Greater Birmingham Chambers of Commerce

BEHIND THE BUILD

SOFTWARE DEVELOPMENT IN THE WEST MIDLANDS

In partnership with:

B13.ai

WELCOME

RAJ KANDOLA

ACTING DEPUTY CHIEF EXECUTIVE

GREATER BIRMINGHAM CHAMBERS OF COMMERCE

Research by the Business Commission West Midlands found that in 2024, more than half of the region's businesses expected to increase their investment in technology and artificial intelligence (AI), identifying AI and digitisation as one of five key levers for future economic growth.

Building on these findings and recognising the pivotal role of software development in unlocking the potential of AI and digital transformation, we are proud to have collaborated with B13.ai on this important research.

Software development represents a powerful engine for innovation, efficiency, and competitiveness. It enables businesses across the West Midlands to reimagine how they operate, deliver value, and drive sustainable growth in an increasingly digital economy.

This research explores how businesses across the West Midlands Combined Authority area are progressing in developing new software solutions, the challenges they face, and the lessons emerging from their experiences.

This report presents the findings of that research, highlighting not only the data, but also the real stories behind the statistics: the lived experiences of West Midlands firms at the forefront of software innovation, and undertaking new software integrations.

I would like to extend our sincere thanks to all those who contributed to this report, whether by completing the survey or sharing your insights through in-depth interviews. Your openness in discussing challenges, lessons learned, and examples of good practice will help other organisations on their own development journeys and strengthen the region's collective capacity to seize the opportunities of digital transformation and economic growth.

TOM HAWORTH

FOUNDER

B13.AI

Having spent the past decade supporting small businesses across the region in unlocking the value of bespoke software, we would like to extend our thanks to the Greater Birmingham Chambers of Commerce for the opportunity to contribute to this report.

With only 24% of participating firms reporting that they achieved their desired outcomes from software development projects, it's clear there is still work to be done in establishing a more reliable path to the efficiencies and innovation that AI and bespoke software promise.

The stories shared in this report aim to demystify common mistakes and highlight the clear patterns among those who have successfully realised the value they set out to achieve – particularly when it comes to sufficient upfront scoping before development begins.

We would also like to thank everyone who volunteered their time to complete the survey or share their experiences. This report serves not only as an essential guide for business owners considering a software development project, but also as a testament to the West Midlands' position as a hub of innovation and experimentation.

KEY FINDINGS

- 40% of West Midlands businesses have engaged in software development activities in the past 2 years.
- 41% of firms in the region plan to engage in software development activities in the next 12 months.

The main goals of software development projects for West Midlands businesses:

- 64% – Improving internal business processes
- 50% – Enhancing customer experience
- 48% – Automating existing tasks or workflows

Key challenges West Midlands firms faced during software development:

- 40% – Budget constraints
- 23% – Project delays, overruns or unrealistic timelines
- 20% – Lack of expertise within the development team

Software development outcomes for West Midlands businesses:

- 24% of firms reported facing no significant challenges in recent software development projects.
- Whilst 48% of firms stated that whether their software development had successfully delivered value was yet to be determined, 30% reported that this was the case, with just 2% reporting otherwise.

SAMPLE AND METHODOLOGY

Surveying for the Behind the Build research was conducted between 12th May – 9th June 2025, through additional questions in the existing Quarterly Business Report survey and Quarterly Economic Surveys of the Greater Birmingham Chambers of Commerce, Coventry and Warwickshire Chambers of Commerce and Black Country Chambers of Commerce. These were disseminated to local businesses within and beyond the Chambers' membership, through a wide range of communications channels, including email newsletters, direct emails, social media, and in-person events.

Unless stated otherwise, analysis of the quantitative survey findings in this report are based on all respondents less those who chose not to answer specific questions. Where figures do not sum to 100%, it is due either to rounding and/or participants being able to select multiple answers.

To supplement the Behind the Build survey, and to develop a deeper understanding of the experiences and challenges firms have faced – and in some cases, continue to face – across the region, the Chambers and B13.ai conducted one on one interviews with a self-selecting group of 11 business leaders who responded to the survey. Anonymised case studies from these qualitative interviews are summarised throughout the following report.

WHO IS ENGAGING IN SOFTWARE DEVELOPMENT IN THE WEST MIDLANDS?

40% of business leaders surveyed across Greater Birmingham, Coventry and Warwickshire and the Black Country reported that in the 24 months prior to surveying they had engaged in software development activities (including in-house development, commissioning, or collaborating with third parties), and 41% were planning to do so in the next 12 months. Just 27% had not engaged in software development in the previous 12 months and weren't planning to do so in the year ahead.

Responses across the manufacturing and services sectors were similar. 41% of manufacturers and 40% of services sector businesses had engaged in software development activities over the previous 24 months, though a slightly higher proportion of manufacturers had not done so – 42% compared to 38% of their services sector counterparts. Looking to the coming year, 43% of manufacturers and 41% of services firms had plans to engage in software development.

Comparing responses by business size, broadly, the larger the organisation, the higher the likelihood of engagement in software development activities. 32% of firms with 1-19 employees, 51% of those with 20-199 staff members, 87% of those with a headcount of 200-499 and 100% of businesses with more than 500 staff surveyed had engaged in software development activities in the previous 24 months. This pattern was also reflected in future software development intentions. 34% of organisations with 1-19 employees had intentions to engage in software development activities in the next 12 months, a figure which increased to 49% amongst those with 20-199 employees, 87% among those with 200-499 employees, and 100% amongst businesses with 500+ employees.

Conversely, the smaller the organisation, the more likely that they had not engaged in software development activities, nor had plans to do so, as reported by 32% of firms with 1-19 staff members, 18% with 20-199, 7% with 200-499 and 0% with 500+. Smaller businesses were also more likely to feel that software development activities were not applicable to them, as indicated by 19% of firms with 1-19 employees, 9% of those with 20-199 staff, 7% with 200-499 and 0% of those with 500+.

WHAT ARE FIRMS LOOKING TO ACHIEVE THROUGH SOFTWARE DEVELOPMENT IN THE WEST MIDLANDS?

Amongst firms engaging in software development activities, 64% of respondents to Behind the Build surveying identified improving internal business processes as a main goal of their software development projects, making this the most frequently identified ambition, followed by enhancing customer experience (as reported by half of all respondents), and automating existing tasks or workflows (identified by 48%). To integrate with other systems/platforms was a key goal amongst 2 in 5 firms engaging in software development activities (40% of respondents to the question). 21% identified creating a new product or service as a main goal, and 17% reported that meeting new compliance or regulatory requirements was a key ambition. 'Other' responses included reducing costs, improving cybersecurity, and monitoring test machines.

Comparing the objectives of software development projects undertaken by manufacturing and services sector businesses, both had most frequently identified a main goal to be improving internal business processes (identified by 71% of manufacturing and 65% of services sector firms).

Those in the services sector had more frequently sought to enhance customer experience (53%, compared to 38% of manufacturers) and to create a new product or service (23%, compared to 18% of manufacturers).

On the other hand, manufacturers more frequently identified improving internal business processes (71%, compared to 65% of services firms), automating existing tasks or workflows (53%, compared to 47% of services firms), and integrating with other systems/platforms as a main goal – notably, this ambition was reported by 56% of manufacturers compared to 37% of services firms. Manufacturers also more frequently identified meeting compliance or regulatory requirements as a key ambition (21%, compared to 17% of services firms).

There appeared to be a correlation between how large a business is and the likelihood that their software development projects have sought to improve internal business processes as a primary objective (this was reported by 56% of firms with 1-19 staff members, 76% with 20-199 staff, 79% with 200-499 staff and 88% with 500+ staff). Nevertheless, this was the most frequent response across all size bands – joint with automating existing tasks or workflows for those with 200-499 employees.

Organisations with 200-499 and 500+ employees significantly more frequently identified automating existing tasks or workflows than those with 1-19 and 20-199 employees. Those with 500+ staff also identified enhancing customer experience as a key ambition notably more frequently than smaller firms.

CASE STUDY:

Customising an Off-the-Shelf Association Management System

A micro membership organisation interviewed discussed engaging in software development to improve the efficiency and integration of its administrative processes. The organisation previously relied on a combination of software tools, however, as membership grew and administrative demands increased, these disparate systems proved insufficient for effective member management and engagement tracking.

After exploring various software development options, the organisation decided to adopt an off-the-shelf Association Management System (AMS). The selected AMS provider had extensive experience in membership management and was widely used within the organisation's sector. Although not the cheapest option, it is anticipated that it will offer superior functionality, including website integrations. The user-friendly interface and established track record of the system were also key factors in the decision-making process.

During procurement, the organisation adopted a structured and evidence-based selection process. They began by defining detailed requirements, which were recorded in a spreadsheet and used as a comparison tool to evaluate potential solutions side by side. This allowed the team to identify which products offered essential features and which lacked critical functionality.

Particular attention was paid to contract terms, as the organisation's small size meant that flexibility in the duration and scope of the agreement was essential.

Significant time was invested in planning before the development phase began. Once the contract was signed, the organisation and provider worked backwards from the target launch date to establish a detailed implementation plan. This included defining responsibilities, scheduling milestones, and conducting preparatory work such as data cleansing.

The build phase has focused on customising the off-the-shelf platform to meet the organisation's specific requirements. The process has been iterative, involving regular feedback loops between the organisation and the provider to refine the system's design and functionality. Progress is monitored through a structured project plan with defined deadlines and shared workspace tools for collaboration.

By investing time in defining requirements and mapping functionality before development, the organisation aims to ensure the system is configured for long-term success. Early indications suggest that this structured and collaborative approach is enabling the project to remain on track for a successful launch.

KEY CHALLENGES IN SOFTWARE DEVELOPMENT BY WEST MIDLANDS BUSINESSES

1. Budgetary Constraints

The most frequently identified challenge faced during software development was budget constraints, reported by 40% of West Midlands businesses engaged in software development activities in the previous 24 months. This was the most frequent challenge amongst both services and manufacturing sector businesses, however, appears to have been significantly more prevalent amongst services firms, with 43% of services sector respondents identifying this challenge, compared to 33% of manufacturers.

The most frequent challenges faced during software development varied by business size. Budgetary constraints were most commonly identified by firms with 1-19 and 20-199 employees, with almost 2 in 5 (39% of) firms in each size band reporting such). 42% of businesses with 200-499 employees reported budgetary constraints as a key challenge, and this figure rose to almost 9 in 10 (86%) amid large businesses with 500+ staff – making it the most frequent challenge by far amongst the latter group, and suggesting that the larger a business is, the more likely they are to encounter this difficulty.

2. Project Delays, Overruns or Unrealistic Timelines

Project delays, overruns or unrealistic timelines were the second most frequently identified challenge, reported by 23% of firms responding to the Behind the Build survey. These were slightly more frequently identified by manufacturers (27%) than their services sector counterparts (23%).

Broadly, as businesses increased in size, the prevalence of delays, overruns or unrealistic timelines increased in frequency. Whilst only reported by 11% of employers with 1-19 employees, 36% of firms with 20-199 employees and 58% with 200-499 members of staff identified this as a challenge – making it the most frequently reported challenge amongst the latter group. Similarly to those with 200-499 employees, 57% of businesses with a headcount of 500+ reported experiencing challenges with delays, overruns or unrealistic timelines.

CASE STUDY:

Strategic Development of Integrated Business Software

Over the past eight years, a medium to large sized education business in the West Midlands has been engaged in the strategic development of a bespoke software system, designed to integrate operational processes with client relationship management. Historically, the business relied on a combination of spreadsheets and disparate off-the-shelf solutions that lacked alignment with the company's CRM platform. This fragmentation hindered cross-departmental communication and operational efficiency.

In 2017, the organisation entered into a partnership with an external software development firm to design a tailored solution. However, the initial phase of the project proceeded without a comprehensive process map or a detailed specification of system requirements. This omission led to significant inefficiencies and cost overruns. A significant amount of money was invested before it became apparent that the system's core architecture was based on the developer's proprietary intellectual property. When the partnership broke down due to limited progress and escalating costs, the company was unable to transfer the partially developed system to an alternative supplier and was consequently required to write off the investment.

In late 2020, the organisation revised its approach by appointing an in-house software developer to continue system development internally.

This shift has delivered measurable improvements in certain operational functions, though challenges remain regarding scalability and development pace. The business has since adopted an agile development model, progressing through defined sprints and mapping requirements incrementally to improve delivery and transparency.

To enhance technical capability and embed modern technologies, the company initiated a Knowledge Transfer Partnership (KTP) with a local university in 2024. The objective of this collaboration is to design and implement a bespoke learner management system (LMS) that can be integrated with the CRM infrastructure, incorporating automation and advanced technological features. Although the process has been methodical and time-intensive, the partnership has now reached the stage of finalising a comprehensive process map to inform subsequent development.

This software system remains a cornerstone of the organisation's long-term growth and acquisition strategy. A fully integrated platform is considered essential to facilitate future acquisitions and ensure alignment across business units. In the longer term, the organisation recognises the potential to commercialise the completed system, given the absence of comparable solutions in the marketplace and the likelihood that other firms in the sector face similar integration challenges.

3. Lack of Expertise within Development Teams

Overall, 20% of firms surveyed in the course of this research who had engaged in software development in the last two years reported a lack of expertise within development teams as a key challenge faced during software development, but this challenge was identified by almost double the proportion of services firms (22%) than their manufacturing sector counterparts (12%).

Jointly with project delays, overruns or unrealistic timelines, a lack of expertise within the development team was the second most frequently reported challenge amongst firms with 500+ staff (57% of whom reported such). However, this was far less frequently identified as a challenge by smaller businesses. 22% of businesses with 1-19 members of staff reported experiencing challenges with a lack of expertise within their development teams, alongside 16% of firms with 20-199 employees, and 17% of businesses with 200-499 employees.

CASE STUDY:

Process Improvement and Technology Integration

One of the businesses who participated in this research is a micro business consultancy which specialises in process improvement, helping organisations identify inefficiencies, design achievable future-state processes, and implement technology solutions to enhance operational performance. The company works across a range of sectors and has experience integrating large-scale enterprise systems, such as SAP and IBM Maximo, as well as smaller-scale automation solutions within Microsoft Power Platform and other tools.

The organisation's approach emphasises rigorous upfront process mapping. Typically, a three-day engagement is used to map existing workflows, perform root cause analysis, and develop a clearly defined, achievable future state. Technology solutions are then overlaid onto these processes, with a focus on eliminating waste, optimising value-adding activities, and enabling effective data capture and reporting.

A major challenge the consultancy seeks to help firms address is the need to keep pace with rapidly evolving technology. In one high-profile project, the organisation addressed inefficiencies in outsourced maintenance contracts. The client faced a significant volume of invoices – across multiple suppliers – requiring forensic review to detect anomalies and potential fraud. Manual auditing was infeasible, leading to the development of an automated solution using early-stage AI from a US-based partner company.

Invoices were uploaded to a SharePoint system, processed via an AI model trained on 70 different invoice formats, and stored in a SQL database.

Power BI was used to visualise the data, generating interactive reports that identified exceptions, verified supplier consistency, and highlighted potential fraud. The system also interfaced with external regulatory data sources to ensure ongoing accuracy. This implementation significantly reduced manual effort, provided real-time insights, and contributed to strategic investment decisions for the client.

The consultancy's methodology integrates agile project management principles, translating process mapping outcomes into iterative development sprints. Value propositions are defined for each initiative, and cross-functional teams are selected to implement solutions. The consultancy ensures that process owners, rather than IT specialists alone, are involved, thereby bridging the gap between corporate strategy and technology execution.

A key insight from the organisation's experience is the critical importance of planning and process design prior to system implementation. The organisation discussed how their clients had experienced previous IT projects, such as SAP rollouts, fail due to inadequate upfront planning, highlighting that implementing technology without optimised processes simply automates inefficiency at high cost. By investing significant effort in preparation, process design, and iterative implementation, the consultancy ensures that technological solutions are effective, scalable, and aligned with organisational objectives.

4. Lack of Internal Expertise or Lack of Internal Stakeholder Engagement

17% of firms surveyed that had engaged in software development activities in the past two years reported having experienced challenges with a lack of internal experience or lack of internal stakeholder engagement during their software development. This figure was slightly higher amongst services sector firms (18%) than manufacturers (15%). It was also significantly higher amongst businesses with 500+ employees (43%) compared other business size bands. 16% of those with 1-19 staff, 19% of those with 20-199, and 8% of those with 200-499 identified this as a challenge.

CASE STUDY:

Iterative Development of Bespoke Software

Given their small internal team, a small business consultancy and risk management firm in the West Midlands discussed their experience of outsourcing their software development to external providers. The organisation adopted a Software-as-a-Service (SaaS) model, aiming to deliver a highly configurable, user-friendly platform capable of visualising complex data simply for end users. Central design principles prioritised simplicity, intuitive user experience, and minimal need for user training, while enabling advanced analytics and data capture for back-office processing.

The development process has been highly iterative and agile. The company has approached software design in small, incremental components, carefully defining each module's functionality and interface before development begins. A dedicated business analyst acts as an intermediary between the organisation and the developer, translating user requirements and maintaining alignment with core design principles. This approach has mitigated scope creep and ensured that each development cycle delivers a clearly defined output.

As the software has been piloted with clients, additional functionality requests have emerged, reflecting real-world needs and sector-specific requirements.

The company has managed these changes by ensuring that all new requests align with the original design principles and overarching user experience goals. This method has allowed the team to adapt while maintaining system coherence.

Initial funding, including European grants, supported early software development focused on the care sector. Lessons learned from this phase highlighted the risks of attempting overly ambitious development goals following successful delivery of a project; learning this, the organisation adjusted its strategy to focus on smaller, targeted increments, engaging closely with specific sectors to refine specifications before broader rollout.

The organisation continues to develop its software in a structured, modular fashion, balancing flexibility for client-driven enhancements with adherence to the core design framework. This approach has enabled the business to scale the platform across multiple sectors while maintaining usability, configurability, and alignment with strategic objectives.

CASE STUDY:

Agile Software Development and Workflow Automation

A small technology company in the West Midlands, interviewed for the Behind the Build report, specialises in the development of low-code and open-source solutions, allowing the business to deliver cost-effective, adaptable technology to clients while maintaining a nimble internal team.

A core aspect of the company's methodology is the use of a low-code workflow management tool. This enables visual, drag-and-drop process design, allowing clients to automate business processes without extensive coding expertise. For example, the company has implemented automated workflows that integrate CRM, invoicing, and contract management systems. This approach reduces the need for bespoke coding, allows rapid adaptation to changing business processes, and enhances operational efficiency.

The company maintains a strong commitment to open-source solutions, primarily for cost efficiency and flexibility.

Open-source technologies are customised to meet client requirements, enabling the business to deliver scalable solutions without reliance on expensive proprietary software or subscription models. This approach has particular benefits for clients in the education and training sectors, allowing them to redirect resources toward core organisational objectives.

Challenges primarily arise from the dynamic nature of technology and diverse client processes. Each client's workflow is unique, requiring the company to map processes in detail before implementing automation. Regular changes in software capabilities and evolving business needs necessitate continuous adaptation, maintaining both flexibility and agility in development. The company emphasises incremental development, careful process mapping, and the integration of client insights to ensure solutions remain aligned with operational objectives.

5. Managing Incomplete or Changing Requirements

Across all sectors and sizes, 15% of firms surveyed reported having experienced challenges managing incomplete or changing requirements in the course of their recent software development projects. In particular, manufacturing firms significantly more frequently identified this as a challenge, with 21% of manufacturers reporting such compared to 14% of services businesses.

25% of businesses with 200-499 members of staff experienced these difficulties, alongside 18% of firms with 20-199 staff, 14% of those with 500+ staff, and 13% of those with 1-19 staff.

CASE STUDY:

Managing Evolving Requirements in Software Development

One small to medium sized manufacturing organisation in the West Midlands interviewed during the Behind the Build research reported that they rely predominantly on third-party providers to develop software solutions to support their production and quality assurance processes. While outsourcing has enabled the business to access specialist expertise, it has also presented significant challenges in the past, related to alignment, cost, and responsiveness to change.

The organisation reported that externally developed systems often fail to fully meet their operational needs. Although the delivered solutions are generally functional, they frequently lack precise customisation. As a result, the business has had to accept partially suitable systems due to time and budget constraints. This process is largely iterative, involving extensive trial and error. Because the company's in-house expertise in software development is limited, it depends heavily on external guidance and must make decisions based on the advice of third-party developers.

A key ongoing challenge arises from changing customer requirements, which directly influence the business's production processes and, consequently, its software functionality. The firm manufactures precision components that must undergo rigorous quality checks. Initially, these checks were performed manually, leading to inconsistent results and elevated rejection rates.

To address this, the company invested in an automated quality assurance system involving robotic cameras and integrated software to detect product defects.

However, the first iteration of this automated system failed to fully meet performance expectations. It detected some quality issues but lacked the precision needed to identify all relevant defects. Continuous changes in customer specifications further compounded the problem, requiring frequent software modifications to retain contracts and maintain client satisfaction. Each adjustment necessitated additional investment and redevelopment, with customer demands effectively dictating the organisation's internal quality and production standards.

Moreover, efforts to adapt software developed for one project to subsequent contracts have proven largely ineffective. The unique nature of each product and client requirement has meant that the company often must begin development from the ground up, rather than leveraging previous solutions.

Despite these challenges, the company continues to refine its approach. It recognises the importance of maintaining a clear vision of the desired end product and advises other businesses to resist settling for suboptimal outcomes.

6. Technical Complexity

13% of firms responding to the Behind the Build survey who had engaged in software development in the last two years identified technical complexity (e.g. poor technical documentation) as a challenge experienced in the process. Notably, manufacturing sector businesses twice as frequently reported technical complexity as a source of difficulties (24%) than the services sector businesses surveyed (12%).

This challenge was most often identified by firms with 20-199 employees (21%) and those with 200-499 employees (17%), compared to 9% of firms with 1-19 staff, and 0% of those with 500+ staff.

CASE STUDY:

Integrating Software Development with Complex Electrical and Mechanical Engineering

Behind the Build interviewed a small engineering firm which specialises in the design and manufacture of bespoke mechanical test machines. The organisation conducts all aspects of development in-house, encompassing mechanical construction, electronics, and control software. The firm has cultivated significant expertise in software development, evolving from the use of commercial platforms to fully customisable, off-the-shelf solutions.

The firm's approach to software development is closely integrated with its mechanical and electronic engineering processes. Each test machine is unique, often developed for cutting-edge applications, requiring bespoke control software that can manage complex safety protocols, data acquisition, and mechanical actuation. The company's in-house capability allows for iterative refinement of both hardware and software, enabling rapid adjustment of system parameters and operational sequences.

A distinctive feature of the firm's software development is the combination of mechanical, electronic, and software expertise within a small team. This multidisciplinary approach requires that software engineers understand the operational context of the machines they control, which is critical for both safety and functional accuracy. Software must not only capture precise data for clients but also manage potentially hazardous processes in real time.

The company faces challenges in maintaining and modernising legacy software. While existing software reliably delivers core functionality, evolving user expectations and the adoption of modern interfaces – such as touchscreens and graphical displays – require new skill sets and careful recruitment. Locating software engineers who combine the necessary programming expertise with an understanding of mechanical systems is particularly challenging. In practice, software development requires close collaboration between electronics engineers, mechanical engineers, and software developers to ensure that control sequences, safety protocols, and data acquisition systems operate harmoniously.

The firm also emphasises the importance of regulatory compliance, security, and adaptability. International standards frequently change, necessitating updates to software to reflect new requirements. The transition to hydrogen testing has further increased system complexity, introducing additional sensor inputs, alarm mechanisms, and operational safeguards. The in-house software capability allows the company to iteratively adapt its systems in response to these evolving requirements, an approach that, in this circumstance, would be difficult to replicate with external software providers lacking domain-specific knowledge.

Advice for other organisations highlights the critical importance of understanding the intended end market, interface requirements, regulatory obligations, and security protocols before undertaking software development. Effective scoping, clear specification, and consideration of ongoing support and maintenance are essential. Additionally, the firm identifies a need for intermediaries who can translate technical requirements across engineering and software domains, suggesting a regional opportunity to improve support for small firms navigating complex software development challenges.

7. Cybersecurity or Data Protection Concerns

Alongside technical complexity, 13% of businesses surveyed also identified cybersecurity or data protection concerns as a challenge experienced in the course of recent software development activities. This was broadly similar between services firms and manufacturers, with 14% and 12% respectively identifying this challenge. However, comparing business size bands, cybersecurity or data protection concerns were identified by 33% and 29% of firms with 200-499 and 500+ members of staff respectively, compared to roughly half the proportion of smaller employers with 20-199 (15%) and 1-19 (10%) members of staff.

8. Managing Relationships between Different Suppliers

Just over 1 in 10 (11% of) West Midlands businesses surveyed reported having experienced challenges managing relationships between different suppliers. This was fairly consistent across businesses of various sectors and sizes. 12% of manufacturers and 11% of services sector firms reported such, whilst 17% of firms with 200-499 employees, 14% of businesses with 500+ staff, 12% of firms with 20-199 staff and 10% of businesses with 1-19 staff reported the same.

CASE STUDY:

Managing Third-Party Suppliers and Gradual Business Transformation

A micro recruitment firm which participated in the Behind the Build research shared their experiences of undergoing a significant digital transformation over the past two years, focusing on modernising outdated IT systems and infrastructure to improve efficiency. During this period, the company has also relocated offices multiple times, compounding the logistical and technical challenges of maintaining stable operations.

The business currently faces a range of connectivity and infrastructure issues at its new premises, located in a shared office building. Problems have emerged with internet stability, mobile signal strength, and phone system reliability, all of which are critical to the firm's day-to-day operations. A key difficulty has been identifying the source of these technical problems, as several third-party providers are involved in managing different components of the firm's IT environment.

The company uses separate suppliers for its building infrastructure, computer systems, phone network, and internet services. This fragmentation has led to ongoing confusion and delays in resolving faults, as providers often attribute problems to one another. The lack of a single point of accountability has resulted in inefficiencies, service disruptions, and unexpected costs.

Phone system reliability has been a particular concern. The firm has experienced significant call dropouts – losing almost 100 calls in a single month, each representing potential business.

Troubleshooting has been complicated by overlapping responsibilities between the phone provider, the building's IT team, and the network supplier. To improve reliability, the company has decided to migrate to Microsoft Teams-based telephony, which will consolidate communication systems under a single provider and reduce complexity.

In parallel, the business has been managing the integration of its CRM. Historically, the CRM operated via a remote desktop configuration that limited compatibility with modern Microsoft applications such as Teams and shared spreadsheets.

The new IT provider implemented a Virtual Private Network (VPN) solution to improve security and access, but users have found it slower than the previous setup. Moreover, the additional costs associated with maintaining separate systems for CRM and VPN access were not fully anticipated during procurement.

Although the CRM software is older, it remains stable, reliable, and well-suited to the firm's recruitment processes. Unlike some newer, more complex systems, it delivers core functionality effectively without unnecessary features. Training and capacity have also emerged as considerations. For now, the firm has chosen to retain this system while keeping open the possibility of future upgrades once other infrastructure changes are complete – prioritising stability and gradual improvement over rapid transformation.

CASE STUDY:

Developing In-House Capabilities while Maintaining Trusted Partnerships

A medium-sized manufacturing company in the West Midlands participating in this research discussed having developed a strong capability in internal software development to support operational efficiency and digitisation. The organisation maintains an in-house technology team responsible for day-to-day software development, including bespoke applications and scripts that integrate with existing systems such as ERP and CAD platforms.

Recent initiatives include the creation of a bespoke application for their shop floor, which consolidates data from multiple sources, providing employees with a single interface to access work orders, technical drawings, and related information. The company has also begun leveraging AI technologies, implementing dashboards, basic automations, and other analytical tools to enhance operational decision-making.

Since 2019, the company has engaged external developers to complement its in-house capabilities. Experiences with external providers have been mixed, with success largely dependent on the developer's understanding of the company's business needs and the quality of project scoping. Projects where the external team thoroughly understood the business and scoped effectively have generally been successful, whereas projects relying on generic, out-of-the-box solutions have often required additional in-house intervention.

The company employs external developers selectively, maintaining trusted partnerships which are leveraged for capacity management, ensuring projects can scale while preserving quality.

The internal technology team has grown from an initial two-person capability to a five-person team, including three software developers and two system operators. This growth has been facilitated through targeted training, internal skill development, and the strategic hiring of specialist software engineers as required. The team employs lean agile methodologies, focusing on delivering minimum viable products and ensuring value is delivered on time.

Primary challenges identified include the variability of external provider performance, the need for precise scoping, and managing evolving software requirements. Budget adherence and project timelines have historically been more predictable for internal projects than for external engagements.

By combining an experienced in-house technology team with carefully selected external partners, the company has been able to deliver complex software solutions that meet current operational needs while remaining adaptable to future growth and technological advancements.

SOFTWARE DEVELOPMENT OUTCOMES

Just under a quarter (24%) of firms engaged in software development activities in the past 24 months reported facing no significant challenges in doing so, with this figure slightly higher amongst services sector businesses (26%) than manufacturers (21%).

Perhaps surprisingly, the proportion of firms reporting having experienced no significant challenges during their recent software development experiences was highest amongst the smallest firms – 33% of those with 1-19 staff reported facing no significant challenges, compared to 13% of firms with 20-199 members of staff, and 0% of firms with more than 200 employees.

Behind the Build surveying investigated the success of recent software development projects in regards to four key variables: whether they were delivered on time, to budget, and on spec, and whether they were delivering value.

On Time

27% of firms reported that their recent software development projects were successfully completed on time, while 14% reported that this was not the case. In 38% of cases, this was yet to be determined, as projects were still ongoing (the remaining respondents reported 'not applicable' and don't know').

Comparing manufacturing and services sector firms, those in the manufacturing sector more frequently reported that their software development projects were still ongoing and the outcome as yet undetermined (46%, compared to 37% of services businesses), perhaps accounting for the disparity between those reporting that their projects had been successfully delivered on time (17% of manufacturing firms, compared to 29% of services sector firms). An equal proportion of manufacturers and services businesses stated that their software development was not successfully delivered on time (14%).

Analysing responses by employee size bands, revealed that amongst those with 20-199 staff, an equal proportion of firms (25%) stated that their software development was successfully delivered on time to those stating that this was not the case. Outcomes appeared to worsen further amongst businesses with 200-499 employees least frequently reporting that their software development projects were delivered on time (with just 9% reporting such) and four times as many respondents (36%) stating that this was not the case. Conversely, those with 500+ employees most frequently identified that their software development projects were successfully delivered on time (43%), with a significantly lower proportion (14%) stating that this had not been the case.

To Budget

Overall, software development projects were more frequently reported to be successfully delivered to budget than on time. Whilst 38% of firms stated that this had yet to be determined, 32% reported that their projects had been delivered to budget, and just 10% stated that they had not.

Once again, a higher proportion of manufacturing firms than their services sector counterparts reported that the outcome of their software development was yet to be determined (44% compared to 37%). 26% of manufacturers reported that their projects had been delivered to budget, whilst 9% stated that they had not been. Amongst services firms, 34% stated their software development projects had been delivered to budget, whilst 10% reported that this was not the case.

Each of the business size bands more frequently reported software development projects were successfully delivered to budget than not.

Once again, there was a fairly even divide between firms with 20-199 employees reporting that their software development was delivered successfully – in this case, to budget – (25%) and those with 20-199 employees reporting that their software development was not delivered successfully (19%).

Those with 500+ employees reported that their software development was successfully delivered to budget more often than each of the other business size bands, with 43% identifying such. 14% of firms with more than 500 staff stated that their software development had not been delivered to budget.

Meeting Specifications

Of all the outcome measures presented in the survey (on time, to budget, 'on spec' and delivering value), respondents most frequently reported that projects were delivered successfully on spec, with 38% identifying this to be the case. Just 2% stated that their software development was not successfully delivered on spec. 40% reported that this was yet to be determined, as projects were still ongoing.

Services sector firms were more likely than their manufacturing counterparts to report that their software development was successfully delivered meeting specifications (39%, compared to 32% of manufacturers), and less likely to report that this had not been the case (2%, compared to 3% of manufacturers).

Businesses in all four size bands more frequently reported software development projects were successfully delivered to specifications than not.

CASE STUDY:

Early Decision Making in Successful Software Development

A small software company in the West Midlands providing consultancy and bespoke software solutions discussed their experience working with clients on web design and primarily membership organisations on bespoke customer relationship management platforms.

The primary challenge faced by the company is ensuring that the correct tools and approaches are selected at the outset of a project. They report that early decisions – including the choice of open-source versus enterprise software, team composition, and project scope – directly impact long-term project success. Many clients approach the company without a clear understanding of their requirements, making initial discovery and needs assessment critical. Misaligned or incomplete specifications often result in additional development work to ensure the final product meets the client's needs.

The company emphasises thorough discovery, engaging directly with clients to clarify objectives and anticipated outcomes. Visual prototyping, including sketches or flow diagrams, is encouraged to support communication and early alignment with the development team. Open-source technologies are favoured for their flexibility, cost efficiency, and ability to adapt to client processes, though the organisation also works with enterprise systems when required.

For larger projects, the business combines in-house development expertise with outsourced teams to manage capacity while maintaining project quality and timelines. Throughout development, careful project management and iterative review ensure that evolving client needs are accommodated without compromising the project scope or design principles.

The company supports the use of generative AI tools to facilitate early prototyping and ideation but stresses the importance of maintaining human oversight in software development. AI tools are recommended as an aid to communicate ideas and experiment with approaches, rather than a replacement for expert developers.

Delivering Value

Whilst 48% of firms stated that whether their software development had successfully delivered value was yet to be determined, 30% reported that this was the case, with just 2% reporting otherwise.

Comparing broad industry sectors, manufacturing sector firms less frequently reported that their software development was successfully delivering value than their services sector counterparts (24%, compared to 32% of services firms), and more frequently stated that this was not the case (6%, compared to 1% of services firms). 50% of manufacturers and 48% of services sector businesses stated that this was still ongoing and yet to be determined.

As with two of the three other measures of success investigates, each of the business size bands identified more frequently reported software development projects were successfully delivering value than not.

Notably, the data presented a somewhat mixed picture for firms with 500+ staff. Whilst 29% reported that their software development was successfully delivering value, almost half as many (14%) reported that it was not – the highest proportion reporting such across each of the size bands.

CASE STUDY:

Automating Data-Driven Systems through Bespoke Software Development

One medium-sized retail business in the West Midlands participating in this research discussed having developed bespoke software in-house to optimise operational efficiency, enhance customer experience, and support growth.

The company's technology journey began in 2013 with the development of an internal system, inspired by innovations observed in the United States. The software includes features such as automated promotions, offer management, and inventory tracking. Initial development was supported by a freelance specialist for complex coding requirements, though the majority of development has been undertaken in-house.

Over time, the business has also developed a proprietary CRM system, now cloud-based and web-accessible, which supports the full business operation. Staff can generate queries and reports with ease, enabling efficient management of sales, inventory, and operational data.

In the past 12–18 months, the company has focused on enhancing operational efficiency through data-driven systems.

The organisation's software development has been delivered primarily by a small but highly skilled in-house team, led by an IT manager with extensive field experience and a self-taught software developer.

All proprietary software is developed internally to protect intellectual property and maintain complete control over system functionality. External development is only utilised for highly specialised coding tasks beyond in-house capabilities.

Key operational principles include engaging end-users early in the development process to ensure usability and effectiveness, focusing on automation to reduce human error, streamline reporting, and increase efficiency across all business functions, and continuous improvement, allowing incremental enhancements to systems as new opportunities are identified.

Bespoke software development has delivered transformative benefits across the business. Automation and live reporting have significantly reduced manual workloads for staff on the road and in the back office, while improved stock availability and service responsiveness enhance customer satisfaction and retention. More efficient operations have also enabled the business to serve additional customers with existing resources, increasing profitability. And having built proprietary systems, the business has flexibility to integrate new technologies and expand service offerings, such as AI-driven recommendations and smart retail solutions.

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ABOUT B13.ai

B13.ai is a Birmingham-based software development specialist, dedicated to helping non technical innovators transform ideas into market-ready software. Over the past decade, we have been working to redefine the software development landscape by bridging the gap between concept and delivery.

Our trademarked scoping process, **Venture Mapping,** ensures that businesses of all sizes can access world-class, bespoke software solutions on par with those of global enterprises.

By removing barriers and de-risking the development process, we enable businesses to achieve their software goals **on budget, on time, and to specification,** delivering solutions that truly meet their needs.

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www.greaterbirminghamchambers.com

Greater Birmingham Chambers of Commerce
7th Floor West Wing, 54 Hagley Road, Birmingham B16 8PE
Tel : 0845 603 6650