The Rates of Success, Goals, and Future Priorities of Digital Transformations, by Sector
The key findings for hardware devices, components, and semiconductor companies

More than half of technology hardware companies have executed a winning digital transformation that met their transformation objectives and created sustainable change—a figure 50% higher than the cross-industry average of 35%.

Hardware companies outscore other industries on individual success factors, especially leadership and strategy, but they struggle on agile governance, indicating that agile at scale remains a heavy lift for physical goods companies.

Hardware companies emphasize customer experience less than companies in other industries, instead making their top priorities growth and business model innovation and sales and marketing acceleration.

Successful digital players are prioritizing areas that are good fits with AI solutions, such as automated lead generation, dynamic pricing, predictive maintenance, and demand forecasting.

ESG considerations—especially energy consumption reduction, data privacy, and cyber resilience—are becoming more important in the digital agenda.

Source: BCG analysis.
The data in more depth

- Rates of success in digital transformation
- Topics of focus for hardware (devices and components)
- Top priorities for the future
- The critical human and tech enablers
- The role of ESG in digital transformation

Source: BCG analysis.
Half of hardware companies reach the win zone, which is 1.5 times the cross-industry average

2021 cross-industry average: 7.4


Note: Survey question: “Across the following dimensions, please rate your organization’s digital transformation experience to date on a scale of 1 to 10, using the guidelines in the table below.”

1. Success score is calculated from respondents’ answers on six dimensions of transformation: strategy; leadership; talent; agility; monitoring; and tech and data.
Hardware companies clear the bar on integrated strategy and leadership commitment; they struggle most with employing an agile governance mindset.

Source: 2021 BCG Global Digital Transformation Survey. Note: Survey question: “Across the following dimensions, please rate your organization’s digital transformation experience to date on a scale of 1 to 10 using the guidelines in the table below.”

Rates of success:

DISTRIBUTION OF SUCCESS SCORES ON INDIVIDUAL KEY FACTORS

1. Integrated strategy with clear transformation goals
2. Leadership commitment from CEO through middle management
3. Deployment of high-caliber talent
4. An agile governance mindset that drives broader adoption
5. Effective monitoring of progress toward defined outcomes
6. Business-led modular technology and data platform

Lower extreme | Hardware devices | Upper or lower quartile | Upper extreme
---|---|---|---

Woe zone (success score <6) | Worry zone (success score ≥6–<8) | Win zone (success score ≥8)


Note: Survey question: “Across the following dimensions, please rate your organization’s digital transformation experience to date on a scale of 1 to 10 using the guidelines in the table below.”

'Success score is calculated from respondents' answers on six dimensions of transformation: strategy; leadership; talent; agility; monitoring; and tech and data.'
Transformation priorities for hardware companies include growth and business model innovation and customer-oriented topics.

### TOPICS OF FOCUS

**Strategic objectives**

**SHARE OF RESPONDENTS (%)**

- Improvement in customer experience and go-to-market: 30
- Innovation and growth in the core and beyond: 26
- Performance improvement through the operational value chain: 28
- Performance improvement in support functions: 17

**Scope of digital transformation**

**SHARE OF RESPONDENTS (%)**

- Growth and business model innovation: 79
- Sales and market acceleration: 74
- Customer experience and journeys: 68
- Marketing and dynamic pricing: 66
- Digital manufacturing and operations: 66
- Digital procurement: 63
- Building resilience via cybersecurity and compliance: 61
- Supply chain: 61
- Digital ecosystem and partnerships: 55
- Digitizing support functions: 55
- New business venture: 42

**CROSS-INDUSTRY AVERAGE (%)**

- Growth and business model innovation: 72
- Sales and market acceleration: 71
- Customer experience and journeys: 81
- Marketing and dynamic pricing: 41
- Digital manufacturing and operations: 50
- Digital procurement: 54
- Building resilience via cybersecurity and compliance: 54
- Supply chain: 48
- Digital ecosystem and partnerships: 65
- Digitizing support functions: 45
- New business venture: 45


Note: Because of rounding, the percentages given for the strategic objectives do not add up to 100%.

1 Respondents were asked to select all priorities that applied.
TOPICS OF FOCUS

Win-zone hardware companies are shifting their focus from core operations to sales and marketing and innovation-oriented business outcomes.

Scope of digital transformation
SHARE OF RESPONDENTS (%)

Digital manufacturing and operations
-15 pp
Woe- and worry-zone hardware (combined)
Win-zone hardware companies
Change of +5 pp or less
Change of more than +5 pp
60
45
30
82
70
60
36
30
82
91
21 pp
22 pp
52 pp

Supply chain
-15 pp
-15 pp

Customer experience and journeys
sales and market acceleration
growth and business model innovation
New business venture
Digital ecosystem and partnerships
–15 pp
–15 pp
60
45
30
82
70
60
36
30
82
91
21 pp
22 pp
52 pp

Note: Survey question: “From the list of most common digital outcome areas and enablers in digital transformation, please help us identify the scope of your digital transformation (select all that apply).”
Nearly all hardware companies intend to invest about 40% of their investments toward next-generation sales and marketing and digital operations and support functions.

<table>
<thead>
<tr>
<th>TOP PRIORITIES FOR THE FUTURE</th>
<th>PLANNED SHARE OF WALLET SPENDING ALLOCATED ACROSS DIGITAL TOPICS IN THE NEXT TWO TO THREE YEARS (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Next-generation sales and marketing</td>
<td>97% of respondents plan to invest, allocating an average 21% of total digital investment.</td>
</tr>
<tr>
<td>Product innovation and design</td>
<td>89% of respondents plan to invest, allocating an average 21% of total digital investment.</td>
</tr>
<tr>
<td>Digital operations and support functions</td>
<td>97% of respondents plan to invest, allocating an average 21% of total digital investment.</td>
</tr>
<tr>
<td>Smart factories</td>
<td>84% of respondents plan to invest, allocating an average 19% of total digital investment.</td>
</tr>
<tr>
<td>Digital supply chain</td>
<td>87% of respondents plan to invest, allocating an average 18% of total digital investment.</td>
</tr>
</tbody>
</table>


"For example, the uppermost pair of bars can be read as "97% of hardware respondents plan to invest in next-generation sales and marketing, allocating an average 21% of total digital investment."
## TOP PRIORITIES FOR THE FUTURE

### Hardware companies’ digital priorities: Next-generation sales and marketing

#### Digital initiatives (bars indicate relative prioritization of initiatives)

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Relative Prioritization for all hardware companies</th>
<th>Top priorities for win-zone companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital marketing</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Automated lead generation and handling</td>
<td>0.63</td>
<td></td>
</tr>
<tr>
<td>E-enabled sales force</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Smart customer segmentation and personalized outreach</td>
<td>0.47</td>
<td></td>
</tr>
<tr>
<td>Seller/distributor network ecosystem management</td>
<td>0.38</td>
<td></td>
</tr>
<tr>
<td>Visualization and dashboards for key account management</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Dynamic pricing model</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Dealer commission</td>
<td>0.09</td>
<td></td>
</tr>
</tbody>
</table>

# TOP PRIORITIES FOR THE FUTURE

## Hardware companies’ digital priorities: Product innovation and design

### Digital initiatives (bars indicate relative prioritization of initiatives)

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Relative prioritization for all hardware companies</th>
<th>Top priorities for win-zone companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using market intelligence to understand customer requirements and preferences</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Digital tools for real-time collaboration internally</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>Data-driven (re)engineering to improve product design</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>Using virtual tools (e.g., VR) to correct design errors</td>
<td>0.36</td>
<td></td>
</tr>
<tr>
<td>Digitizing product life-cycle management</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>Data sharing platform between testing companies and component suppliers</td>
<td>0.19</td>
<td></td>
</tr>
</tbody>
</table>

Hardware companies’ digital priorities: Digital support functions and operations

Digital initiatives (bars indicate relative prioritization of initiatives)

- End-to-end procure-to-pay digitization for procurement: 1.00
- End-to-end hire-to-retire digitization (including integrated training) for HR: 0.72
- End-to-end record-to-report digitization of finance activities: 0.66
- End-to-end order-to-cash digitization for management of accounts receivable: 0.60
- End-to-end source-to-contract digitization for contracting: 0.52
- End-to-end contact-to-resolve digitization for contact center: 0.49

## Hardware companies’ digital priorities: Smart factories

### Digital initiatives (bars indicate relative prioritization of initiatives)

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Prioritization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing analytics (production optimization, default detection, etc.)</td>
<td>1.00</td>
</tr>
<tr>
<td>Robotics and automation on the assembly line</td>
<td>0.97</td>
</tr>
<tr>
<td>Predictive and preventive maintenance for machinery</td>
<td>0.65</td>
</tr>
<tr>
<td>3D printing and additive manufacturing</td>
<td>0.57</td>
</tr>
<tr>
<td>Digital twin</td>
<td>0.49</td>
</tr>
<tr>
<td>Shop-floor labor-force optimization and schedule/shift management</td>
<td>0.44</td>
</tr>
<tr>
<td>Shop-floor simulation</td>
<td>0.19</td>
</tr>
<tr>
<td>Energy efficiency optimization</td>
<td>0.16</td>
</tr>
<tr>
<td>Wearables for workers’ safety and traceability</td>
<td>0.10</td>
</tr>
</tbody>
</table>

TOP PRIORITIES FOR THE FUTURE

Hardware companies’ digital priorities: Digital supply chain

Digital initiatives (bars indicate relative prioritization of initiatives)

- Demand forecasting: 1.00
- Network optimization: 0.71
- Real time product and supplies tracking: 0.44
- Capacity planning: 0.44
- Inventory planning: 0.43
- Automated warehouse: 0.18
- Real-time inventory tracking: 0.13

Hardware companies intend to invest across a broad range of tech and human enablers

Nine out of ten hardware companies plan to invest in AI and big data, and modernization of tech organization and operating model, allocating about 30% of their total digital enablers spending to these areas.

PLANNED SHARE OF WALLET SPENDING ALLOCATED ACROSS ENABLER DIGITAL TOPICS IN THE NEXT TWO TO THREE YEARS (%)\(^1\)

<table>
<thead>
<tr>
<th>Tech Enablers</th>
<th>Share of respondents allocating any investment toward digital topic</th>
<th>Average share of total investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure and cloud enablement</td>
<td>81%</td>
<td>14%</td>
</tr>
<tr>
<td>AI and big data</td>
<td>90%</td>
<td>17%</td>
</tr>
<tr>
<td>Modernization of tech architecture</td>
<td>62%</td>
<td>11%</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>81%</td>
<td>14%</td>
</tr>
<tr>
<td>Modernization of technology organization and operating model</td>
<td>90%</td>
<td>13%</td>
</tr>
<tr>
<td>Integrated ecosystems</td>
<td>62%</td>
<td>7%</td>
</tr>
<tr>
<td>Continuous learning</td>
<td>76%</td>
<td>8%</td>
</tr>
<tr>
<td>New ways of working</td>
<td>76%</td>
<td>10%</td>
</tr>
<tr>
<td>New talent and leadership models</td>
<td>67%</td>
<td>6%</td>
</tr>
</tbody>
</table>

\(^{1}\)For example, the leftmost pair of bars can be read as “81% of hardware respondents plan to invest in Infrastructure and cloud enablement, allocating an average 14% of their total digital enabler spending.”
About 87% of hardware companies plan to increase investments in ESG (above cross-sector averages) ... with greater emphasis on S and G dimensions

Share of respondents planning to increase/decrease/maintain investment toward ESG in coming years

<table>
<thead>
<tr>
<th>HARDWARE AVERAGE (%)</th>
<th>CROSS-INDUSTRY AVERAGE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significantly increase</td>
<td>35</td>
</tr>
<tr>
<td>Moderately increase</td>
<td>52</td>
</tr>
<tr>
<td>Maintain as in previous year(s)</td>
<td>13</td>
</tr>
<tr>
<td>Decrease vs. previous year(s)</td>
<td>0</td>
</tr>
</tbody>
</table>

Leading digital initiatives being prioritized to support E, S, and G goals

- **Environment**
  - Reduction in energy consumption in offices and buildings
  - Digital supply chain optimization
  - ~43%

- **Social**
  - Ensuring protection of clients’, employees’, and/or customers’ data
  - Reducing employee risk
  - ~58%

- **Governance**
  - Critical risk incident management, building cyber resilience
  - Active management of operationally linked environment KPIs/metrics
  - ~42%

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