acuiti management intelligence

Building Competitive Technology for the Exchanges of the Future

IN ASSOCIATION WITH

Connamara TECHNOLOGIES

Table of Contents

Introduction

Operating an exchange is a task involving intense competition for trading flows, with a constant hunt for profit and expansion.

Venues have two basic routes available for growth. One is extracting more revenue from their existing client base, through measures such as market data fees or increased trading volumes. The other is pursuing growth through expansion of the client base.

To achieve this objective, exchanges can pursue a range of different liquidity sources. International trading firms, domestic institutional investors and retail traders all represent rich client bases to cultivate.

Each client type will have its own needs and features to be catered to. However, a key requirement for all will be a robust and accessible technology infrastructure.

Building the right tech stack requires careful planning, given the risks of mis-allocated capital, overspend and timeline overrun.

For the more established exchanges, these risks can be better weathered, but for smaller exchanges, budgets are often limited, so every investment dollar must be spent wisely.

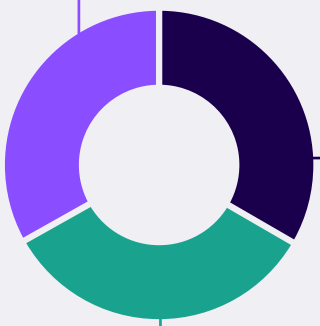
CTOs and COOs must find value at every level of the tech stack.

This will involve grappling with questions such as how much of an exchange's infrastructure can be outsourced or developed in-house and the cost and timeline implications of these choices.

In order to understand how smaller exchanges across the world are handling these challenges and executing their investment in technology, Acuiti has partnered with Connamara Technologies to survey or interview 58 senior executives in technology, business development operations and management roles at exchanges.

The report finds a market with significant ambitions for growth but one in which, for many traditional exchanges, legacy and outdated technology will hold back growth.

Respondents to this survey were split into three core segments:



1

Tier 2 and 3 exchanges - exchanges with an international presence but outside the tier 1 major exchange groups

2

Emerging and frontier market exchanges - national exchanges with limited international reach

3

Specialist exchanges - recently launched markets covering new asset classes such as carbon, events or digital assets

Among this report's key findings:

- Investment in technology is a key part of exchanges' growth strategies - 91% of tier 2 and 3 exchanges said it was a major factor in achieving growth with 61% saying it was crucial
- Less than half of exchanges that took part in this study had conducted a major upgrade to their matching engine in the past six years
- Exchange outages remain a problem for many exchanges, particularly those running legacy technology stacks
- 67% of respondents are either in the process of a major investment in their technology or preparing one for within the coming 12 months
- There are observable cost differences between exchanges that outsource systems to tier 1 exchange group vendors and those that use smaller independent firms, with the latter more cost effective
- The most important factors that exchanges value when outsourcing technology are the ability to customise software, selected by 62% of survey respondents, and cost, selected by 56%

Achieving growth through new clients

Growth is naturally the key goal of every exchange management team.

However, exchanges take a variety of approaches. This survey found that for both smaller international and emerging market exchanges, increasing the number of participants on their venues is the core element of their growth strategy.

Reflecting their relative immaturity in the global market, increasing the number of participants over launching more services for existing participants was particularly important for emerging market exchanges – 60% of whom said that this path was either very or critically important to their growth strategy.

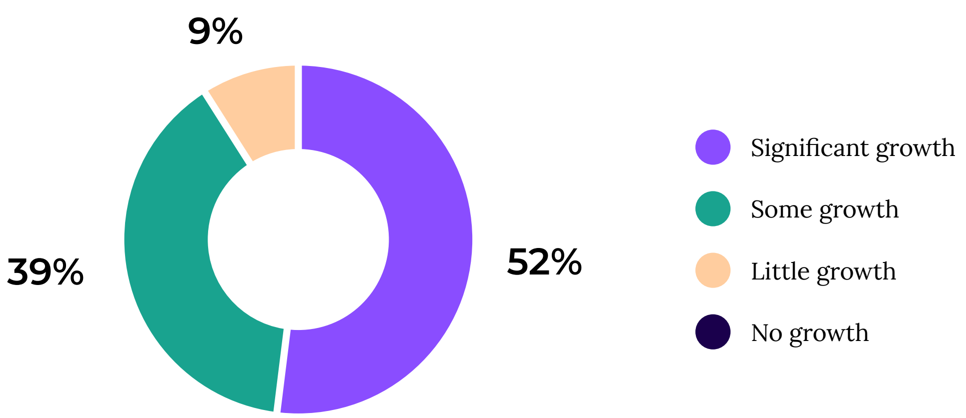
Around a third of emerging market exchanges were predominantly targeting domestic expansion, while 26% were focusing on international clientele. The remainder were targeting a mixture of both.

Those emerging market exchanges that pursue international expansion have several avenues.

The most popular reported by respondents to this survey were via exchange partnerships, such as MOUs and cross-listings, and growing their reach among the international sell-side.

Despite the challenges, growth is an achievable goal. The vast majority of tier 2 and 3 exchanges surveyed for the report reported success in their growth strategies over the last 10 years. Over half reported significant growth.

How much growth in participation have tier 2 and 3 exchanges seen in the number of participants over the past decade?

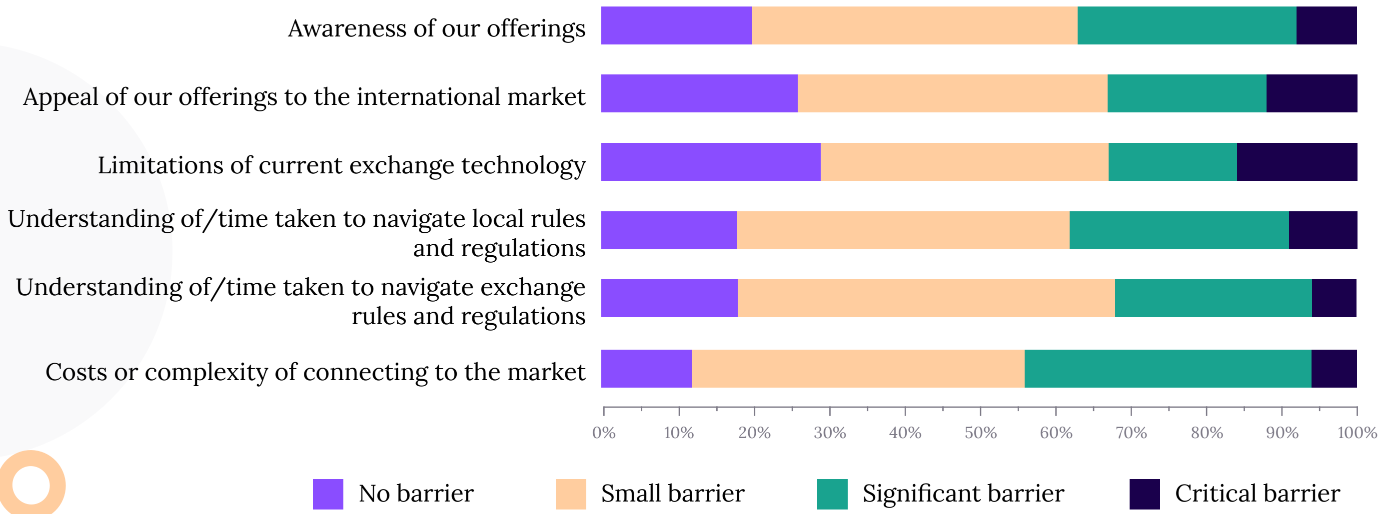


Emerging market and tier 2 and 3 exchanges operate in distinct competitive environments.

However, there are some common challenges that all must overcome. Notably, both exchange types reported significant challenges in promoting the appeal of their offerings to the international market.

There was also a similar pattern between the two exchange types on how much of a barrier to growth limitations of technology had proven. Similar proportions (under a third) felt that technology had been no barrier, while

Challenges that tier 2 and 3 and emerging market exchanges have in attracting international business flow



about a third of each exchange type either identified it as a significant or critical barrier to current progress on growing clients (emerging markets) or in the past decade's effort in pursuing growth (tier 2 and 3 exchanges).

This split can partly be explained by the different stages of technology investment that survey respondents find themselves at.

Those exchanges that faced few or no barriers were more likely to have made recent investments in their technology. Meanwhile, those with older tech stacks were more likely to face significant or critical challenges to attracting international business.

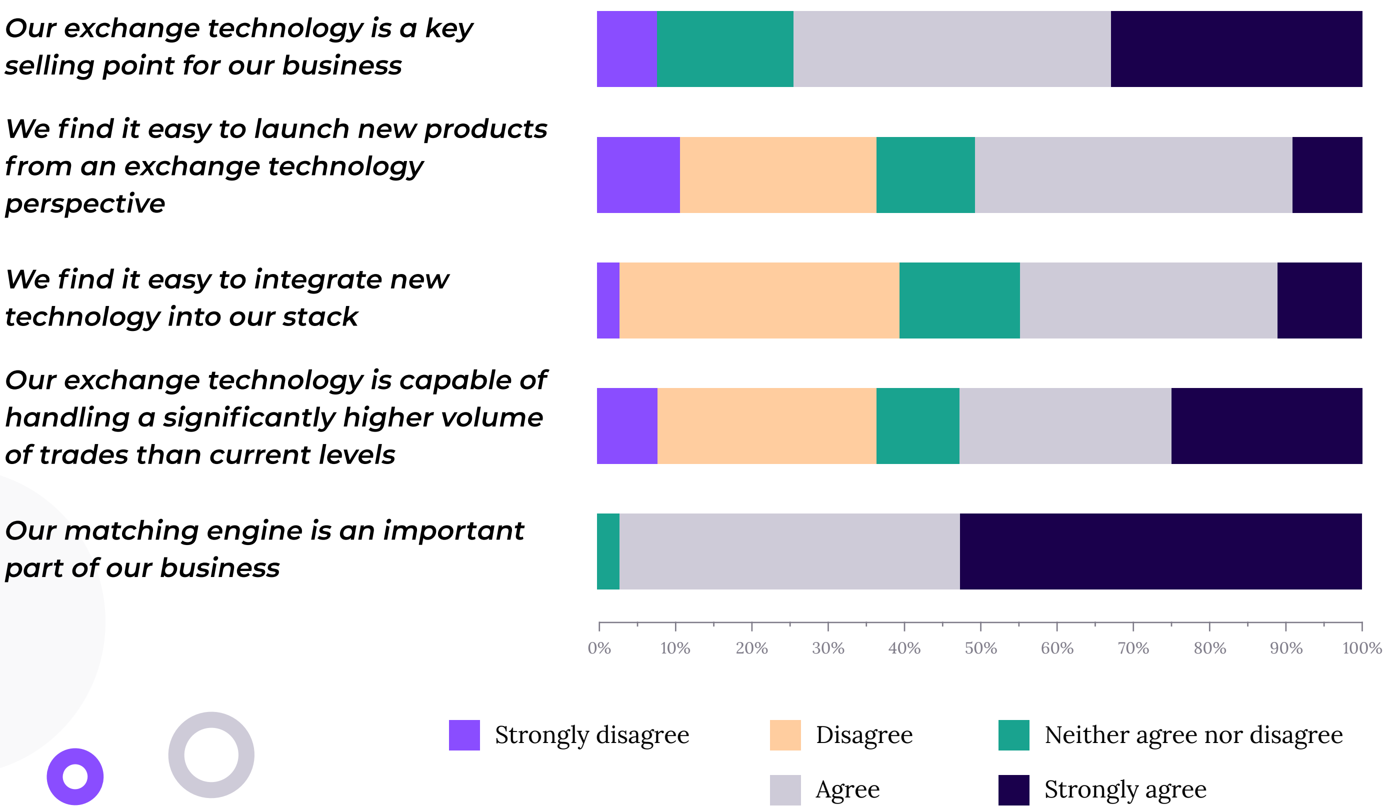
Harnessing technology for growth

For some markets, such as digital assets, regulation and wider institutional adoption are seen by most market participants as the key issue to be resolved if new liquidity is to be attracted.

However, for exchanges that offer products in more established asset classes, technology is a more significant differentiator. Factors such as the capacity to host sophisticated trading strategies and modern risk management systems are more essential for a venue to appeal to the international market.

Around three quarters of all survey respondents agreed that technology was a key selling point for their business. An even higher proportion — 97% — said that their matching engine was an important part of their business.

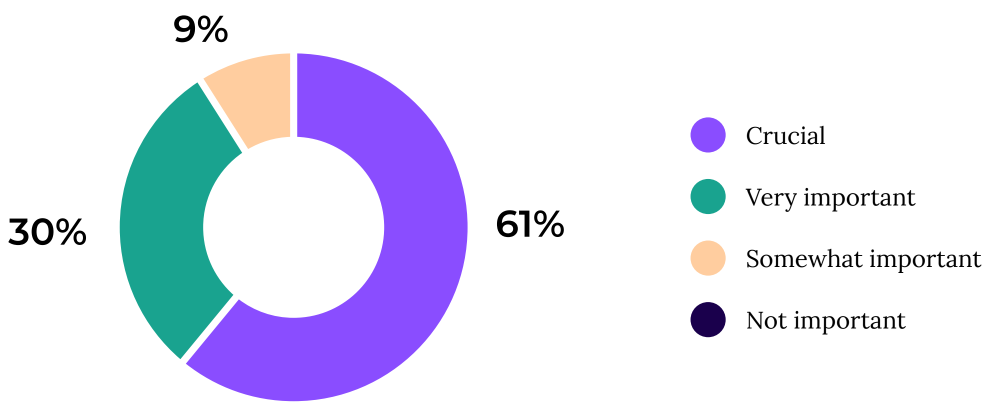
Do you agree or disagree with the following statements?



Technology investment also enables an exchange to be nimbler. On questions such as the ease of launching new products, handling increased volumes of trades and integrating new technology into the stack, satisfaction was varied. Again, this was often correlated to when an exchange has invested in its technology. Venues that had made more recent investments were more likely to be confident in their ability to execute new initiatives.

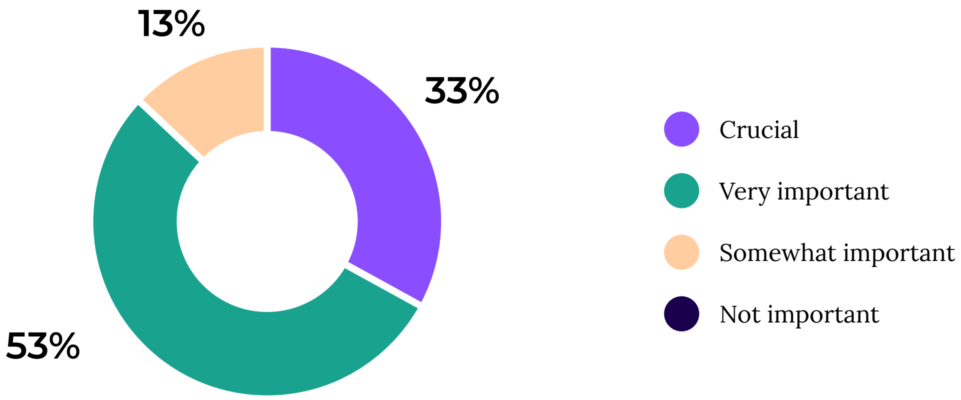
Ultimately, executives surveyed for this project view investment in technology as key to growth. Tier 2 and 3 exchanges recognised that the high level of success that they had enjoyed in growing the number of participants on their venues was attributable to investment. More than nine in 10 said such investment in technology had been a significant factor in executing their growth strategy, with 61% saying it had been crucial.

How important has investment in exchange technology been to growing tier 2 and 3 exchanges?



For emerging market exchanges, investment was also highly important. One third said it was crucial to growing their exchange, while just over half said it was very important.

How important is investment in exchange technology to the growth strategy of emerging market exchanges?



EP3® Insight: A buy AND build Approach to Legacy Technology

While investing in new technology offers numerous advantages, it's crucial to navigate the complexities of integrating it with your existing legacy systems. Working with professionals who understand existing technology and cutting-edge tech stacks is the first step. A buy AND build approach provides a seamless solution, combining the best of both worlds. With EP3®, you can optimise your operations, reduce risk, and accelerate your digital transformation while unlocking new growth opportunities.

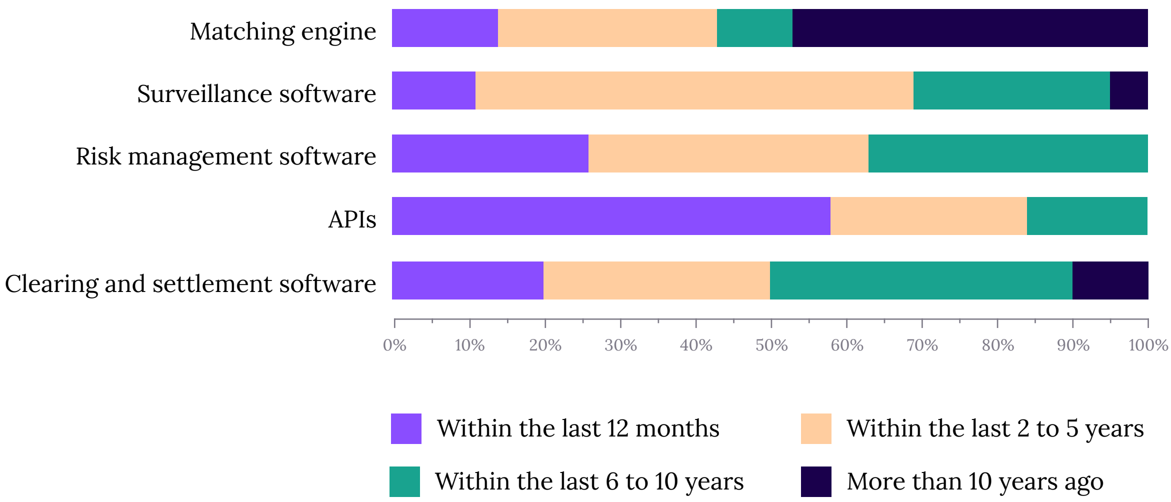
Assessing the tech stack

The exchange tech stack is multi-layered with wholesale upgrades rare due to the complexity, time and cost involved.

The nature of investment also varies according to which part of the tech stack it is being made in. Among emerging markets exchanges there has been a recent focus on APIs, for example. APIs are a broad category and invested in on a much more continuous basis than other parts of the tech stack, such as matching engines.

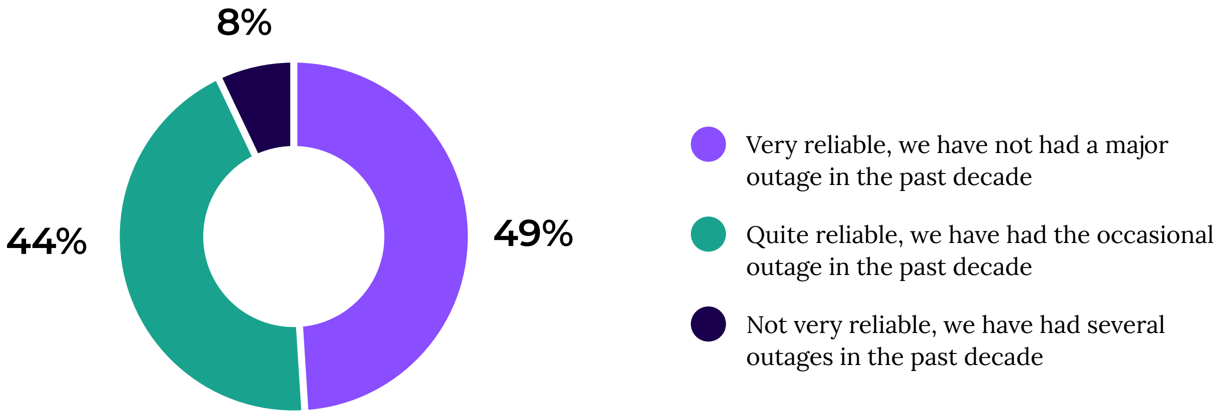
As found in this survey, matching engines are a critically important part of any exchange's offering. However, the survey shows that respondents are much more reliant on old technology in this area, with most survey respondents having conducted a major upgrade six years or more ago.

When did your exchange last make a major upgrade to your exchange technology in the following areas?



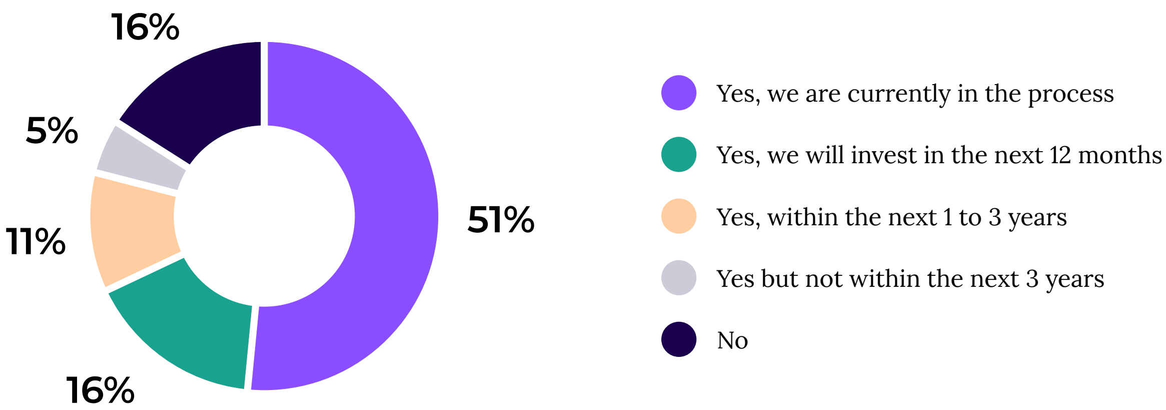
Tier 2 and 3 exchanges were more likely to have upgraded their matching engine more recently than emerging market exchanges. The implications of running old technology are stark when considering the risk of outages. More than half of all respondents had experienced a major outage during the past decade. Outages are significant operational headaches, not just in the immediate recovery mission, but for long-term reputational damage too.

Overall, how reliable is your exchange technology?



In response, exchanges are turning to tech investment. While many exchanges reported significant recent investments in certain parts of the tech stack, just over half of respondents are currently in the process of planning a major technology investment. Given the importance that these investments will play in achieving a growth strategy, structuring them correctly will be essential to any exchange's success.

Are you currently planning a major investment in your exchange technology?



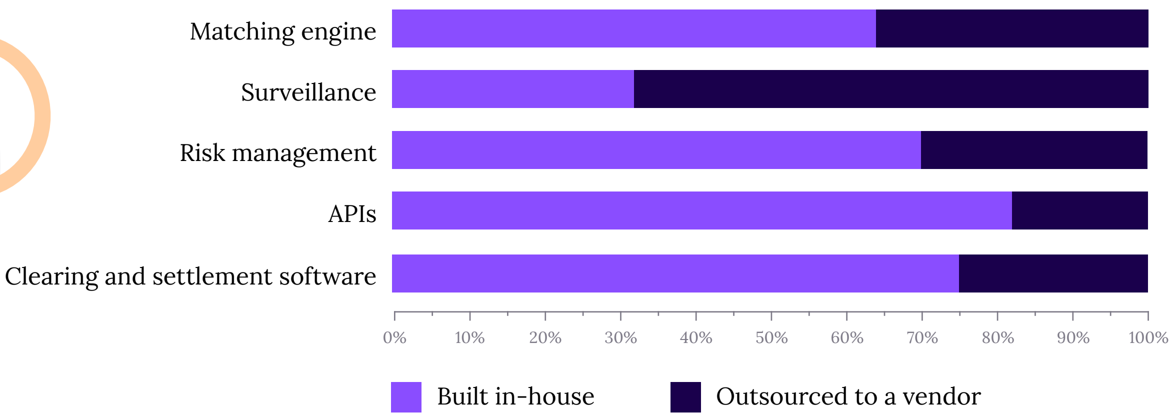
EP3® Insight: APIs: The Key to Customisation and Flexibility

With a majority of exchanges (58%) focusing on API upgrades, it's evident that the ability to customise and integrate third-party solutions is a top priority. APIs are not just a tool but a key that unlocks the door to a competitive advantage. They enable exchanges to tailor their systems precisely to their market and operational needs, ensuring adaptability and a leading edge in a rapidly evolving industry. The EP3® advanced exchange and clearing platform, with its downstream integration capabilities, further enhances this advantage, allowing seamless integration with third-party or proprietary market access and trading applications through standard APIs and protocols such as FIX.

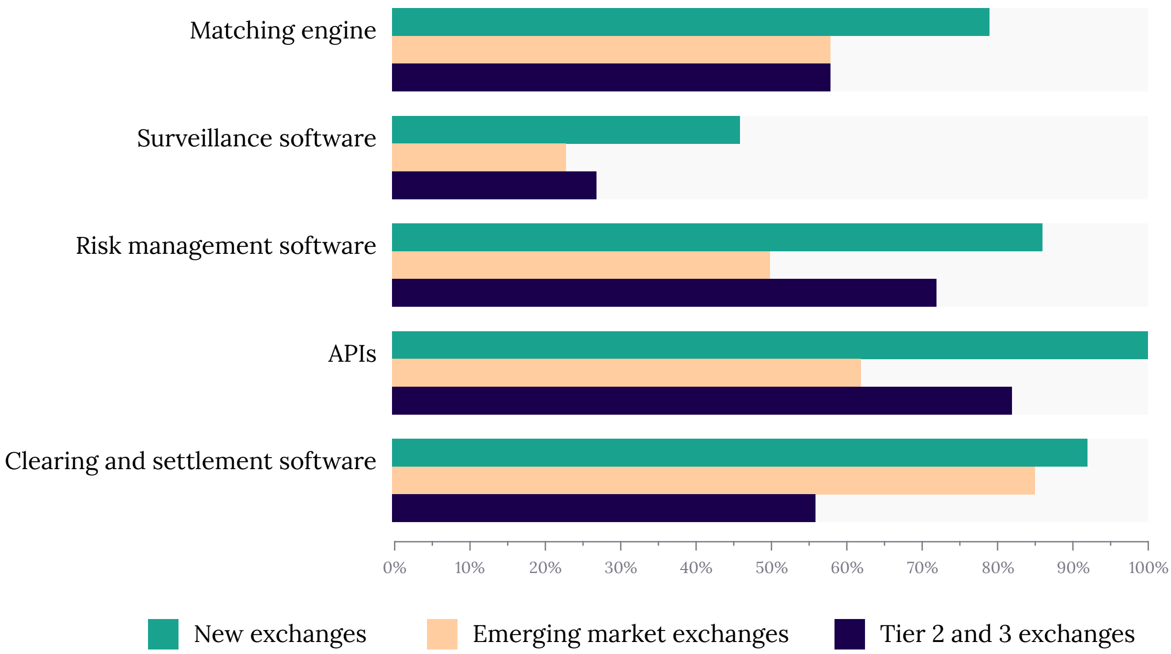
In-house vs outsourced: evaluating the advantages

For exchanges that are investing in technology, the first question to address is how much of the stack should be developed in-house and how much should be outsourced as well as what the best processes are for each route. Overall, for most parts of the tech stack, exchanges had chosen the in-house route, with APIs the most common function to be developed in-house.

How did you source the following technology for your market?



Who builds what in-house?



This preference for in-house API development was strongest among new exchanges, none of which had outsourced. Among emerging market exchanges, there had been a greater tendency to work with a third-party vendor.

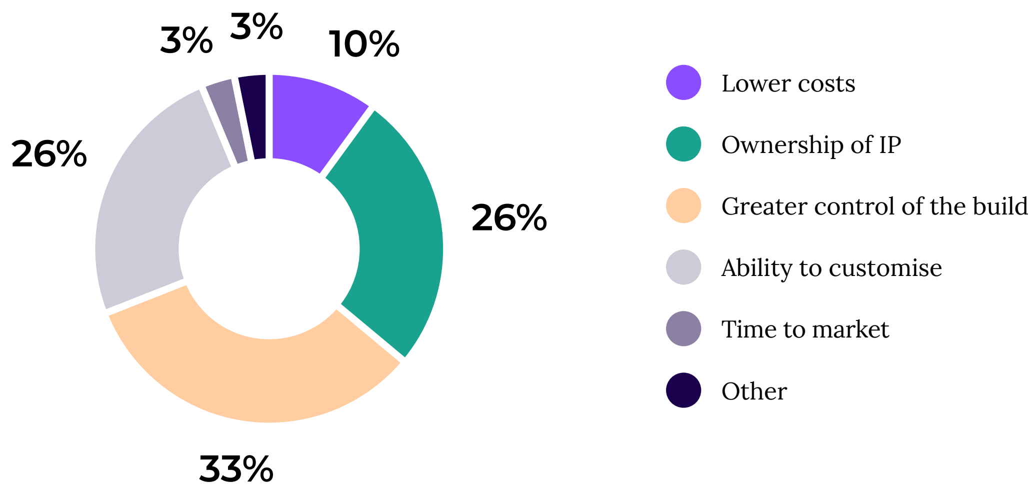
Emerging market exchanges' openness to outsourcing was also apparent in other functions. While tier 2 and 3 exchanges showed a higher rate of in-house development than emerging markets across most functions (except matching engines and clearing and settlement software), they too reported higher levels of outsourcing than new exchanges.

The higher rate of in-house development among new exchanges is partly due to the relative immaturity of the asset classes that they serve. Third-party vendors are much more common in traditional asset classes, simply due to their longevity.

In-house development is attractive to some for a variety of reasons. Across all types of exchanges surveyed for this report, greater control of the build was cited as the main factor behind choosing the in-house route.

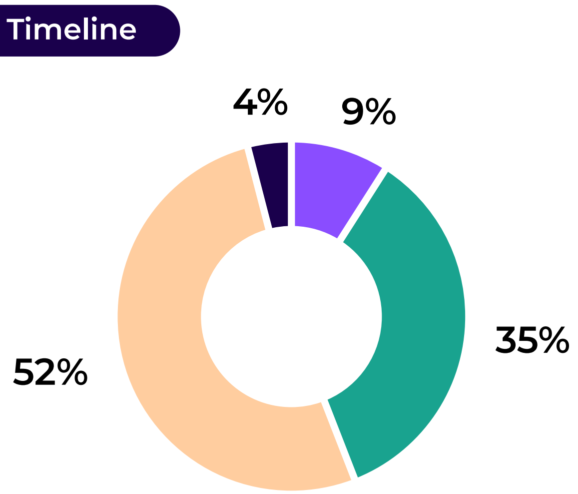
Other factors that survey respondents commonly cited were closely interlinked with control, such as the ability to customise and ownership of IP.

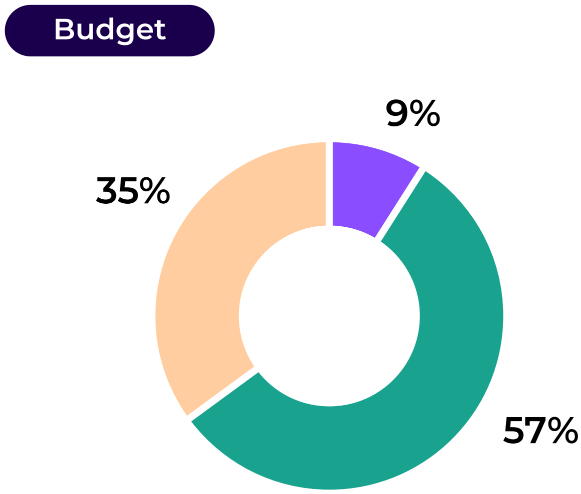
What is the main factor in your decision to build exchange technology in-house?



However, in-house development has drawbacks too and expectations of the advantages don't always meet reality. Cost control and timeline overrun are two such issues, with significant budget needed to hire the right development teams — both for the build and maintenance afterwards. These development team costs can be prohibitive for exchanges with a limited budget. The potential for longer than expected builds is also higher when starting from scratch. Most tier 2 and 3 and emerging market exchanges had chosen an in-house build for their most recent system upgrade. During the building stage, most of these exchanges reported a degree of overrun on their development timeline.

How did the in-house build meet expectations in terms of timelines and budget?





Less than expected
More than expected
In line with expectations
Significantly more than expected

While timelines had often been longer than expected, most exchanges in each group said that the in-house build had been in line with budget. This conclusion should be caveated however, as the total cost of ownership in-house is often harder to define at a granular level than outsourced technology.

This increases the appeal of working with a third-party vendor. By outsourcing, firms can bring parts of their tech stack to market faster and, in many instances, with a lower total cost of ownership.

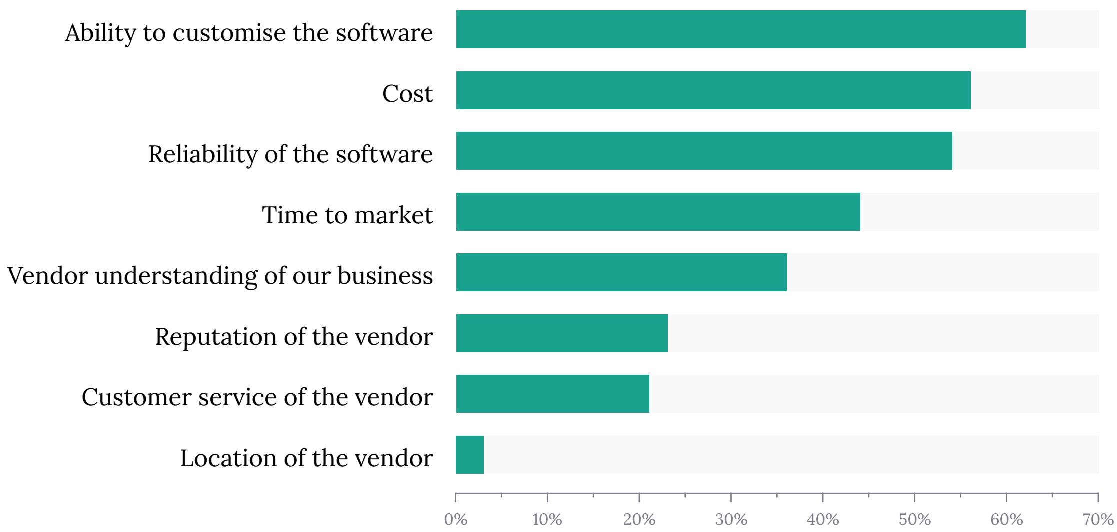
Some technology functions are now served by a highly mature third-party market. Surveillance is one such area, with healthy competition between a grouping of sophisticated vendor offerings. Across exchange types, surveillance was by far the most outsourced technology.

While many exchanges tilted towards in-house, there was still a high level of outsourcing among survey respondents. Most exchanges that outsourced all or part of their infrastructure worked with two to three different vendors.

When considering a vendor to work with, exchanges gave the highest importance to the ability to customise software. This has been a major theme in the third-party market of recent years, with more vendors offering buy-and-build solutions alongside the off-the-shelf systems traditionally associated with third-parties.

Also highly important were cost and the reliability of the software. The latter point is a concern for many firms around issues such as outages or cyber hacks, with a common perception that client-vendor communication can break down and hinder control over the recovery process. Cost has traditionally been seen as lower in the third-party market. However this can vary significantly according to the type of vendor involved.

When evaluating outsourcing of exchange technology, what are or would be the top 3 most important factors for your firm?



EP3® Insight: The Economics of Outsourcing Technology

When managing technology costs, outsourcing often proves more cost-effective than in-house development. This can be crucial for tier 2 and 3 exchanges and emerging market exchanges, which often operate with tighter budgets. By strategically leveraging outsourcing, firms can achieve cost-effective technology solutions without compromising quality. Selecting vendors, like EP3®, that offer proven, flexible technology, along with modular pricing of key components, mitigates the risk of overruns in budget and time.

The vendor landscape

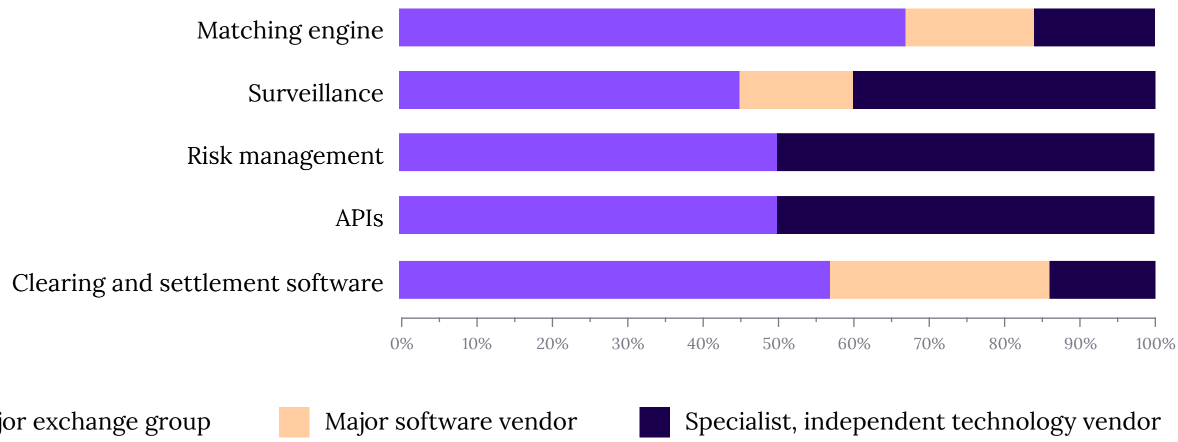
The vendor landscape for exchanges is a broad one, with customer experience varying significantly by company type.

The range contains the business lines of tier 1 exchange groups that provide their technology to other exchanges, large software providers that provide a range of technology systems to financial firms, and more specialist firms, which create systems for specific functions.

In the choice of vendors, there was a dividing line between tier 2 and 3 exchanges, which tended to use tier 1 exchange group vendors, and emerging market and new exchanges, which made much more use of specialist vendors.

Despite all these firm types classifying as vendors, the user experience and offerings they provide are often very different.

What type of vendor did you use for the functions that you outsourced?



For most exchanges, the timeline for bringing outsourced technology to market had been in line with expectations. Higher proportions of tier 2 and 3 exchanges, which more commonly buy systems from tier 1 exchange group vendors, reported overspend on budget.

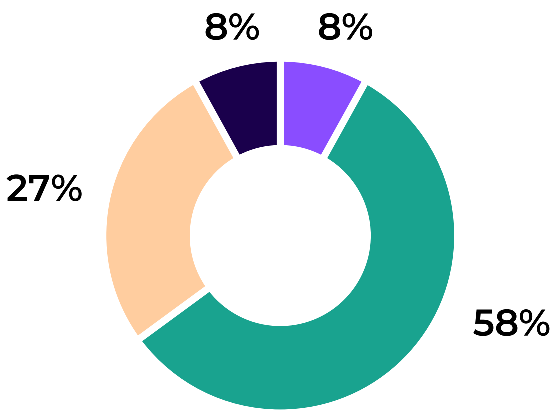
EP3® Insight: Partnering with Independents: Agile, Cost-Effective, and Market-Ready

Partnering with independent vendors gives exchanges a competitive edge through agility and customisation. Independent vendors can offer highly tailored solutions that align closely with specific market and operational needs. Emerging markets and new exchanges favour independent vendors for their ability to provide specialised, modular pricing and better cost control.

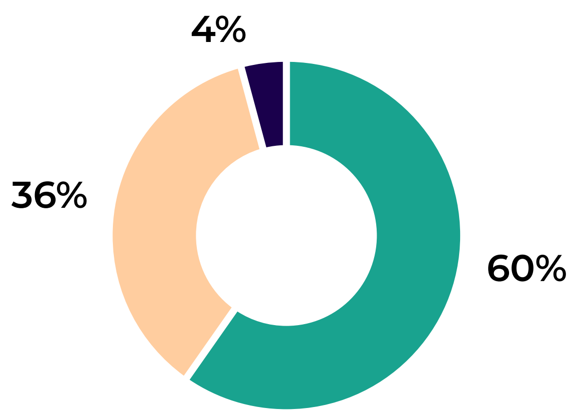
However, overall, most firms that outsourced reported costs in line with the budget. This is largely to be expected, given that a traditional advantage associated with using third-party offerings is the overall lower cost of ownership.

How did the outsourcing meet expectations in terms of timelines and budget?

Timeline



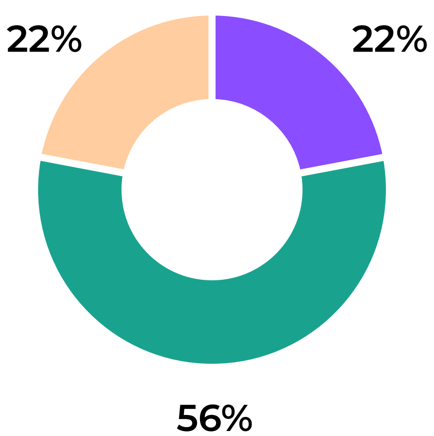
Budget



- Less than expected
- More than expected
- In line with expectations
- Significantly more than expected

Among emerging market and new exchanges, which made greater use of independent providers, overspend was lower than that of the tier 2 and 3 exchanges. This may be due to the nimbler nature of independent vendors as well as their reported increased willingness to provide modular pricing. Greater satisfaction among emerging market and new exchanges was also apparent on maintenance costs.

How happy are you with the ongoing cost of running the exchange technology that you outsource?



- Extremely happy
- Somewhat satisfied
- Somewhat unsatisfied
- Extremely unsatisfied

Conclusion

The success that tier 2 and 3 exchanges have reported in this survey in growing their client base over the past decade shows to emerging and frontier markets that the prize is there for the taking.

Many of these markets have vibrant and diverse local retail bases and products that offer different exposures to those that trade on international markets - making them very attractive to global investors.

Technology is fundamental to the success of any exchange. Building and maintaining a tech stack that is competitive in modern global markets, therefore, requires significant investment.

How investment dollars are spent will require significant planning by any exchange, but the challenge is particularly acute for those with more restrained budgets. This group typically comprises tier 2 and 3 exchanges, emerging market and frontier exchanges and new exchanges.

This study found that most of these exchanges are planning significant investment in their tech stack, either immediately or in the near term.

For most firms, this will involve some level of outsourcing as an efficient mode of bringing systems and applications to market.

The survey findings in this report show that significant proportions of exchanges are now using third-party solutions across the tech stack.

Applications range from surveillance, which is well-served by third-party options, to matching engines — a crucial part of the exchange tech stack that firms have traditionally developed in-house.

While many firms see advantage via in-house development, attitudes are clearly shifting. On key measurements, such as timeline and budget for build and maintenance, firms are finding significant gains from working with third-parties.

This picture is becoming richer with the increased diversity of the vendor landscape, as independent providers increasingly compete with established players. The ultimate effect is increasing confidence to consider outsourcing at every stage of the tech stack.

A NEW BREED OF EXCHANGE TECHNOLOGY

End-to-End Integrated Exchange and Clearing Infrastructure

- A complete exchange and clearing infrastructure, seamlessly integrating all key functions into a single robust platform, including order matching and execution, market access, market data distribution, risk management, market surveillance, exchange administration, regulatory reporting, clearing and settlement.

- Cost-accessible, quick-to-market, and easily adaptable to new asset classes and ways of trading

- Proven technology that is powerful, scalable, and highly available

- Cloud-native with flexible deployment models - the cloud, data center, or hybrid

- Backed by decades of successful deliveries of mission critical solutions to exchanges and capital markets participants

For inquiries, please reach out to Daniel Davis, Connamara Technologies' Head of Growth, at DDavis@connamara.tech.

More information about EP3 and Connamara Technologies can be found at www.connamara.tech

+44 (0) 203 998 9190
acuiti.io
info@acuiti.io