Reaching new heights

How Indonesian businesses have embraced the cloud
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BCG RESEARCH AND MARKET STUDY

Reaching new heights

*How Indonesian businesses have embraced the cloud*

Alain Schneuwly

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EXECUTIVE SUMMARY

As COVID-19 continues to impact the economy and reshape business norms, the need to digitize organizations has become increasingly critical. Now more than ever, organizations must enhance their digital capabilities to secure and accelerate ecommerce platform deployments, strengthen supply chains, and institutionalize secure ways of working, all while becoming resilient to new disruptions. Amazon Web Services (AWS) has worked with Boston Consulting Group (BCG) to conduct a survey across businesses in Indonesia to understand the voice of the customer and simplify the cloud adoption journey in one of the fastest growing markets in APAC. Indonesia’s public cloud market has a projected CAGR of 25%, and is expected to expand to US$ 0.8 billion by 2023\(^1\). The Indonesian Government’s commitment to cloud technologies is further demonstrated by the ratification of Government Regulation No. 71 Year 2019 (GR 71) in 2019 and the Palapa Ring fibre-optic upgrade plan.

Results of this survey have illustrated the benefits of embracing the cloud. Among participating companies, 96% of the companies acknowledged that cloud adoption reduced their overall IT spend, with 46% stating that they have reduced IT CAPEX by more than 60%. Moreover, 93% of the companies saw an improved user experience after adopting the public cloud. On the whole, participating companies are able to improve their operational efficiency and pace of innovation, achieving an average development cycle of less than 4 weeks, up to 50% improved IT and development team productivity, up to 50% reduced unplanned downtime, and up to 30% increased products and services via digital channels.

Our study revealed that the desire to accelerate innovation, enhance current performance and security, and minimize upfront IT investment are the common drivers that trigger the cloud adoption journey for most enterprises. At the same time, enterprises often face a common set of challenges during the initial stages of their cloud journeys - particularly around maintaining security, regulatory barriers, and cost. Participating companies were able to address these concerns through tactics including, but not limited to, engaging partners to gain cloud competence and provide execution horsepower, establishing cloud-ready teams to accelerate the process, and taking an experimental approach to innovate with new technologies.
While the survey demonstrated that many enterprises are already running significant workloads on the cloud, 22% indicated that they continue to be challenged by a shortage of IT professionals in the Indonesia market with the skills required to develop and run production-level workloads on the cloud. To unlock the full potential of cloud, Indonesian businesses should focus on prioritizing programs to establish well-rounded skills with internal and external talent. AWS has also collaborated with the Indonesia government to train hundreds of thousands of Indonesians by 2025 through its Training & Certification programs.

¹Ascent to the Cloud - How 6 Key APAC Economics Can Lift Off report
CHAPTER 1
INTRODUCTION AND METHODOLOGY

Cloud has emerged as an imperative that enables enterprises to more efficiently achieve their business goals. Public cloud providers like AWS eliminate an organization’s need to maintain and manage their own physical on-premises infrastructure, instead paying only for what they consume in the cloud. This allows businesses to be more agile, cost efficient, innovative, reliable, and secure.

Although Indonesia’s public cloud market is in its formative stages, it remains one of the fastest growing markets in APAC. With a projected CAGR of 25%\(^2\), the market size is expected to expand from US$ 0.3 billion in 2020 to US$ 0.8 billion by 2023 with a cumulative economic impact of US$ 35 billion. The ratification of GR 71 further demonstrates the Indonesian Government’s commitment to cloud technology. This is estimated to create approximately 70,000 jobs, with another 275,000 influenced by second order effects. Moreover, the country’s overall cumulative GDP impact of public cloud adoption could extend beyond US$ 50 billion should the Indonesian Government overcome underlying challenges, including with its telecommunication infrastructure, adoption of international best practices on data and digital policies, and its gap in digital talents.

To further understand the Indonesian market, AWS has collaborated with Boston Consulting Group (BCG) to conduct a market study on cloud business values, strategic barriers and implementation challenges faced by Indonesian enterprises and digital businesses across all industries. A series of surveys and interviews were conducted with senior executives and IT decision-makers to identify broader cloud use cases, challenges, and benefits across six business value domains, as illustrated in Exhibit 1. Each of these domains are equipped with measurable Key Performance Indicators (KPIs) to quantify and generate insights on both business and technology benefits.

\(^2\)IDC, Gartner, BCG Public Cloud Survey (n=1,000 across 6 countries), BCG Analysis
A total of 27 companies (existing customers of AWS) of varying sizes participated in this market study, with the largest representation (44%) coming from the Technology, Media and Telecom (TMT) industry (see Exhibit 2).

Out of these 27 companies, 73% of them have at least 60% of IT infrastructure and applications hosted in the cloud, with a much less evenly distributed usage in different cloud service models (approx. 33%-34% for public cloud, hybrid cloud and multi-cloud). Assessment results from the market study reveal cloud adoption trends, business values of cloud adoption, challenges and pain points, which are further described in Chapter 2, 3 and 4 respectively. Chapter 5 summarizes BCG’s recommended strategic thrusts to accelerate cloud adoption and increase Return on Investment (ROI).
CHAPTER 2
CLOUD ADOPTION TRENDS AND USE CASES IN INDONESIA

As a whole, Indonesia is in the nascent stages of cloud adoption. With a projected CAGR of 25%, the Indonesian market size is expected to reach US$ 0.8 billion by 2023\(^3\). The cumulative economic impact of the public cloud is estimated at US$ 35 billion between 2019 and 2023, which is equivalent to 25% of annual GDP impact from large traditional industries such as the palm industry. Over 95% of the impact will come from gains to industry verticals, and no more than 5% will be from the direct gains experienced by cloud service providers and technology services in this still-nascent public cloud market. The economic growth is likely to create approximately 70,000 jobs, where 47,000 will be in non-digital roles such as sales, marketing, human resources, finance, logistics and operations and the remaining 23,000 will be digital jobs. Among the digital jobs, 3,000 will be related to cloud services and IT system providers. The second order effects are expected to influence another 275,000 jobs, bringing the total potential jobs to 345,000\(^3\).

Furthermore, it is expected to see substantial growth in public cloud usage over the next couple of years with the ratification of Government Regulation No. 71 Year 2019 (GR 71) in 2019, an Indonesian regulation on organization of electronic systems and transactions. The Indonesian Government is proceeding with their investment to enhance their network infrastructure to meet the rapidly growing population’s demands for Internet access. This includes the Palapa Ring fibre-optic upgrade plan which intends to improve connectivity throughout the Indonesian archipelago with undersea cables.

TMT is the primary industry driving adoption of the public cloud in Indonesia, with increasing traction from Financial Services and Consumer Goods. The Financial Services industry is actively growing the number of Internet users. For the past decade, banks and fintech firms have used mobile apps to serve the Indonesian archipelago of more than 17,000 islands spanning over 3,000 miles east to west, and the public cloud has helped enhance customer engagement and establish reliable mobile connectivity. Local players in other industries such as retail and media are seeing potential uses of public cloud when it comes to digitizing their product offerings, using advanced analytics as well as improving productivity.
The two (2) most common use cases (see Exhibit 3) for adoption are rapid operational scaling and deploying development/QA in the cloud (with consensus from more than 80% participating companies). Public cloud adoption improves the usage of valuable IT resources, thus promoting operational agility and speed to market for products and services. Companies believe that adoption of the public cloud reduces the overall upfront investment, allowing them to improve customer experience and scale infrastructure to accommodate new influxes of traffic.

Public and hybrid-cloud are the two (2) largest types of cloud service models adopted in the Indonesian market today. With hyper-scale providers, large enterprises who use private clouds or on-premises data centres due to inherent concerns over data residency are beginning to demonstrate some initial traction in the public cloud. Over 50% of the companies use more than one (1) Cloud Service Provider (CSP) across various cloud service models, but typically have a primary cloud vendor running the majority of workloads.
CHAPTER 3
BUSINESS VALUES OF CLOUD

Business value that Indonesian enterprises can harness from the public cloud is anchored around six (6) key benefit dimensions described in the Business Value Framework in Chapter 1:

1. Embrace Agility

All participating companies agreed that adopting the public cloud increases agility. Whereas in the past, organizations needed weeks of planning to provision new servers, the cloud allows services to be deployed in minutes, allowing them to experiment and iterate faster. Results of this survey found that cloud reduces deployment and development time by at least 20%, enabling organizations to become more agile and accelerate time-to-market (see Exhibit 4).

Organizations stated that agility and the flexibility to adapt quickly was key to gaining a competitive edge in the market. An Indonesian online retailer reduced its time-to-market by 50% by using services such as AWS Lambda to accelerate development and release new applications faster. This has allowed the company to allocate more resources to building out its predictive analytics to understand customer behavior, in turn driving up revenue. Similarly, a digital native company shortened their time to fulfill customer requests by 20-50% and decreased time to launch new products or services by 51-75% after adopting the public cloud, enabling them to deploy new products or services in less than four (4) weeks.

“Provisioning on-prem infrastructure has always been a challenge in terms of speed. Product and Marketing teams always think IT is the bottleneck.” – Chief Information Officer (CIO) of a telco in Indonesia

“Speed matters, if we can reduce the time to launch product/services or the ability to respond to certain market situations, that’s our key to win the business.” – Chief Technology Officer (CTO) of a digital native company
2. Improve Productivity

All participating companies acknowledge the productivity improvement benefit from the cloud. In particular, the cloud’s undifferentiated heavy lifting and automated processes were frequently highlighted as a key factor for increased productivity, allowing organizations to focus more on high-value tasks instead of managing infrastructure. The majority achieved a 40% reduction in working hours of developers and IT infrastructure teams (see Exhibit 5).

Exhibit 5 | IT Admin Hours Saved per FTE

Participating companies often highlighted that increasing productivity was key to increasing profitability for their business. An online grocery shopping company reduced working hours by 41-60% for IT admins and developers by increasing automated deployments in the cloud by more than 60%. As a result, resources required for capacity planning, budgeting, and procurement were reduced by 20-40%. Similarly, a fintech in retail reduced working hours and its average cost per transaction, each by 60%, after migrating its workloads to the cloud.

“AWS Cloud allows us to keep the number of engineers we employ to a minimum. Our engineers can focus on building features and do not need to think about infrastructure.” – CTO of an online grocery shopping company
"Our industry demands us to be ready 24x7 to fulfil our customers’ needs. AWS provides the capability to scale vertically and horizontally to meet demands." – Head of Application Development from a flight and hotel booking tech company

3. Ensure Resiliency

The benefit of resiliency was recognized by 96% of the companies. Hyper-scale cloud providers, like AWS, are built with independent regions (multiple Availability Zones within each region, multiple physical data centres within each availability zone) to avert single points of failure and offer accessibility to system health monitoring. These capabilities enhance enterprises’ business continuity by providing high availability technologies and protection from external attacks.

Respondents emphasized that resiliency was critical to their business, as their customers expected services to be available 24 hours a day, every day of the year. More than half of the participating companies achieved at least a 20% decrease in unplanned downtime by deploying multi-availability zone architectures, autoscaling and load balancing to manage traffic (see Exhibit 6). A manufacturing company previously running their SAP workloads on-premises used to experience downtime of up to 6 hours each month, affecting employee productivity and application availability. Since migrating to the cloud, availability has increased to 99.8% from less than 99.5% previously.

“Since we migrated to AWS, we have not experienced any incidents like when we ran our workloads on-premises. We have not experienced any security incidents or outages.” – CIO of a large mining conglomerate

Exhibit 6 | Decrease in Unplanned Downtime

- <10%: 11.5%
- 10% - 20%: 26.9%
- 21% - 50%: 42.3%
- > 50%: 19.2%
4. Reduce Spending

96% of the companies acknowledged that cloud adoption reduced their overall spending. Of those, almost half stated that they have reduced IT CAPEX by more than 60% (see Exhibit 7). Organizations were able to increase infrastructure utilization and streamline Full Time Employee (FTE) costs from the pay-as-you-go model, as well as to reduce costs further by using automation tools to stop services during idle time. On average, companies were able to decrease the IT cost per application by 20-40%.

“Cost savings allow us to strengthen our competitive advantage through Research and Development (R&D) investments in new products and features” – CTO from an e-commerce company

While participating companies largely agreed that reduced IT CAPEX helped to lower overall costs, many also leveraged cost optimization models to further decrease costs post migration by leveraging discount programs such as AWS Savings Plans for workloads with consistent usage and Spot Pricing for intermittent usage. For example, a healthcare company achieved cost savings of 20-30% through extensive use of Amazon Elastic Compute Cloud (Amazon EC2) and Amazon Relational Database Service (Amazon RDS) reserved instances instead of using on-demand pricing. Organizations also reduced their third-party licensing costs by moving to the cloud. A telco company used cloud native PaaS to cut its licensing costs, leading to a 20-40% decrease in IT CAPEX.

“Telco businesses are CAPEX intensive, which also means we have to manage the OPEX to maximize EBITDA. By maintaining and reducing our spending, we can increase our overall profitability.” – CIO of a telco company
5. Improve User Experiences

93% of the companies saw an improved user experience after adopting the public cloud. Participating companies cited improved user experience as being important both to sustain customer satisfaction and grow the business, as well as to increase performance and usability for internal users. Overall, companies that adopt cloud successfully increased their Net Promoter Score (NPS) by 5-10%.

Organizations provided a range of examples to demonstrate how they had used the public cloud to enhance the user experience. A flight and hotel booking technology company reduced content latency by 10-30% after adopting Amazon CloudFront and Lambda@Edge. As a result, its net promoter score and customer acquisition rate increased by 11-20% and 25-50%, respectively. Predictive analytics and machine learning played an important role in improving user experience for another grocery retail company. The company used AWS Glue to extract data on customer shopping patterns and Amazon SageMaker to increase personalization and predictive analytics projects, which decreased customer churn rate by 31-50%.
6. Launch Digital Products and Services

93% of companies realized the benefits of launching digital products and services in the cloud. Since the onset of COVID-19, organizations stated that it was more important than ever to develop the capabilities to launch new products and services quickly - particularly for those with traditional sales channels. Among Indonesian businesses, the average products and services increment in digital channels was between 10-30%.

Participating companies reiterated that launching new products and services regularly helped to improve the customer experience and ultimately win greater market share. In some cases, organizations stated that they released new product features as frequently as every two weeks. An ecommerce company increased its transaction volumes via digital channels by 50-75% via the cloud’s ability to enable partnerships by allowing businesses to exchange data and integrate payments (e.g. GoPay, OVO and DANA with online shopping site). A media company decreased time to launch new business products or services by more than 75% where more than ten products or services leveraged advanced technology such as artificial intelligence, machine learning, Internet of Things or blockchain.

“Experimenting with new features is easy on AWS and low in terms of cost and risk.” – CTO from a media company
CHAPTER 4
KEY CHALLENGES TO CLOUD ADOPTION AT SCALE

Based on this study, there are three primary drivers that trigger the cloud adoption journey amongst enterprises - namely the desire to accelerate innovation (voted by 61.5% of the companies), enhance current performance and security (voted by 46.2% of the companies), and minimize upfront IT investment (voted by 38.5% of the companies). Although the public cloud unlocks the six business values mentioned in Chapter 3, organizations need to plan their migration by assessing their readiness to operate in the cloud, define the business outcomes, and create a migration roadmap.

**Exhibit 8 | Strategic Barriers and Implementation Challenges**

<table>
<thead>
<tr>
<th>Strategic Barriers</th>
<th>Implementation Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of Business Involvement</td>
<td>No Business Value Gained from Lift and Shift Applications to Cloud</td>
</tr>
<tr>
<td>Vendor Lock In</td>
<td>19%</td>
</tr>
<tr>
<td>IT Organizational Limitations</td>
<td>15%</td>
</tr>
<tr>
<td>Technical Complexity</td>
<td>33%</td>
</tr>
<tr>
<td>Regulatory Barriers</td>
<td>31%</td>
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<tr>
<td>Misconceptions around Security and Data Privacy</td>
<td>33%</td>
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</tbody>
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**Strategic barriers**

**Misconceptions around security and data privacy.** A common misconception when weighing the relative advantages and disadvantages of the public cloud vs. on-premises hosting is that the latter is less vulnerable from a security standpoint. However, results of this survey show that the public cloud provides even greater security protection than on-premises hosting, with 64% of participating companies stating that they observed at least 25% fewer security incidents after cloud adoption (see Exhibit 9).
More than half of participating companies also observed at least a 25% decrease in fraudulent transactions and scams by deploying a range of services. An ecommerce company used Amazon Simple Notification Service (Amazon SNS) to create messages every time a transaction was processed, which was then forwarded to a third party for fraud detection. A start-up focusing in HR solutions also managed to reduce fraudulent transactions or scams by 26-50% by utilizing AI/ML services.

Part of the perception problem is a lack of clarity around the roles and responsibilities in the public cloud, which can be addressed with guidance from cloud providers and technology partners. With on-premises hosting, infrastructure resides within the organization's own data centre, fully owned and managed in-house. However, this is not the case with public cloud. The public cloud introduces shared security responsibilities between cloud providers and their customers. In this model, cloud users are responsible and accountable for applying appropriate security measures over the applications and data they host in the cloud, while the cloud provider is responsible for protecting the security of the infrastructure in which the services operate.
**Regulatory barriers.** While Indonesia’s cloud-related regulations continue to evolve, recent amendments and guidance from authorities has provided organizations with greater clarity on how to manage their security and data privacy. Prior to the GR 71 issuance, some organizations were hesitant to move to cloud due to ambiguous regulatory interpretation whether the use of public cloud was permitted by law. The latest regulation, GR 71, addresses data processing and storage requirements for both the public and private sectors. This has given organizations confidence to proceed with migrating to the public cloud, noting that they retain full ownership, access, and control over their data.

Specific rules also apply to certain sectors such as Financial Institutions, which are regulated by the Otoritas Jasa Keuangan (OJK), Financial Services Authority of Indonesia. OJK’s regulations require organizations to undergo approval processes prior to data offshoring. As part of the approval process, OJK requires Financial Institutions to give access to auditors by providing required data. Organizations have continued to emphasize the fact that they maintain ownership over their data to build a case for migrating to the public cloud.

Nevertheless, organizations should consider a proactive stance in exploring ways to experiment with the public cloud by working closely with the regulator. Organizations may consider services such as AWS Outposts (available in Indonesia), a fully managed service that virtually extends AWS infrastructure, AWS services, APIs and tools to any data centre, co-location space, or on-premises facility for consistent hybrid experiences.

Technical complexity and IT organizational limitations. Cloud adoption requires technology architecture redesign, people upskilling, and additional technology capabilities to manage and secure the cloud. Businesses can consider beginning their cloud adoption journey with proof-of-concept projects that enable both business and technology teams to progressively understand the benefits of cloud, increasing receptiveness over time. Cloud providers also offer credits for customers to offset the cost of running pilot projects, allowing organizations to gain confidence in the benefits of the technology before committing.
Implementation challenges

**Lack of skills and resources.** Indonesia is home to the largest population of developers in Southeast Asia, but technical competency gaps remain due to the shortage of IT professionals trained to build and deploy on the cloud. This was apparent even among survey respondents that had already migrated to the cloud, with 22% stating that skills gaps constrained them from being more agile. Given Indonesia's diverse geographic landscape and mobile penetration of approximately 90% among adults, digital content and delivery of cloud skills programs will be a key factor in upskilling the population. Likewise, Bahasa based content is required to ensure cloud skills are adopted broadly across different population segments.

Organizations need not start from scratch when upskilling their talent, and should take advantage of the resources that are already publicly available to easily acquire cloud-related knowledge. For example, AWS Cloud Practitioner Essentials - a digital course for cloud beginners - is available for free in both Bahasa and English. It helps by creating excitement, increasing cloud fluency, and building momentum for the journey to the cloud and organizational transformation ahead. Cloud service providers also cater support plans that enable knowledge transfer to their customers, and leading cloud security practitioners provide online or in-person training. Nevertheless, organizations should define the necessary skills and hiring plan to support their transition to the cloud.

**Solo migration without strategic direction or support.** Over a tenth of participating companies admitted that they were initially challenged by the technical complexity and lack of experience with cloud technologies. By engaging a partner, these companies were able to carry out their migrations successfully with strategic guidance and execution support to bolster their internal resources. Cloud providers such as AWS acknowledge the significant role that partners play in helping companies deploy solutions faster and more effectively, and have established large partner ecosystems that include thousands of systems integrators, ISVs, and SaaS providers. These partners also offer hundreds of tools and features to help customers meet their security objectives, ranging from network security, configuration management, access control, and data encryption.

**Legacy business processes and “frozen middle”.** Almost a quarter of participating companies stated that legacy business processes continued to be a challenge for their businesses, and need to adapt to allow for faster decision making. More often than not, this problem arises from what we describe as the “frozen middle” - the middle management level of the organization that is used to traditional processes and resistant to change and new modes of thinking. In such cases, leadership support and organization goals for technological transformation are critical to thawing the frozen middle and bringing about a cultural shift. Moreover, some participating companies established cloud-ready teams to prepare the organization for the migration journey, which helped them to overcome these initial hurdles and expedite the process.
CHAPTER 5
STRATEGIC FOCUS AREAS TO ADDRESS CLOUD CHALLENGES

There are six key strategic focus areas to maximize the value of cloud adoption investments, as shown in Exhibit 10. Tailoring cloud usage based on business needs helps to unravel the full potential of the cloud. Based on the study, the majority of the companies agreed that talent shortage is a significant challenge in the realm of cloud. Hence, we recommend these companies prioritize programs to establish well-rounded skills with internal and external talent.

Exhibit 10 | Six Strategic Focus Areas for a Successful Cloud Journey

First, align cloud adoption with business vision. Priority business programs are a good starting point to achieve quick wins and realize concrete benefits of the cloud. This program will break common business - technology siloes in Indonesian companies and enforce shared ownership between teams and establish the foundation for future learning and continuous improvement. Businesses can learn from cloud playbooks developed by leading cloud practitioners while implementing and operating in the cloud.
Choose the effective and efficient migration path. While there are no set-in-stone time frames for how long a migration may take, planning is necessary and helps companies understand areas where they can most easily capitalize on the benefits of the public cloud. Typically, migration planning starts with a readiness assessment to evaluate the organization’s landing zone, internal capabilities, and business plan among other factors. This serves to identify and address gaps early so that the organization is ready to migrate at scale further down the line. As part of the migration planning, organizations should also work with their cloud provider or partner to map out applications that can be moved in the short or medium term, as opposed to boiling the ocean by migrating all applications at once.

Adjust current operating model with cloud in mind. Mature adopters take a common approach of building a Centre of Excellence (COE), which acts as a centralized body to organize, govern, procure, finance, and manage various aspects of cloud usage. COEs will be the catalyst for enforcing best practices in cloud adoption.

Build well-rounded skills with internal and external talent. Successful cloud transformation does not focus solely on the technology - it also requires skills in project management, change management, customer experience design, and strategic operations. Almost 50% of companies acknowledge the necessity to build skills and talents around cloud to achieve more business values. Businesses can upskill internal talent, while technology and consulting partners are also available to accelerate the learning journey. Businesses need to adjust roles and responsibilities to adopt cloud knowledge in their operating model.

Boost security with cloud. Network security attacks remain on an upward trajectory despite the pandemic situation. Earlier this year, AWS mitigated the largest DDoS (DDoS) attack ever recorded through the use of its AWS Shield protection service, which peaked at 2.3Tbps. The increased tendency of remote working further imposes new security challenges across all organizations. As a result, public cloud adoption should be one of the key strategic drivers that organizations focus on following the pandemic.

Finally, build future-proof architecture. Businesses need to implement cloud-first and cloud-native architecture principles to fulfil customer demands quickly and maximize infrastructure utilization. These principles imply organizations need to prioritize buying or building cloud-native solutions. They provide the scalability and elasticity to use necessary infrastructure resources based on the workload. Furthermore, the combination of cloud and edge computing will decrease latency in a cost-efficient way to enable an improved user experience. Clear policies and workload allocation, governance, architecture standards, and implementation guidelines need to be defined to enforce the application of these principles.

Organizations that leverage these six strategic focus areas, can maximize the value of their cloud investments and benefit from the full potential of the cloud.
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