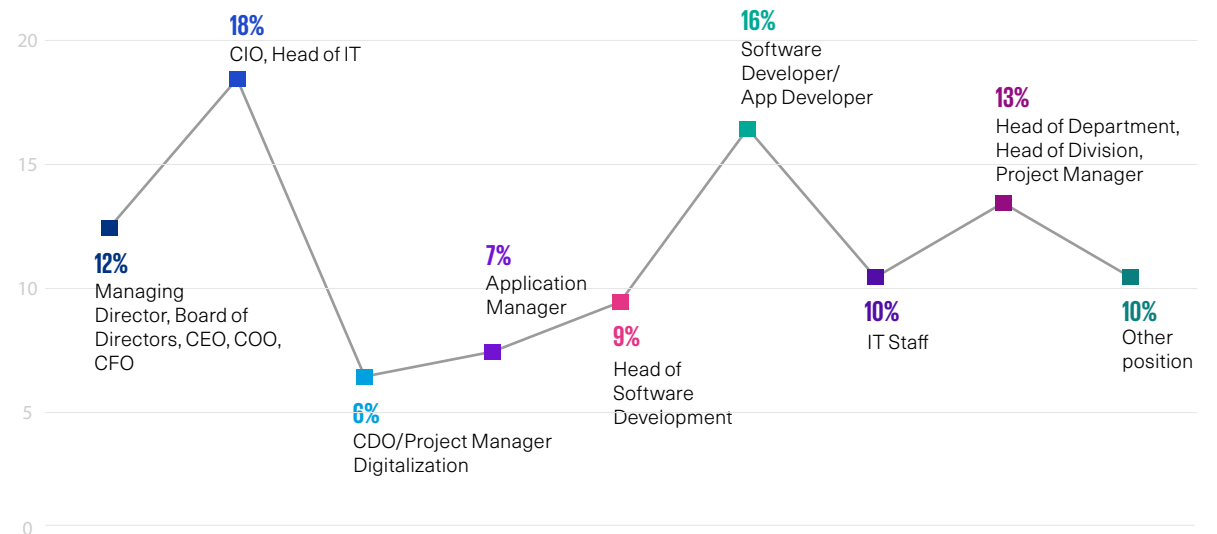
Companies within EMA with 50 or more employees were decisive for the study. 208 interviews (29 percent) were conducted in smaller companies (50 to 499 employees), 345 interviews (48 percent) in medium-sized companies (500 to 4999 employees) and 162 interviews (23 percent) in large companies with 5.000 or more employees.

- 50 to 99 employees **9%**
- 100 to 499 employees **20%**
- 500 to 999 employees **23%**
- 1,000 to 4,999 employees **25%**
- 5,000 to 9,999 employees **13%**
- 10,000 or more employees **10%**

Position in the company

For the study, 715 company managers were interviewed who have detailed insights into the software development of the companies and the use of low-code platforms. 233 business managers and 482 IT managers were interviewed.

Figure 14:
Which position do you work in at your company?



Base: 715 companies; Rounding differences possible
Source: Shaping digital transformation with low-code platforms, KPMG International, 2022

About KPMG International

KPMG is a global organization of independent professional services firms providing Audit, Tax and Advisory services. KPMG is the brand under which the member firms of KPMG International Limited (“KPMG International”) operate and provide professional services. “KPMG” is used to refer to individual member firms within the KPMG organization or to one or more member firms collectively.

KPMG firms operate in 143 countries and territories with more than 265,000 partners and employees working in member firms around the world. Each KPMG firm is a legally distinct and separate entity and describes itself as such. Each KPMG member firm is responsible for its own obligations and liabilities.



KPMG International Limited is a private English company limited by guarantee. KPMG International Limited and its related entities do not provide services to clients.

For more detail about our structure, please visit kpmg.com/governance.

Contacts



Rui Rosado Gonçalves

Partner, Advisory
Low-code COE
ruigoncalves@kpmg.com
KPMG in Portugal



Björgvin Magnússon

Partner, Consulting
Low-code COE
BjoergvinMagnusson@kpmg.com
KPMG in Germany



Paul Henninger

Global Head of KPMG Lighthouse
Data, AI & emerging technologies
paul.henninger@kpmg.co.uk
KPMG International



Anastasia Voinou

Associate Director
Low-code COE
avoinou1@kpmg.com.au
KPMG in Australia



Bruno M Oliveira

Director, Advisory
Low-code COE
bmoliveira@kpmg.com
KPMG in Portugal



Sven Petrich

Senior Manager, Consulting
Low-code COE
spetrich@kpmg.com
KPMG in Germany



Bobby Soni

Global Technology Consulting
Leader
bobbysoni@kpmg.com
KPMG International



Alexander Zagnetko

Manager
Low-code COE
azagnetko@kpmg.ua
KPMG in Ukraine

kpmg.com

Some or all of the services described herein may not be permissible for KPMG audit clients and their affiliates or related entities.



Raul Bukowiecki

Consulting
Low-code COE
rbukowiecki@kpmg.com
KPMG in Germany

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on this information without appropriate advice after a thorough examination of the particular situation.

© 2023 Copyright owned by one or more of the KPMG International entities. KPMG International entities provide no services to clients. All rights reserved.

KPMG refers to the global organization or to one or more of the member firms of KPMG International Limited ("KPMG International"), each of which is a separate legal entity. KPMG International Limited is a private English company limited by guarantee and does not provide services to clients. For more detail about our structure please visit kpmg.com/governance.

The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organization.

Throughout this document, unless otherwise indicated by quotation marks, "we", "KPMG", "us" and "our" refers to the global organization or to one or more of the member firms of KPMG International Limited ("KPMG International"), each of which is a separate legal entity.