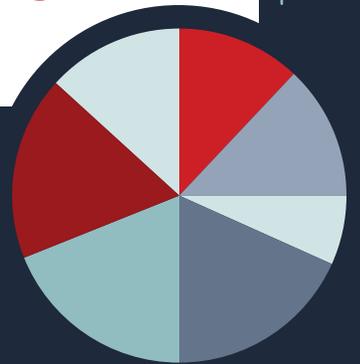


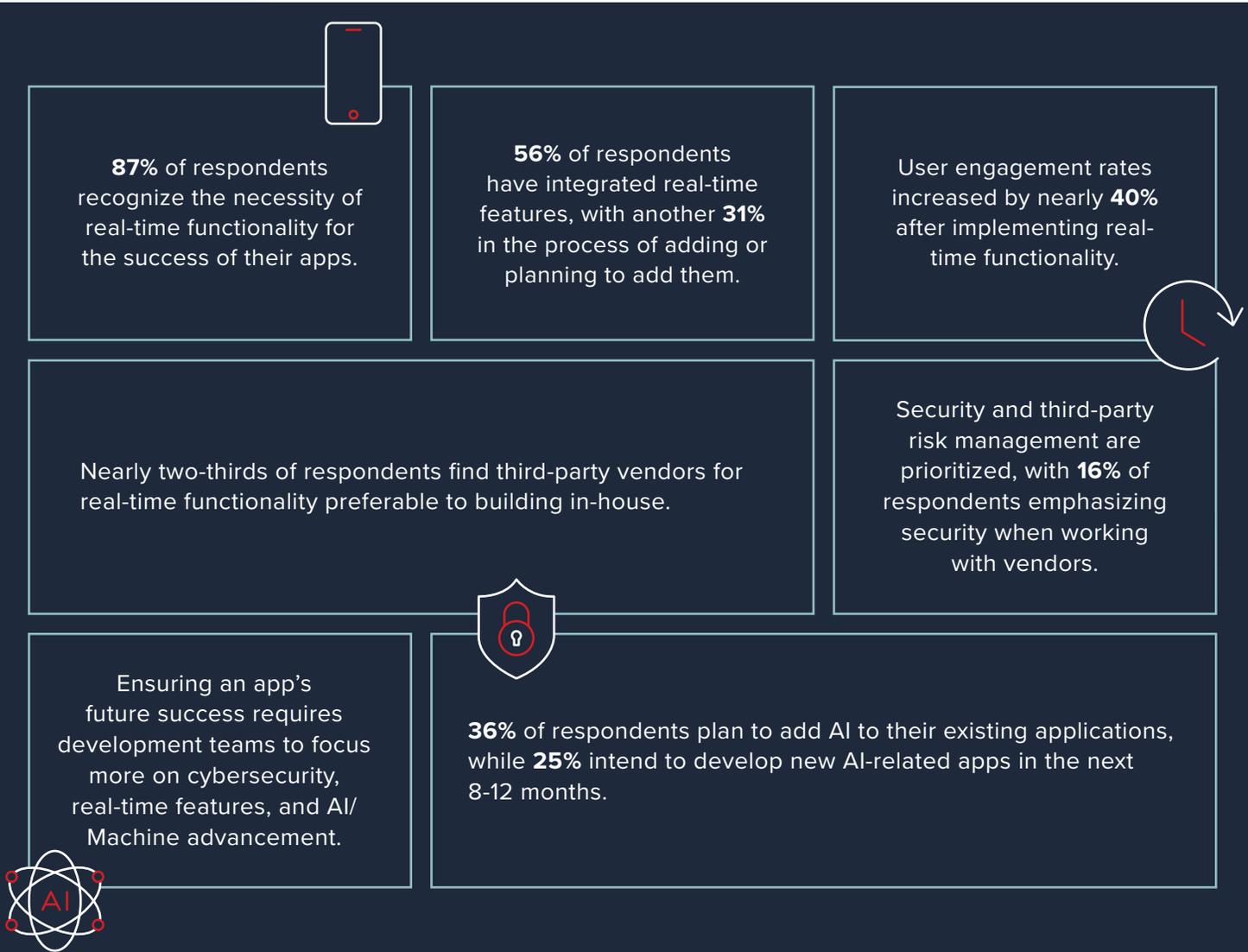
BENCHMARKING REPORT

# Application Development & Real-Time Interactivity



# I. Executive Summary

This report delves into the evolving landscape of app usage and the challenges faced by app development teams in meeting user expectations. It explores the growing importance of real-time functionality, security concerns, and the integration of technologies like Artificial Intelligence (AI) in app roadmaps.



The study underscores the significance of real-time features for user engagement and app stickiness. But App development companies aim to customize, scale, and maintain reliability while incorporating real-time functionality.

In conclusion, the report highlights the importance that today's app development teams place on real-time functionality, security, and the integration of AI. Organizations recognize the need to adapt to user expectations and stay at the forefront of technological advancements. Companies can build competitive and engaging apps in today's rapidly changing digital landscape by addressing security concerns, leveraging third-party services effectively, and prioritizing user experience.

## II. Introduction

Today's world is very different than five years ago. Home offices, webcams, and cameos by pets and kids replaced busy offices and face-to-face meetings. Working from home went from being an occasional nice-to-have to a necessary part of business continuity plans.

While the lack of a commute has been a definite upside, our acceptance—and even embracing—of remote life has its downsides. One of which is that we're at the mercy of the apps that we use to stay connected to our work and home lives. The popular and kitschy tagline "There's an App for That" has become obsolete because as we now know, there's an app for (virtually) everything. So when these apps that run our lives don't perform as expected, things are delayed (or don't get completed), and progress slows.

So what constitutes "not performing as expected" when it comes to apps? Well, it depends on who you ask, but some common ones are:



The good news is that all of these are within the control of the app development team. The bad news is that more often than not, there are multiple issues happening and competing priorities take time and attention away.

What are those issues and competing priorities? Where are app development teams applying their resources? What plans do they have to maintain forward momentum to meet the ever-growing expectations of the end user? How do they plan on incorporating the latest technologies like Artificial Intelligence (AI) into their app roadmap?

It's questions like those that we wanted to answer with this study.

# III. Apps & Real-Time Functionality

## SUMMARY

- **87%** of respondents recognize the necessity of having real-time functionality built into their apps
- **64%** stated they saw between **37-40%** increase in user engagement once real-time functionality was incorporated
- **61%** report having utilized a third party to build real-time features either now or in the past
- **13%** build everything in-house, with EMEA being the region that opted for this approach the most
- **16%** of respondents placed Security at the top of their list when working with a third-party vendor, despite regional and company size differences
- North American respondents reported being more cost-sensitive when selecting vendors than other regions
- The top third-party features most important to respondents are unlimited concurrency, a plug-and-play solution, and clear documentation

The era of real-time functionality is upon us. The responses show that regardless of region, position, or company size, organizations recognize the necessity to have real-time features built into their apps.

In fact, **56%** of respondents currently have real-time functionality built into their app, with another **31%** either in the process of adding it or planning to add it. That means **87%** of respondents recognize the necessity of real-time functionality in one form or another.

One of the reasons that real-time functionality is so important is that it helps increase user engagement with the app. Sixty-four percent of respondents reported between **37-40%** increase in user engagement rates.

To help bring real-time functionality to users, **43%** of respondents report that they're currently using a third party to build features into their apps. In comparison, another **18%** have used third parties in the past, despite not using them presently. Thirteen percent of respondents said that they currently build everything in-house. *(See Figure 1)*

**87%**

of respondents recognize the necessity of real-time functionality in one form or another.

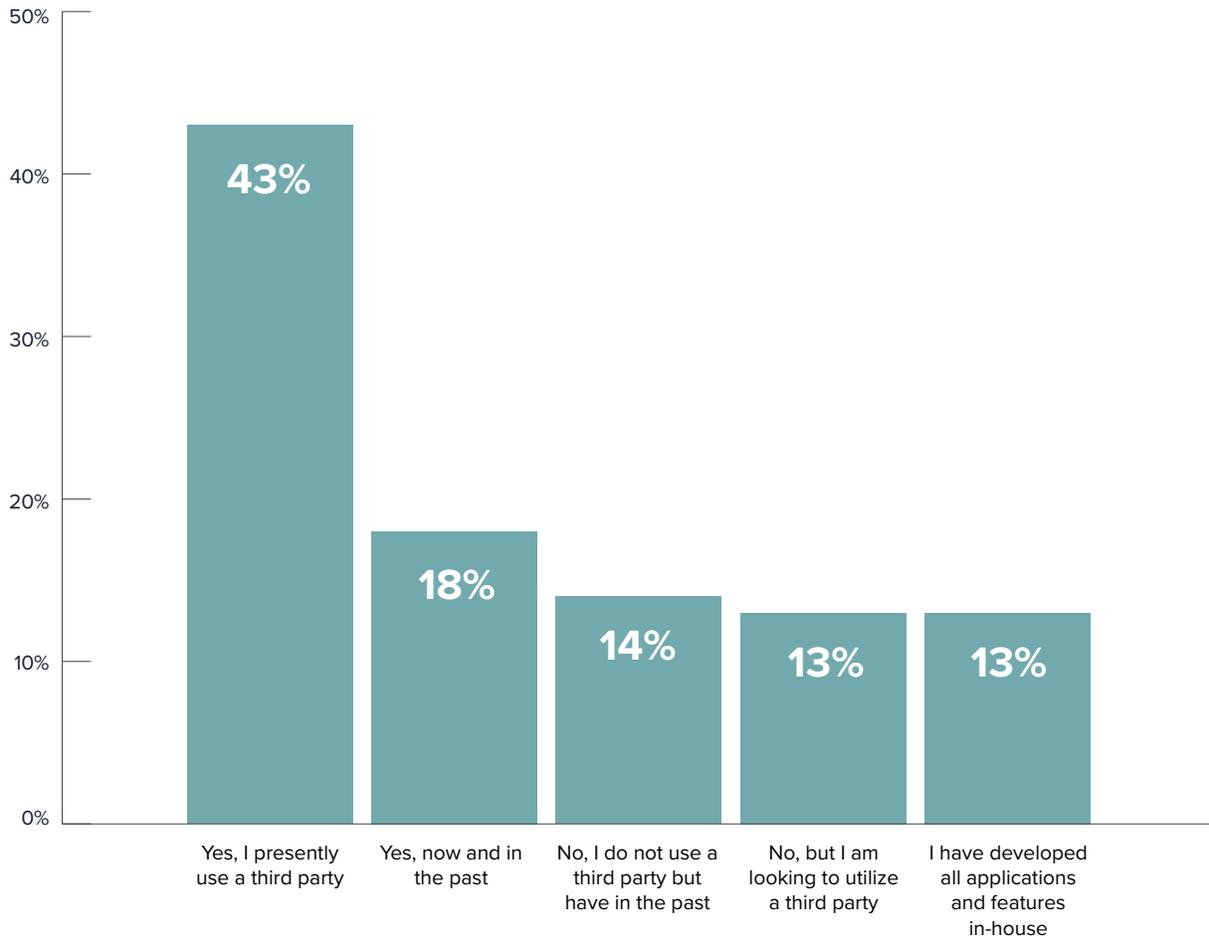


**64%**

of respondents reported between 37-40% increase in user engagement rates.



## Have you ever used a third-party solution to help add real-time features to your application?

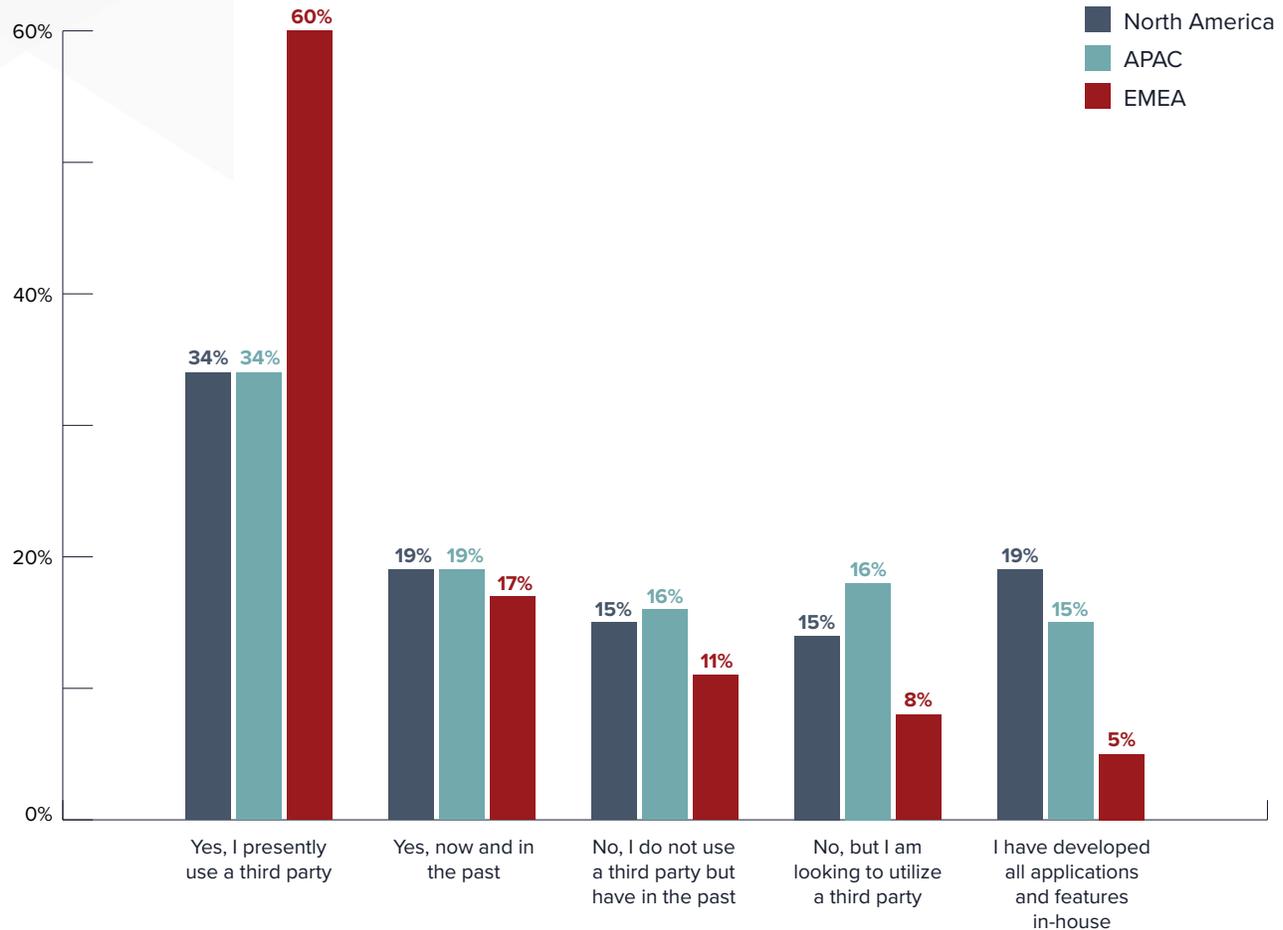


**FIGURE 1**

Does geography play a role in whether or not a company outsources its real-time functionality development? Possibly, because 71% of respondents from EMEA report they are either currently using a third party for real-time functionality development or have in the past. In comparison, only 34% of North American and APAC respondents have. Regarding developing the functionality in-house, EMEA is least likely to do it (5%), while North America is most likely (19%), as shown in *Figure 1a*.



## Have you ever used a third-party solution to help add real-time features to your application?



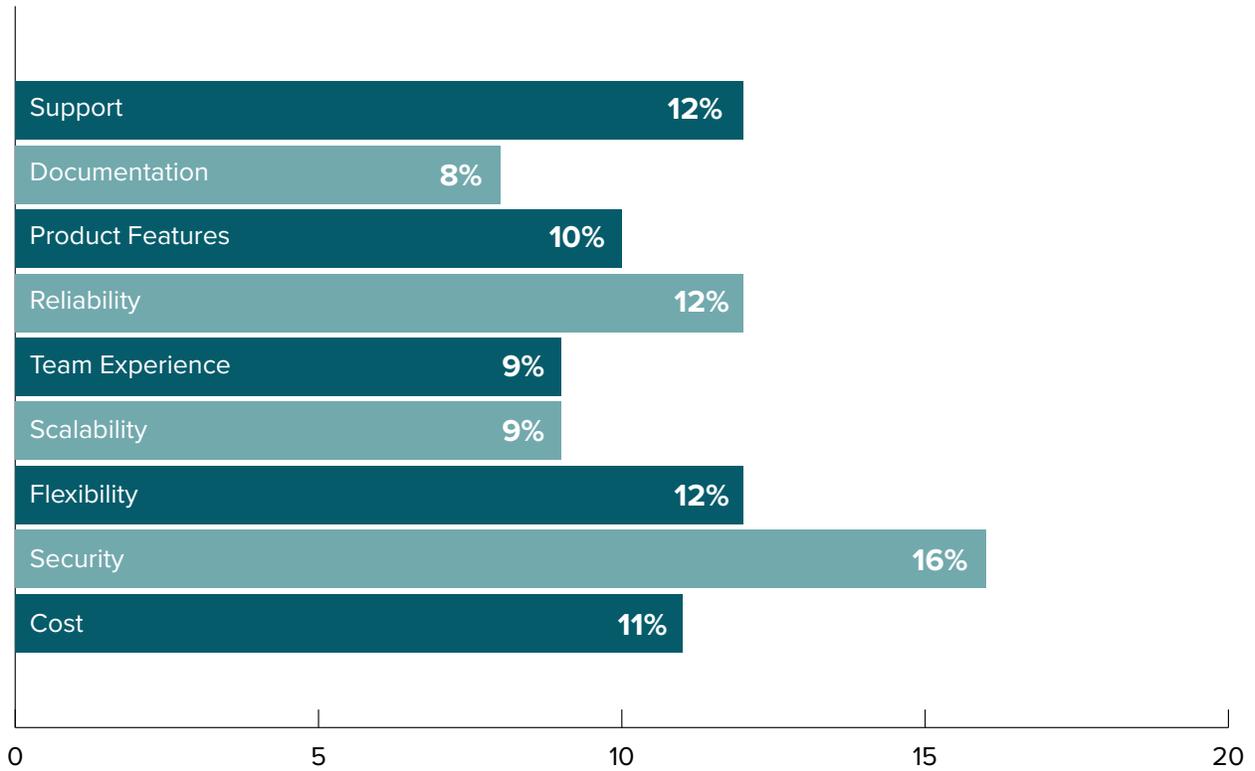
**FIGURE 1A**

Finally, for those who have worked with third parties, there are several factors teams take into account when selecting a vendor, and they differ slightly depending on geographical region and company size.

Overall, however, respondents rated Security as the most important factor they consider (16%), followed by Reliability (12%), with Support and Flexibility tied for third place with 11%. *(Figure 2)*



## What are some of the factors your development team considers when selecting a third-party solution?

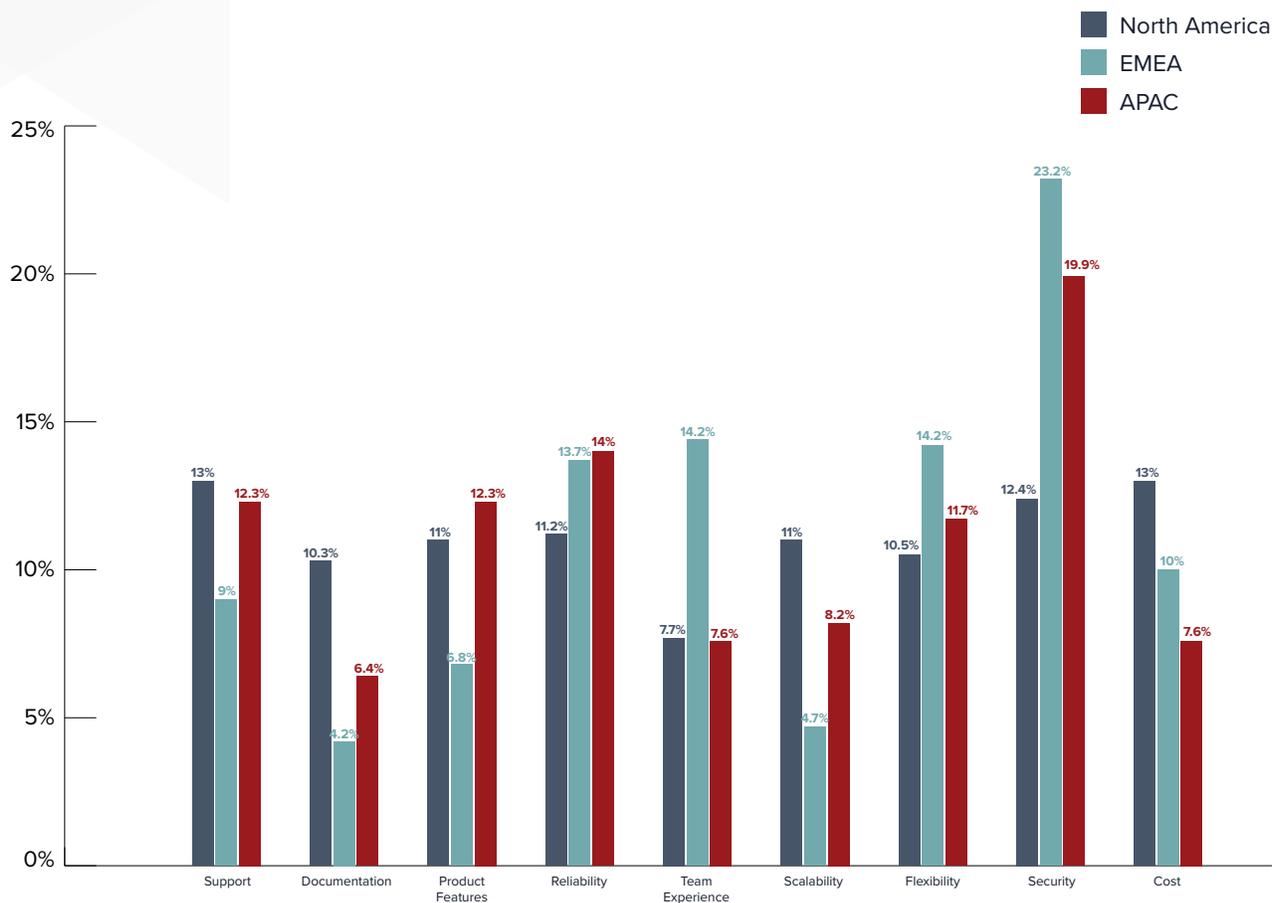


**FIGURE 2**

There were some regional differences, as shown in the following charts. North American respondents answered that Cost & Support tied for the top spot with 13%. Security came in at 12%, and Product Features, Reliability, and Scalability tied for third place and were mentioned by 11% of people. *(See Figure 2a)*



## What are some of the factors your development team considers when selecting a third-party solution?



**FIGURE 2A**

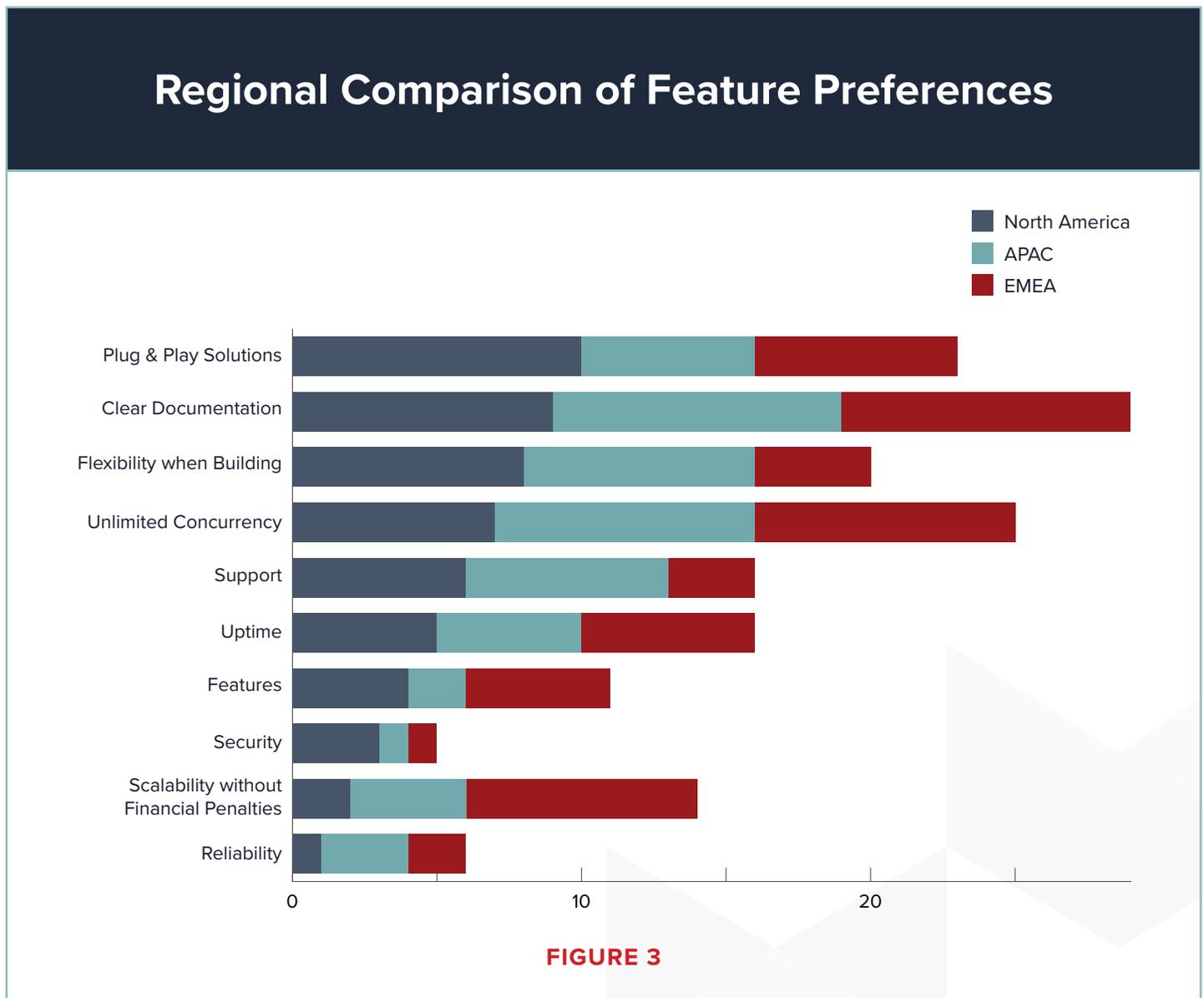
For those working in EMEA, Security was a standout as the most important factor considered (23%), with the Team's Prior Experience with the Tool and Flexibility tying for second place at 14% and Reliability coming in third at 13%.

Security was also top of mind for those in APAC, with 20% of respondents saying that was a deciding factor when selecting a real-time interactivity vendor. Reliability was second in line with 14%, and Support and Product Features tied for third with 12%.

Regarding the capabilities of the third-party solution itself, we asked respondents to rank them in order of importance, at the top of the list are **having clear documentation, unlimited concurrency, and it being a plug-and-play solution.**

It's when the data is broken down by region that some key differences emerge, as shown in *Figure 3*.

- North America cares most about flexibility when building, clear documentation, and having a plug-and-play solution
- APAC cares most about unlimited concurrency, clear documentation, flexibility when building, and support
- EMEA cares most about scalability without financial penalties, unlimited concurrency, and clear documentation

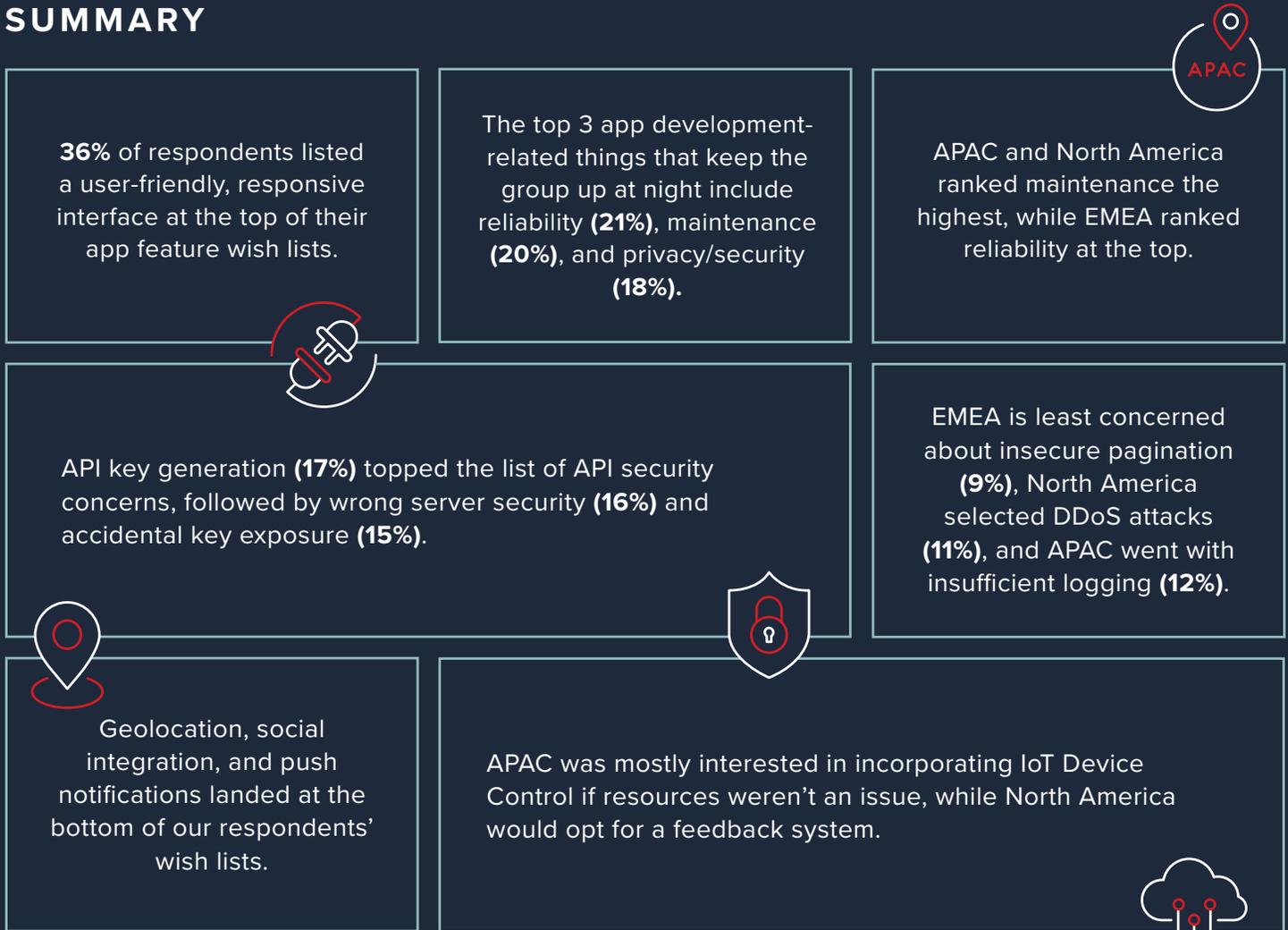


## INSIGHTS & ACTION ITEMS

- 1 Organizations have realized that real-time features have become “must haves” for their apps and are now playing catch up to remain competitive.
  - 2 End users become more engaged, and an app becomes more “sticky” when there are real-time features like in-app chat, as it mimics in-person interaction and allows users to build relationships.
  - 3 It’s a double-edged sword, however, because if there is any lag in sending or receiving messages, gameplay, document updates during collaboration, etc., the user experience is negatively impacted, and they’re less likely to return. Real-time *must be in real time*.
  - 4 Most companies either currently or have used a third party to add real-time functionality, which frees them up to focus on other things.
  - 5 When they utilize a third party, security consciousness and third-party risk management is still top-of-mind, so real-time interactivity platforms should communicate all security and privacy practices.
  - 6 App development companies want to be able to customize and scale their app without sacrificing reliability, something only platform solutions can achieve.
  - 7 Working with a provider that offers unlimited concurrency & scalability eliminates the concern about being financially penalized for their app’s success.
-

# IV. Features & Fears

## SUMMARY

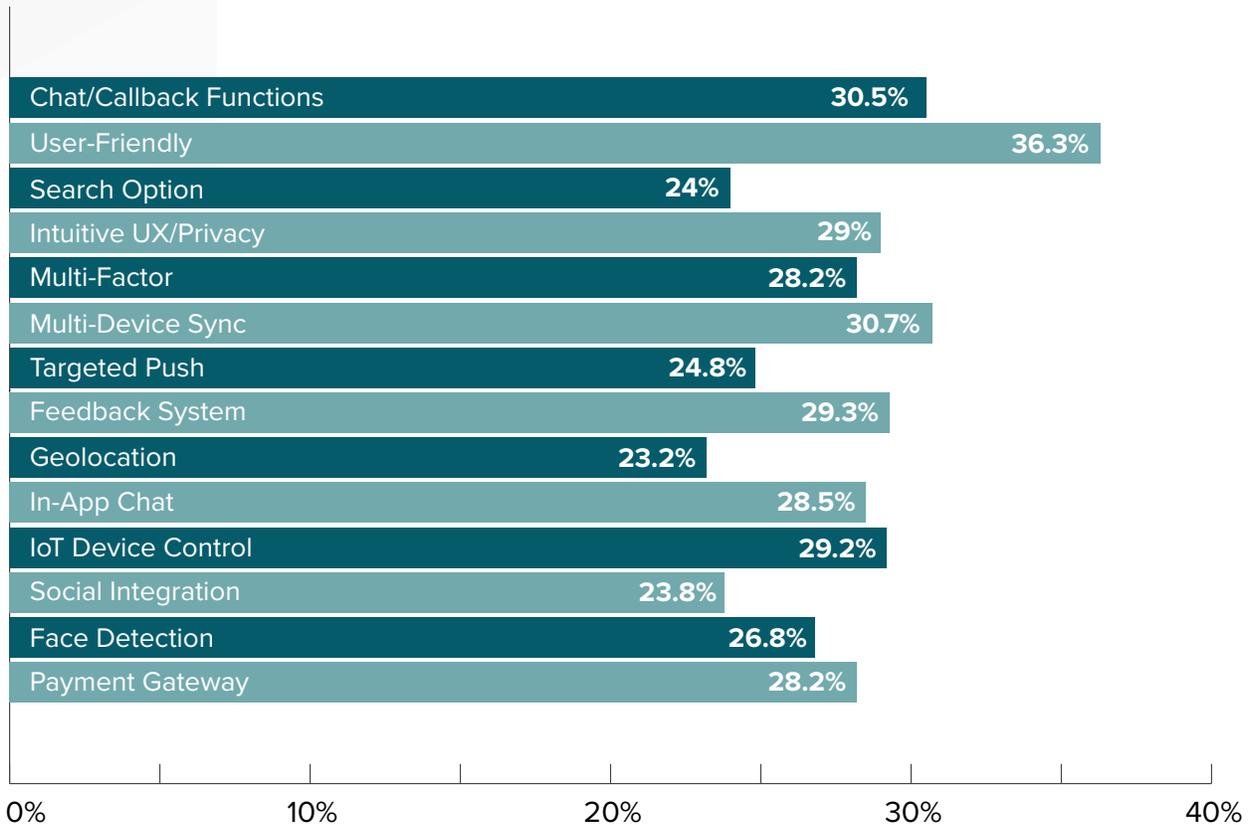


Every organization has a wish list – things they'd like to see or implement within their app if resources weren't an issue. What's on that list naturally depends on existing features and functionality, but most center around customer service and the overall user experience.

As shown in *Figure 4*, more than a third of our respondents (36%) said they'd want their app to have a user-friendly, responsive interface if money wasn't an issue, followed by Multi-Device Sync (30.7%) and Chat/Callback Functionality (30.5%). Geolocation (23.2%), Social Integration (23.8%), and a Search Option (24%) were at the bottom of the list when the results were analyzed in their entirety.



## What are some features or functionalities that you would like to add to your application?



**FIGURE 4**

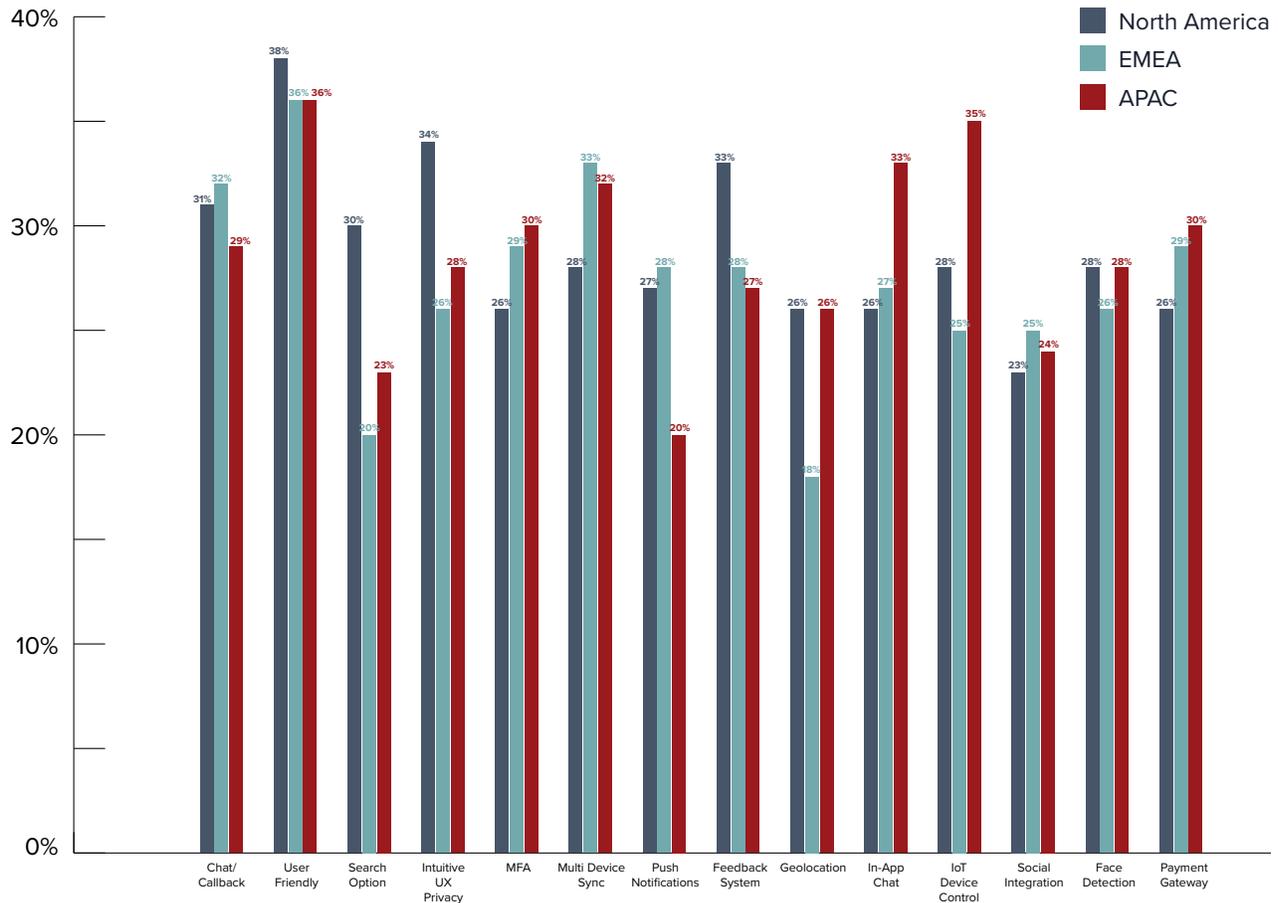
Now, looking at *Figure 4a*, there were a couple of interesting regional differences. Nearly 35% of APAC respondents reported they'd implement IoT Device Control if cost weren't an issue, whereas fewer than 28% of North American and 25% of EMEA respondents selected this feature. Also, North Americans said they'd go for a Feedback System (33%) and Intuitive UX and Clear Privacy Options (34%), whereas an average of 27% of EMEA and APAC survey takers selected these.

EMEA and APAC ranked Multi-Factor Authentication (MFA) higher than North American respondents, as the feature came in 5th place (out of 14) for those regions, but further down the list in 11th, for their North American counterparts.

Regarding those features that were at the bottom of the list when looked at regionally, APAC selected Push Notifications (20%), EMEA chose Geolocation (18%), and North America went with Social Integration (23%).



## What are some features or functionalities that you would like to add to your application?

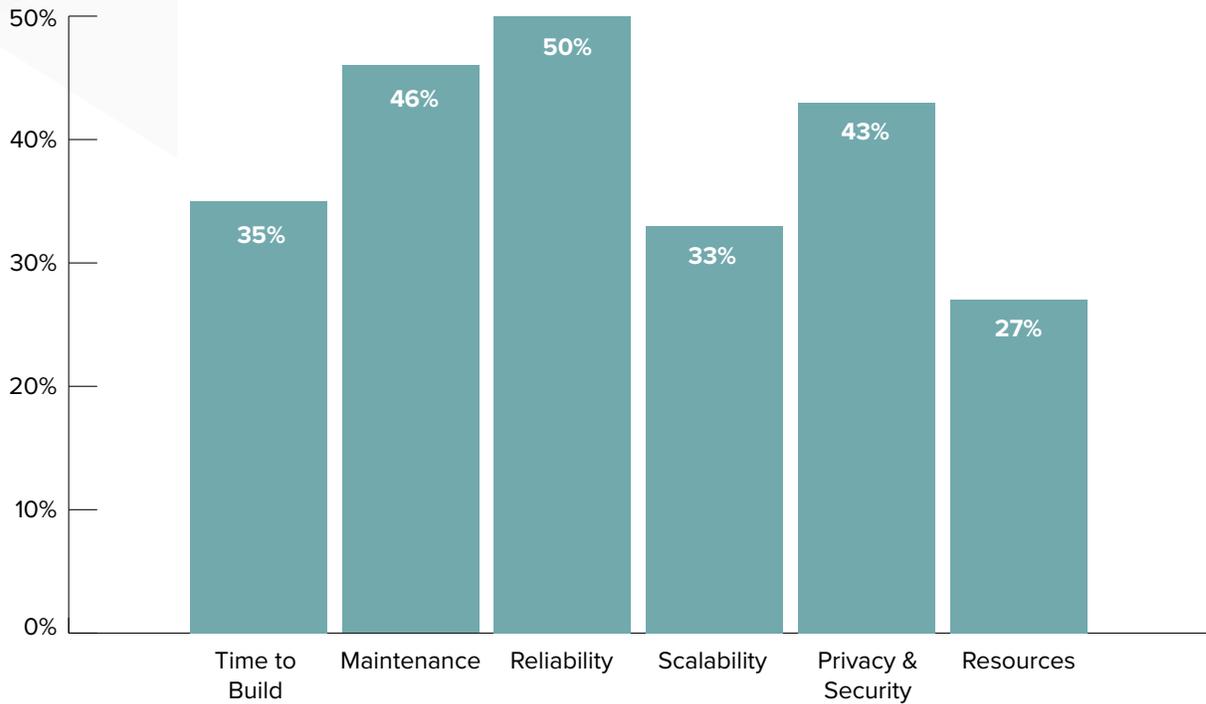


**FIGURE 4A**

Next, we asked the group what were some of the app development-related things that (metaphorically) kept them up at night, and overall, the group answered their app's Reliability (50%), Maintenance (46%), and Privacy/Security (43%) practices. (See Figure 5).



## What are some app development-related things that keep you up at night?

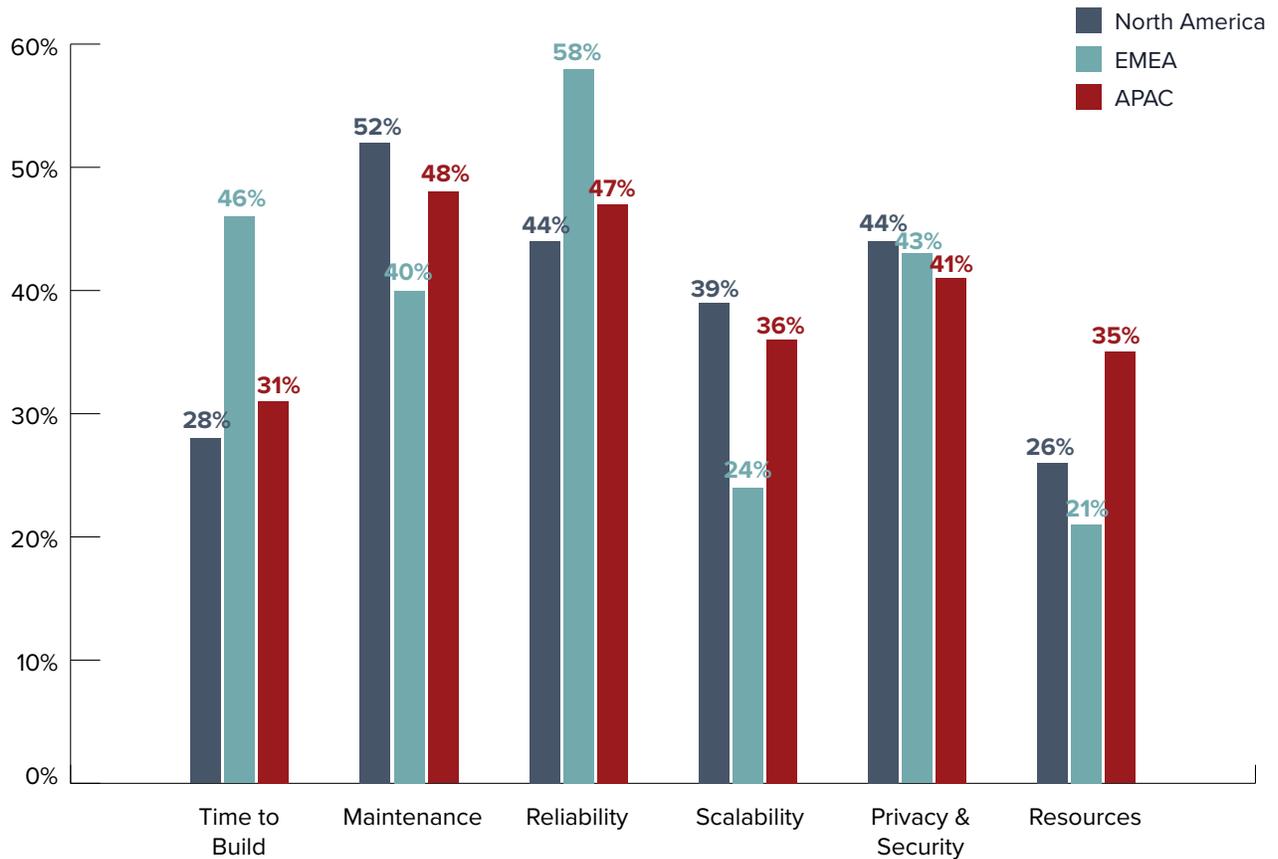


**FIGURE 5**

Regionally, there were a couple of differences concerning app development professionals, as shown in *Figure 5a*. EMEA is most concerned about Reliability (58%) and is the least Resource sensitive (21%), whereas Maintenance is the number one concern for APAC (48%) and North America (52%). APAC cared about time to build the least (31%).



## What are some app development-related things that keep you up at night?

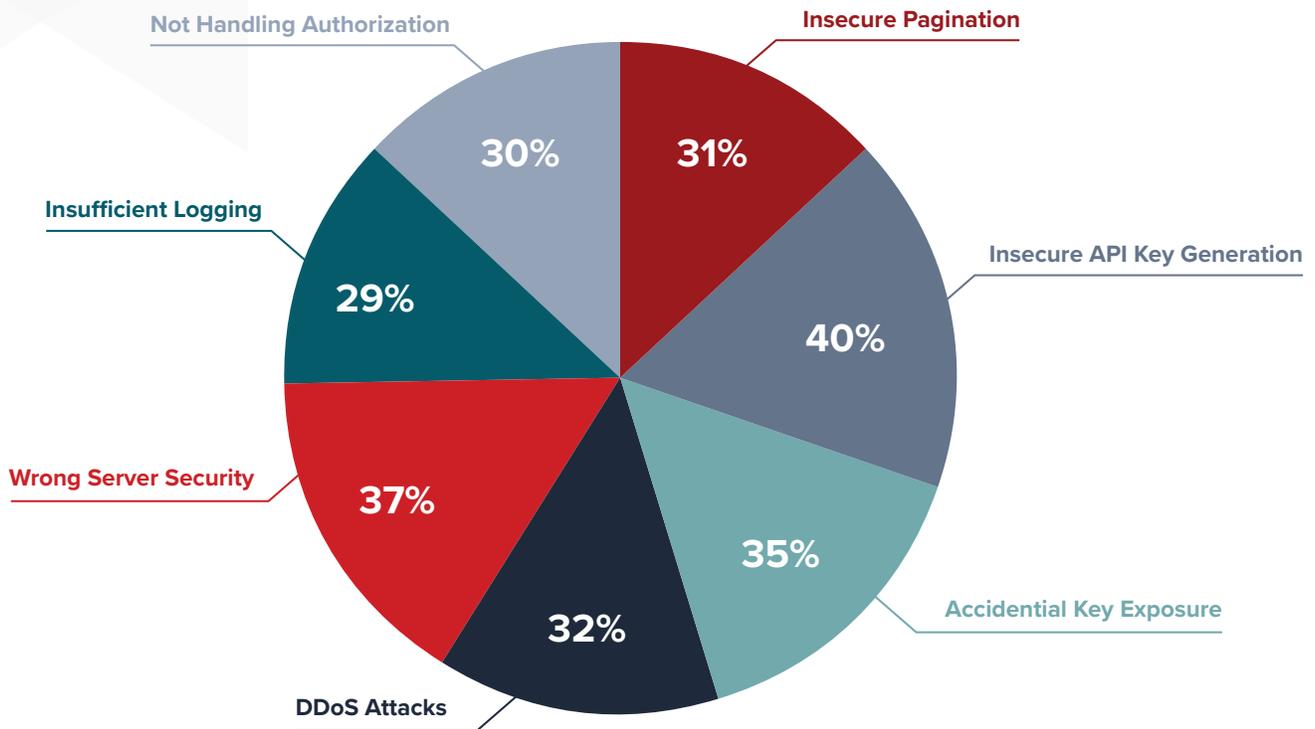


**FIGURE 5A**

*Figure 6* shows that when it comes to any API security concerns that respondents have, the top three overall are Insecure API Key Generation (40%), Wrong Server Security (37%), and Accidental Key Exposure (35%), with North America and APAC being most concerned about Insecure API key generation (17% & 18%) and EMEA about Wrong Server Security (19%).



## Do you have any security concerns about APIs or when building applications?

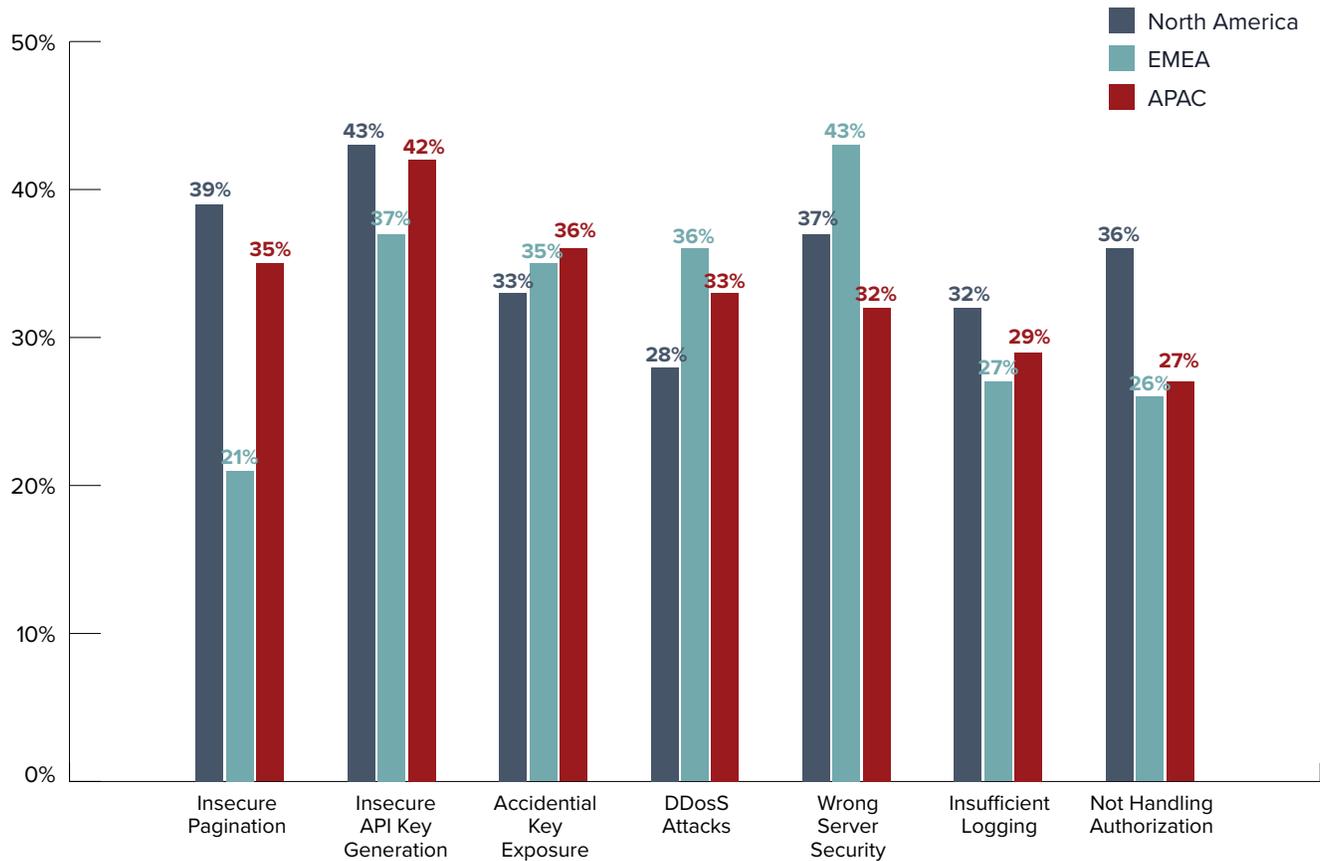


**FIGURE 6**

The regional differences continue when looking at what respondents are least concerned about, with EMEA reporting Insecure Pagination (21%), North America selecting DDoS Attacks (28%), and APAC choosing Not Handling Authorization (27%). (See Figure 6A).



## Do you have any security concerns about APIs or when building applications?



**FIGURE 6A**

## INSIGHTS & ACTION ITEMS

- 1 If presented with an unlimited budget, most companies opt to enhance the user experience vs. adding extra bells and whistles to their apps.
  - 2 Certain functionality like Push Notifications, Geolocation, and a Search function are table stakes for regions like APAC, which are often seen as front runners in technological adoption, which means that other regions should look to see where they need to catch up to stay competitive.
  - 3 If they work with a third party for app development, regions with built-in privacy and security legislation (e.g., EMEA) can focus on expanding app functionality when the provider can show proof of compliance.
  - 4 Building apps on a provider's infrastructure means the provider is responsible for maintaining the underlying technology, eliminating one common headache for developers.
  - 5 Work with a provider with a 99.999% uptime SLA to maintain low latency and high reliability.
-

# V. Forward Thinking

## SUMMARY



The top three technologies on companies' roadmaps are Cybersecurity (**23%**), Real-Time Features (**22%**), and AI/Machine Learning (**21%**).

North America and EMEA are focused on Real-Time Features, while APAC focuses on AI/Machine Learning.

**36%** of respondents plan on adding AI to their existing application in the coming year, while **25%** report plans to create new AI-related apps.

17% of respondents haven't considered AI for their upcoming product roadmaps.

EMEA respondents were mainly concerned with securing their applications from AI-related attacks (**27%**).

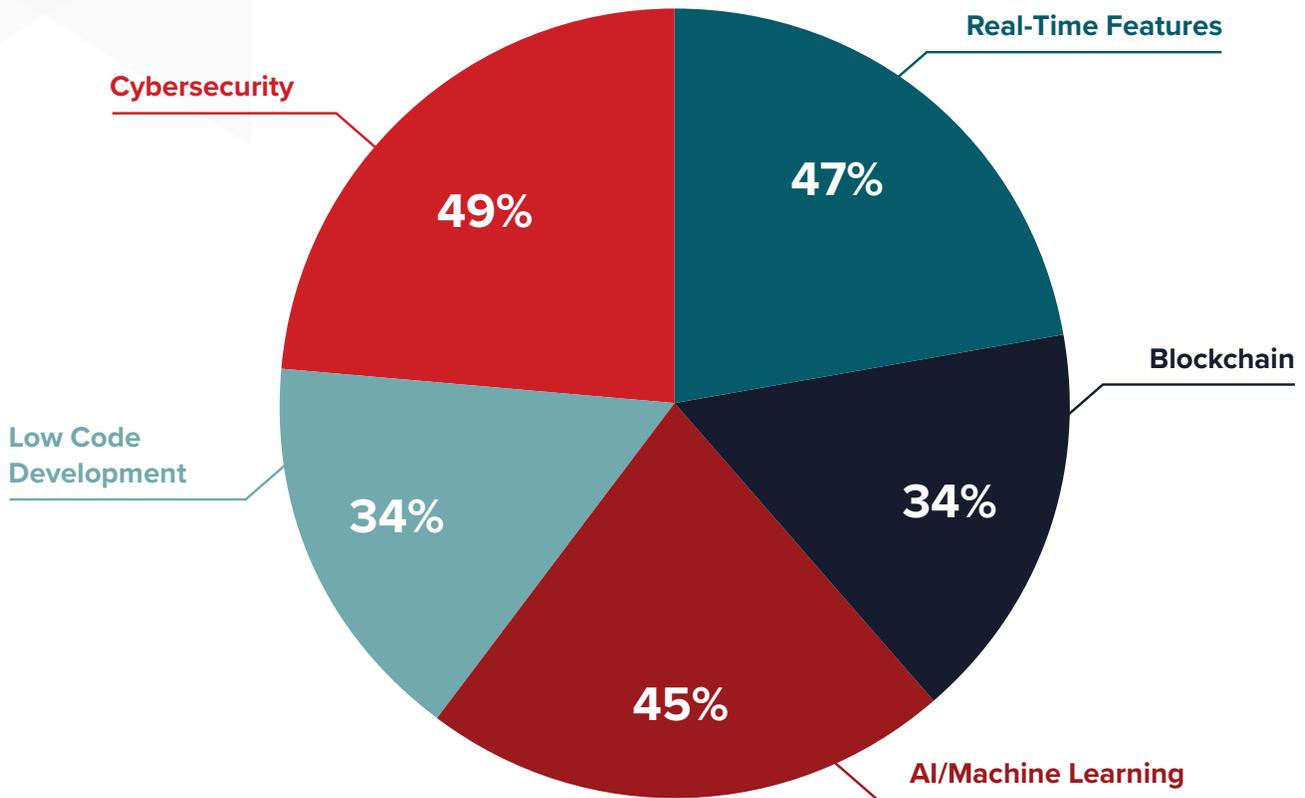


Regarding staying at the cutting edge of technological advancement, developers and other technical leaders know how it's done. So when they say that something is on their radar for the coming year, we listen because it's often an indicator of many things, including the current and future health of the economy.

When asked about the technologies that are on their organization's radar in the coming year, the top three answers were Cybersecurity (49%), Real-Time Features (47%), and AI/Machine Learning (45%). (See *Figure 7*)



## What technologies are on your org's radar in the coming year?

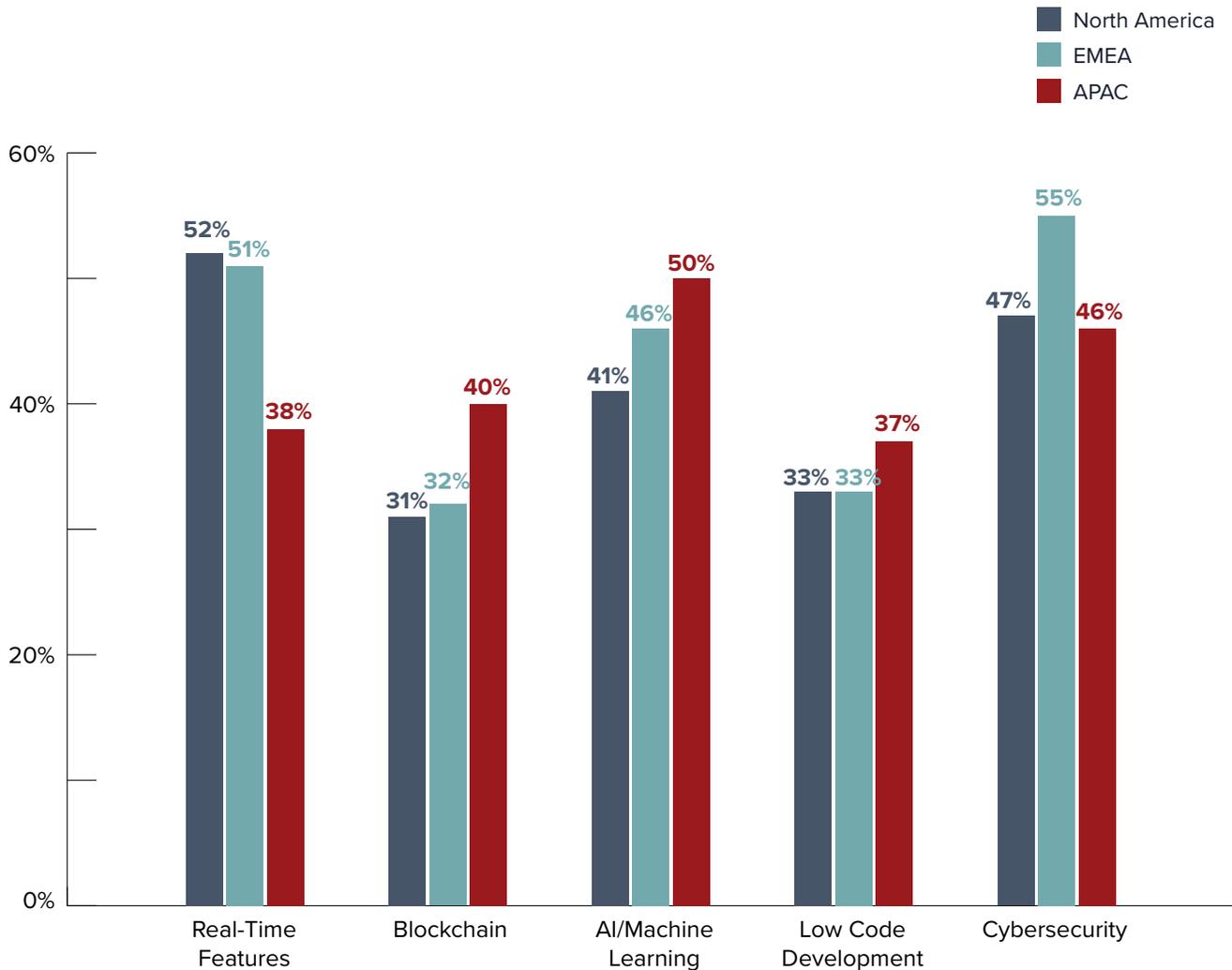


**FIGURE 7**

The top technologies for North America and EMEA are Real-Time Features (52% & 51%), Cybersecurity (47% & 55%), and AI/Machine Learning (41% & 46%). Alternatively, the top technologies for APAC are AI/Machine Learning (50%), Cybersecurity (46%), and Blockchain (40%). *(Figure 7a)*



## What technologies are on your org's radar in the coming year?

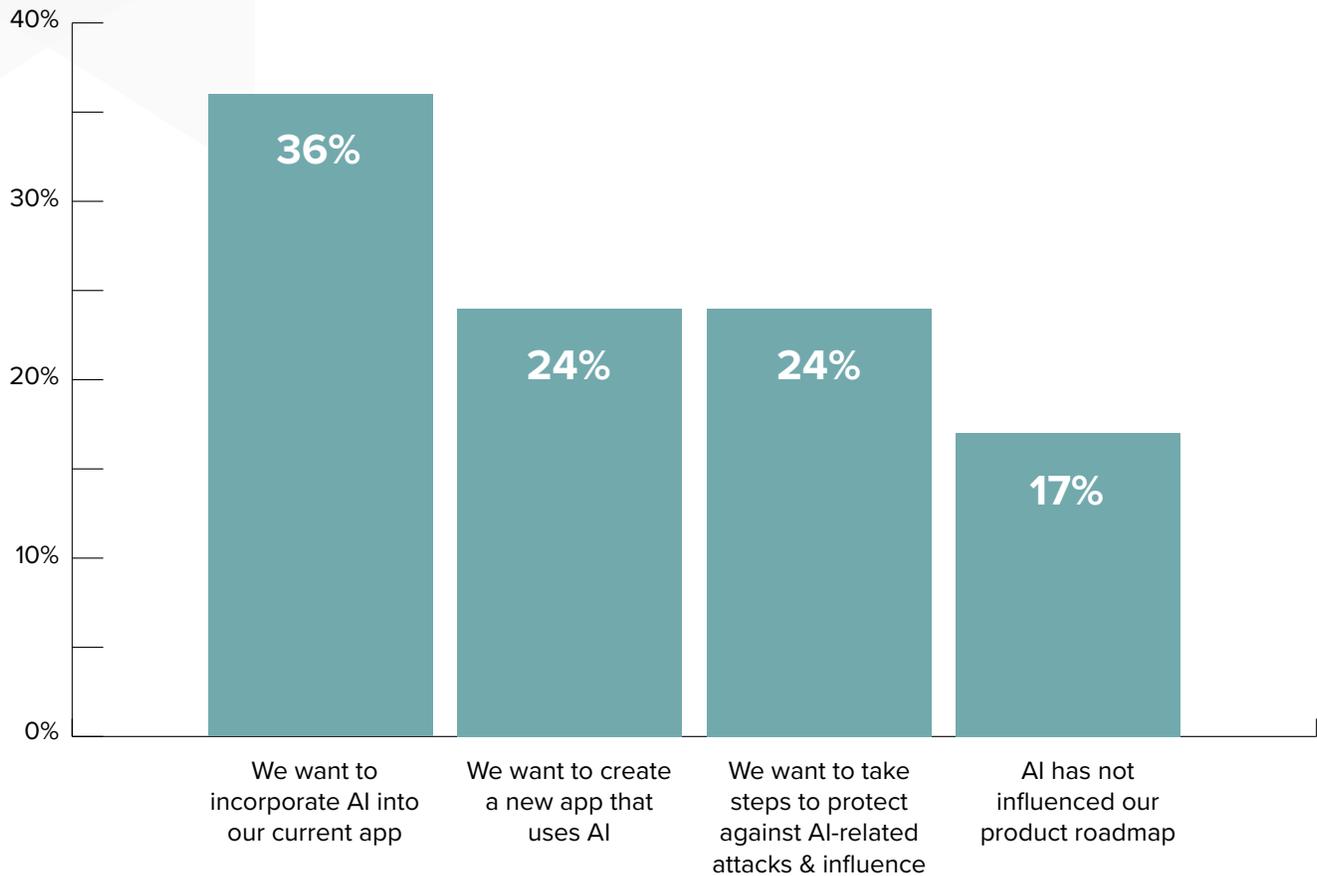


**FIGURE 7A**

Measuring the impact of Artificial Intelligence (AI) on an organization's product roadmap for the next few years indicated varying results. As shown in *Figure 8*, more respondents highlighted their plans to incorporate AI into their current App (36%), 24% reported they plan to create a new app that uses AI, another 24% report plans to protect against AI-related attacks, and 17% felt AI has not influenced their product roadmap.



## How has AI influenced your product roadmap for the next 1-3 years?

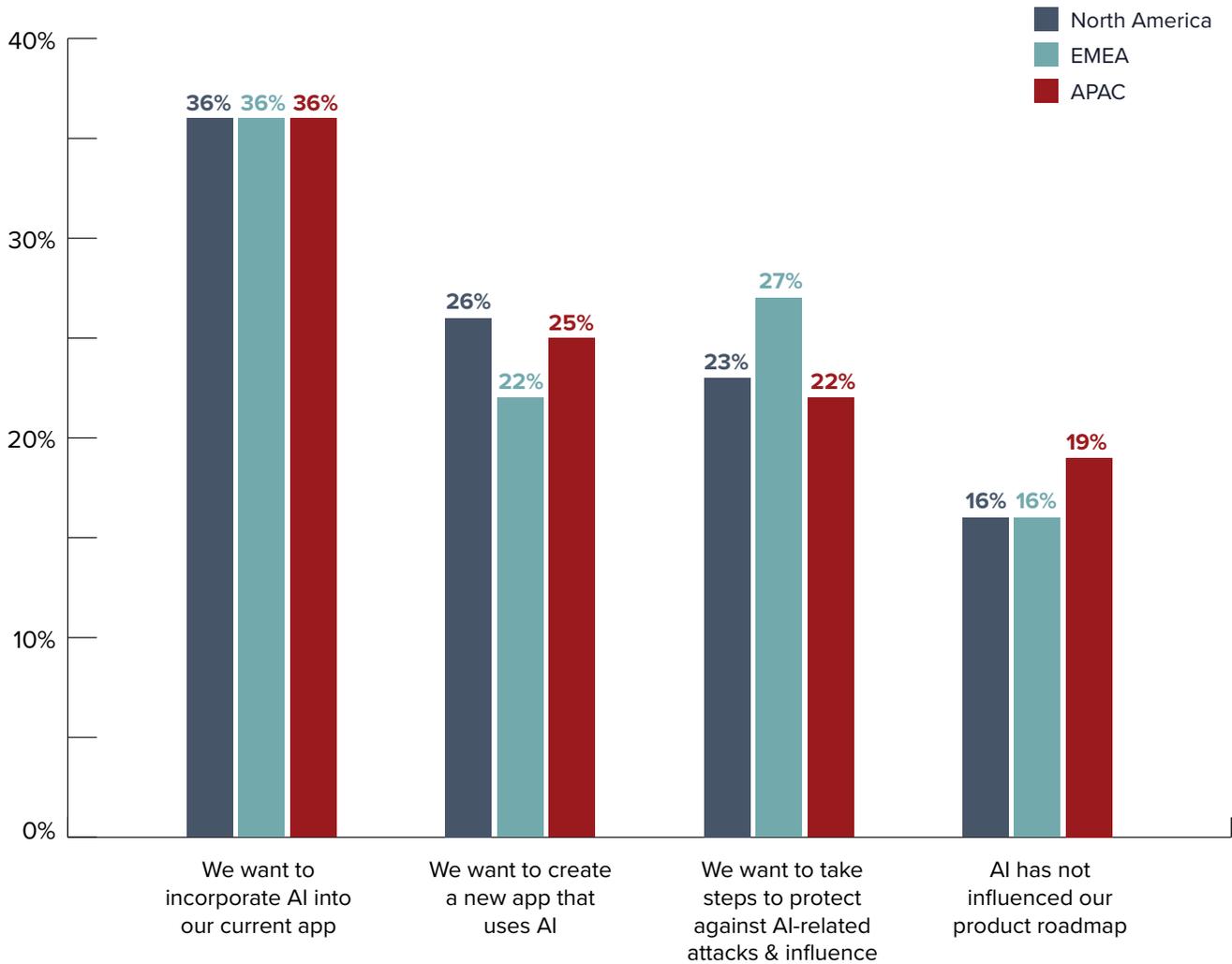


**FIGURE 8**

When looked at by region, most respondents who said AI had not influenced their roadmap are in the APAC region (19%). In comparison, most of those with plans to create a new app incorporating AI reside in North America (26%). Respondents from the EMEA region were mainly concerned with securing their application from AI-related attacks (27%), more than any other region. *(Figure 8a)*



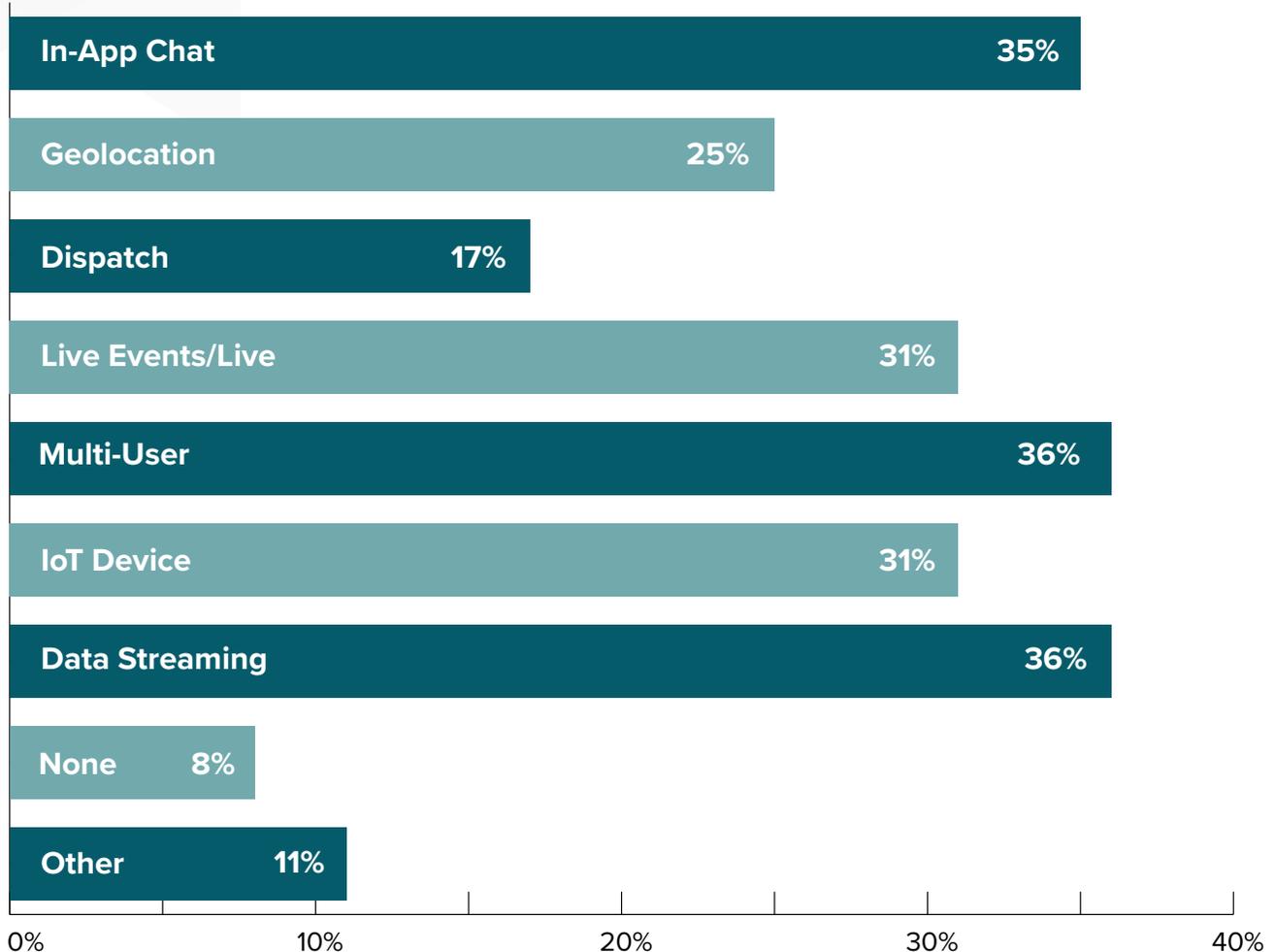
## How has AI influenced your product roadmap for the next 1-3 years?



**FIGURE 8A**



## What plans do you have for real-time features in 2023 and beyond?

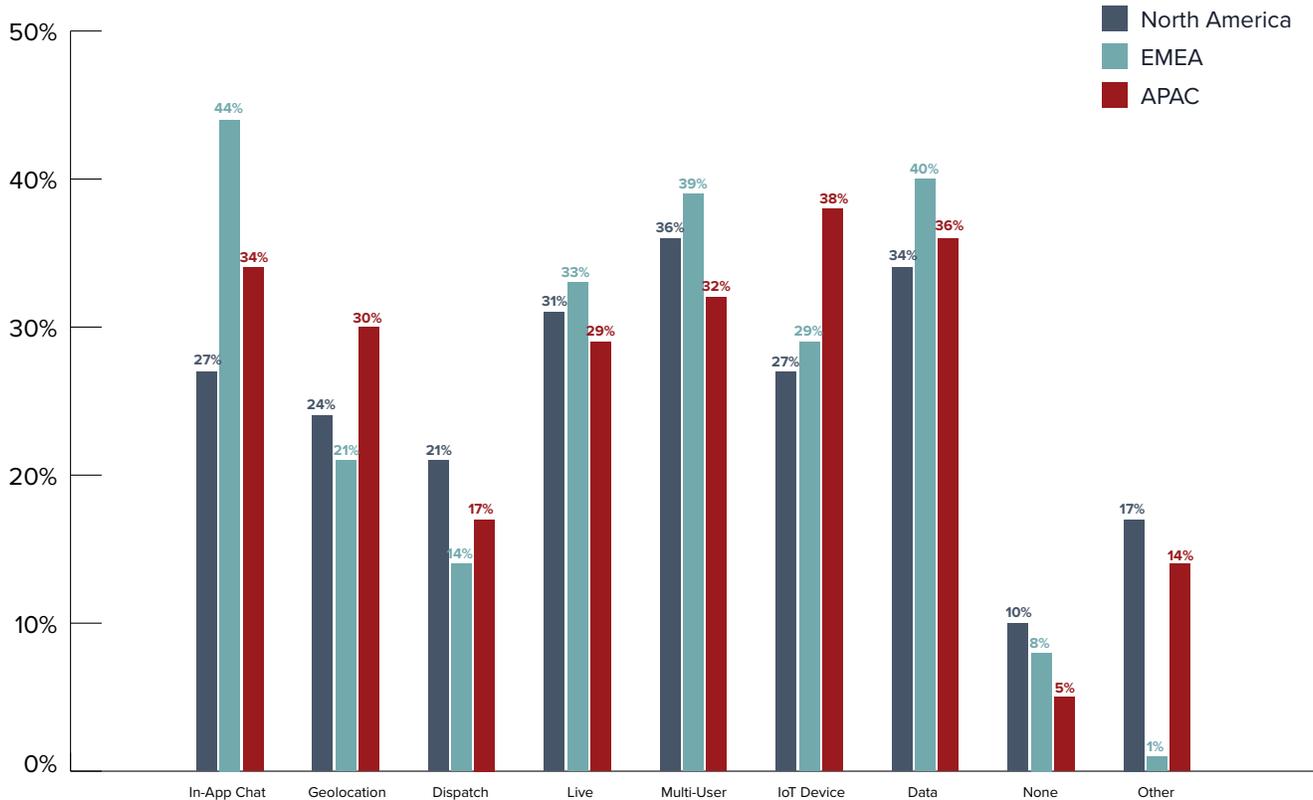


**FIGURE 9**

Finally, we wanted to know what real-time features organizations plan to build in the coming months. The top three features that companies will be adding to their apps are Multi-User Collaboration (36%), Data Streaming (36%), and In-App Chat (35%). Only 8% of respondents said they have yet to make plans to add real-time features. *(Figure 9)*



## What plans do you have for real-time features in 2023 and beyond?



**FIGURE 9A**

Regionally, there are several significant differences, as shown in *Figure 9a*. Forty-four percent of respondents from EMEA said they would be building In-App Chat, whereas 34% of APAC and 27% of North American respondents selected the same. EMEA was also a standout in the Data Streaming category with 40%, while North America came in at 34% and APAC at 36%.

Another standout data point is that 38% of APAC respondents selected IoT Device Control, while only 27% of North American and 29% of EMEA respondents did. Regarding adding Dispatch features, 21% are from North America, while only 14% were from EMEA and 17% from APAC.

## INSIGHTS & ACTION ITEMS

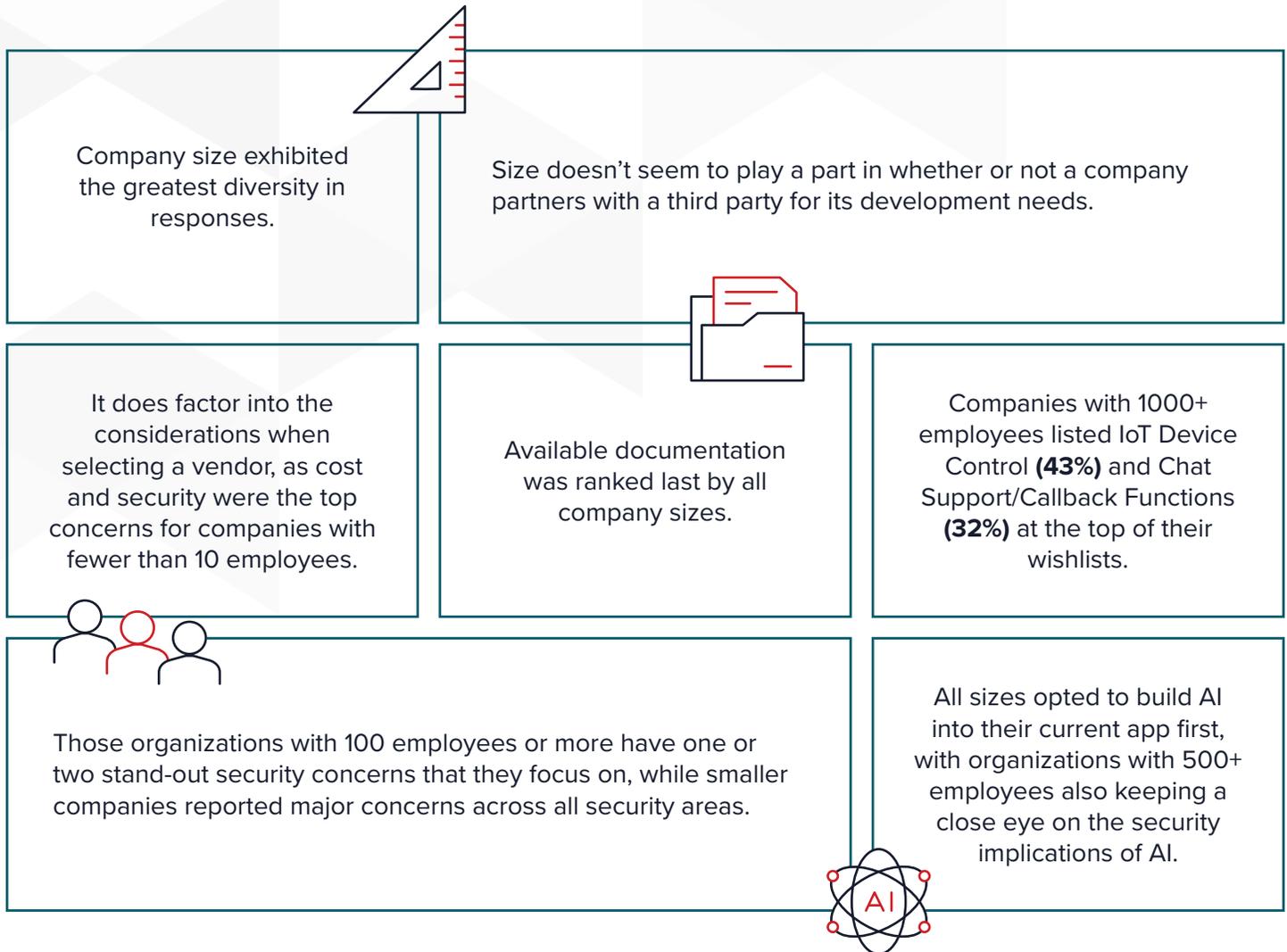
- 1 All of the added features and functionality of today's apps bring with it increased attack vectors for bad actors, so checking all the boxes for things like third-party risk management and API security will go a long way to protecting your app and its users.
  - 2 With real-time functionality being on many product roadmaps in the coming year, quickly adding new features without having to rework the app's underlying infrastructure will save time, money, and sanity.
  - 3 Organizations are recognizing how quickly the world of AI is moving and realize that to stay relevant, they need to associate themselves with AI quickly. The most common way is by adding it to their existing app.
  - 4 Organizations also recognize the unique security concerns that come with AI, so they're also looking for ways to keep their products and users secure.
  - 5 The age of live events and multi-user collaboration is here to stay. Many thought those real-time capabilities would quiet down as fervor around the pandemic lessened, but that's not true. Instead, those features have become "the norm," and they've become regular parts of users' daily lives.
  - 6 APAC continues to look for ways to build out our "Smart" spaces with a focus on IoT Device Control.
-

SIDEBAR:

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# Does Size Matter?

# Summary



So what makes a company build real-time functionality in-house vs. outsourcing to a third party? Interestingly, our study determined that organization size plays no role in whether or not a company works with a third party for its development needs.

Of the respondents that worked for organizations that employed between 2-9 people, 16% have utilized third-party vendors to assist them with their real-time functionality development needs, compared to only 4% of respondents from companies with 500-999 employees. For smaller organizations (10-24 employees), 5% reported partnering with a third-party vendor, but respondents from companies who employed between 1,000-4,999 people reported using outside firms 19% of the time.

Company size does seem to play a role in what's considered when working with a vendor. Respondents from companies with 2-9 employees ranked cost and security at the top of the list with 19%, and flexibility and a team's prior experience using a tool tied for second place with 16%.

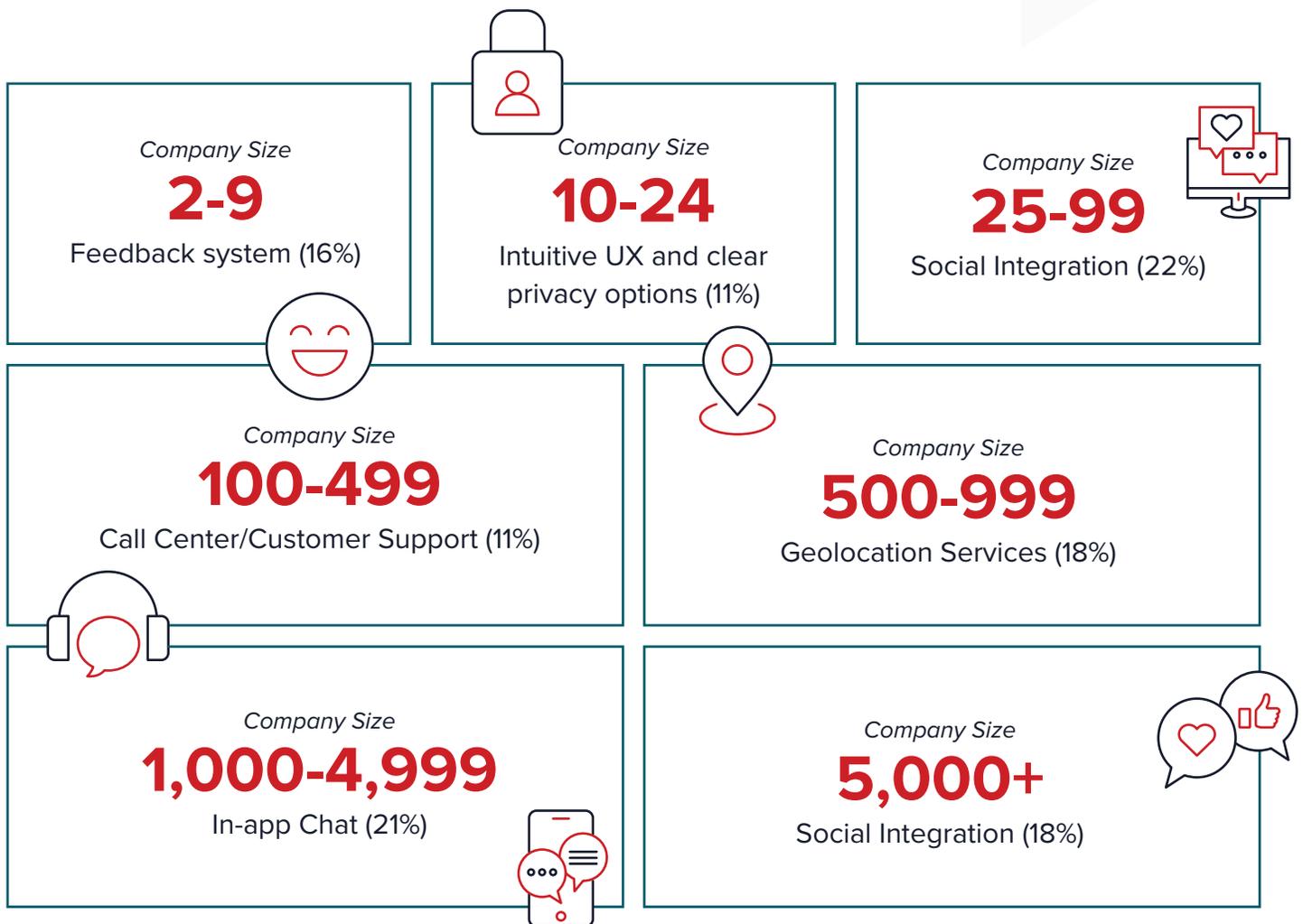
This group was the only one that had cost in the top spot. The vendor's available documentation was of the least concern, with only 5% of respondents calling that a factor.

Only companies with 10-24 employees ranked Product Features as the number one thing they look for in a vendor (27%). Similarly, Flexibility made the top spot for only those companies with 500-999 employees (28%). Security was the number one factor for all of the other company sizes.

On the other side of the spectrum, Flexibility was the least important factor for companies with 10-24 employees (5%), Product Features were in last place for those with 100-499 employees (7%), and interestingly, respondents who work for companies with 1,000-4,999 employees ranked Scalability in last place (10%) in their list of factors they take into consideration when working with a third party for their real-time interactivity features. All other company sizes felt the same about documentation as the smallest group, with 5% being the average answer.

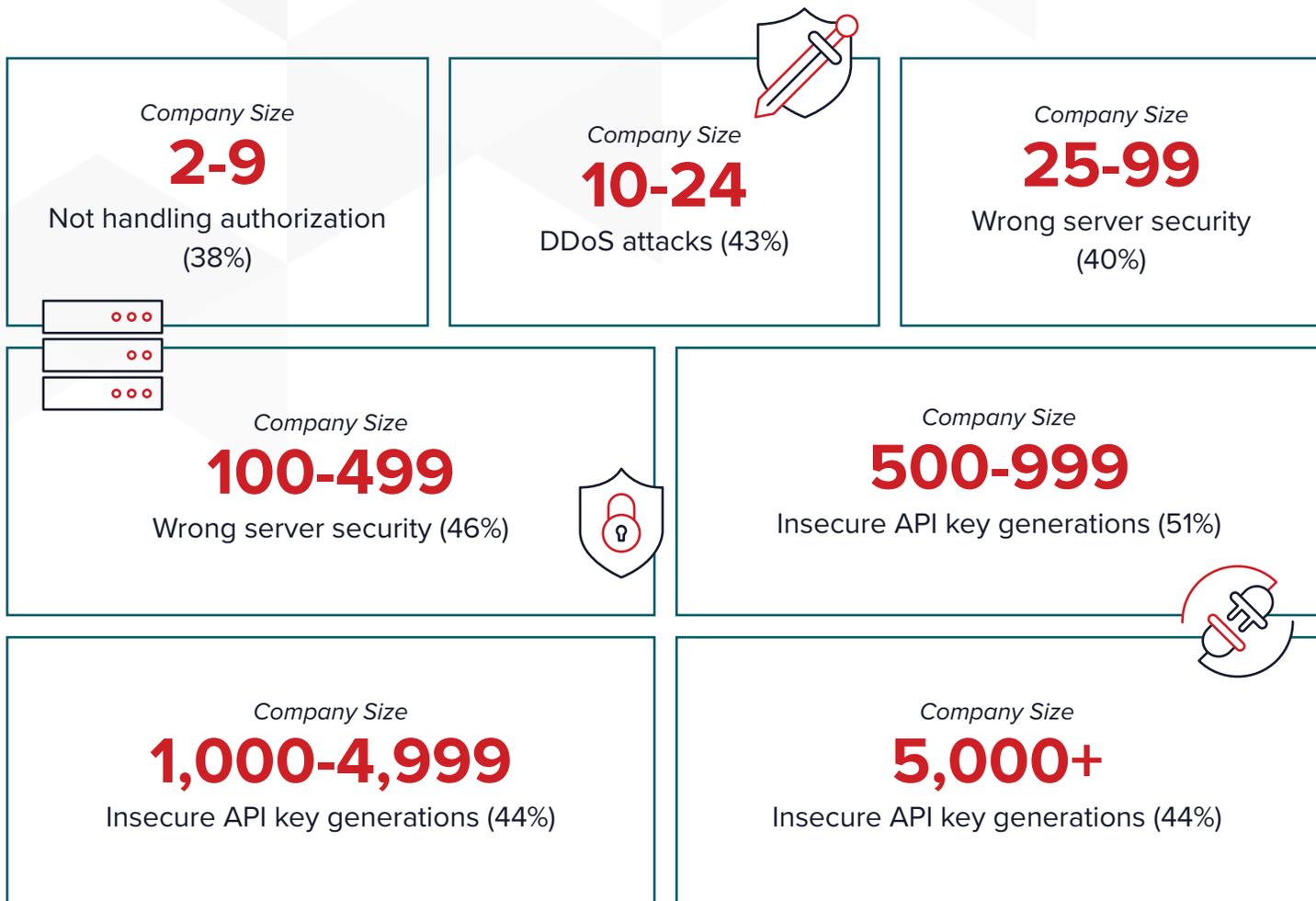
The app features wish lists differed depending on company size. Interestingly, organizations with 1000+ employees went for IoT Device Control (avg. 43%) and Chat Support/Callback Functions (avg. 32%) as features they'd prioritize if resources were readily available.

Furthermore, there was a different last-place feature for almost every size group. Here's how they broke down:



We also wanted to know if API security concerns change based on company size, and the answer is yes...to an extent.

When it comes to what keeps them up at night, those with under 100 employees were concerned about maintaining their app. In comparison, organizations with 100 and more employees were worried most about their app's reliability.

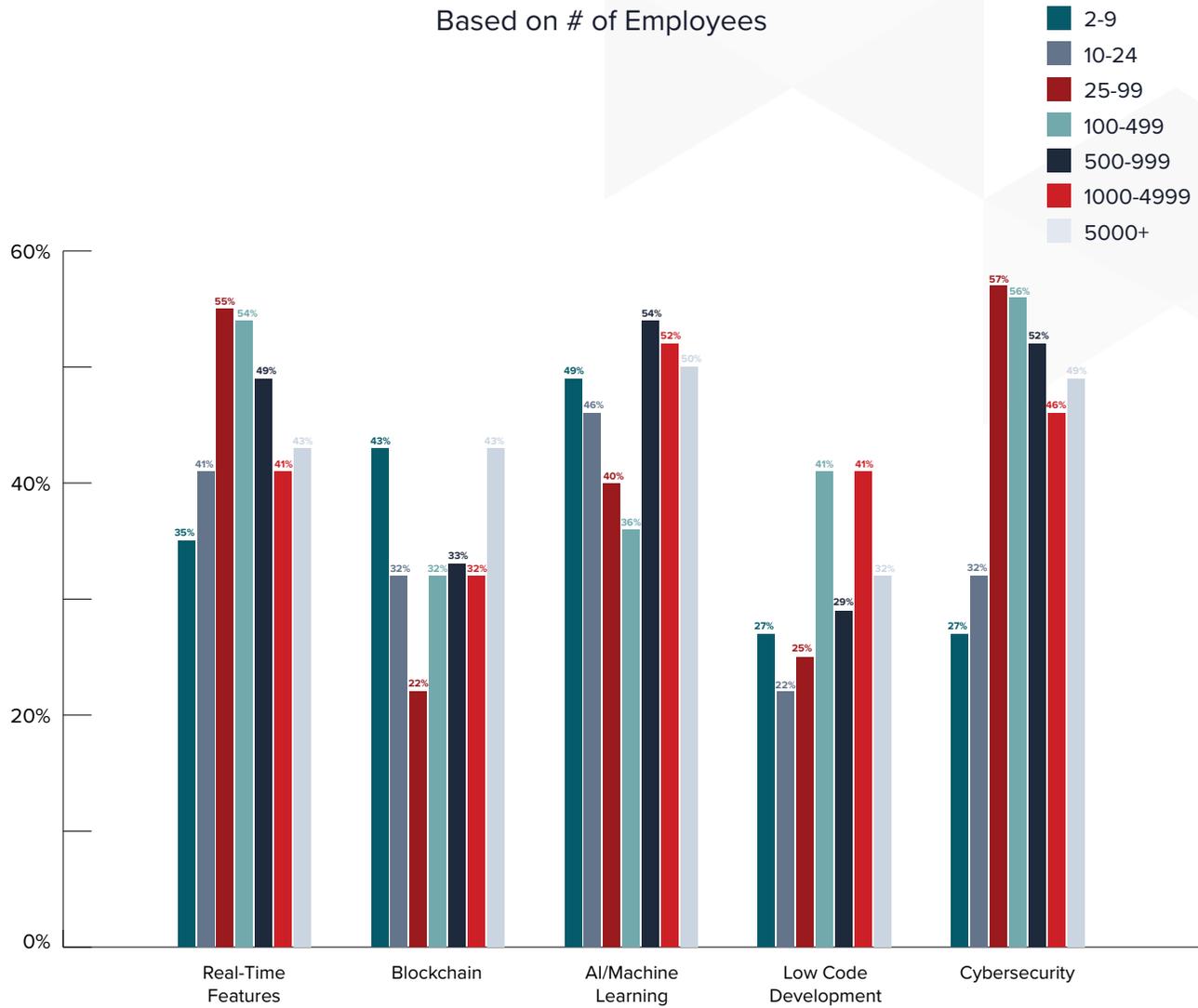


Our data also showed that companies with 1000 employees and up have about the same level of concern for each category. In other words, there wasn't one thing they were focused on more than another. Alternatively, we found that companies with 100 employees or more tended to have one or two stand-out security concerns. In comparison, companies with fewer than 100 employees were higher in all categories across the board.

What are some differences in an app's roadmap based on company size? The companies with 25-499 employees are looking at adding real-time features (avg. 54%) and ways to improve their cybersecurity (avg. 56%). In contrast, those organizations with 500+ employees are more likely to focus on AI/Machine Learning (avg 52%) and Cybersecurity (avg 49%). (Figure 10)



## What are some technologies that are on your org's radar in the coming year?



**FIGURE 10**

# Conclusion

While many organizations recognize how important it is to have real-time technology built into their apps, many companies worldwide are still playing catch up, and the implications of that may be that they fall behind their competitors regarding user engagement and app adoption rates.

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# Appendix A

COMPANY SIZE	FREQUENCY	PERCENTAGE
1	27	4.50%
2 to 9	37	6.20%
10-24	37	6.20%
25 to 99	67	11.20%
100 to 499	158	26.30%
500 to 999	95	15.80%
1,000 to 4,999	97	16.20%
5,000+	82	13.70%
<b>Total</b>	<b>600</b>	

## REGIONS

APAC	200	33.33%
EMEA	200	33.33%
North America	200	33.33%

## GENDER

Female	299	49.8%
Male	301	50.2%

## JOB FUNCTION

Developer	269	45%
Product Management (App Development)	141	24%
Tech Executive	190	32%
<b>Total</b>	<b>600</b>	

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