

DIGITAL VORTEX

2023

Taiwan vs. Global Trends

Yingfen Lin | Jialu Shan

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About this Study

Key Insights

1. Digital disruption has captured the attention of high-level executives globally, including those in Taiwan.

Over three-quarters of respondents reported that their C-suites were concerned about digital disruption.

2. A large knowing-doing gap was discovered in organizations around the globe.

While the majority of business leaders who were surveyed were aware of digital disruption and its potential effects, only a small percentage of them were actively responding to it, and a considerable portion had no digital strategy or one that was fragmented.

3. Most companies don't know how to manage digital disruption.

In response to the challenges posed by digital disruption, 72% of Taiwanese companies and 64% of global companies stated they were either doing nothing or were unsure of what to do.

4. Business model matters when it comes to advancing digital transformation, but only in Taiwan.

Companies that implement both B2B and B2C initiatives are more likely to have a digital strategy, and more than half of these companies in Taiwan reported having a coordinated strategy (fragmented 30.2% vs. coordinated 35.7%). However, because of the complex nature of these companies, global data showed that the digital strategies of global companies tended to be more fragmented (fragmented 61.4% vs. coordinated 21.6%).

5. There is a perception gap with regard to digital disruption among the various levels of executives in organizations.

In general, higher-level executives were confident about their responses to digital disruption. Lower-level managers, however, tended to say that the response by the higher-level executives was inappropriate.

6. Taiwanese and international organizations both showed similar trends in their ability to respond to digital disruption.

Both were able to perform better at internal management tasks (such as operations management) than external ones (such as customer behavior analysis), and both had a low level of failure tolerance – a key component of digital business agility.

7. The biggest differences between Taiwanese and global executives were seen in their perceptions of the urgency and intensity of digital disruption.

A higher proportion of the global executives surveyed acknowledged that digital disruption had already occurred and that its influence on their firms would be transformative in the next five years, while fewer than one-third of respondents from Taiwan shared this belief.

Understanding Digital Disruption through IMD's Digital Vortex

Digital business transformation is the integration of digital technologies into all areas of a business – digitizing non-digital products, services or operations to improve performance. It is a cultural change that requires organizations to constantly challenge the status quo, test and learn and get comfortable with failure. Realizing that change is necessary is the initial challenge; after that, the planning for a digital transformation can begin.

Digital disruptors have the capacity to overthrow incumbents and transform markets overnight through new digital technologies and business models that affect the value propositions and market positions of current businesses. They innovate rapidly and then gain and scale up their market share much faster than conservative competitors. As seen through the examples of Amazon, Uber and Netflix, digital disruptors are particularly threatening because they seem to amass enormous user bases much more quickly than any other businesses in history, and they are quick to transform their users into business models that challenge incumbents in multiple markets.

Although the continuously changing competitive landscape makes it impossible to know exactly how to respond to digital disruption, understanding how it works is essential if firms are to launch effective strategies to benefit from it.

The digital vortex concept, which has the following features, makes it easier to see how firms and industries are affected by digital disruption:

- A force that pulls everything toward the middle.
- Objects are drawn to the center with exponentially increasing velocity.
- Industries may dissolve or consolidate.
- The center is the “new digital normal.”

The digital vortex symbolizes the predictable shift of industries toward a digital center. This is demonstrated when value chains and business models are pushed toward maximum digitization. The force of the vortex separates digital and physical value sources and produces “components” that can be merged to generate innovative disruptions that obscure the lines between industries.

By conceiving digital disruption as a vortex, IMD plots survey data as well as data from outside sources (e.g. Bloomberg and CBInsights) to determine which industries are at greatest risk of being digitally disrupted. The industry's position within the digital vortex provides insight into the extent of the possible competitive disruption resulting from digital technology and business models during the next five years. The industries closest to the vortex's center are those with the most potential for disruption, while those on the periphery will experience less immediate effect.

The Global Status of Digital Disruption

Vulnerable Industries

The most vulnerable industries in 2023 (those closest to the center of the vortex, see *Figure 1*) – technology products and services, education, financial services, telecommunications – share some characteristics that make them particularly susceptible to digital disruption. For instance, their core offerings and services can be digitized (e.g. software and money), and they tend to generate revenue from business-to-consumer (B2C) business models. The business-to-business (B2B) industries that are on the periphery of the vortex tend to be asset-heavy and less affected by disruption; however, they run the risk of being unexpectedly sucked into the center, as has happened with the transportation and logistics sectors, where the rise of autonomous vehicles and e-mobility has had a significant impact.

Technology: Disrupt the Disruptions

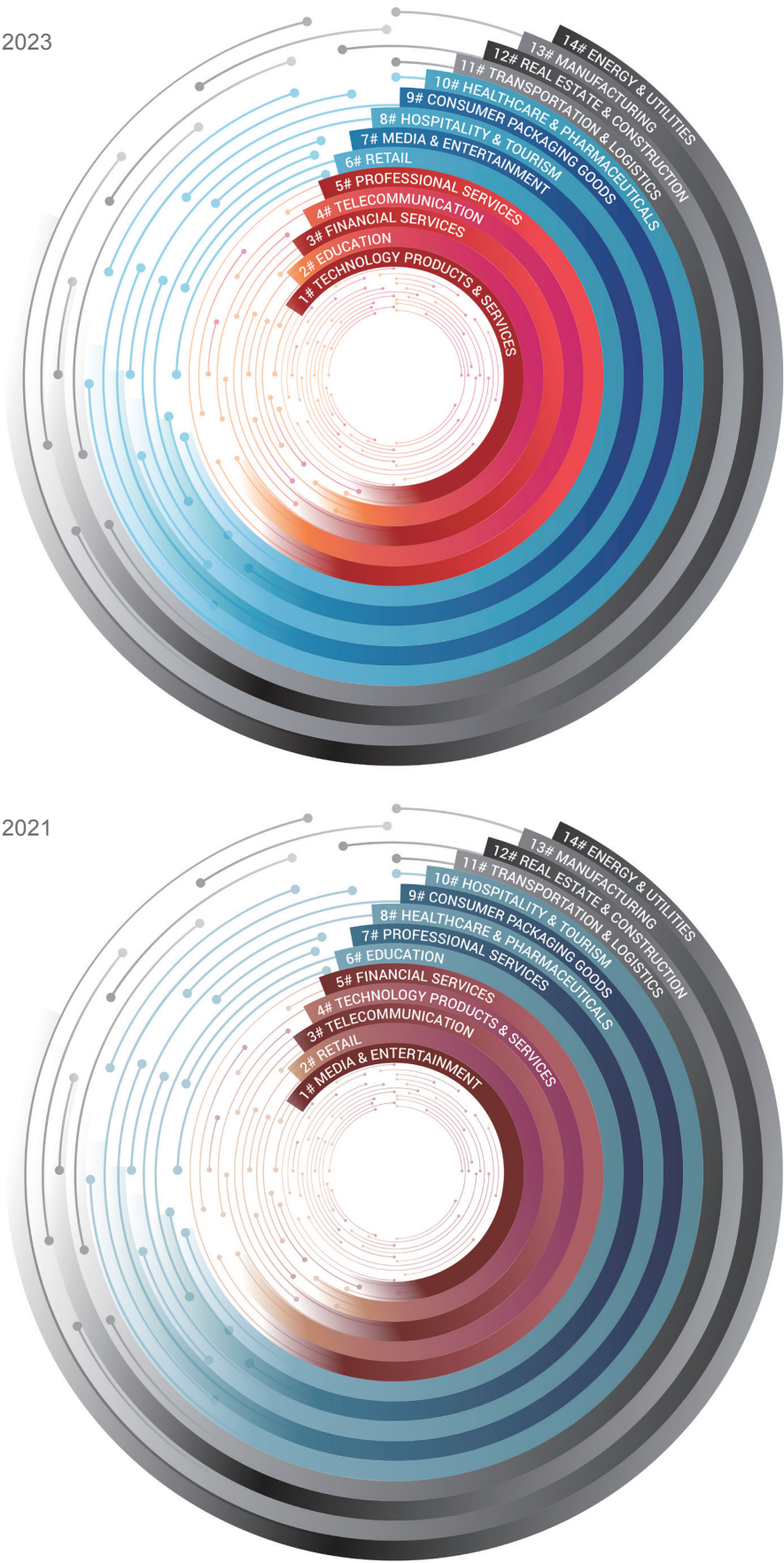
Technology has played a crucial role in the disruption of industries – it is at the root of most disruption and facilitates the inevitable digital transformation in almost every business. In 2023, technology products and services once again took center stage as the most vulnerable sector to digital disruption. The rise of generative artificial intelligence (AI) is undoubtedly one factor. It is not only the remarkable achievement of ChatGPT, which garnered 100 million monthly active users in just two months (compared with nine months for TikTok),ⁱ but also the immense potential and challenges that generative AI could bring beyond content creation. For example, generative AI can be used to create synthetic data sets for training machine learning models, to design novel products and services, to enhance human creativity and collaboration, and to generate insights and hypotheses from complex data. These applications have the potential to transform various industries and domains in the same way that smartphones have enabled businesses like Uber, and social media giants.

The Pandemic's Legacy of Disruption

Since the pandemic, disruptive forces have been particularly prevalent in several sectors. As a result, innovation has flourished and new solutions are replacing the old ways of doing things. Education has entered the top-five for the first time since 2015, jumping up four spots to second place. For-profit education systems have been considerably more disrupted by technology-mediated learning than the public sector. During the pandemic, virtual learning reshaped education systems worldwide, particularly in compulsory and higher education. In addition, the education sector attracted venture capital funding during the pandemic; by July 2022, there were 36 EdTech unicorns globally, the majority of which had raised fresh capital during the pandemic. These unicorns had a total market value of more than US\$105 billion.ⁱⁱ

Digital technologies have enabled a broader spectrum of learners to access courses without the constraints of geographical boundaries and have enhanced the overall learning experience. According to a PwC survey in 2022, emerging tools such as augmented and virtual reality (XR) have been found to boost learning efficiency even when training budgets are constrained and in-person training is not feasible.ⁱⁱⁱ

Figure 1 Digital Vortex in 2021 and 2023



Source: Global Center for Digital Business Transformation, 2023

Non-Stop Digital Disruption

Even though certain industries are farther from the center than others, this does not suggest that disruptive forces have had less impact on these sectors than in past years. Rather, it means that these industries have experienced less disruption from digital technology than others. The media and entertainment sector, for instance, has been the most vulnerable to digital disruption since 2017, but has moved six spots to seventh place this year. A similar pattern can be seen in the retail sector, which went from fourth to sixth place in 2023.

This does not mean that there is no disruption in these sectors, rather that transformation is ongoing. New technologies, such as artificial intelligence (AI), cloud computing, big data analysis and social commerce, have posed new challenges and opportunities for retail companies. Industries have also begun to blur together into flourishing “hybrid industries”.^{iv} Retail-tainment, for example, is a growing trend that combines entertainment and retail (e.g. Amazon Prime – online shopping and movies) to provide a more emotionally engaging client experience to attract customers.

Digital disruption and transformation are not one-time occurrences. While some sectors inevitably show a steeper disruption curve than others at any given moment, every sector in this study is experiencing a shift.

Responses to Digital Disruption: Taiwan vs. Global Trends

As a key node in the global technology supply chain, Taiwan is an important hub for high-end manufacturing and advanced semiconductor manufacturing processes. According to a 2020 study by the Institute for Information Industry (III), digital business transformation, especially sustainable digital business transformation, has become an increasingly hot topic among Taiwan's companies, with almost half of them worried that they could be left behind.^v

To better understand the state of digital transformation across Taiwan's industries, the Marketing Intelligence & Consulting Institute (MIC) conducted IMD's Digital Vortex survey in late 2022 to examine how Taiwan's businesses are faring in addressing the challenges of digital disruption by benchmarking them against global peers. IMD first released the global data version of the Digital Vortex in 2015, and since then, it has updated the survey and continued to offer new insights. However, it is worth noting that there is sample selection bias because IMD's sample focused on large to very large firms while Taiwan's sample focused on medium to large companies. As a result, we will place more emphasis on the trend comparison than the numbers.

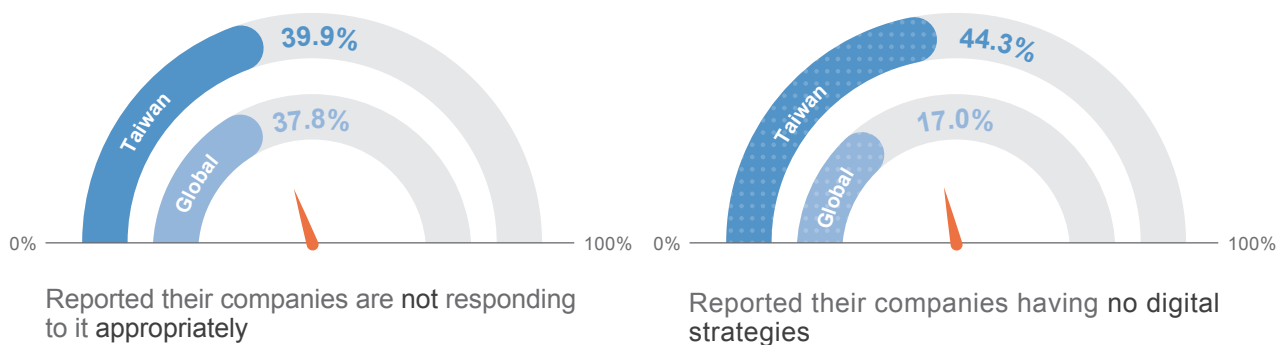
Awareness of Digital Disruption

The **majority** of surveyed organizations reported that their **"C-suite" executives are concerned about Digital Disruption.**




According to the results, high-level executives around the world are concerned about digital disruption, with 75% of Taiwanese respondents and 82% of global respondents reporting that their C-suites are concerned. However, acknowledging it does not necessarily mean it is being dealt with appropriately. Our study revealed a knowing-doing gap with respect to digital transformation. Roughly 40% of the surveyed Taiwanese and global executives thought that their companies were not responding to it appropriately, and it was reported that 44% of Taiwan's companies had no strategies compared to the global number of 17% (*Figure 2*).

Figure 2 Knowing-Doing Gap



Source: Global Center for Digital Business Transformation and MIC, May 2023

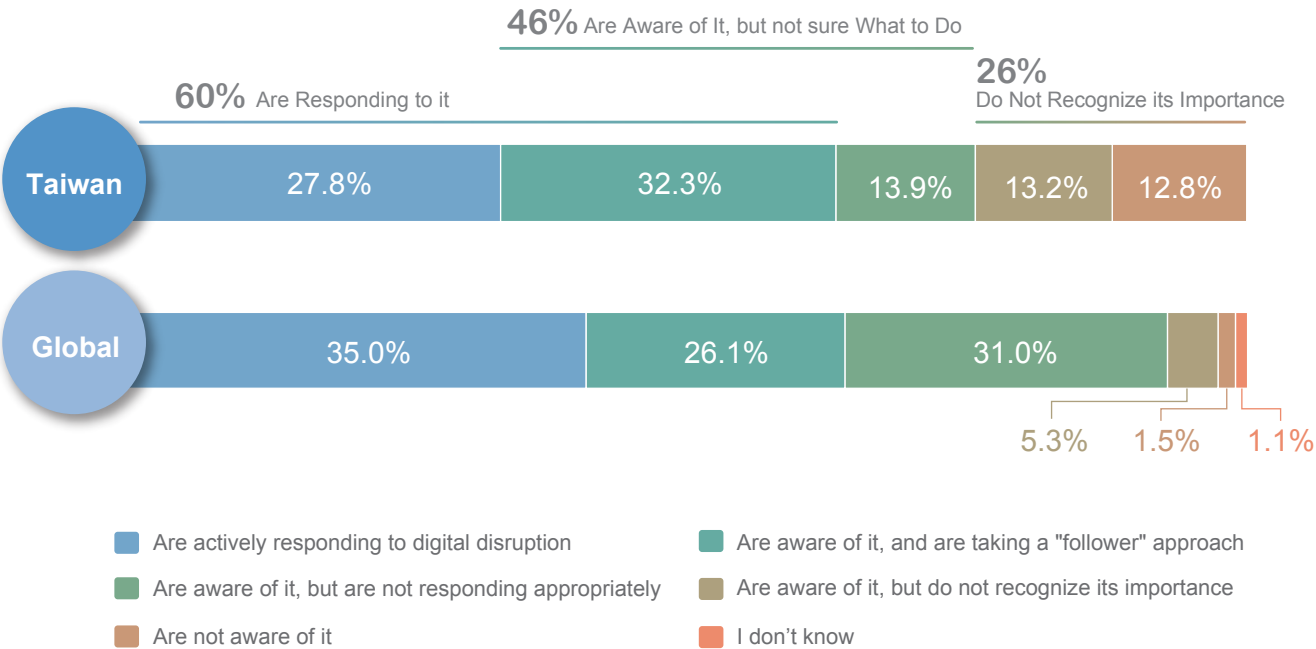
To be more specific, we asked respondents to report on how their organizations were responding to digital disruption. As mentioned, both the global and Taiwanese data revealed that even today, as much as 40% of firms were either not aware of digital disruption, or not responding to it appropriately. In Taiwan, merely 28% of the surveyed executives expressed that their organizations were actively responding to digital disruption whereas 32% of them said their organization were taking a “wait-and-see” approach (*Figure 3*), compared to the global numbers of 35% and 26%, respectively.



What is your organization's attitude towards digital disruption?

Survey Question

Figure 3 Attitudes toward Digital Disruption



Source: Global Center for Digital Business Transformation and MIC, May 2023

There is no one-size-fits-all approach for digital transformation; the transformation must be tailored to the individual organization’s needs. Taking a “wait-and-see” approach, or merely copying a competitor’s transformation journey could be risky in some cases. Based on MIC’s observation, one common failure mode is that companies in Taiwan simply implemented an IT system that their counterparts had adopted without doing any research, only to discover later that it was useless.

Furthermore, we found that 26% of firms in Taiwan still did not recognize the importance of digital transformation, compared to 7% globally. While the difference could be due to sample bias, as most of the global executives surveyed were enrolled in IMD’s programs, the message is clear: Digital disruption was top of mind for business leaders, yet many were still struggling to find a systematic way to address it.

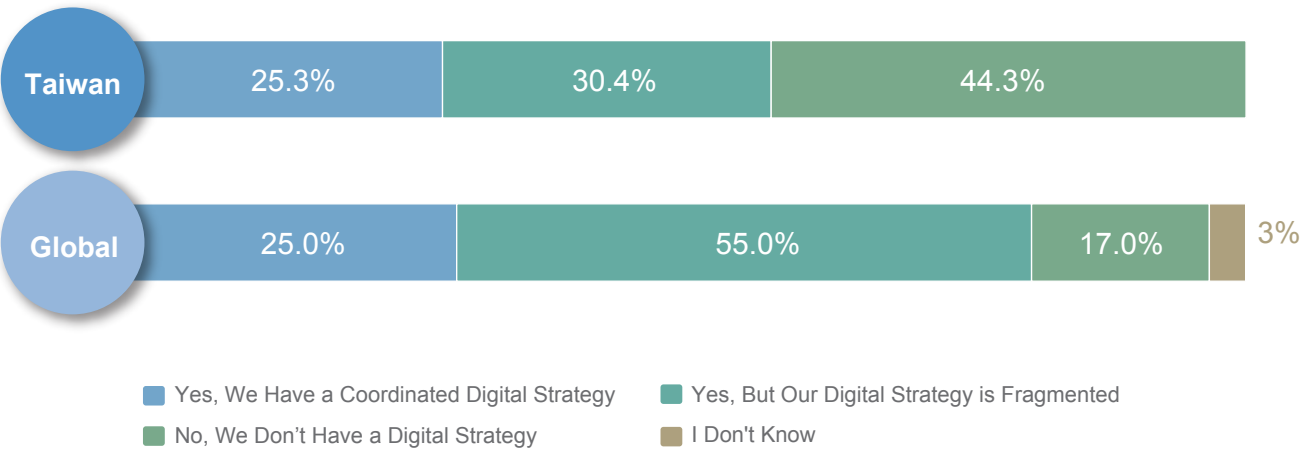
A Fragmented Approach



Does your organization have a formal digital strategy?

Survey Question

Figure 4 Digital Strategy



Source: Global Center for Digital Business Transformation and MIC, May 2023

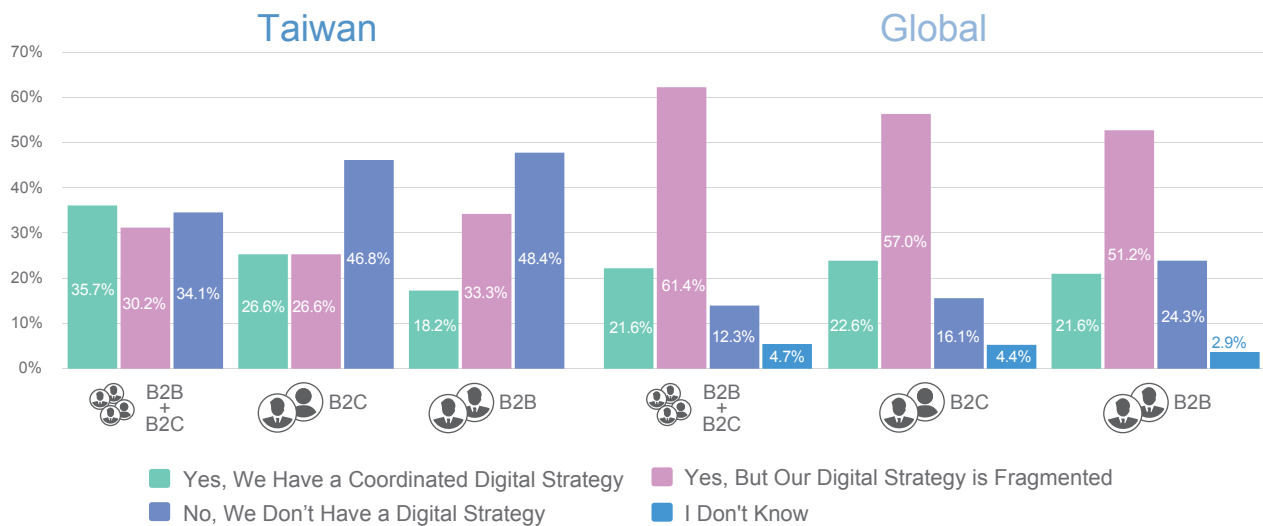
Why do organizations find it difficult to respond to digital disruption? One reason could be an unclear digital strategy: Only one-quarter of respondents believed their organizations had a cohesive digital strategy to deal with digital disruption.

Both Taiwanese and global statistics showed that although the majority of surveyed organizations reported they had a formal digital strategy, more than half of them acknowledged it was a fragmented one (Figure 4). Specifically, 55% of Taiwanese executives indicated that their organization’s digital strategy was rather fragmented compared to 69% of global business leaders. This might be due to the fact that IMD’s sample included more large and very large companies; thus, their transformation map could be more complex and fragmented. Unfortunately, about 45% of Taiwanese executives said that their organizations did not have a formal digital strategy. This number was much smaller among global executives -17%.

Businesses that were involved in both **B2B** and **B2C** activities were more likely to have **coordinated digital strategies**, but **only in Taiwan**.



Figure 5 Business Models are Driving Digital Transformation



Source: Global Center for Digital Business Transformation and MIC, May 2023

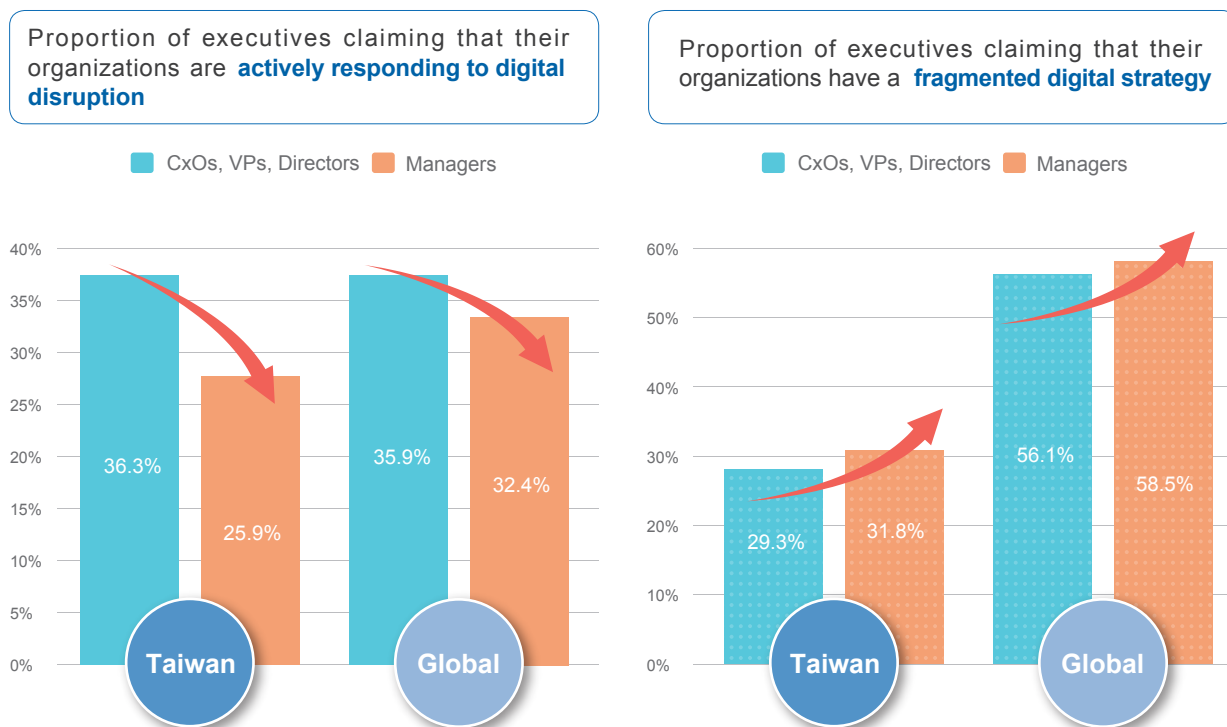
An interesting phenomenon was also identified when we looked at the development of digital strategies considering organizations' different business models. Taiwanese businesses that were involved in both B2B and B2C activities were more likely to have coordinated digital strategies. However, we were unable to identify a similar pattern in the global results. The Taiwanese data in particular (*Figure 5*) showed that 35.7% of executives whose organizations implemented both B2B and B2C initiatives said that they had a coordinated digital strategy. Comparatively 26.6% of executives from B2C and 18.2% from B2B felt the same way. However, regardless of the organizations' business model, the global data suggested about 22% had a coordinated digital strategy.

Given the complexity of their customers, operations and business profiles, "B2B/B2C" organizations felt a sense of urgency to be well-prepared to manage their businesses. It also serves as a signal that having a comprehensive digital strategy is a must for businesses looking to branch out into other business models in Taiwan.

Perception Gap

High levels of confusion and uncertainty regarding the transformation process could hinder execution efforts and reinforce the perception that digital transformation is difficult to achieve and prone to failure. In some cases, top leaders do not communicate effectively across their organizations because they have become overconfident that everyone is on the same wavelength when it comes to the organization's digital transformation journey.

Figure 6 Response to Digital Disruption:
Lower-Level Executives are Less Confident than Senior Executives



Source: Global Center for Digital Business Transformation MIC, May 2023

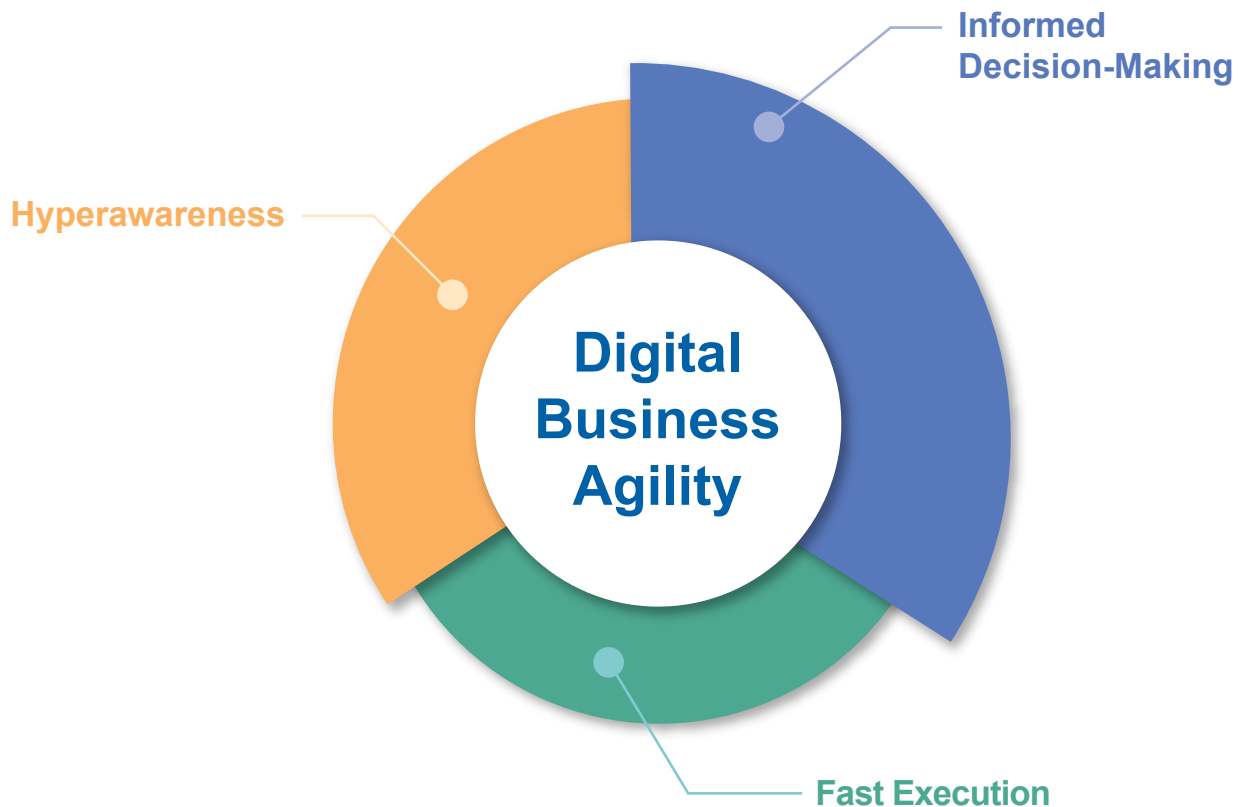
For example, both the Taiwanese and the global statistics showed that higher level executives were more likely to conclude that they were actively responding to digital disruption, while those at lower levels in the firms did not share that perspective. As shown in *Figure 6*, 36.3% of Taiwan's directors and above reported that their companies were actively responding to digital disruption, while only about 26% of low-level managers agreed with them. A comparatively smaller gap was found in the global results: 35.9% of directors and above believed their companies were actively responding to digital disruption, whereas 32.4% of lower-level managers agreed with them.

We also searched the Taiwanese and global data for a perception gap around digital strategy fragmentation. The results showed that the lower levels thought the fragmentation challenge within the organization was considerably more acute than the higher levels thought. These factors seemed to indicate that the digital strategy formulated at the C-suites may not have been disseminated consistently throughout the ranks.

Digital Business Agility (DBA)

To assess an organization's capacity for understanding and reacting to digital disruption, IMD developed a Digital Business Agility measurement, which is built on three fundamental capabilities – hyperawareness, informed decision-making and fast execution.

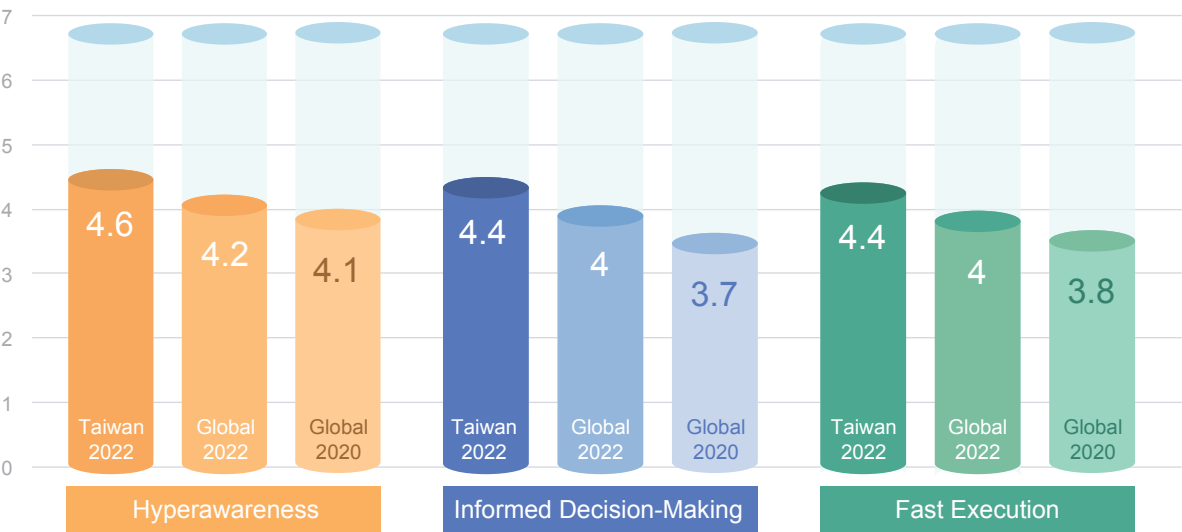
Figure 7 Digital Business Agility



Source: Global Center for Digital Business Transformation, May 2023

- **Hyperawareness** is an organization's capability to detect and monitor relevant changes in its extended business environment, including its employees, customers and operating environment.
- **Informed Decision-Making** is an organization's capability to analyze the available information and make the best decision based on the given situation.
- **Fast Execution** is an organization's capability to turn its decisions into fast and effective actions.

Figure 8 Digital Business Agility Synopsis: Taiwan vs. Global Trends

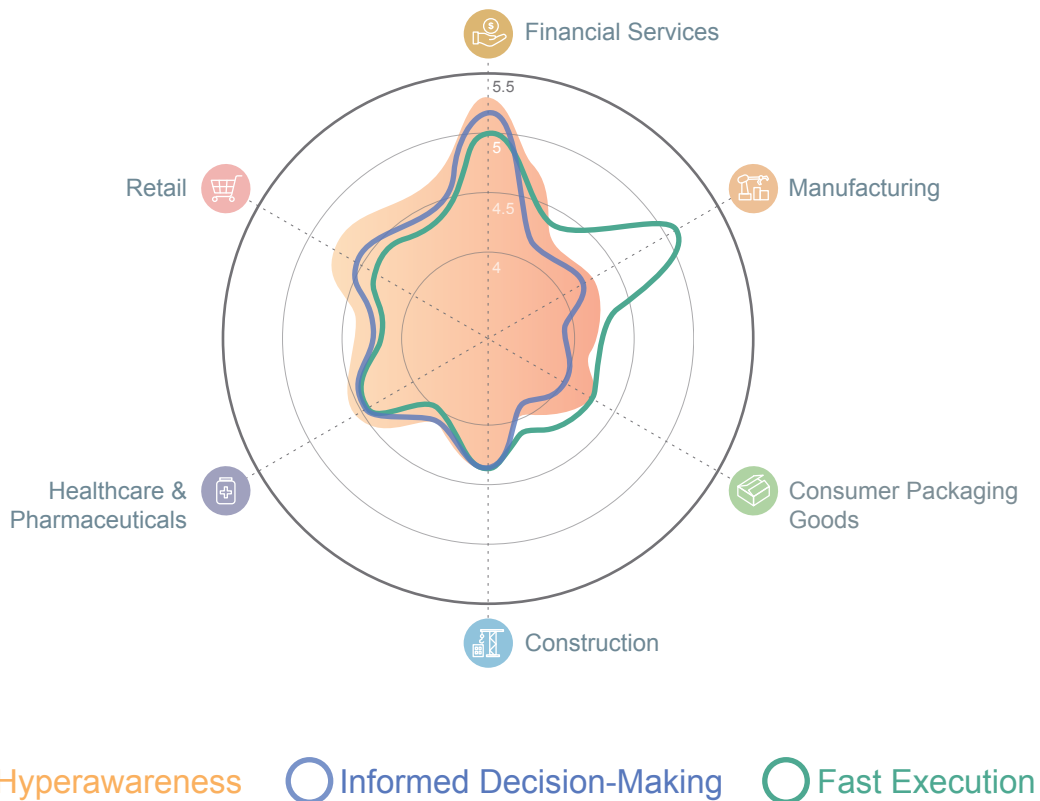


Source: Global Center for Digital Business Transformation and MIC, May 2023

In general, Taiwan’s Digital Business Agility score is a little higher than the global score, in part because we only polled executives in Taiwan who were leading digital initiatives, while 30% of the global respondents lacked any digital background (*Figure 8*).

Both global and Taiwanese organizations tended to be better at detecting and monitoring relevant changes in their extended business environments (Hyperawareness) than at decision-making analysis (Informed Decision-Making) and efficient execution (Fast Execution). In line with IMD’s previous finding, Asian companies tended to perform better when it came to fast execution, and this was especially true for Taiwan’s manufacturing industry (*Figure 9*).

Figure 9 Taiwan's Digital Business Agility Synopsis by Industry



Source: MIC, May 2023

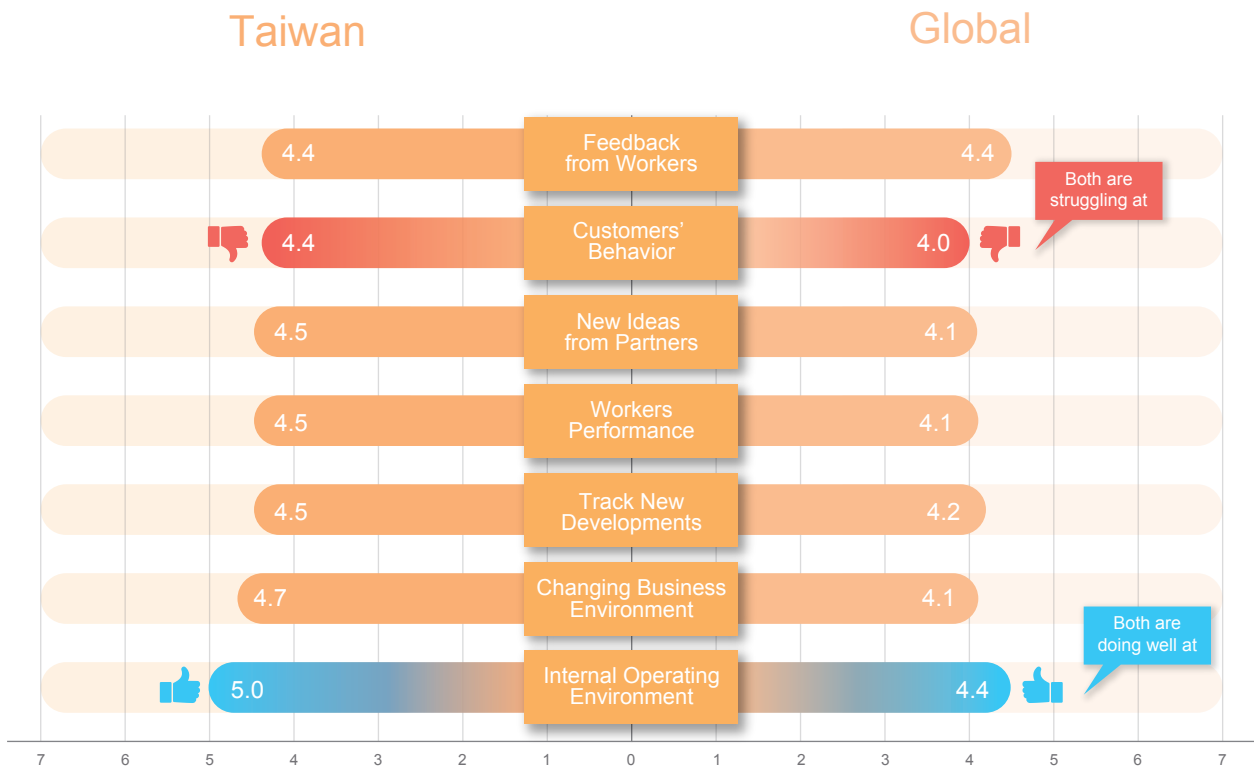
Financial Services in Taiwan outperformed other industries in their overall DBA performance.



The data also showed that financial services companies in Taiwan were better prepared than their peers in other industries in terms of their overall DBA performance. Apart from the fact that this sector is financially well-off, which allows businesses to devote greater resources to digital investment, regulation also serves as a passive driver of digital transformation within this industry, especially for traditional banks. For example, financial institutions in Taiwan are legally obligated to have a structured cybersecurity management plan that includes regular cyber risk assessments, performing pen tests, etc.^{vi} Additionally, it has been mandated since 2021 that financial institutes should appoint a chief information security officer (CISO),^{vii} which, according to a separate MIC poll, contributed to a significant increase in IT spending in the financial sector between 2021 and 2022.^{viii} In order to comply with these new regulations, financial services organizations must invest in talent, deploy specific digital tools and of course have feasible plan in place.

Figure 10 Taiwan vs. Global Hyperawareness

A company's ability to detect and monitor changes in its business environment

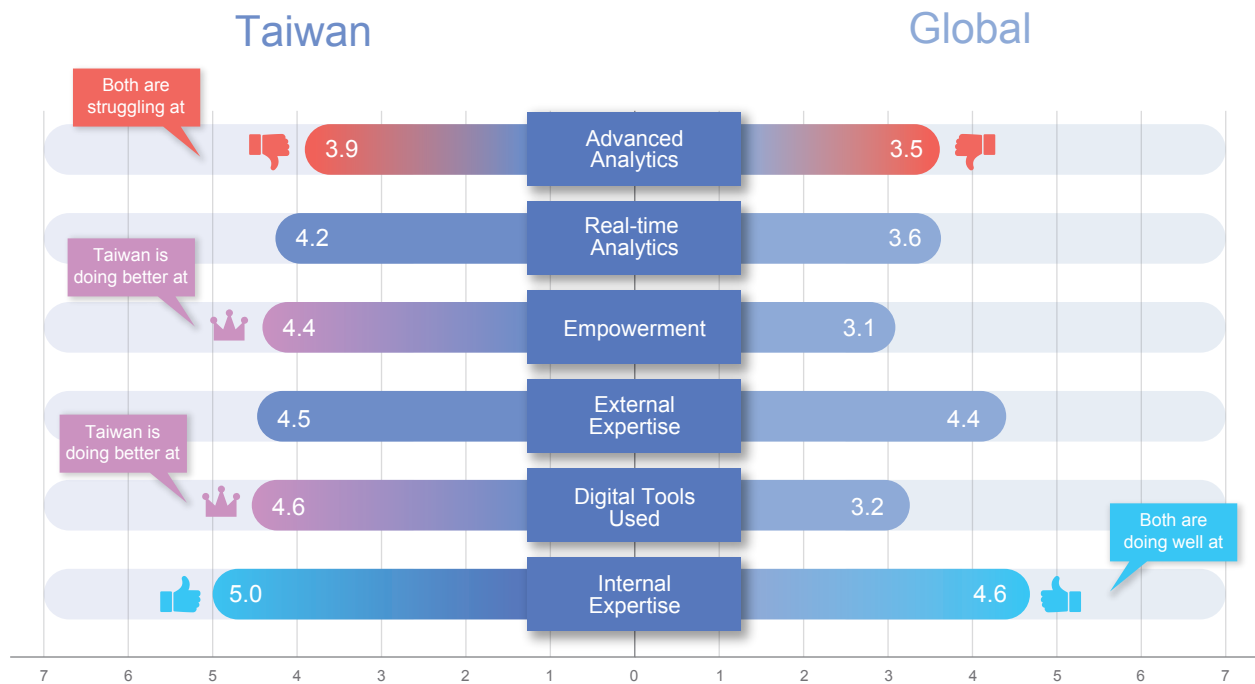


Source: Global Center for Digital Business Transformation and MIC, May 2023

As mentioned, Hyperawareness is a company's ability to detect and monitor changes in its business environment. By "business environment," we mean both the internal (e.g. employees, internal operating environment, etc.) and external (e.g. customers, partners, competitors, etc.) factors that impact the company's opportunities and risks. The data demonstrated that both Taiwanese and global firms performed much better in terms of internal operations management than anticipating customer behavior. It showed that companies prioritized their digital spending on initiatives that would directly increase revenue, putting operational optimization first. Executives hesitated to invest in customer insight because of the uncertain returns. However, it's important to keep in mind that knowing your customer helps businesses to not only retain customers but also remain highly adaptable to the market, which is a very important mindset in digital transformation.

Figure 11 Taiwan vs. Global Informed Decision-Making

A company's ability to make the best decision in a given situation



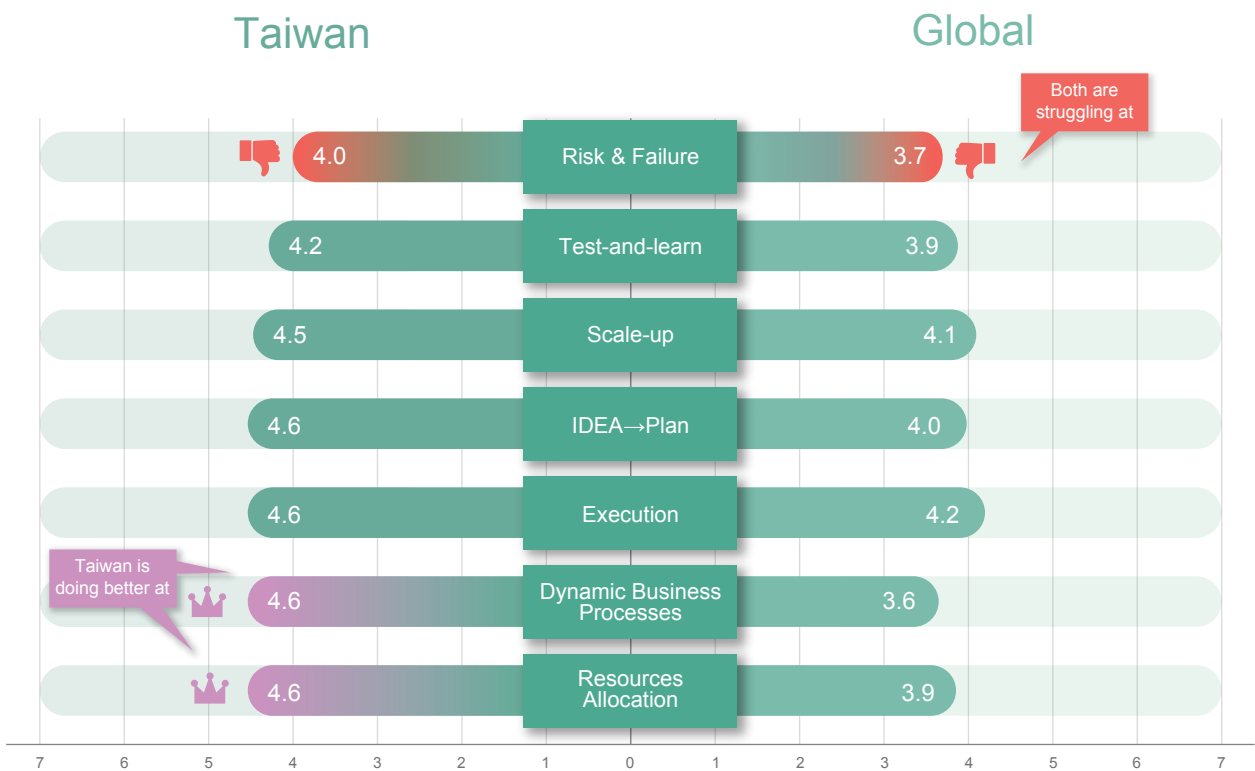
Source: Global Center for Digital Business Transformation and MIC, May 2023

After the data has been compiled during the company's hyperawareness process, it should undergo analysis, scaling, packaging and distribution throughout the firm. To excel at informed decision-making, firms must develop mature data analytic capabilities that enhance human judgment. The firm can then act based on the data analytic recommendations and ensure that both internal and external experts have access to the key findings. Compared to global trends, firms in Taiwan performed significantly better at using digital tools for decision making as well as empowering their employees.

However, it appears that advanced analytics adoption for businesses worldwide still has a little way to go. Both Taiwan and global organizations scored below average on this item, which may indicate that many businesses are still in the early stages of the digital transformation process, have a few phases of projects to complete and are not ready to move on to the final frontier – tackling the endless supply of data and interacting with analytics systems and processes in new ways to fully transform and create new capabilities and opportunities.

Figure 12 Taiwan vs. Global Fast Execution

A company's ability to carry out its plans quickly and effectively



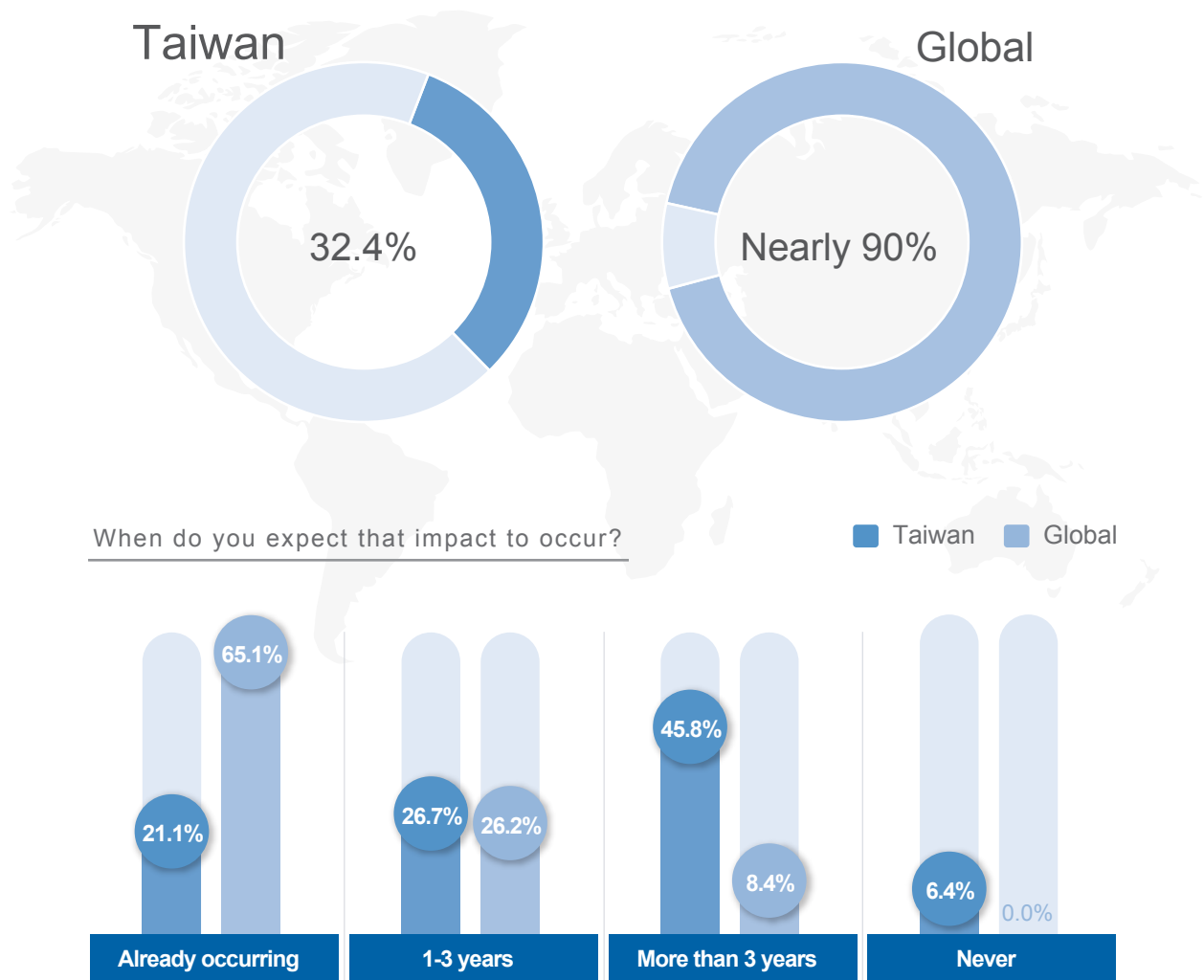
Source: Global Center for Digital Business Transformation and MIC, May 2023

Once the decision has been made, companies need to carry out their plans quickly and effectively. Unfortunately, fast execution is a rare capability in organizations globally, with the majority of the items falling below the average. Organizations in Taiwan appear to have stuck to the principle of being a well-known original equipment/design manufacturing (OEM/ODM) economy, outperforming global organizations in applying rapid resource allocation and dynamic business processes to changing conditions. Yet, an enhanced ability to tolerate failure and enjoy the test-and-learn process appears to be an issue that both global and Taiwanese firms need to resolve. Agile, a foundation of digital business transformation, places high value on failure, risk-taking and test-and-learn. In order to understand the influence on efficiency and experience, a firm can experiment with real goods and real consumers by utilizing “test-and-learn” agile practices.

The Impact of Digital Disruption on the Industry and Businesses

Figure 13 Perceived Impact of Digital Disruption

Proportion of executives believe that digital disruption will have a **major or transformative impact** on their organizations



Source: Global Center for Digital Business Transformation and MIC, May 2023

As we have seen, Taiwan's sectors have generally responded to digital disruption in a way that is consistent with global trends. However, there is a significant gap between Taiwanese and global trends in Taiwan are aware of its importance. While 90% of the global CEOs polled believe that digital disruption will have a large to transformative impact, just 32.4% of respondents in Taiwan shared this opinion (*Figure 13*).

When asked when they expected the impact of disruption to happen, 65.1% of global respondents claimed it was already occurring, but only 21.1% of the Taiwanese respondents came to the same conclusion. The results suggest that Taiwan might not have felt the full impact yet.

A Way Forward

There is no doubt that digitalization has become a necessity for both organizations and clients worldwide. The real question is what to do and how to do it. *The Digital Vortex 2023: Taiwan vs. Global Trends* reveals that the majority of people in leadership roles in organizations around the world are concerned about digital disruption, but many are struggling to develop feasible digital strategies in a coordinated manner. Digital transformation is a challenging process. Previous studies show that as many as 87% of digital transformations fail.^{ix} Lack of talent and skills, unclear objectives, lack of resources and, hence, an inability to establish a suitable future-forward strategy coupled with the uncertainty of the returns are commonly identified as factors hindering leaders on proactively promoting digital business transformation. Our results corroborated these generalizations, showing that a sizable percentage of survey participants said their organizations wanted to take action to deal with digital disruption but lacked clarity on how to do so (46% in Taiwan and 57.1% globally, See [Figure 3](#)).

Many organizations are not yet ready to leverage the power of data to create new capabilities and business models.



We also discussed that companies need to possess digital business agility – namely hyperawareness, informed decision-making and fast execution – to respond quickly and effectively to emerging threats to their businesses and new market opportunities. We found that both Taiwanese and global organizations performed much better at the operations management-related tasks than at the adoption of advanced analytics and the study of consumer behavior. They also both had a low tolerance for failure. This could signify that most organizations are still in the initial stage of their digital transformations, focused on streamlining processes in specific departments and functions, and are not yet ready to enter the final frontier of leveraging the power of data to create new capabilities and business models.

Digital transformation is an ongoing journey using an iterative approach to change. While it is difficult to predict the next wave of disruption or crisis, digitally mature companies are more likely to be better prepared. The COVID-19 pandemic showed us that companies that had a more complete digital foundation were more resilient to the unknown risks than companies that had not yet deployed such digital capability. Therefore, accelerating digital progress should be a priority for the organization, not just something on the agenda.

About this Study

For the global data sample, approximately 2,000 business leaders were surveyed in 70 countries across 14 industries to understand their attitudes and behaviors toward digital disruption since 2017. About 81% of respondents were from large to very large companies, over two-thirds were directors or above and more than half were from B2B companies.

For Taiwan's data sample, 431 respondents were surveyed in 2022, covering five industries – manufacturing, financial services, healthcare and pharmaceuticals, construction and retail. This sample distribution is based on Taiwan's gross domestic product (GDP) weighted by industry, with manufacturing and retail accounting for the largest share, followed by the financial services sector and other industries. Only those in charge of tasks linked to digital transformation were eligible to participate in this survey. The majority of respondents identified themselves as managers of the equivalent (60% of entire sample), followed by directors and above (29%), with the remaining 11% belonging to non-manager levels.

The main differences between Taiwanese and the global samples was firm size and annual revenues. The global sample included a greater number of large to very large firms with annual revenues ranging from US\$100 million and above. The Taiwanese sample focused more on medium-size to large firms and their annual revenues ranged from US\$5 million to less than US\$10 billion. B2B businesses predominated in both the Taiwanese and global samples.

Digital Vortex Methodology

The Digital Vortex ranking is based on a composite of multiple measures assessing the qualitative and quantitative impacts of digital disruption on each sector. The quantitative measures are drawn from industry sources across the globe. The qualitative measures are taken from surveys of executives conducted by IMD's Global Center for Digital Business Transformation. These survey responses were collected at multiple time points, sectors and geographies.

The measures contributing to the index include:

1. INVESTMENT – Where venture capitalists and others are putting their money
2. TIMING – When, and at what rate, digital disruption is likely to occur
3. MEANS – The strength of barriers to entry for digital disruptors
4. IMPACT – The potential magnitude of disruption

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Digital Vortex 2023

Taiwan vs. Global Trends

About the Research Institutes

The Digital Vortex 2023: Taiwan vs. Global Trends report is a production of the Market Intelligence & Consulting Institute (MIC) at the Institute for Information Industry (III) and the Global Center for Digital Business Transformation at the International Institute of Management Development (IMD).

Institute for Information Industry (III)

III is a non-profit organization that promotes the development of information technology in Taiwan. In response to the wave of digital transformation, III has repositioned itself as a digital transformation enabler since 2018 by integrating the resources of government think tanks, talent cultivation, information and communications technology (ICT) research and development (R&D) and promotional strategies to develop solutions and applications to better tap into industrial needs. The ultimate goal is to drive digital transformation across all stakeholders including the government, industry and society.

Market Intelligence & Consulting Institute (MIC)

MIC, a division of III, is an institute dedicated to conducting technology, product, market, and trend research across various fields of the ICT industry to provide real-time and efficient consulting services for global ICT brands, financial institutions, and academic institutions. It also plays its role as a major government think tank to provide policy advice and analysis to the Taiwanese government.

The International Institute of Management Development (IMD)

IMD is an independent business school with Swiss roots and global reach. Focused on developing leaders and transforming organizations, IMD designs and delivers interventions that challenge what is and inspire what could be. IMD has been ranked in the top three of the FT's Executive Education Rankings (combined ranking for open & custom programs) since 2012. It has also been in the top five for more than 15 consecutive years.

The Global Center for Digital Business Transformation (DBT Center)

The DBT Center brings together innovation and learning for the digital era. The DBT Center is a global research hub at the forefront of digital business transformation, where executives engage to solve the challenges created by massive market transitions. The DBT Center seeks out diverse viewpoints from a wide range of organizations – startups and incumbents – to bring forward new ideas, best practices, and disruptive thinking. The DBT Center is located on IMD's campus in Lausanne, Switzerland.

