



GRADUAL RECOVERY IN 2H2024 SETS THE STAGE FOR MEASURED GROWTH IN 1H2025

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KEY RESULTS:	
BUSINESS ACTIVITY – 2H2024	<ul style="list-style-type: none"> • Business conditions improve, but expansion remains cautious • Export sales outpace local sales • Production volume rebounds faster than capacity utilisation • Cost challenges remain, capital investment strengthens cautiously • Employment stagnates as businesses prioritise stability
BUSINESS ACTIVITY – OUTLOOK 1H2025	<ul style="list-style-type: none"> • Business conditions to be sustained by stability and steady growth despite softer optimism • Cautious outlook prevails, with local sales largely stable and export sales slightly softer amid global uncertainties • Steady production and capacity optimise resources over expansion • Cost pressures to build up, capital investment to remain high • Stable hiring, with moderate hiring gains and most firms expecting little change in workforce size
GENERAL BUSINESS ACTIVITY – OUTLOOK 2025	<ul style="list-style-type: none"> • 56% respondents expect revenue growth, with most anticipating increases of 1%-10% • 47% respondents expect profit growth, with most predicting increases of 1%-10% • 43% respondents anticipate positive changes within their own companies, 34% foresee improvements in their industry, 28% expect favourable domestic economic conditions and 45% expect stable consumer spending habits • Top 3 challenges facing businesses: rising input costs, intensifying competition and weak demand • Top 3 opportunities for businesses: product portfolio expansion, export market expansion and digital transformation
BUDGET 2025 WAGE ADJUSTMENTS	<ul style="list-style-type: none"> • 91% of respondents expect increase in minimum wage and mandatory wage costs to impact their operational expenses, with 48% expecting moderate increase (5%-10%)
GREEN MANUFACTURING	<ul style="list-style-type: none"> • 51% respondents are moderately prepared for adoption of green manufacturing practices, with only 16% reporting being well or fully prepared • 68% respondents have sustainability partially integrated into their businesses, 32% have set targets, and 26% plan to achieve adoption within 1-2 years • 71% respondents adopt practice of waste reduction and recycling • 52% respondents allocate less than 5% of their capital expenditure toward green manufacturing initiatives • Cost savings, corporate sustainability goals and regulatory compliance are the lead motivators for adopting green manufacturing practices • 70% respondents indicate high implementation costs as the most significant barrier to adopting green manufacturing practices • 50% respondents listed energy usage as the most difficult area to green • 75% respondents cited financial incentives or grants as the most critical form of support needed
SUPPLY CHAIN CHALLENGES	<ul style="list-style-type: none"> • 35% respondents source more than 70% of their materials from Malaysia • 36% respondents source 31%-70% of their materials regionally – ASEAN, China, Japan, Korea • 54% respondents source up to 30% of their materials globally (Outside ASEAN) • 85% respondents indicated increased logistic costs as the most pressing challenge • 26% respondents attributed disruptions to global supply chains

KEY RESULTS:	
SUPPLY CHAIN CHALLENGES	<ul style="list-style-type: none"> • 50% respondents experienced increased costs due to trade policies or tariffs • 64% respondents diversify their supplier base to address supply chain challenges • 58% respondents suggest that the government facilitate regional trade agreements to reduce barriers
SMART MANUFACTURING	<ul style="list-style-type: none"> • 44% of companies implement factory automation/smart manufacturing/Industry 4.0 in their manufacturing process • 63% respondents implement System Integration in their manufacturing process • 60% respondents driven by increased operational efficiency and productivity to adopt Industry 4.0 • 53% respondents are not aware of available financing options for factory automation/smart manufacturing/Industry 4.0 • 81% respondents have not applied for government incentives or loan options for automation and operational upgrades • 31% respondents use AI software or productivity tools in their business operations, with 80% using ChatGPT • 68% respondents have access to 5G, with 62% actively using 5G for their business operations • 30% respondents cite poor 5G signal/coverage as reason for not using 5G in their business operations, and 49% report equipment connectivity issues and weak indoor coverage

The manufacturing sector in 2H2024 demonstrated steady momentum, with business conditions, sales and production strengthening amid high costs. Sustained capital investment and steady employment levels underscore a strategic, long-term confidence, as manufacturers navigate an evolving economic landscape with a balanced approach to growth and risk management.

Looking ahead to 1H2025, manufacturers are expected to prioritise efficiency over aggressive growth, focusing on stability amid global economic uncertainties. While employment remains stable and investment sentiment is steady, rising costs and external risks may temper business expansion. The sector is moving toward gradual recovery, but caution remains a defining factor in strategic planning.

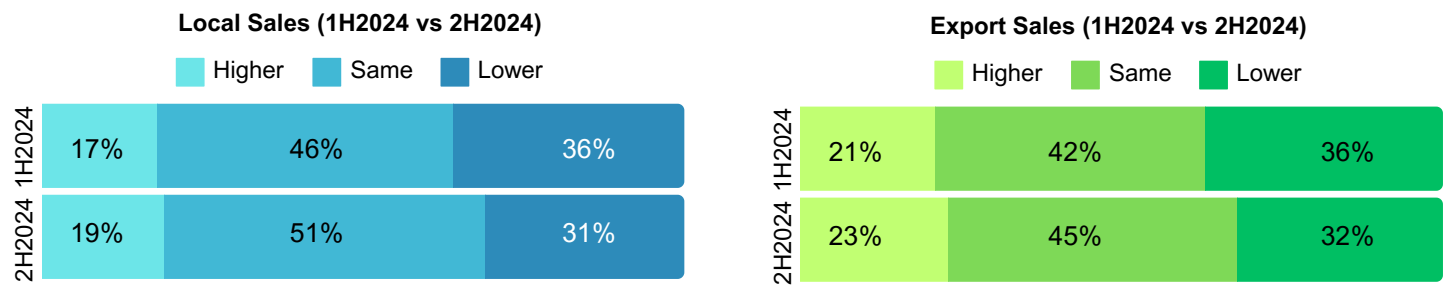
Indicators	FMM Business Conditions Index Values							
	Current (Compared to 6 months ago)				Looking forward (Next 6 months)			
	1H2023	2H2023	1H2024	2H2024	1H2023	2H2023	1H2024	2H2024
Business conditions	66	89	93	98	86	92	106	101
Local sales	71	86	81	88	81	92	95	94
Export sales	66	80	85	92	88	89	100	97
Production volume	69	91	91	99	86	99	110	109
Capacity utilisation	68	91	93	96	87	99	108	106
Capital investment	95	103	107	108	100	110	116	116
Number of employees	101	98	98	98	101	105	105	106
Cost of production	157	154	155	144	148	159	162	167

BUSINESS CONDITIONS IMPROVE, BUT EXPANSION REMAINS CAUTIOUS

Businesses are cautiously optimistic, with stability taking precedence over strong expansion. The proportion of respondents reporting higher activity rose slightly, with a slight increase in respondents from 1H2024 (26%) to 2H2024 (27%), while the business activity index increased from 93 to 98 points, indicating a slow but steady recovery.

Meanwhile, same activity responses grew from 42% in 1H2024 to 43% in 2H2024, reinforcing stabilisation, while lower activity declined from 33% to 30%, reflecting a continued reduction in negative sentiment. Overall, business confidence is improving but at a measured pace. Companies are adopting a wait-and-see approach, awaiting stronger economic signals before committing to expansion.

Local Sales Stabilise as Export Confidence Rebounds

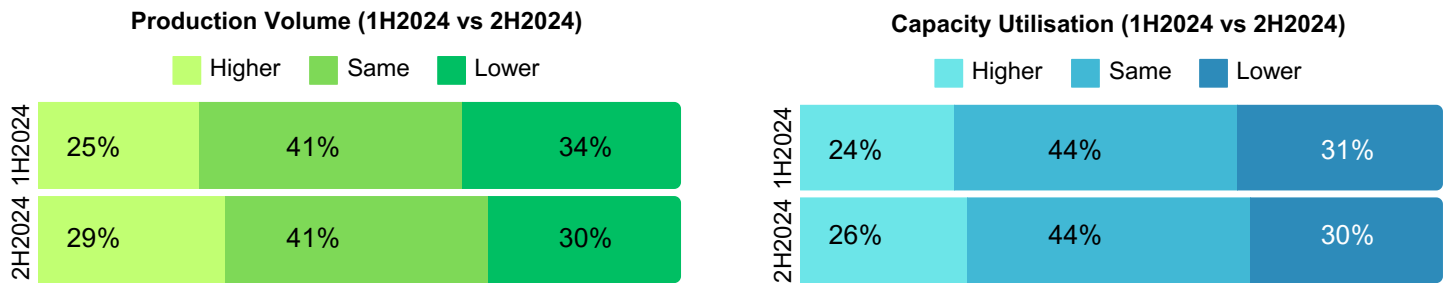


The trends in local and export sales during the second half of 2024 reflect broader economic shifts and market dynamics. Local sales experienced a period of stabilisation, with more businesses reporting steady sales, while the proportion reporting higher sales remained subdued. The decline in those reporting lower sales suggests that businesses are moving away from pessimism, but overall confidence in local sales has not yet reached strong levels of optimism. The current index for local sales, which declined from 86 in 2H2023 to 81 in 1H2024, rebounded slightly to 88 in 2H2024. While this improvement signals a recovery, local market conditions remain cautious.

In contrast, export sales demonstrated a stronger and more consistent recovery. The percentage of respondents reporting higher sales saw a modest but steady increase, while those who experienced steady sales grew more significantly, indicating that exporters expect stability in global demand. Meanwhile, the proportion exporting less has been declining consistently, suggesting improved external market conditions. The current export sales index saw a notable improvement from 85 in 1H2024 to 92 in 2H2024, showing a stronger confidence boost compared to local sales. Despite this upward trajectory, both local and export indices remain below the 100-point threshold, indicating that full optimism has not yet been reached.

Overall, the export sector is recovering faster than the local market, with businesses displaying greater confidence in international demand. Meanwhile, local sales are gradually improving but at a slower pace, likely due to domestic market constraints.

Steady Growth in Production, but Utilisation Lags

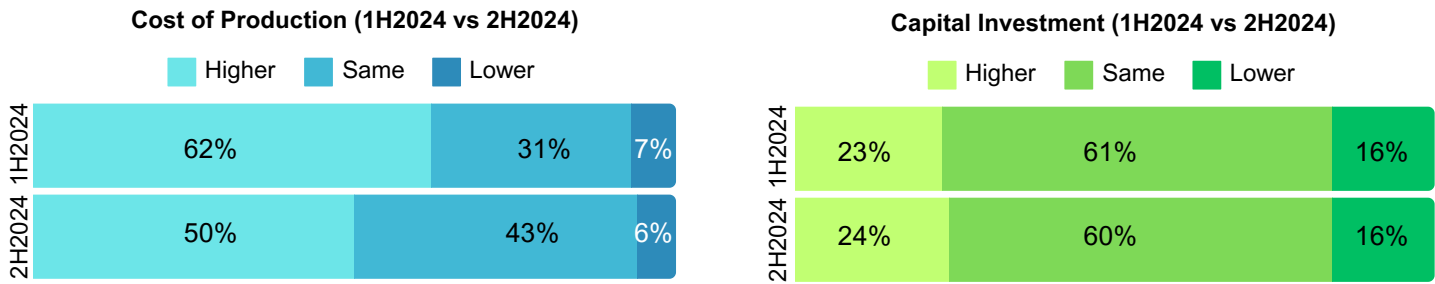


Production volume saw a steady increase in responses from 25% in 1H2024 to 29% in 2H2024, while those who reported “same volume” have remained stable at 41%. Lower production volumes were confirmed by 30% of the respondents in 2H2024, down from 34% in 1H2024, indicating a positive shift in production output. The current index for production volume remained flat at 91 from 2H2023 to 1H2024 before jumping to 99 in 2H2024, suggesting a near return to optimism.

Similarly, capacity utilisation followed an upward trend, with 26% reporting higher capacities in 2H2024, up from 24% and 23% in 1H2024 and 2H2023, respectively. Capacities, however, remained stable for 44% of the respondents, while 30% reported lower capacities in 2H2024. The current index for capacity utilisation showed a gradual improvement from 91 (2H2023) to 96 (2H2024), indicating a strengthening but cautious recovery.

While both production volume and capacity utilisation are improving, production volume has shown a stronger rebound as its index approaches the optimism threshold of 100. The steady increase in the proportions of respondents indicating higher production volume and decline in the proportions of those reporting lower production volume reflect growing confidence in production expansion. However, capacity utilisation is improving at a slower rate, suggesting that businesses are increasing output cautiously and may still have underutilised capacity.

Navigating Cost Challenges with Cautious Investment



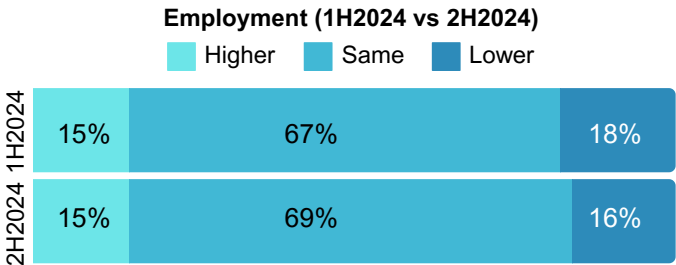
The percentage of businesses experiencing higher production costs declined from 62% in 1H2024 to 50% in 2H2024, indicating some easing of cost pressures. Meanwhile, more businesses (43%) reported stable production costs in 2H2024, up from 31% in 1H2024, reflecting a moderation in price volatility. The current index for production cost declined from 155 to 144, but it remains well above 100, signalling that cost pressures are still present, though at a slower pace.

Capital investment is on a steady upward trajectory, with the proportion of respondents reporting higher investment rising from 22% in 2H2023 to 24% in 2H2024. Meanwhile, businesses maintaining the same investment level remained stable at around 60%, suggesting a continuation of planned expenditures. The index improved from 103 in 2H2023 to 108 in 2H2024, indicating growing confidence in capital expansion, albeit at a measured pace.

The cost of production remains elevated, but the decline in businesses experiencing rising costs suggests some relief from inflationary pressures. Meanwhile, capital investment confidence is gradually improving, with fewer respondents reporting a decline in investment. While cost pressures remain a challenge, the improving current index for investment suggests that businesses are willing to allocate capital for expansion, albeit cautiously.

Job Cuts Ease, but Hiring Momentum Remains Weak

The manufacturing employment landscape remains largely unchanged, with 15% of respondents consistently reporting higher employment activity since 2H2023. Meanwhile, the majority of respondents (69%) are maintaining their workforce levels in 2H2024, indicating a stable but cautious labour market. Notably, the proportion of respondents reporting lower employment decreased from 18% in 1H2024 to 16% in 2H2024, suggesting a slowdown in job cuts.



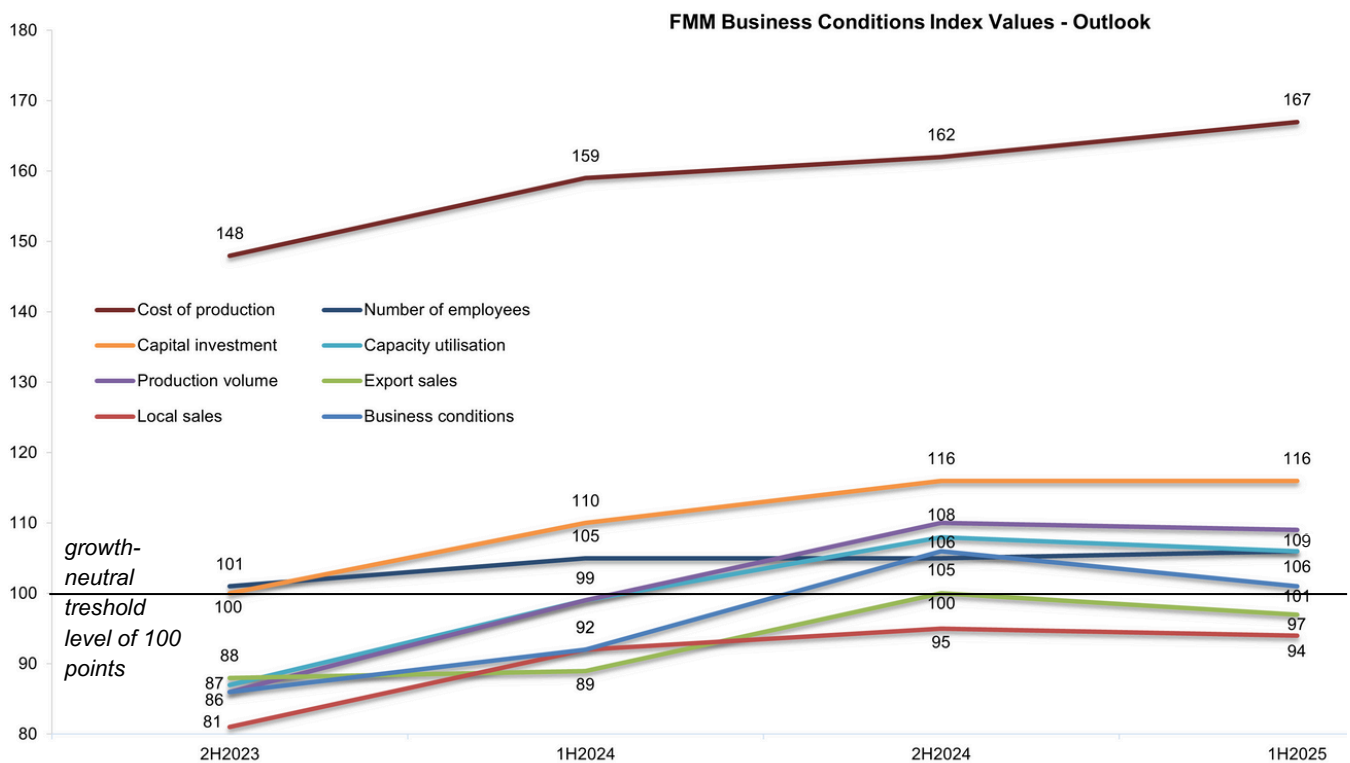
The current employment index has remained at 98 across all three periods (2H2023, 1H2024 and 2H2024), just below the optimism threshold of 100. This indicates neutral sentiment, with respondents preferring to maintain existing workforce levels rather than expand aggressively.

The labour market is stable but lacks strong growth, with no significant increase in hiring activity. The slight decline in lower employment suggests that layoffs are easing, which may indicate a gradual recovery in labour demand. However, respondents remain cautious, likely influenced by uncertainties in economic conditions and automation trends.

OUTLOOK FOR 1H2025: A BALANCING ACT BETWEEN STABILITY AND GROWTH

Moving forward, manufacturers are shifting towards stability, favouring steady growth over rapid expansion. Business activity expectations remain positive, with fewer anticipating declines and more expecting stable conditions. Local and export sales show cautious optimism, while production and capacity utilisation reflect resource optimisation over aggressive growth. Rising production costs remain a challenge, with sustained cost pressures. Investment and employment outlooks are stable, with measured expansion and a focus on efficiency. Despite economic uncertainties, businesses prioritise sustainability and resilience.

Manufacturers' expectations for higher **business activity** rose from 23% in 2H2023 to 29% in 1H2024 before easing to 26% in 2H2024. Meanwhile, the proportion of respondents who opined that business activity will remain the same in the coming months increased from 46% to 50%, reflecting greater market stability, while those with lower activity forecasts declined from 31% to 25%, implying reduced pessimism.



Notwithstanding the moderating optimism, confidence remains, with the index staying above 100. Overall, businesses are shifting from uncertainty to stability, favouring steady activity over sharp changes. While optimism slightly receded in the latest survey, declining pessimism and market stability suggest a more predictable business environment.

Manufacturers' expectations for local and export sales in the latest survey reflect cautious stability. **Local sales** optimism remains limited, with only 20% of the respondents expecting higher sales, while responses for stable sales expectations grew to 55%, signalling a shift toward predictability over expansion. Pessimism eased slightly, as respondents with lower sales expectations fell to 25%.

Export sales softened slightly, with respondents anticipating higher expectations shrinking from 26% to 23%, likely due to global trade uncertainties. However, 51% of respondents anticipate stable exports, and those with lower expectations declined to 26%, indicating reduced pessimism. The index for expected export sales peaked at 100 in the prior survey before dipping to 97 currently, while the expected local sales index remained subdued at 94. Though export confidence initially outpaced local sales, both indices reflect a cautious outlook.

Overall, businesses are prioritising stability over rapid expansion, with pessimism fading across both markets. If trends persist, manufacturers will likely continue a measured approach, focusing on stability amid economic uncertainties.

Manufacturers' expectations for higher **production volume** fell from a proportion of 32% previously to 30% in the latest survey. Meanwhile, stable production expectations grew to 48% (favourable responses), reflecting greater predictability, while those with lower expectations declined to 21%, signalling reduced concerns about slowdowns.

Capacity utilisation followed a similar trend, with 29% of respondents with higher expectations previously settling at 27% in the latest survey. Those expecting stable utilisation remained at 51%, suggesting respondents are optimising resources rather than expanding aggressively.

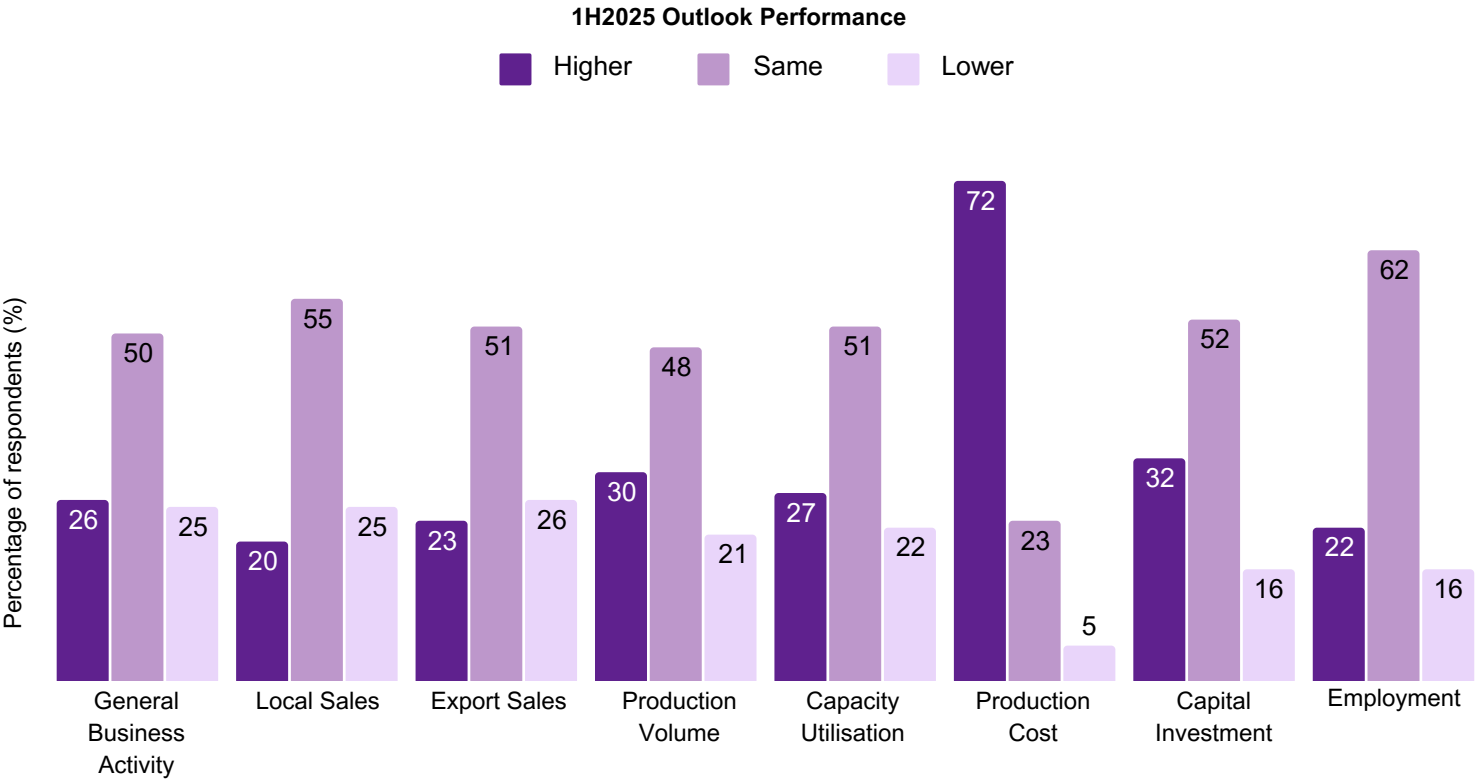
Optimism peaked in the prior survey, with the expected production and utilisation indices moderating from 110 and 108, respectively, to the latest survey's 109 and 106, respectively. Despite the dip, confidence remains strong. The data suggests stability is the priority over rapid expansion, with manufacturers focusing on steady growth and efficiency while closely monitoring external risks before committing to larger expansions.

Manufacturers anticipate rising **production costs**, with 72% expecting higher costs in 1H2025, up from 66% previously. Respondents expecting stable costs declined to 23%, indicating greater volatility, while those with lower cost expectations remain minimal at 5%, suggesting cost relief is unlikely in the short term.

Meanwhile, **capital investment** expectations remain stable, with respondents projecting higher investment rising slightly from 30% to 32%. Respondents with stable investment expectations fell to 52%, while those with lower investment expectations rebounded to 16% in the latest survey, indicating some hesitancy in expansion plans. The expected cost of production index

rose from 162 to 167, reflecting sustained cost pressures, while the capital investment index remained at 116, signalling cautious confidence in expansion.

The **employment** outlook remains stable, as the proportion of respondents with higher hiring expectations recovered to 22% from 18% previously. The majority (62%) expect no workforce changes, while the proportion of those with lower employment expectations rose to 16%, suggesting sectoral restructuring or automation trends. The expected employment index remained above 100, indicating moderate optimism without aggressive expansion.



2025 REVENUE OUTLOOK: CAUTIOUS OPTIMISM, MEASURED GROWTH

Manufacturers remain cautiously optimistic about revenue prospects in 2025 (vs 2024), with 56% expecting growth, 24% anticipating stability, and almost 19% foreseeing declines. Most respondents predict moderate revenue increases (1%-10%), while only 8% expect strong growth (>25%), reflecting measured confidence rather than aggressive expansion. Meanwhile, nearly a quarter of businesses expect no change, suggesting a strategic focus on stability, while those predicting revenue declines remain a minority. In contrast, the 2024 (vs 2023) outlook was more mixed, with 50% expecting growth and 29% predicting declines, including 9% forecasting significant downturns, highlighting challenges from rising costs, inflation and global volatility.

Overall, the latest results indicate a balanced market sentiment, where businesses are prioritising resilience over rapid growth. While optimism dominates, external uncertainties such as global trade conditions, inflationary pressures and supply chain constraints, are likely tempering expectations. The data suggests that manufacturers are taking a pragmatic approach, emphasising efficiency, cost management and operational stability rather than aggressive expansion.

With only a small portion predicting sharp revenue declines, the overall business environment appears stable, but future growth will depend on market dynamics and external economic factors. Respondents are likely to maintain measured investment and hiring plans, with a focus on adapting to evolving conditions rather than taking significant risks. If these trends persist, manufacturers can expect steady but cautious growth in the coming months.

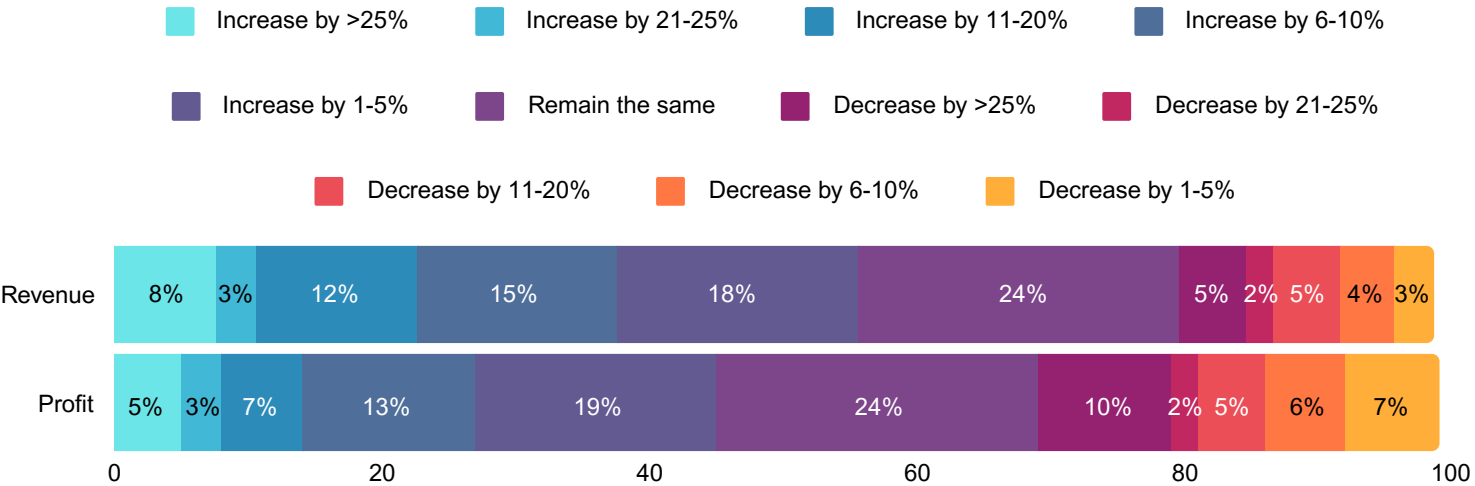
2025 PROFIT OUTLOOK: BALANCED PERFORMANCE

Manufacturers display a balanced outlook on profit growth, with 47% expecting an increase, 24% foreseeing stability and 30% anticipating a decline. Most respondents predicting growth expect modest gains (1%-10%), while only 5% foresee strong profit growth exceeding 25%, reflecting cautious optimism rather than aggressive expansion. Meanwhile, nearly a quarter expect no change, emphasising a focus on maintaining profitability rather than significant improvement. Compared to 2024 (vs 2023), the profit outlook then showed a similar trend, with 43% expecting higher profits and 37% predicting declines, highlighting elevated concerns over rising costs and market volatility.

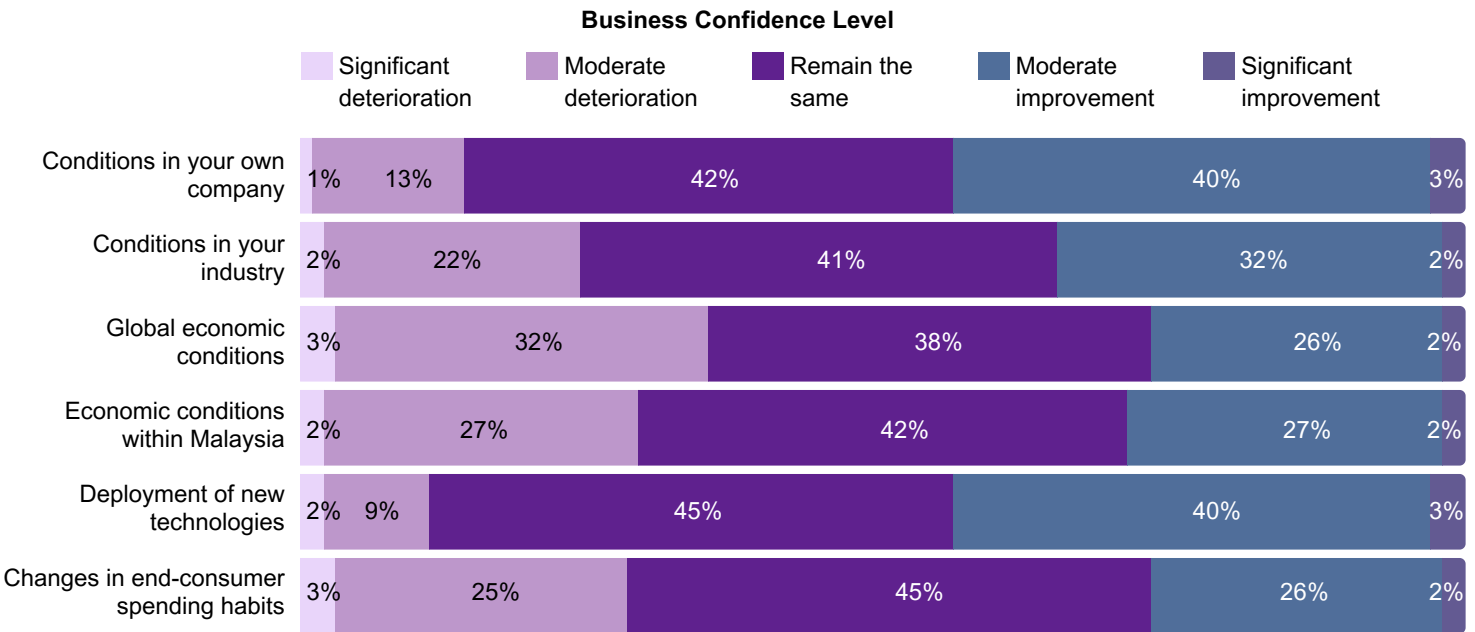
By and large, the results in the current survey suggest a mix of optimism and caution, with cost pressures, market uncertainties, and operational efficiencies shaping profit expectations. The relatively high percentage (30%) anticipating declines highlights concerns about rising production costs and external economic conditions. At the same time, the dominance of modest profit growth expectations indicates a preference for steady financial performance over high-risk expansion.

With no overwhelming expectation of sharp losses, the overall sentiment remains stable yet cautious, with businesses likely to prioritise cost management and operational efficiencies. If these trends persist, profitability will remain a key focus, with firms balancing cautious investment and efficiency-driven strategies to sustain margins.

Expectations on Revenue and Profit Growth for 2025



BUSINESS CONFIDENCE: EXPECTED CHANGES IN 2025 COMPARED TO 2024



Manufacturers expect moderate improvements **within their own companies**, with 43% anticipating positive changes, including 40% foreseeing moderate improvement and 3% expecting significant improvement. However, 14% predict deterioration, with 1% expecting significant deterioration and 13% anticipating moderate declines, while 42% expect no change, reflecting a balanced yet cautiously optimistic outlook.

For **industry** conditions, stability dominates, with 41% expecting no change. While 34% anticipate improvements, the outlook is mitigated by 24% foreseeing deterioration, suggesting that while some industries may experience recovery, others may still face challenges.

The global economic outlook remains uncertain, with 38% expecting no change, 28% predicting improvement, and 35% anticipating deterioration. Similarly, **economic conditions in Malaysia** are projected to be stable, with 42% expecting no change, 29% predicting improvement, and 29% expecting a decline, indicating a split sentiment on domestic economic growth.

New technology deployment sees 45% of respondents expecting stability, while 43% anticipate moderate or significant improvements, reflecting ongoing but steady digital adoption. **Consumer spending habits** are also expected to remain stable, with 45% predicting no change, 28% expecting improvements, and 27% foreseeing deterioration, suggesting that purchasing behaviour will be influenced by broader economic factors.

Overall, while internal company conditions are expected to improve, broader industry, economic and consumer trends remain largely stable, with some concerns about economic and industry-wide slowdowns. Businesses appear cautiously optimistic, focusing on efficiency and adaptation rather than expecting major shifts or disruptions.

The same question was posed in the prior survey for the period 2024 vs 2023. The results then showed that 2024 business confidence was more mixed, with a smaller rise in optimism and still notable caution, driven by concerns over inflation and global uncertainties, creating a more fragmented outlook. However, the overall decline in pessimism marks a subtle recovery in confidence.

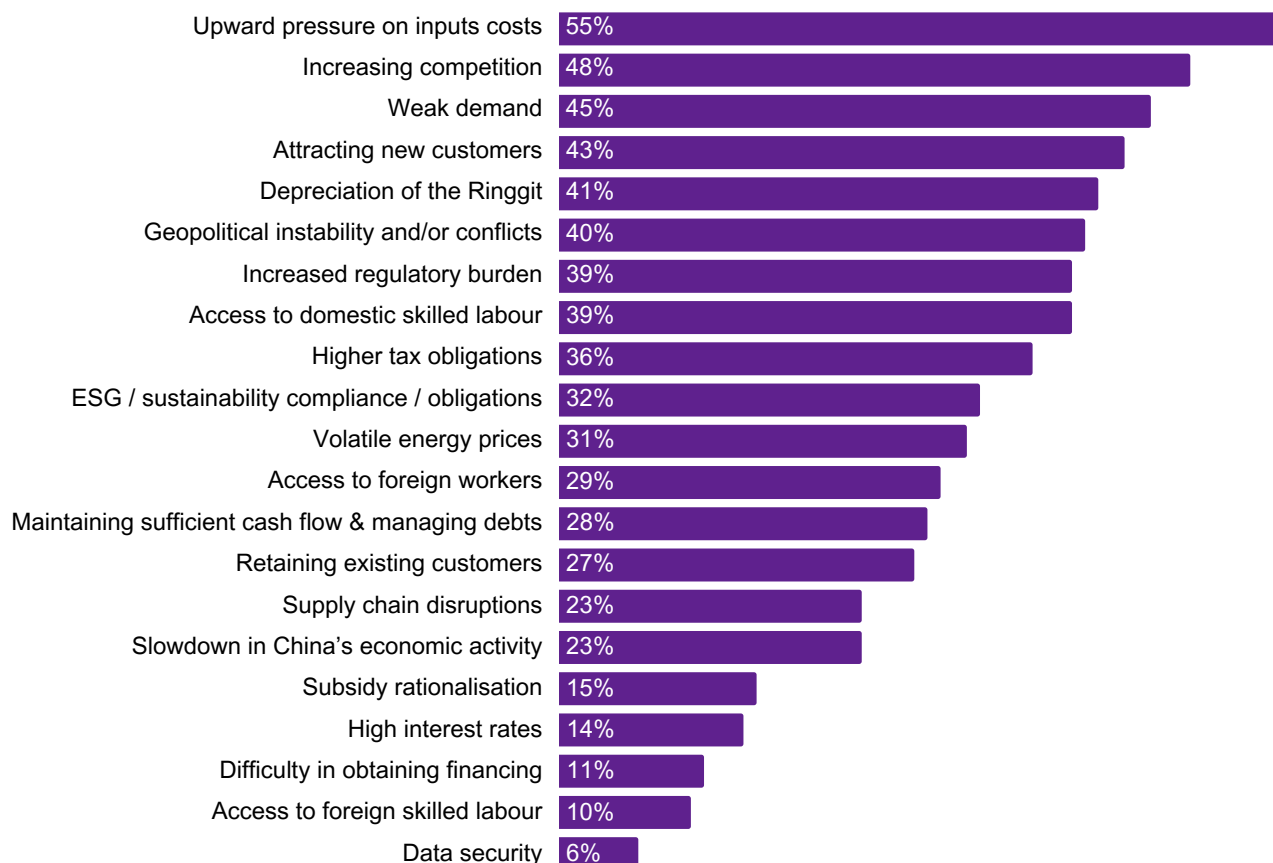
In both 2024 and 2025, manufacturers exhibit cautious optimism with a strong preference for stability. For 2025, about 43% expect internal improvements (primarily modest gains), while a similar proportion anticipates no change, suggesting that firms are leaning toward gradual progress despite external challenges. The 2024 outlook mirrors this balanced sentiment, with company conditions nearly evenly split between stability and modest improvement, and external factors such as industry dynamics, global economics and consumer spending reflecting comparable uncertainty. Overall, both periods underscore a measured approach that favours efficiency and gradual adaptation over rapid transformation.

KEY CHALLENGES TO BUSINESS OPERATIONS AND GROWTH IN 2025

In 2025, manufacturers face intensified cost pressures and slightly heightened competition, with 55% citing rising input costs (up from 49% in 2024) and 48% noting increased competition versus 47% previously. At the same time, concerns over weak demand and Ringgit depreciation have eased somewhat, falling from 51% in 2024 to 45% in 2025 and from 47% in 2024 to 41% in 2025, respectively, while the challenge of attracting new customers has risen from 39% to 43%. Additionally, 2025 introduces new issues such as regulatory burdens, labour shortages and sustainability compliance, suggesting that although some traditional challenges have moderated, the overall operating environment remains complex and demands a strategic focus on cost efficiency and market differentiation.

The combined effects of rising costs, market uncertainty and currency volatility indicate that firms will need to prioritise cost efficiency, strategic pricing and market differentiation to maintain growth in 2025.

Challenges to Business Operations and Growth



KEY BUSINESS OPPORTUNITIES IN 2025

In 2024, opportunities were driven by diversification with 52% of respondents prioritising expanding product portfolios, 34% focusing on export diversification and 19% emphasising digital transformation, alongside growing interest in ESG initiatives. In 2025, these themes are amplified. Businesses see expanding product portfolios (55%) as the biggest opportunity in 2025, indicating a focus on diversification and innovation to drive growth. Exporting to new countries (40%) is another major avenue, reflecting efforts to tap into international markets amid domestic economic challenges.

Digital transformation (23%), including cloud computing and AI adoption, is seen as a key enabler of efficiency and competitiveness. Additionally, new international markets (21%) and specialising in niche products (19%) present further opportunities for businesses looking to differentiate themselves in competitive markets.

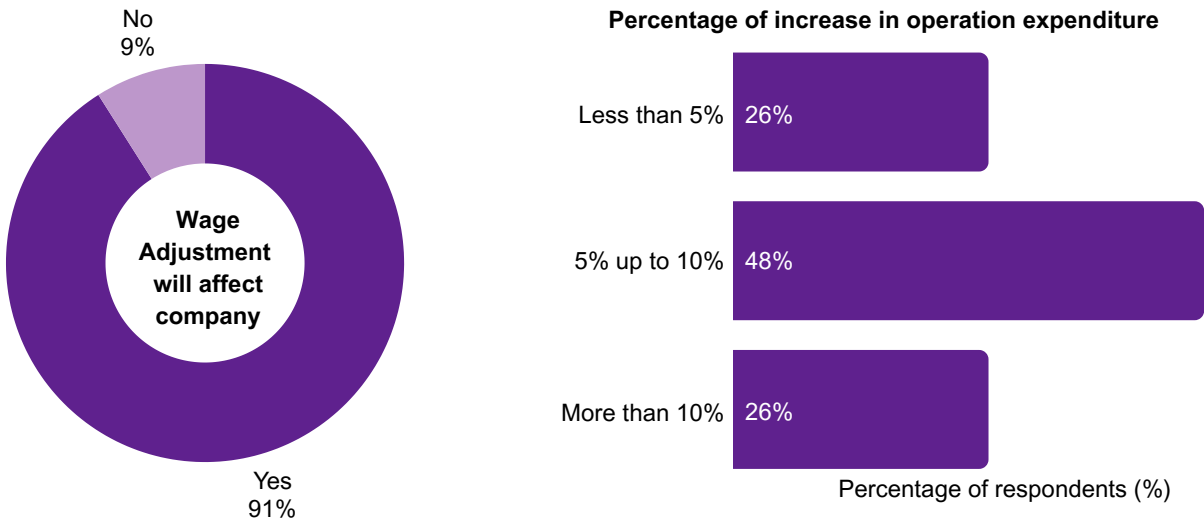
Other emerging opportunities include ESG-related value chain enhancements, sustainability initiatives and industry consolidation. The overall outlook suggests that businesses are prioritising diversification, market expansion and technological innovation to strengthen resilience and capitalise on growth prospects in 2025.



IMPACT OF BUDGET 2025 WAGE ADJUSTMENTS ON BUSINESS COSTS

A majority of respondents (91%) expect the increase in minimum wage and mandatory EPF contribution to impact their operational expenses, while 9% believe there will be no significant effect. Among those anticipating higher costs, 48% expect a moderate increase (5% to 10%), while 26% foresee a smaller rise (<5%) and another 26% anticipate a more substantial cost surge (>10%).

These findings indicate that most respondents are preparing for higher wage-related expenses, with a significant portion expecting moderate cost pressures. This could lead to pricing adjustments, cost optimisation strategies or productivity enhancements to offset the financial impact.

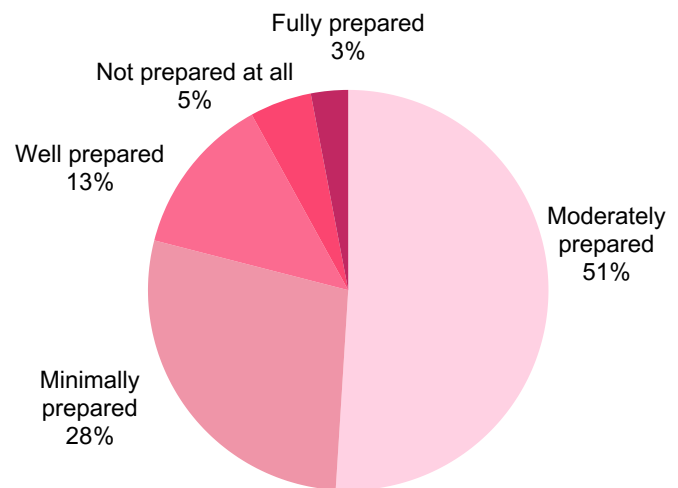


Readiness of Companies in Adopting Green Manufacturing Practices

The majority of businesses are moderately prepared (51%) for adopting green manufacturing practices, while 28% are minimally prepared, indicating that most companies have taken initial steps but may still face challenges in full implementation. Only 16% of respondents report being well or fully prepared, suggesting that few businesses are fully ready to integrate sustainable practices into their operations. Meanwhile, 5% are not prepared at all, highlighting the gap in readiness among certain companies.

These findings suggest that while progress is being made, most businesses remain in the early to mid-stages of green manufacturing adoption. Further support, such as incentives, policy guidance and technological assistance, may be necessary to accelerate the transition toward sustainability.

Percentage of increase in operation expenditure

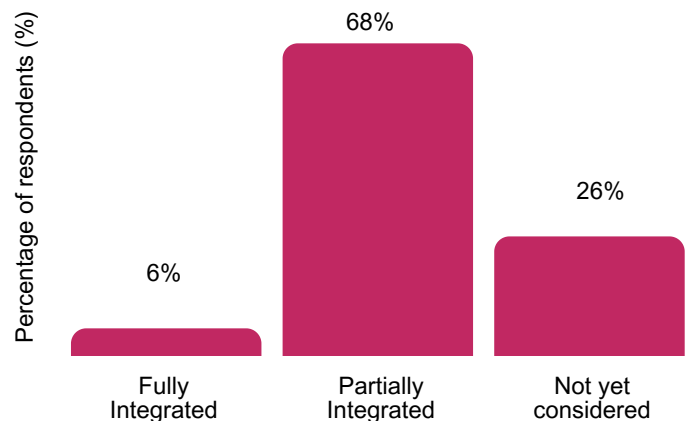


Current Integration of Environmental Sustainability, Future Goals and Adoption Timeline

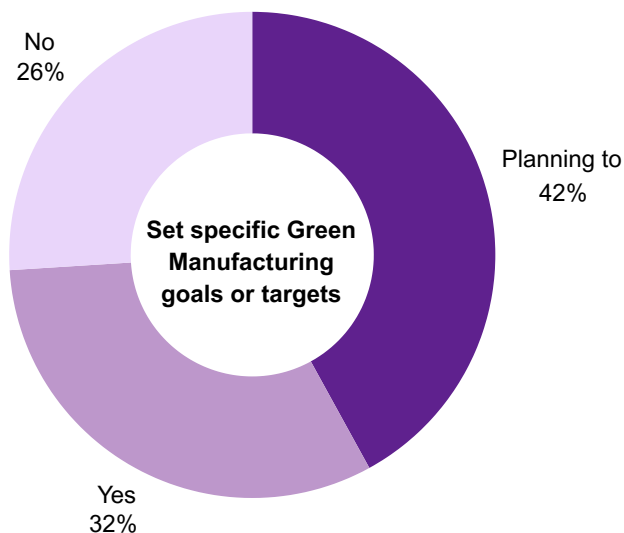
Sustainability is partially integrated into most businesses, with 68% of respondents having some level of environmental practices in their strategies. However, only 6% have fully integrated sustainability, while 26% have not yet considered it, highlighting a gap in structured adoption.

Regarding specific green manufacturing goals, 32% of companies have already set targets, while 42% are in the process of doing so. However, 26% have no defined sustainability targets, indicating that a significant number of businesses are still evaluating their approach. Only 13% of businesses have already implemented sustainable green practices, while 26% plan to achieve adoption within 1-2 years and another 26% within 3-5 years. However, a significant 35% have no specific timeline, indicating uncertainty or lack of structured plans for full implementation.

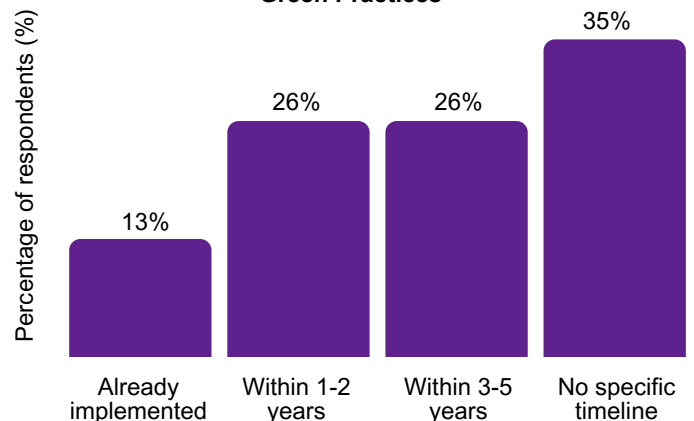
Current level of integration of environmental sustainability into business strategy



These findings suggest that while the momentum for green manufacturing is building, most businesses are still in the transition phase or unsure about their transition timeline. Policy incentives, financial support and clear regulatory frameworks may be needed to accelerate sustainability commitments and ensure broader adoption of green practices.



Timeline to achieve substantial adoption of Green Practices



Adoption of Green Manufacturing Practices

The most widely adopted green manufacturing practice is waste reduction and recycling (71% respondents), indicating a strong emphasis on minimising waste and improving resource efficiency. Energy efficiency improvements (59%) are also a key focus, suggesting that many companies are working to optimise energy use and reduce costs.

Renewable energy adoption (46%) is gaining traction, reflecting efforts to transition toward cleaner energy sources. Meanwhile, 34% of respondents are incorporating eco-friendly materials and 31% are actively measuring and reducing their carbon footprint, highlighting growing environmental responsibility.

While these figures indicate positive momentum, areas like water conservation and green supply chain management remain less prioritised. This suggests that businesses may benefit from greater policy support, financial incentives and knowledge-sharing initiatives to encourage deeper integration of sustainable manufacturing practices.

Capital Expenditure Allocation for Green Manufacturing

A majority of businesses (52% respondents) are allocating less than 5% of their capital expenditure toward green manufacturing initiatives, indicating a cautious investment approach. Another 31% of respondents have committed between 5% to 10% of their capital expenditure, reflecting a moderate level of engagement in sustainability efforts.

Only 12% of businesses have allocated between 10% and 20%, and a small 4% have invested more than 20% of their capital into green manufacturing. These figures suggest that while awareness and integration of green practices are increasing, financial commitment remains relatively low.

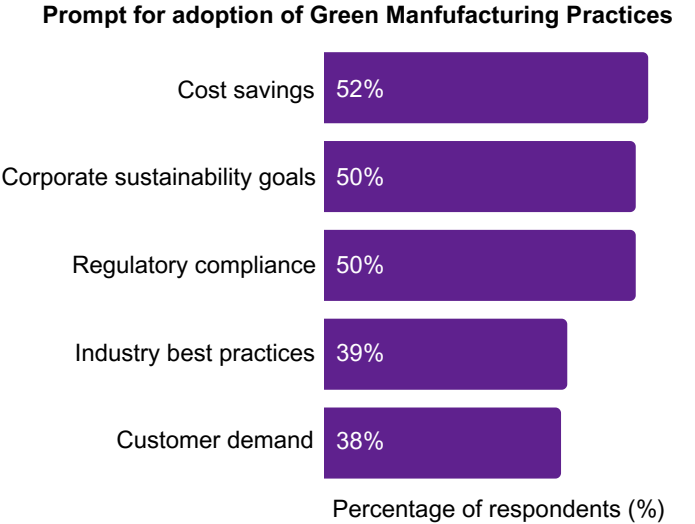
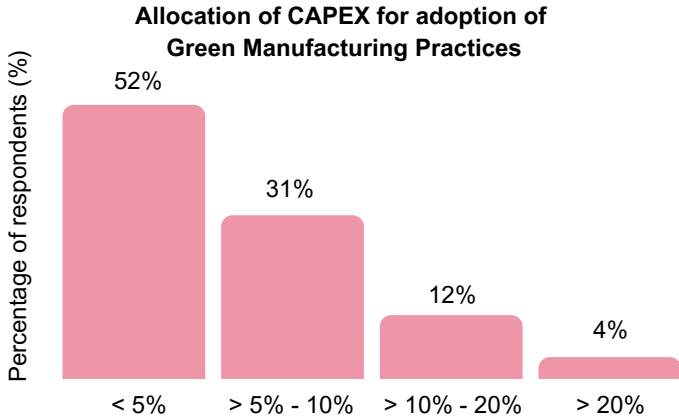
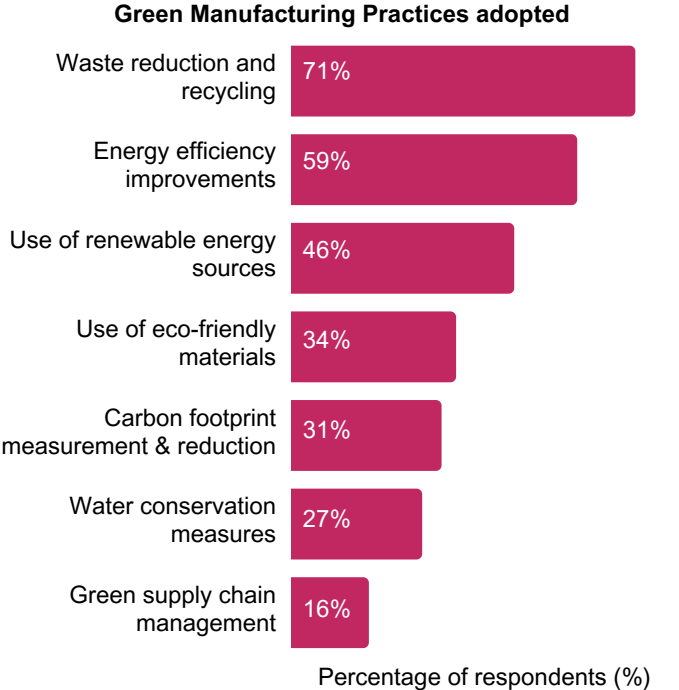
The data highlights the need for stronger incentives, clearer regulatory frameworks and increased financial support to encourage higher investment levels in sustainable manufacturing practices. Without targeted policies or industry-driven initiatives, many businesses may continue to adopt a minimalist approach to green investment rather than committing significant resources.

Factors Driving the Adoption of Green Manufacturing Practices

The leading motivator for adopting green manufacturing practices is cost savings (52% respondents), indicating that businesses see sustainability as a cost-efficient strategy rather than just an environmental initiative. Corporate sustainability goals (50%) and regulatory compliance (50%) are also key drivers, reflecting a strategic alignment with environmental responsibility and legal requirements.

Industry best practices (39%) and customer demand (38%) are important influences as well, suggesting that companies are increasingly adopting green practices to stay competitive and meet consumer expectations. The strong emphasis on cost efficiency and compliance indicates that financial and regulatory incentives will continue to be crucial in accelerating green adoption across industries.

While businesses recognise the value of sustainability, a stronger push from market forces and government policies could further encourage widespread adoption and deeper integration of green practices.

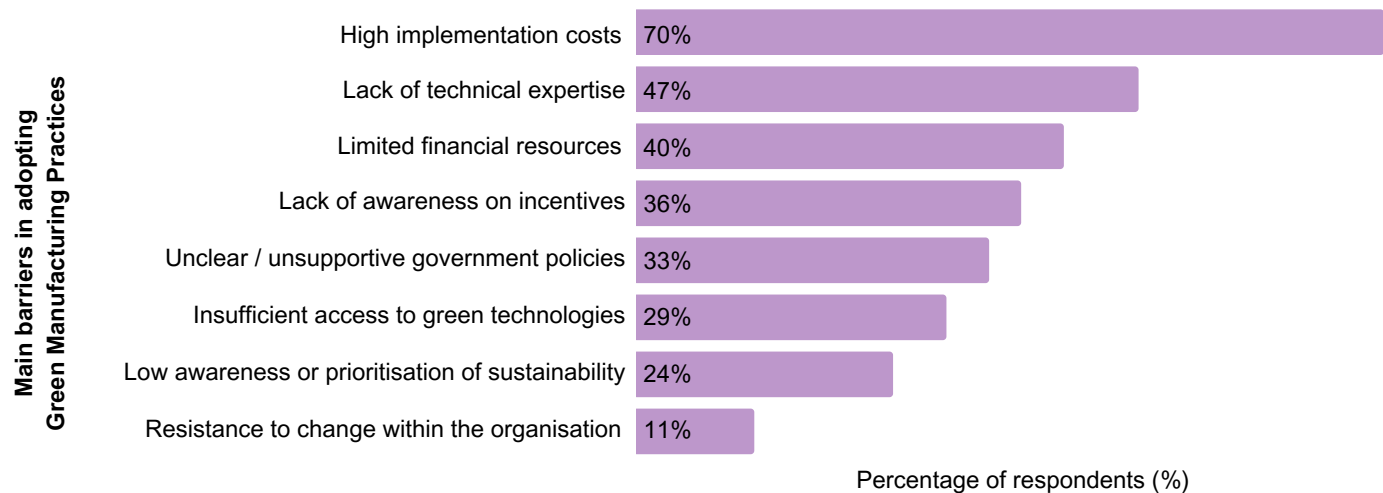


Key Barriers to Green Manufacturing Adoption

The most significant barrier to adopting green manufacturing practices is high implementation costs (70%) respondents, indicating that financial constraints remain a major hurdle for businesses. Lack of technical expertise (47%) is also a prominent challenge, suggesting that many companies lack the necessary knowledge and skills to implement sustainable practices effectively.

Limited financial resources (40%) and lack of awareness on available incentives (36%) further highlight the financial and informational challenges that hinder adoption. Additionally, 33% of respondents cite unclear or unsupportive government policies, indicating the need for clearer regulatory frameworks and stronger policy guidance.

These findings suggest that while businesses recognise the importance of sustainability, many struggle with financial and technical limitations. Greater access to funding, expert guidance and clearer policy direction could accelerate the transition to green manufacturing and encourage more widespread adoption.

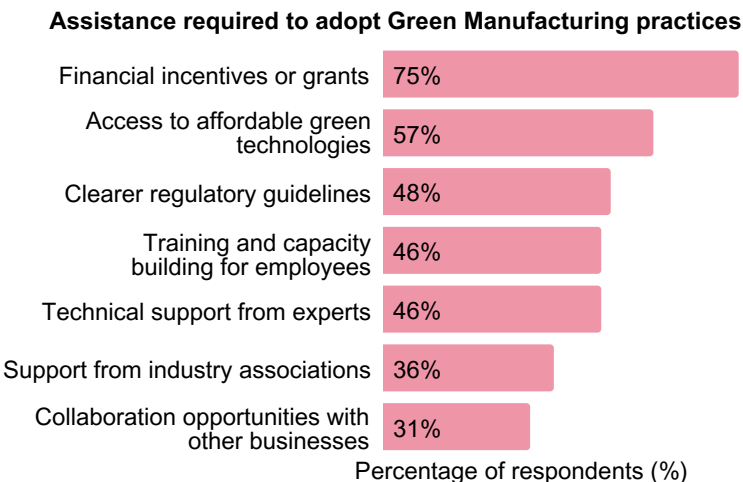
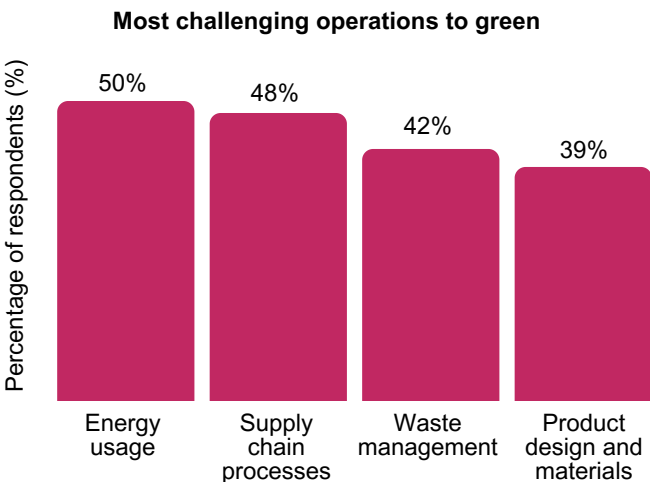


Challenges in Greening Manufacturing Operations and Needed Assistance

The most difficult area to green is energy usage (50% respondents), highlighting the high costs and complexity of transitioning to cleaner energy sources. Supply chain processes (48%) also present major challenges, indicating difficulties in ensuring sustainability across suppliers and logistics networks. Waste management (42%) and product design/materials (39%) are also key concerns, as companies struggle with resource efficiency, sustainable material sourcing and circular economy integration.

To overcome these barriers, businesses indicate that financial incentives and grants (75%) are the most critical form of support, reinforcing the fact that cost is a primary constraint in green adoption. Access to affordable green technologies (57%) and clearer regulatory guidelines (48%) are also major needs, showing that businesses require both financial support and regulatory clarity to transition effectively. Additionally, training and capacity building (46%) and technical support from experts (46%) are vital, suggesting that many companies lack the knowledge and skills necessary for green transformation.

These findings suggest that financial barriers, technological accessibility and knowledge gaps are the key roadblocks to green manufacturing. A combination of government incentives, technological advancements and industry collaboration will be essential to help businesses achieve more sustainable manufacturing operations.



SUPPLY CHAIN CHALLENGES

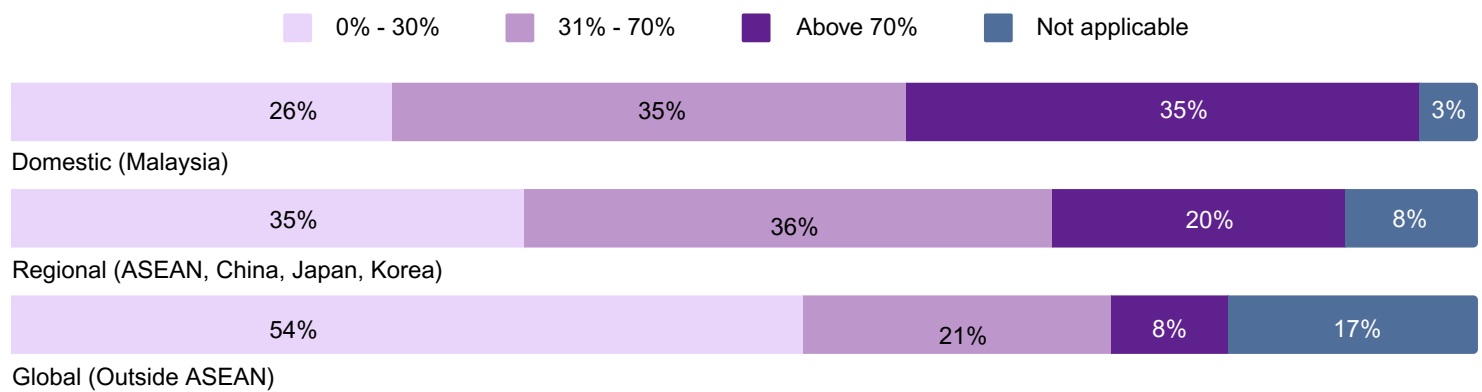
Current Sources of Raw Materials and Components

Manufacturers source their raw materials from a mix of domestic, regional and global suppliers, with no single dominant supply base. 35% of businesses source more than 70% of their materials from Malaysia, while another 35% rely on Malaysia for 31%-70% of their inputs. This indicates a significant level of domestic dependence for raw materials.

Regional suppliers (ASEAN, China, Japan, Korea) play a crucial role, with 36% of respondents sourcing 31%-70% of their materials regionally. However, only 20% rely on regional sources for more than 70% of their inputs, showing a more diversified approach in this category.

Global suppliers (outside ASEAN) account for a smaller share, with 54% of respondents sourcing up to 30% of their materials globally. Only 8% of businesses depend on global sources for more than 70% of their raw materials, highlighting a preference for regional and domestic procurement over global supply chains.

These findings suggest that while Malaysia remains an important raw material hub, businesses diversify sourcing to ASEAN and beyond to mitigate risks and ensure supply chain stability. The limited reliance on global sources may reflect efforts to reduce exposure to international supply chain disruptions and geopolitical risks.

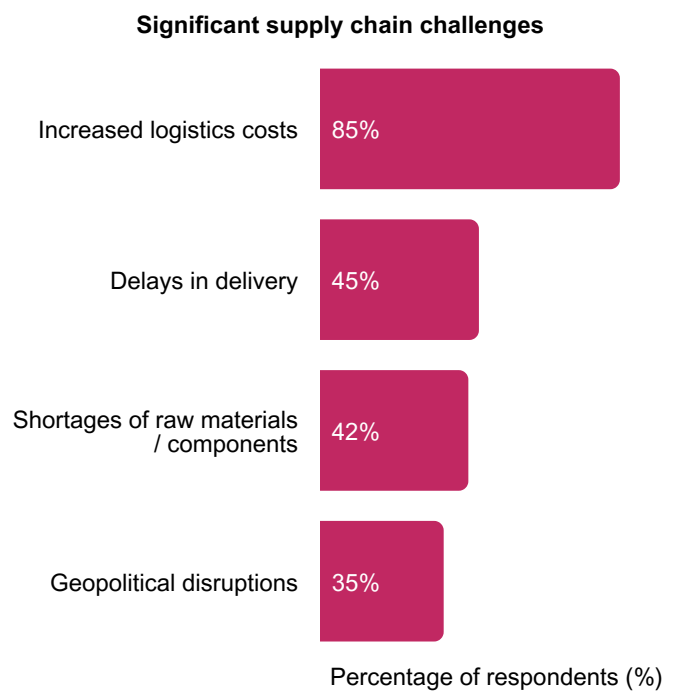


Significant and Other Supply Chain Challenges Facing Businesses

The most pressing challenge for businesses remains increased logistics costs (85% respondents), which impact profitability and supply chain efficiency. Delivery delays (45%) further compound this issue, affecting production timelines and customer fulfilment. Raw material shortages (42%) remain a concern, limiting production capacity and increasing procurement difficulties. Geopolitical disruptions (35%) add uncertainty, influencing trade policies, supply chain risks and currency fluctuations.

Beyond these core challenges, some respondents are also struggling with rising raw material costs, which directly affect production expenses and profit margins. Road conditions, traffic congestion and port delays are logistical bottlenecks that slow operations. Climate change is emerging as an issue, affecting product quality due to vendor-related environmental factors. Additionally, the EU-imposed Waste Shipment Regulation and other regulations introduced under the EU Green Deal such as the Carbon Border Adjustment Mechanism (CBAM) and EU Deforestation-Free Products (EUDR), as well as investment policies in Malaysia that are perceived as not friendly to FDI, add further regulatory and operational concerns cited by some respondents.

These findings suggest that businesses are navigating a complex mix of cost pressures, supply chain disruptions and regulatory challenges. Companies must optimise logistics, diversify sourcing strategies and enhance resilience planning to mitigate these ongoing disruptions effectively.



Supply Chain Challenges Localised or International in Nature?

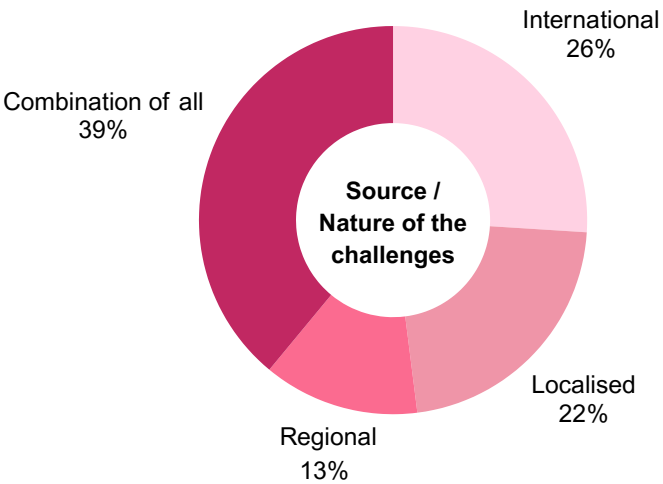
Supply chain challenges are spread across multiple levels, reflecting the interconnected nature of modern logistics. 22% of respondents cited localised challenges within Malaysia, while 13% pointed to regional (ASEAN) issues. A larger share, 26%, attributed challenges to global supply chains, highlighting geopolitical and trade-related challenges. The most significant group, 39%, reported a combination of local, regional and global factors, emphasising the complexity of supply chain risks. Overall, 65% of respondents faced international or mixed challenges, underscoring the need for resilient, diversified supply chain strategies to mitigate risks at multiple levels.

Respondents at different supply chain levels - local, regional and international - face varying challenges. Geopolitical instability is a major concern for businesses engaged in global trade, making them more vulnerable to political instability, trade restrictions and conflicts, whereas local and regional firms are less affected.

Logistics costs are a persistent challenge across all supply chain levels. Rising fuel prices, supply chain disruptions and inflationary pressures impact businesses regardless of geographic scope. Delivery delays remain a widespread issue, driven by systemic inefficiencies in transportation networks, port congestion and logistical bottlenecks.

Raw material shortages are a significant concern, especially for companies reliant on international sourcing, due to geopolitical tensions, supplier concentration risks and export restrictions. While local and regional supply chains face fewer geopolitical risks, they still struggle with cost pressures and supply chain inefficiencies.

The above highlights the need for respondents to enhance resilience by diversifying suppliers, optimising logistics and strengthening risk management. Those investing in supply chain flexibility and efficiency will be better equipped to navigate challenges and stay competitive.



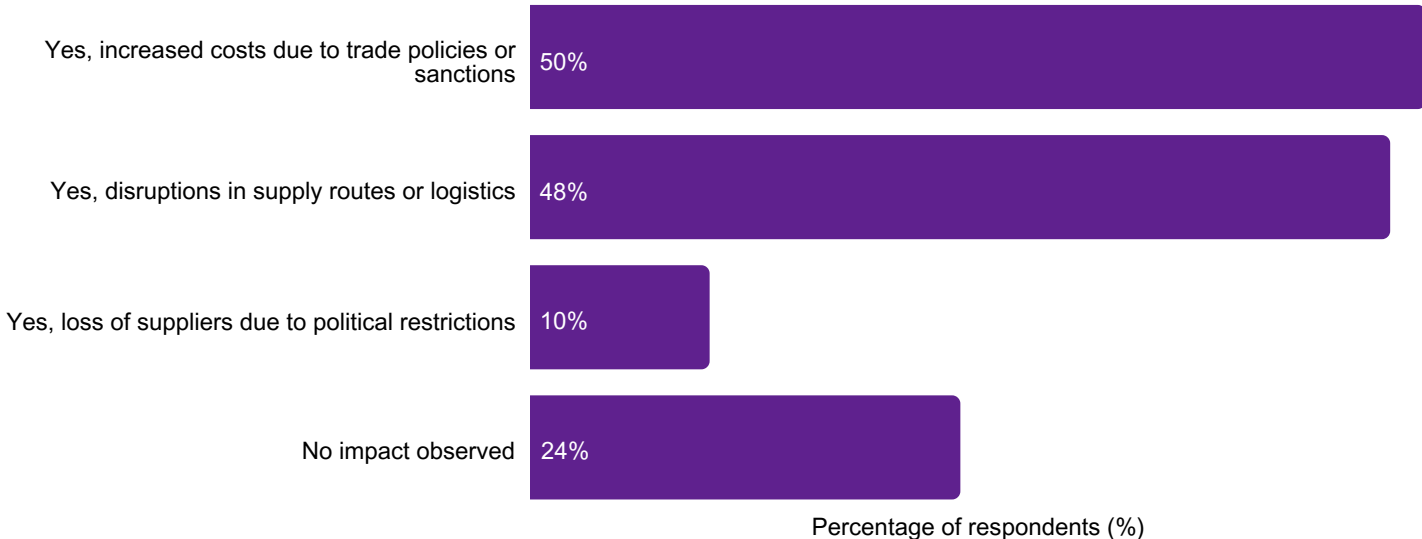
Impact of Geopolitical Tensions on Supply Chain Operations

The data indicates that geopolitical tensions and disruptions have significantly impacted supply chain operations. 50% of respondents reported experiencing increased costs due to trade policies or tariffs, highlighting the financial strain imposed by geopolitical instability. Additionally, 48% noted disruptions in supply routes and logistics, suggesting that transportation and distribution networks have been affected by global uncertainties.

A smaller portion, 10%, faced supplier losses due to political restrictions, reflecting challenges in maintaining stable supplier relationships amid regulatory and diplomatic constraints. Meanwhile, 24% of respondents reported no observed impact, indicating that some businesses have remained resilient despite geopolitical challenges.

These findings emphasise the need for businesses to develop cost-mitigation strategies, strengthen supply chain flexibility and diversify sourcing options to navigate the risks associated with geopolitical tensions.

Geopolitical tensions / disruptions impacted supply chain

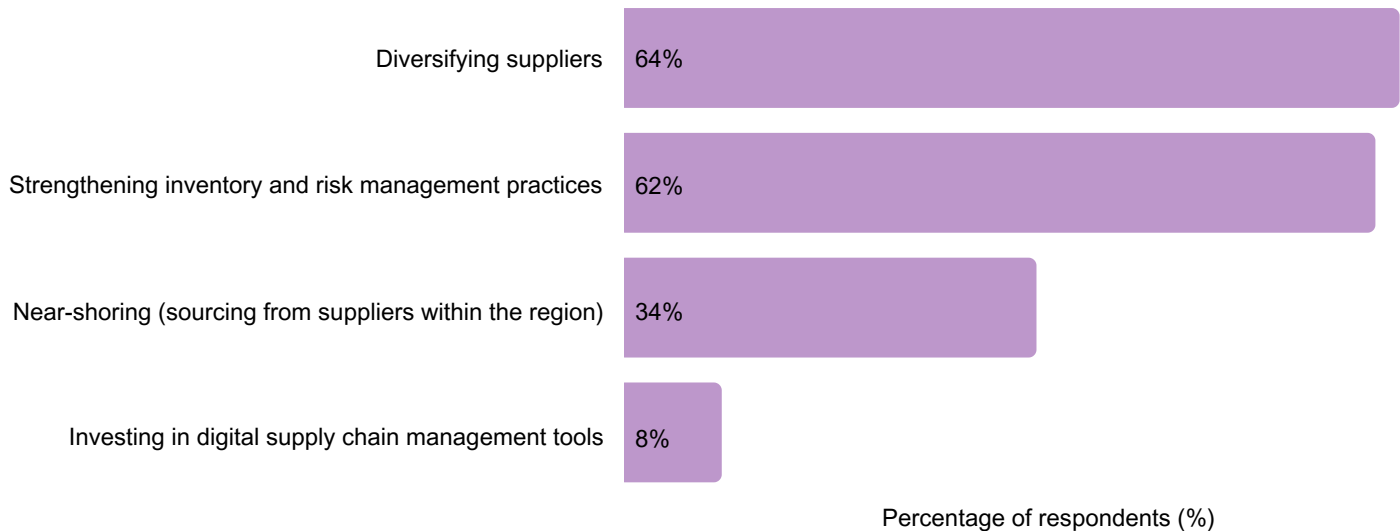


Strategic Responses to Supply Chain Challenges

Companies are actively adapting their supply chain strategies to mitigate challenges, with a strong emphasis on diversification, risk management and technological advancements. The data shows that 64% of respondents are diversifying their supplier base, reducing dependence on specific regions to minimise exposure to geopolitical and logistical risks. Additionally, 62% are strengthening inventory and risk management practices, ensuring greater resilience against unforeseen supply chain shocks.

A significant portion, 34%, is adopting near-shoring strategies, sourcing from regional suppliers to enhance stability and reduce reliance on distant markets. Meanwhile, 8% are investing in digital supply chain management tools, leveraging technology to improve visibility, efficiency and operational control. These findings highlight a strategic shift towards supplier diversification, proactive risk mitigation and digital transformation, enabling businesses to build more resilient and adaptive supply chains.

Ways of addressing current supply chain challenges

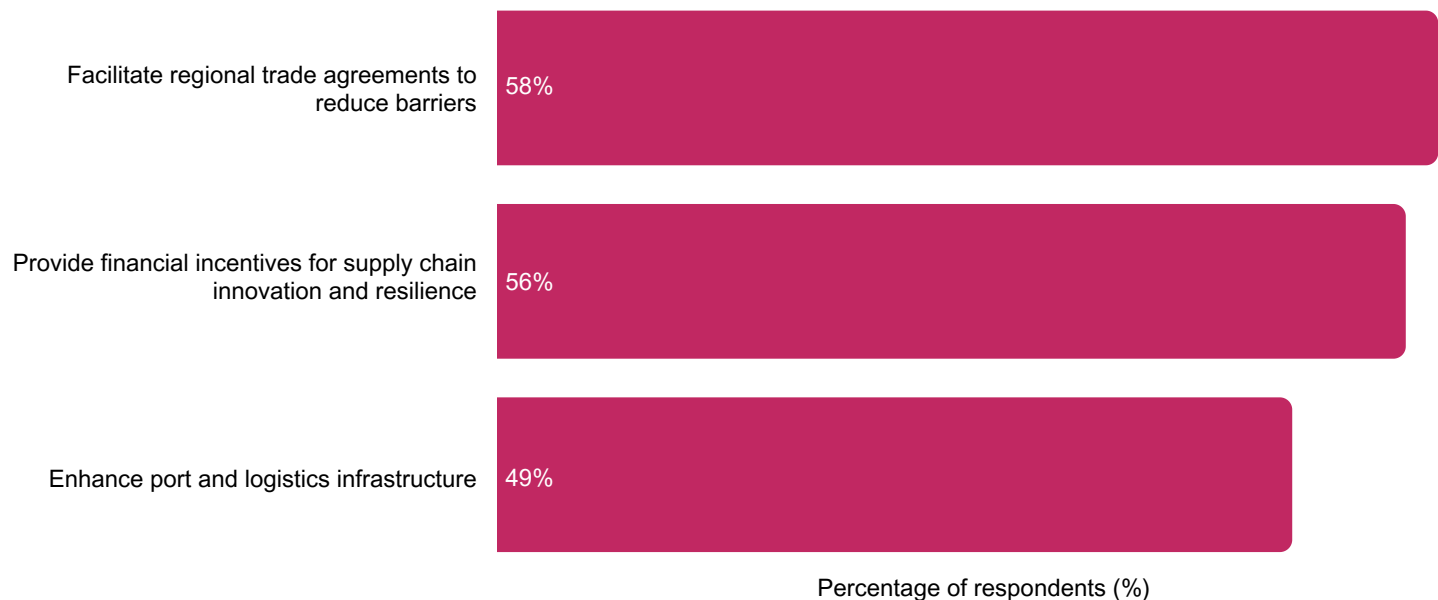


Government Support Measures to Mitigate Supply Chain Risks

The data highlights key actions that respondents recommend the government take to mitigate supply chain risks. 58% of respondents suggest that the government should facilitate regional trade agreements to reduce cross-border restrictions and enhance trade flow efficiency. Additionally, 56% advocate for financial incentives for supply chain diversification, which could help businesses strengthen their sourcing strategies and reduce dependency on single suppliers or regions. Another 49% recommend enhancing port and logistics infrastructure, emphasising the need for improved transportation networks and streamlined logistics operations to prevent bottlenecks.

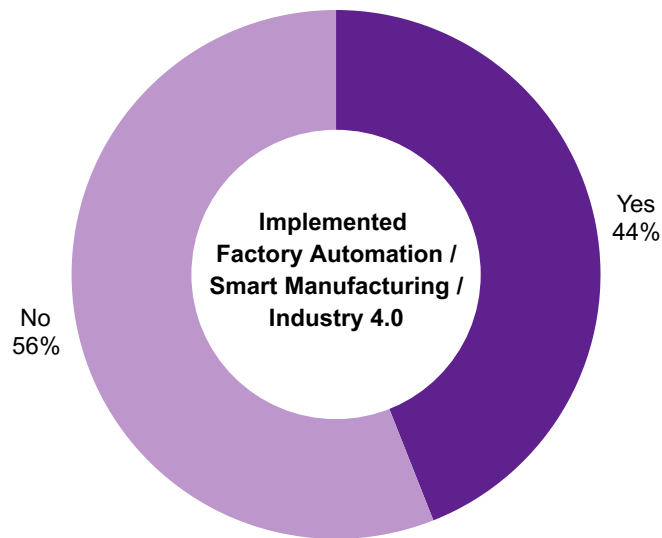
These findings indicate that businesses are looking for policy-driven solutions, financial support and infrastructure improvements to build more resilient and efficient supply chains

Recommendation of actions or support to mitigate supply chain risks



Adoption of Factory Automation and Industry 4.0

The adoption of factory automation and Industry 4.0 is mixed, with 44% of companies implementing these technologies to enhance efficiency and competitiveness. However, 56% have not yet adopted them, likely due to high costs, technical challenges or return on investment (ROI) concerns. The transition to smart manufacturing is ongoing, requiring more incentives, training and infrastructure to drive broader adoption.

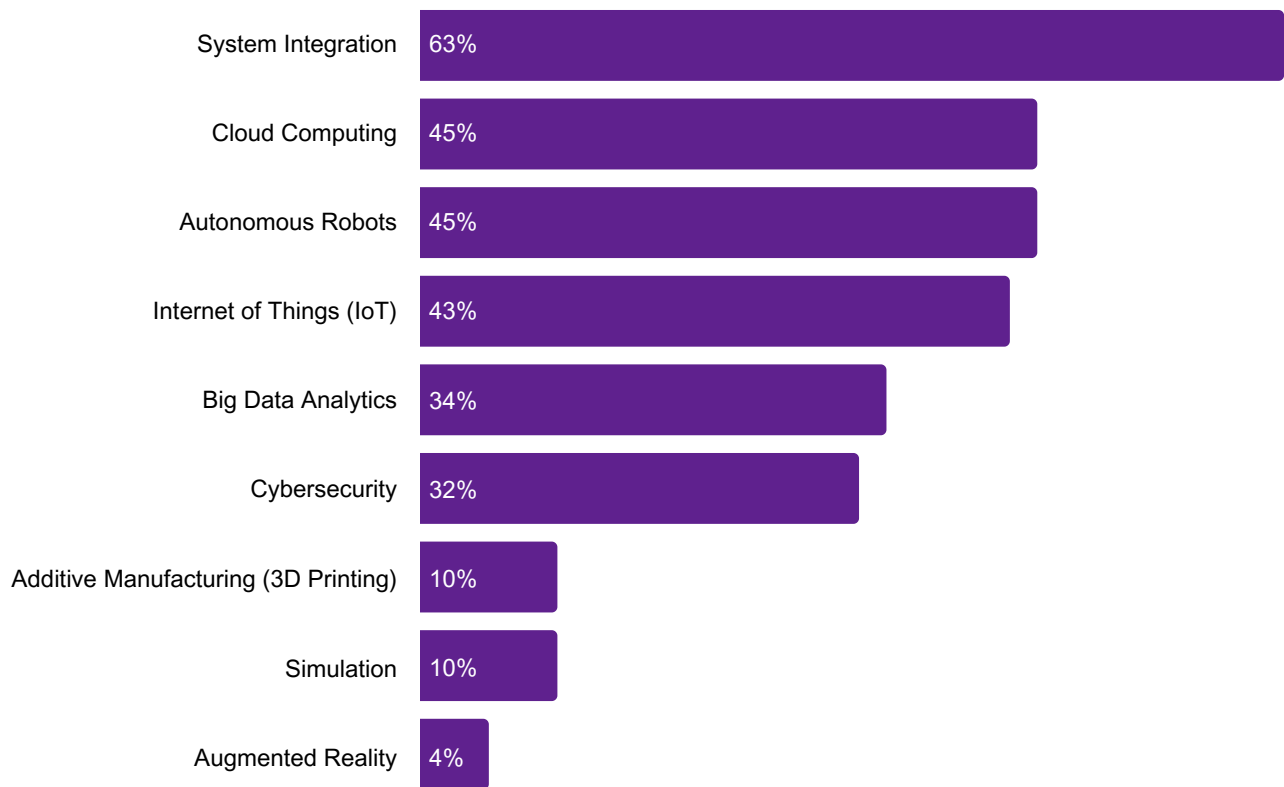


Implementation of Industry 4.0 Technologies in Manufacturing

The data shows that System Integration is the most widely implemented Industry 4.0 technology, adopted by 63% of respondents, indicating a strong focus on streamlining operations and improving connectivity between manufacturing systems. Cloud Computing and Autonomous Robots follow, each implemented by 45% of respondents, suggesting a growing reliance on automation and digital infrastructure. Internet of Things (IoT) is also gaining traction, with 43% adoption, enabling real-time data exchange and smart monitoring. Big Data Analytics, implemented by 34%, supports data-driven decision-making for improved efficiency and predictive maintenance.

These findings highlight an increasing shift toward digitalisation, automation and connectivity in manufacturing, with companies prioritising system integration, robotics and IoT to enhance productivity and resilience.

Industry 4.0 technology implemented in manufacturing process

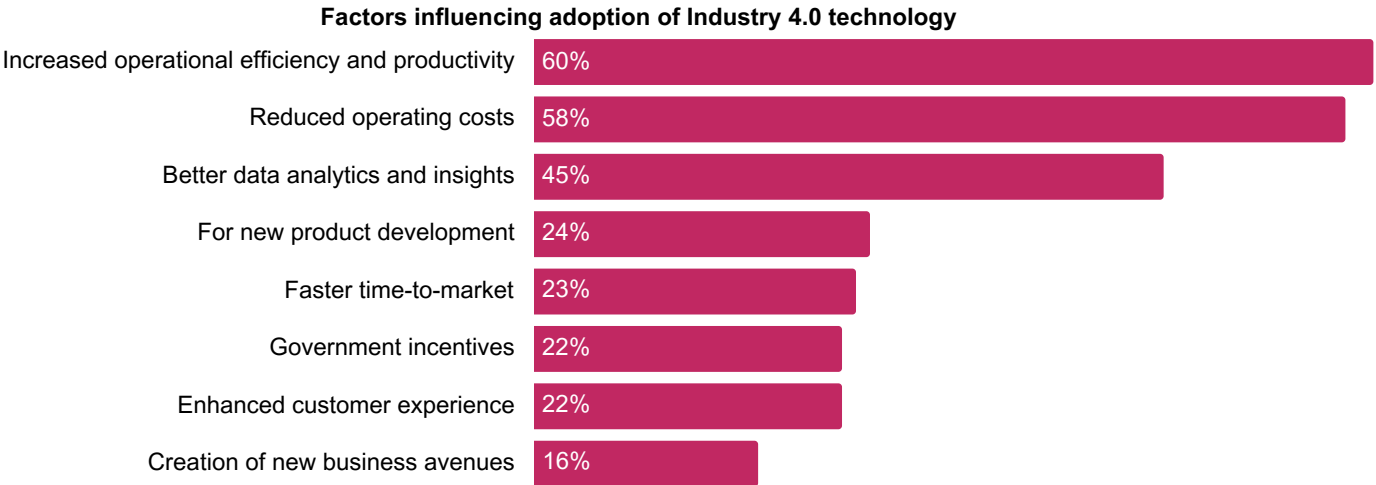


Key Factors Influencing Industry 4.0 Adoption

The primary driver for Industry 4.0 adoption among respondents is increased operational efficiency and productivity, cited by 60% of companies. This underscores the focus on leveraging automation and smart technologies to enhance manufacturing performance. 58% of respondents also focus on reducing operating costs, reflecting the cost-saving potential of digital transformation.

Better data analytics and insights influence 45% of respondents, highlighting the value of real-time data for decision-making and process optimisation. Additionally, 24% of companies adopt Industry 4.0 technologies for new product development, while 23% emphasise faster time-to-market, indicating a push toward innovation and agility in response to market demands.

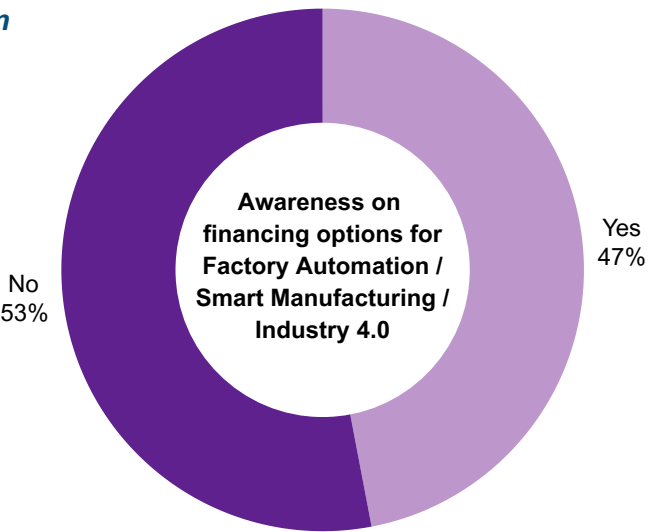
These findings suggest that businesses view efficiency, cost reduction and data-driven decision-making as key motivators for Industry 4.0 adoption, with growing interest in innovation and market responsiveness.



Awareness of Financing Options for Industry 4.0 Adoption

The results indicate that awareness of financing options for Factory Automation, Smart Manufacturing, and Industry 4.0 adoption is relatively low. While 47% of respondents are aware of available financing options, 53% are not, suggesting a gap in outreach or accessibility of information regarding funding opportunities for automation and digital transformation.

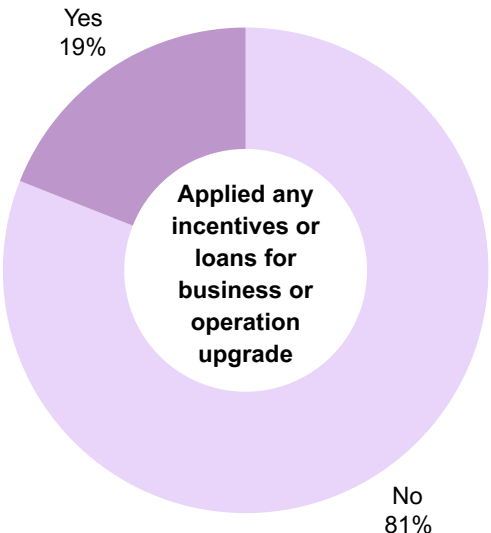
The above highlights the need for greater awareness campaigns and clearer communication from financial institutions and government agencies to ensure businesses can leverage available financial support for modernisation efforts.



Application for Government Incentives and Loans for Automation

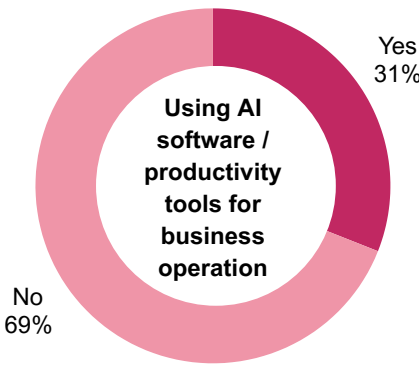
The findings show that only 19% of respondents have applied for government incentives or loan options aimed at automation and operational upgrades, while a significant 81% have not. This low application rate suggests potential barriers such as lack of awareness, complex application processes or eligibility constraints.

Given that 53% of respondents are unaware of available financing options, improving accessibility and outreach for government incentives and funding programmes could encourage more businesses to invest in Industry 4.0 and smart manufacturing technologies.



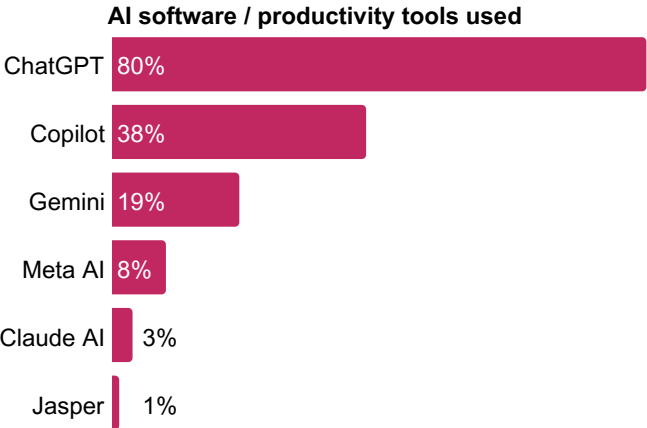
Adoption of AI Software and Productivity Tools

The results show that 31% of respondents use AI software or productivity tools in their business operations, while a majority (69%) do not. This suggests that AI-driven and digital productivity solutions are still in the early stages of adoption, possibly due to cost concerns, lack of expertise or limited awareness of available technologies.



AI Software and Productivity Tools Used by Businesses

ChatGPT is the most widely used AI tool, adopted by 80% of respondents, followed by Microsoft Copilot (38%), Google Gemini (19%), Meta AI (8%) and Claude AI (3%). This suggests a strong reliance on AI for automation, content generation and workflow optimisation, with adoption concentrated around key platforms.

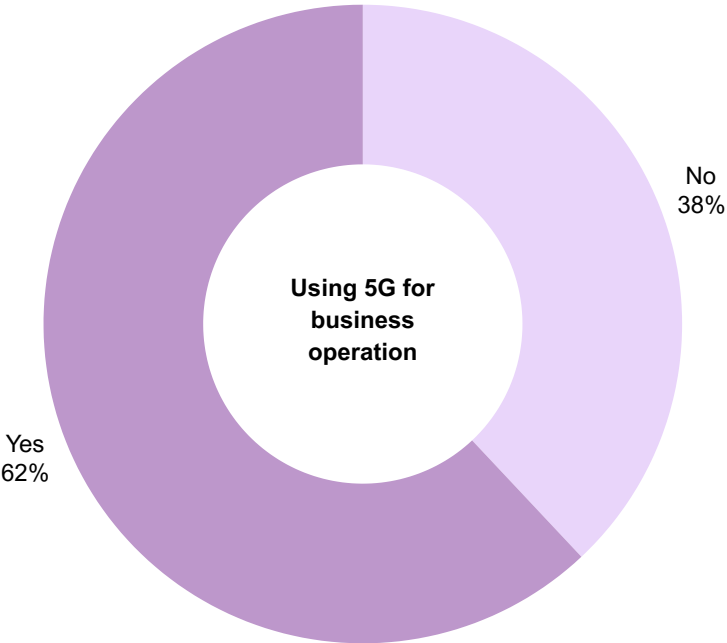
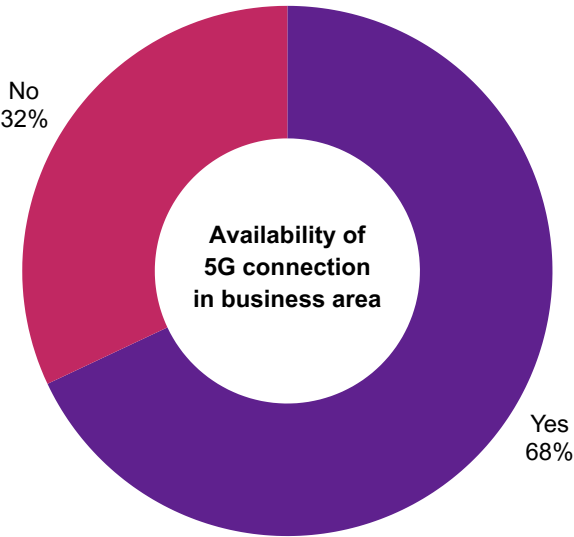


Machine Learning for inspection, SAP, SIA, and other tools are used by only 0.6% of respondents, each. While some businesses are integrating AI-driven analytics and automation, widespread adoption remains limited, requiring greater awareness, affordability and technical supportfor broader implementation.

5G Availability vs Adoption in Smart Manufacturing

The survey data reveals that 68% of respondents have access to 5G, while 32% do not, indicating progress in connectivity but also highlighting a digital divide in smart manufacturing. Among those with access, 62% actively use 5G for business operations, leveraging it for automation, real-time data analytics and efficiency improvements. However, 38% do not utilise 5G, despite availability, suggesting barriers such as high implementation costs, lack of expertise or integration challenges.

Limited infrastructure and investment costs likely remain key obstacles, particularly in industrial and rural areas. Additionally, the gap between availability and adoption suggests that beyond access, businesses may need incentives, training and clearer ROI justifications to implement 5G solutions effectively. Government policies and regulatory support will be crucial in accelerating deployment and encouraging adoption. While 5G presents significant opportunities for advanced manufacturing, bridging both connectivity and usage gaps will be essential for maximising its impact on efficiency, competitiveness and industry-wide digital transformation.

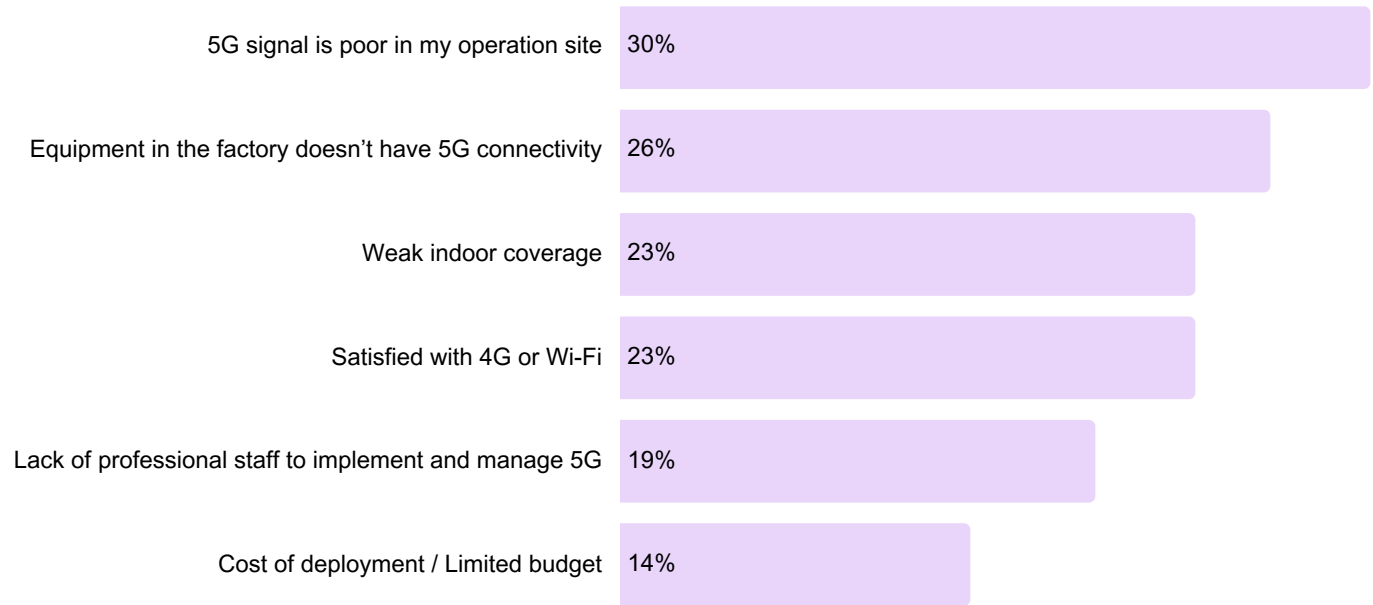


Key Barriers to 5G Adoption in Business Operations

The dataset highlights key barriers preventing businesses from adopting 5G in their operations. The most significant challenge, cited by 30% of respondents, is poor 5G signal or coverage, making it difficult for businesses to rely on the technology. Additionally, 26% report equipment connectivity issues, with more than half of their devices not being 5G-compatible, requiring costly upgrades. Weak indoor coverage is another limitation, affecting 23% of respondents, while an equal percentage indicate they are satisfied with existing 4G or WiFi networks, reducing the urgency to switch.

These findings suggest that network infrastructure remains a critical barrier, particularly in manufacturing and industrial zones where consistent coverage is essential. Additionally, device compatibility issues and investment costs may slow adoption, especially for businesses that do not yet see a strong return on investment. Many companies appear content with their current connectivity solutions, indicating that 5G’s value proposition needs to be clearer and more compelling to justify the transition.

Reasons for not using 5G in business operation



The FMM Business Conditions Index (FMM BCI) tracks the general state of the economy affecting business viability. The FMM BCI uses the current level of business activity as a proxy for current business conditions, compared to six months ago. Index values range from 0 to 200 points. A value above the growth-neutral threshold level of 100 points indicates an improvement or positive outlook, while that below the threshold indicates a worsening or negative outlook.

The FMM Business Conditions Survey 2H2024 was conducted from December 18, 2024 to February 17, 2025 and received 524 responses, of which 70.0% were SMEs (based on full-time employees), with 117, 103 & 66 responses from Klang Valley, Perak & Penang respectively. The top three industries for responses were: Food, Beverage & Tobacco (16.2% of respondents); Plastic & Plastic Products (12.6%); and Electrical & Electronics (12.0%).

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