July 2018

Central Economic Commission
Developing Digital Infrastructure for Digital Economy

Objectives

1. Introduction
2. What do we mean by Digital Infrastructure?
3. What are the common challenges in developing/improving Digital Infrastructure?
4. Findings from the PwC Global Survey on Digital Readiness (1155 Global Leading companies)

Welcome, lets start with a short video

https://www.youtube.com/watch?v=i6rU8FfhB14

Increasingly life has been Digitized over the past couple of decades, technology permeates every aspect of our life

Transportation

Communication

Residential

Medicine

Work

Shopping

Sleep

Technology aspect of Digital receives most attention while other layers of the value chain are equally critical for success..

Customer Solutions Layer	*Distinctive products and services which are of value to consumers/customers*
Operations Layer	*Physical activities & flows that support the Customer layer. Includes product development, planning, sourcing, manufacturing, warehousing, logistics & services*
Technology Layer	*Enabling layer covering IT architecture, interfaces & digital technologies. E.g: AI, 3D printing, IIOT, Sensors, Robots. Etc.*
People Layer	*Organizational competence and culture, includes skills, mindset, relationship & career development*

Each layer represents a cluster of activities

PwC conducted a survey to understand how companies are adapting to meet the needs of the digital era ...

Customer Solutions Layer

Operations Layer

Technology Layer

People Layer

Machine assisted decision making

So lets consider each of these layers in more depth to understand: Customer Solutions layer..

1

Develop Distinctive products and services which are of value to consumers/customers

- Excel in understanding the needs and preferences of customers by capturing the relevant demand signals
- Use these demand signals to develop new customer insights that can be used to develop new products and services
- Choose and develop the right platforms to realize your business potential

Business model platforms being used by leading companies

Omni Channel Commerce (42%)	Product as a Service (23%)	Customer Service (33%)	Complex Solutions (24%)	Open Platform (10%)
Simultaneous multi channel sales & marketing platform for products & services	A Product is sold via a platform in a pay per use model	Highly individualized products & services	Partner products managed by company	Platform for others to build own digital business

So lets consider each of these layers in more depth to understand: Operations Solutions layer..

2

Physical activities & flows supporting customer layer. Includes product dev., planning, sourcing, manufacturing, warehousing, logistics & services

- Customer needs define operational configuration, i.e. Supply chain execution is in sync with real time customer needs e.g: On shelf product availability dictates production batch composition
- Key success factors include total supply chain visibility, flexible manufacturing & strong execution.

Major value additions from Operations layer

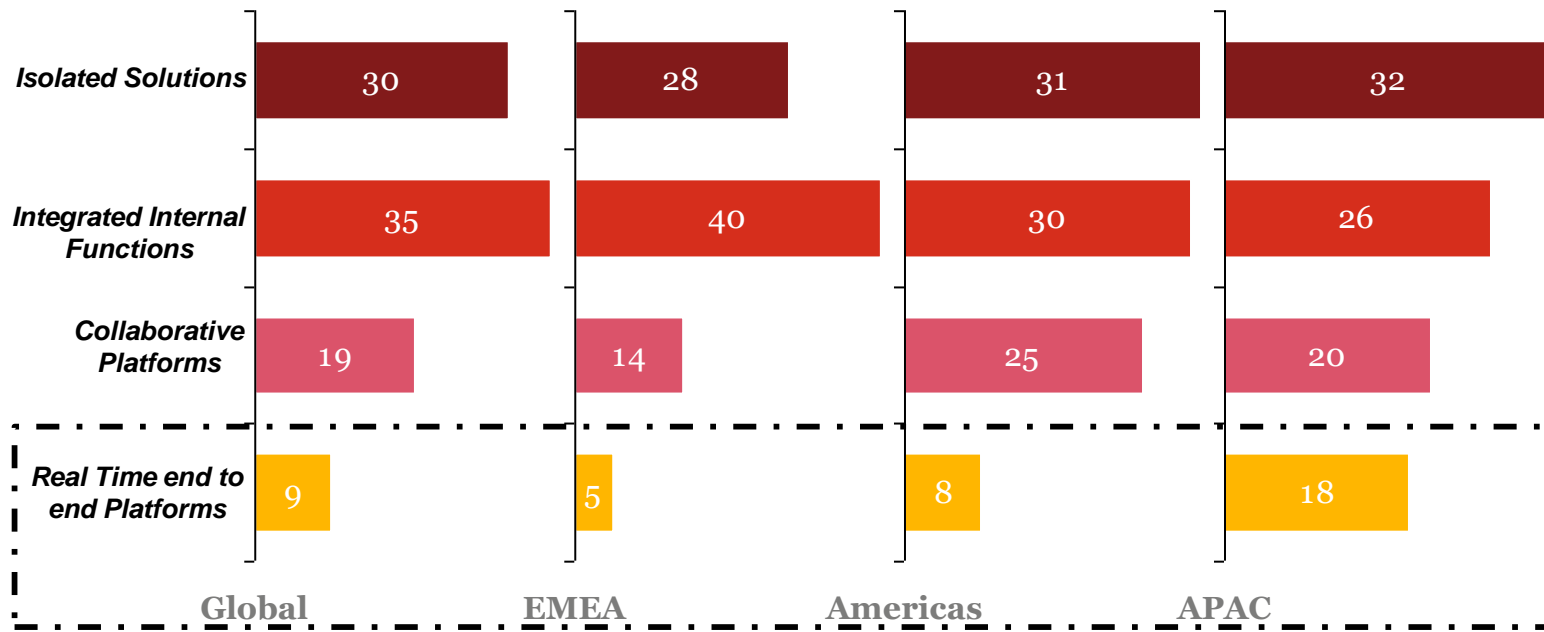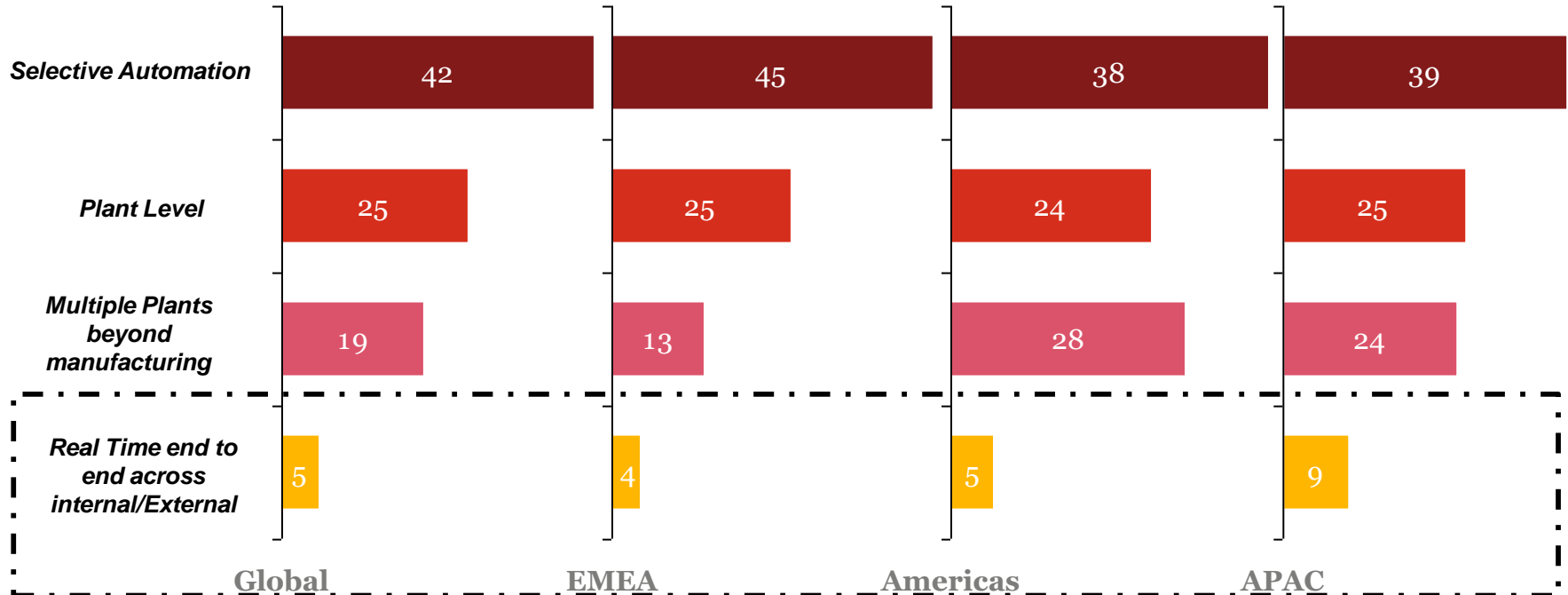| Transparency	Real time Data Sharing	Extended Collaboration	Responsiveness & Flexibility	Connectivity
End to end view of the production value chain.	Real time visibility of information	Move from a transactional relationship with Partners (Suppliers & Customers) to a deeper, synergistic one.	Real time response to customer, market or partner signals	Seamless integration of internal & external information enables a well connected end to end value chain.

Key Challenges faced by Companies (Value Chain Integration)

## Survey conducted across 1155 global companies (response in %)

	Global	EMEA	Americas	APAC
Isolated Solutions	30	28	31	32
Integrated Internal Functions	35	40	30	26
Collaborative Platforms	19	14	25	20
Real Time end to end Platforms	9	5	8	18

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Key Challenges faced by Companies (Manufacturing Automation)

Survey conducted across 1155 global companies (response in %)

	Global	EMEA	Americas	APAC
Selective Automation	42	45	38	39
Plant Level	25	25	24	25
Multiple Plants beyond manufacturing	19	13	28	24
Real Time end to end across internal/External	5	4	5	9

So lets consider each of these layers in more depth to understand: Technology layer..
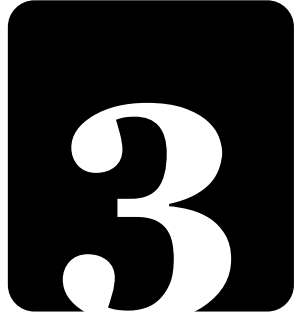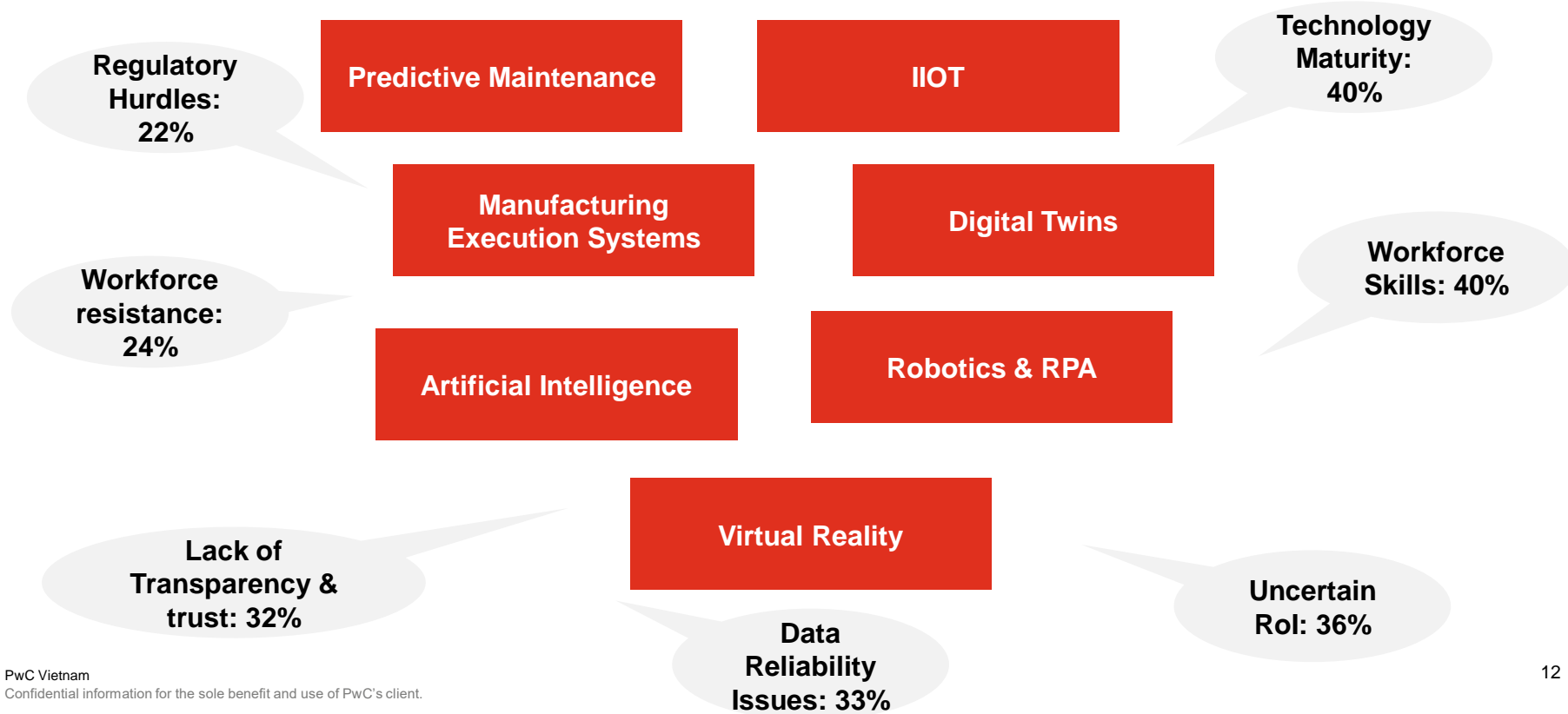
3

Enabling layer covering IT architecture, interfaces & digital technologies. E.g.: AI, 3D printing, IIOT, Sensors, Robots. Etc.

- I.T architecture is the backbone for enabling and implementing new technologies
- Identification of key technologies which further business objectives of the company need to be carefully selected, implemented and leveraged
- Companies should consider their entire eco system which choosing technologies and avoid isolated solutions

Key Technologies companies are considering

Predictive Maintenance (78%)	Manufacturing Execution Systems (73%)	Artificial Intelligence (29%)	Digital Twins (60%)	Advanced Robotics(49%)
Anticipatory asset management which helps reduce downtime as well as reduction in lifecycle asset maintenance costs	Improved real-time understanding of production floor leading to cost as well as production optimization	Improved accuracy and quicker decision making	Digital replica with near real time functionality of physical asset which can be improved, tested, trialled thereby reducing cost physical development process.	Replacement technologies which can carry out complicated tasks with improved efficiency and accuracy

Key Challenges faced by companies (Technology Layer)

Regulatory Hurdles: 22%

Predictive Maintenance

IIOT

Technology Maturity: 40%

Manufacturing Execution Systems

Digital Twins

Workforce resistance: 24%

Workforce Skills: 40%

Artificial Intelligence

Robotics & RPA

Virtual Reality

Lack of Transparency & trust: 32%

Uncertain RoI: 36%

Data Reliability Issues: 33%

So lets consider each of these layers in more depth to understand: People layer..

4

Organizational competence and culture, includes skills, mindset, relationship & career development

- Enables and supports the other three layers, many transformation programs have failed because they don't consider or provide enough weight to the people layer
- Successful companies invest heavily in training and developing the right skills for the enablement of the Digital culture

Key aspect to help facilitate acceptance of Digital technologies

Skills	Mind Set & Behaviour	Relationship & Skill Sources	Career Development
Agile ways of working with strong capabilities in Data analytics, human machine interfacing & technology supported decision making	Open to new technologies and higher tolerance to failure with a "best idea counts" mind set	Hybrid organization fostering strong X functional teams with strong internal and external integration.	Appraisal, incentive & compensation schemes reward and encourage digital way of working

Key Changes faced by Companies

Analog Culture

Digital Culture

Analog Culture		Digital Culture

Push Products into Market, Strongly purchasing/Supply Driven

Customer & Demand

Pull: Customer demand drives supply of products

Strong hierarchy & slow decision making
Process & task orientation, employees with strongly pre-defined work
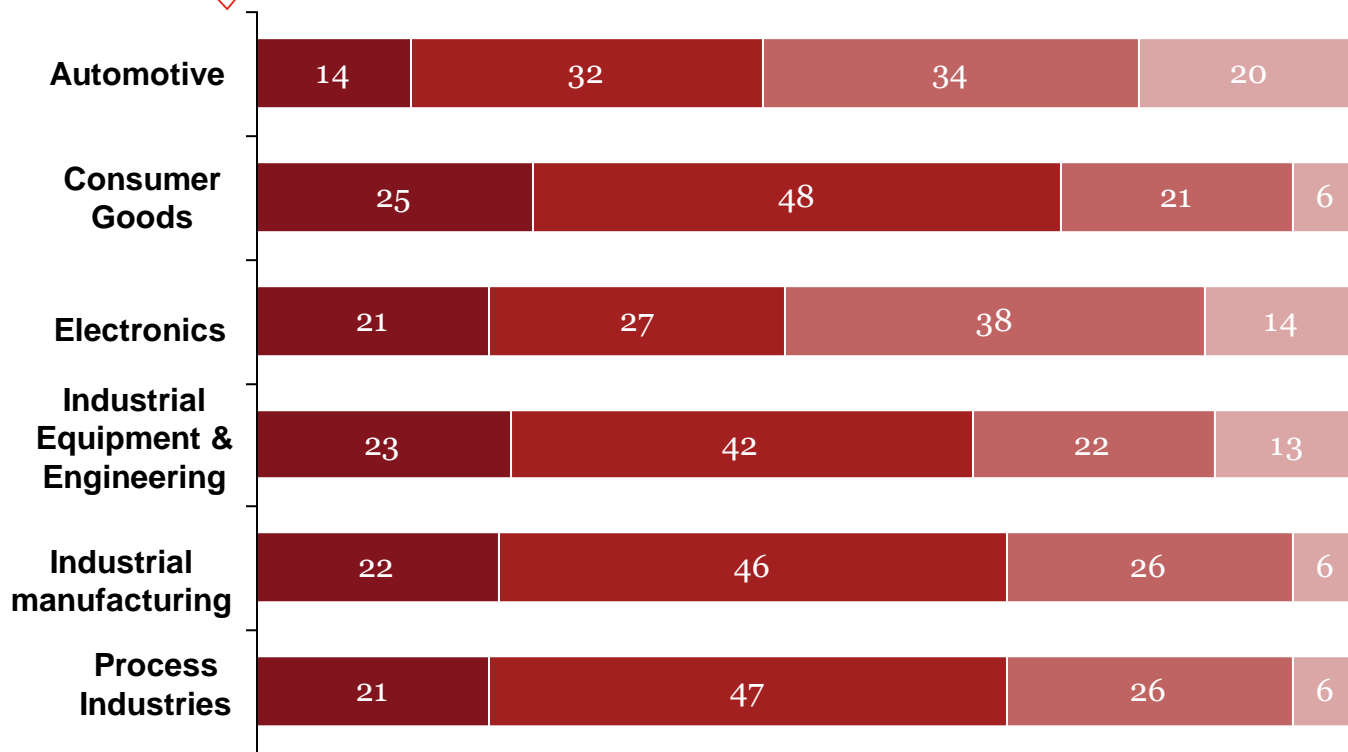**Carry out, keep status quo, and accept barriers**

Organization

Flat hierarchy & fast decision making
Results & product orientation
Innovate improve and overcome barriers

Good understanding of analog customers & learning from past
Experience & stability
Homogenous teams and working in departmental silos
Career progression within predefined paths
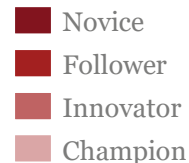
Way of Working

Good understanding of digital customers and new trends
Potential, vision, curiosity, motivation, flexibility & adaptability
Mixed teams working in integrated communities
Rapid unpredictable career progression

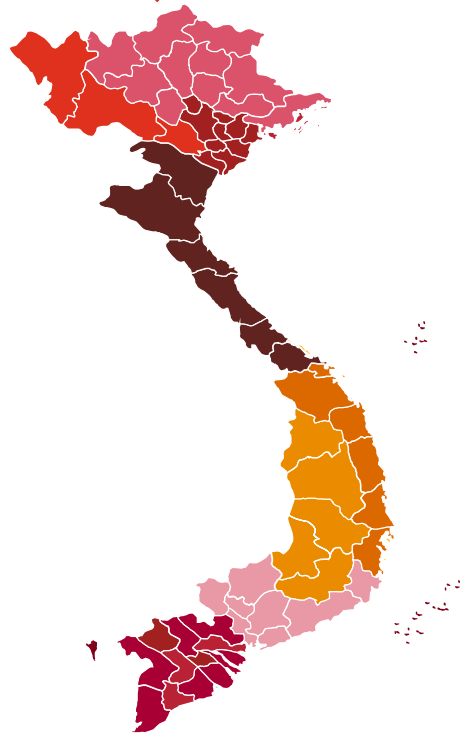# *So lets look at how digitally mature the Global leaders are ..*

Industry	Novice	Follower	Innovator	Champion
Automotive	14	32	34	20
Consumer Goods	25	48	21	6
Electronics	21	27	38	14
Industrial Equipment & Engineering	23	42	22	13
Industrial manufacturing	22	46	26	6
Process Industries	21	47	26	6

Major constraints for companies include
- High Costs
- Unclear understanding of RoI
- Legacy systems
- Internal resistance

Legend:
- Novice
- Follower
- Innovator
- Champion

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Subsequently lets also consider some Vietnam specific information

Top 3 Vietnam Challenges

18% *Lack of digital standards, norms and certification*

Lack of clarity raises investment risks as organisation are unsure how new regulations will impact their investments. Additional clarity and selected policies can provide tremendous boost to the digital revolution.

16% *Insufficient skills and talent (local labour market)*

There is a mismatch between demand and availability of digital skills in the labour market. More effort is needed to bridge this skill gap if Vietnam is to leverage the industry revolution to drive growth

15% *Unresolved questions around data security and privacy*

Digital trust is a complex matter and as organisations move towards a digitising ecosystem, they will integrate and digitise a whole range of systems and processes, which increases cybersecurity risks for all parties: businesses, employees, customers etc.

Lets end with another video

https://www.youtube.com/watch?v=FBl4Y55V2Z4

PwC South East Asia Consulting

Strategy
- Business Strategy
- Customer Strategy
- Megaprojects
- Operations Strategy
- Organisation Strategy
- Product and Services Innovation

Technology
- IT Transformation
- Enterprise Architecture
- Core Banking systems
- ERP & Business Application Packages
- Data Management
- Deal support
- Big Data & Business Analytics
- Data Warehousing
- Cybersecurity

Risk
- Governance Advisory and Board Improvement
- Management oversight and controls optimisation
- Risk and compliance solutions
- Fraud and compliance assessment
- Forensics
- Data recovery
- Data analysis
- Compliance reviews
- Fraud prevention
- Local support
- Dispute resolution

Sustainability
- Strategic sustainability
- GRI (Global Reporting Initiatives) Reporting and Assurance (non-financial)
- Sustainable Supply Chain & Operations
- Climate change and carbon management
- Governance, risk and compliance
- Tax and regulatory environment

Operations
- Procurement Transformation
- Strategic Sourcing
- Supplier Management
- Overall Network Design & Optimisation
- Value Chain Analysis
- Sales & Operations Planning
- Forecasting & Demand Planning
- Product Development Process
- Distribution Network Design & Optimisation
- Warehouse & Distribution
- Transportation Improvements
- Production Strategy
- Manufacturing Cost Reduction
- Production Performance Improvement
- Salesforce effectiveness

Finance
- Finance Organisation and Operating Model
- Finance Systems & Data Management
- Process review: Purchase-to-pay, Order-to-cash
- General Accounting & Financial Reporting
- Planning, Budgeting & Forecasting
- Working Capital & Cash Management Treasury
- Management Reporting & Business Analysis
- Finance Continuous Improvement
- Cost Management
- Smart Close

People & Organisation
- Organisation Design
- HR Transformation
- Workforce Optimisation
- Human Capital Analytics
- Key Performance Indicators & PMS
- Employee Engagement Survey
- Leadership & Talent Management
- Learning & Development Programmes
- Career Pathway
- Job Grading & Evaluation
- Salary Benchmarking
- Reward Strategy & Pay Philosophy
- Designing Creative Rewards
- Change Management

Portfolio & Programme Management
- Project Management Office
- Post Merger Integration
- Portfolio Optimisation and Governance
- Project, Programme and Portfolio Execution
- Operate and Realise & Benefits Tracking

Thank you!

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