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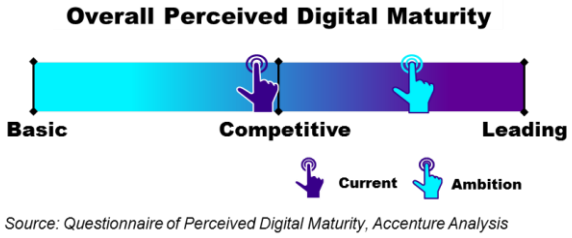
DIGITAL GREECE: THE PATH TO GROWTH

UTILITIES INDUSTRY DIGITAL STATE

Table of Contents

1. Identifying the perceived digital maturity of the Greek Utilities Industry

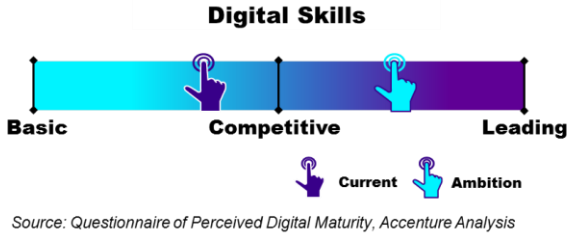
A global study ran by Accenture with Utilities' Chief Strategy Officers (CSOs) revealed that companies in the industry almost unanimously expect technology to transform their industry in the forthcoming years. 98 percent of CSOs in Utilities agree that new technologies will rapidly change their industry in the next 5 years, and 80 percent agree that new technologies have rapidly changed their company's industry over the past 5 years[1]. Acknowledging the criticality of digital transformation, our analysis identifies that leading companies in the industry have taken bold steps towards this direction. Similarly, their Greek counterparts who were surveyed by Accenture[2], place digital with high priority in their agenda to augment their companies' digital skills and stay on track with the competition.



Source: Questionnaire of Perceived Digital Maturity, Accenture Analysis

Figure 1: Overall Perceived Digital Maturity– Utilities Industry (Current State – Ambition)

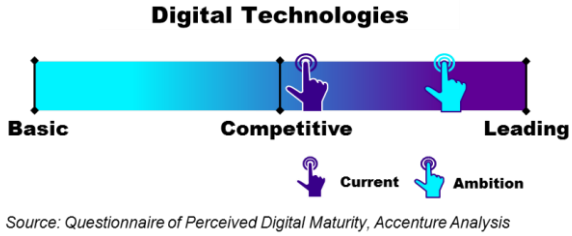
Surveyed Utilities industry executives perceived their companies to be executing their digital transformation slightly slower than their industry's global market (Figure 1). As expressed during Accenture's workshops from executives of the Utilities industry, digitalization has already been identified as a key component of most players' strategic agendas.



Source: Questionnaire of Perceived Digital Maturity, Accenture Analysis

Figure 2: Perceived Digital Skills Maturity – Utilities Industry (Current State - Ambition)

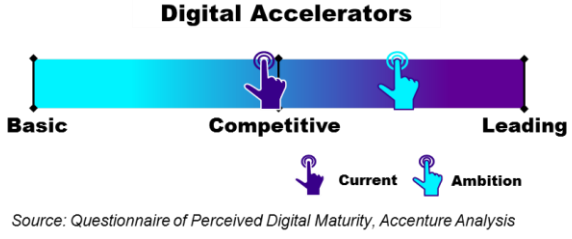
Regarding the digital skills maturity of the sample, surveyed executives consider themselves to perform notably below the market-competitive level (Figure 2). Nonetheless, they have already planned for major changes in the next five years in their Organization and Collaboration capabilities which will have a positive impact on their digital skills maturity.



Source: Questionnaire of Perceived Digital Maturity, Accenture Analysis

Figure 3: Perceived Digital Technologies Maturity- Utilities Industry (Current State - Ambition)

With regards to digital technologies (Figure 3), Greek Utilities companies perceive themselves to have already leveraged several technological capabilities that will help them rotate to digital. They recognize the value of digital technology and are ready to invest in big data capabilities to improve their internal operations and gain an in-depth understanding of their customers.



Source: Questionnaire of Perceived Digital Maturity, Accenture Analysis

Figure 4: Perceived Digital Accelerators Maturity - Utilities Industry (Current State - Ambition)

Finally, as indicated by our survey results, the Greek companies view their maturity related to the industry's digital accelerators to be performing on par with international competitors (Figure 4). The marked ambition of those surveyed indicates a commitment to working

[1] "Thriving on Disruption", Accenture Institute for High Performance, 2016

[2] The performed analysis and the respective conclusions were based on data recorded through the "*Questionnaire of Perceived Digital Maturity*", launched on December 19, 2016 and remained open until January 30, 2017

closely with regulators to improve the business environment within which they operate.

1.1 Evaluating the Greek Utilities Industry's digital maturity

Taking our analysis one step further, we cross-referenced and analyzed secondary data against the executives' opinions, in order to attain an additional layer of granularity in our analysis. To evaluate the Greek Utilities industry's digital maturity and identify the primary factors that can drive economic growth in their digital economic output, we have applied the Digital Economic Opportunity Index (DEOI) for the Utilities industry.

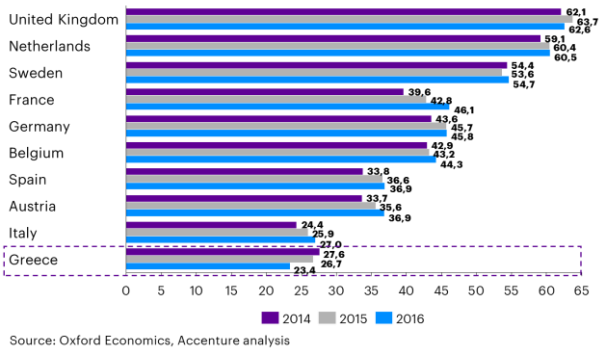


Figure 5: Utilities Digital Economic Opportunity Index from 2014 to 2016

Our analysis for the Greek Utilities companies with regards to their digital maturity suggests that the Greek companies score at the bottom compared to their European peers over the last three years (Figure 5). More specifically, since 2014 the Greek Utilities industry's digitalization seems to be losing momentum. This has resulted in a lower Digital Economic Opportunity score by approximately 4,2 points.

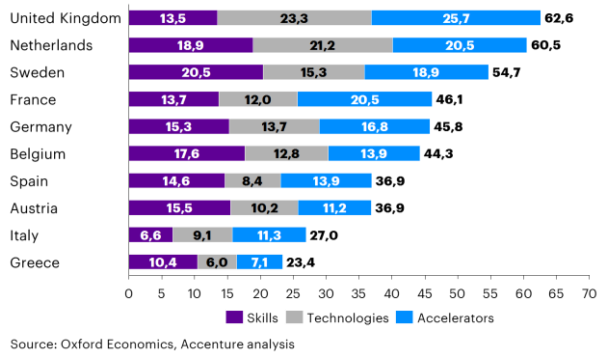


Figure 6: Utilities Digital Economic Opportunity scores by country

The breakdown into the three levers that make up the Digital Economic Opportunity Index, namely, digital skills, digital technologies and digital accelerators expresses the following picture, as seen in Figure 6.

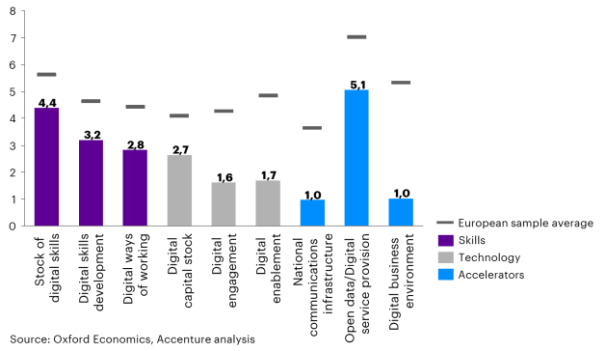


Figure 7: Utilities Industry - Digital Economic Opportunity Index Components Breakdown

To further understand the key drivers of the Digital Economic Opportunity Index, we then zoom into the nine underlying components to get a more detailed view of the factors that contribute to the poor performance of the Greek Utilities industry (Figure 7).

If we take a closer look at the ***digital skills*** lever, the Greek Utilities industry appears to be behind its European peers. The "stock of digital skills" pillar contributes higher to the overall score, indicating that ICT skills within the sector are closer to the average of other European industry peers. Low scores in the "digital skills development" and digital ways of working" components, reflect a relatively poor commitment to digital worker training and limited emphasis on the recruitment of digital talent. Furthermore, Greek Utilities companies have not fully leveraged digital tools and capabilities to facilitate its workforce's mobility (i.e. remote access to enterprise IT systems), scoring about 1,6 points below its competitors.

The low score relating to the ***digital technologies*** lever suggests that although Greek companies have made moderate digital investments, there is significant room of improvement under the "digital capital stock" component. At the same time, the low-scoring "digital engagement" and "digital enablement" components signify that Greek Utilities companies have yet to adopt enabling technologies like Internet of Things, cloud computing and big data analytics.

Finally, by examining the ***digital accelerators*** lever, it is evident that Greek Utilities companies are lagging their European peers, suggesting that the market conditions and business environment in Greece today is severely limiting the companies' digitalization.

1.2 Defining the contribution of digital to the Utilities industry's economic output

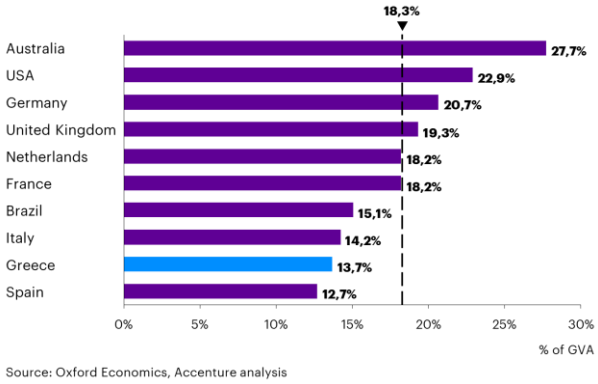


Figure 8: Percentage Contribution of Digital to Utilities Industry's GVA

The Greek Utilities industry's low digital maturity appears to be further validated by the moderate contribution of digital to the industry's economic value. Our analysis with regards to digital contribution of the Utilities industry to the Greek economy, indicates that the overall digital inputs contribute to 13,7 percent of the industry's Gross Value Added (GVA)[3], equal to €573,6 million. This scores 4,6 percentage points below the sample average and positions the Greek Utilities industry at the lower end against the European peers that we examined.

At the top of our analysis we find the Australian Utilities industry, which currently exhibits the highest contribution of digital to its GVA, with a digital output estimated to cover 27,7 percent of the industry's GVA. Looking at the rest of the European counties, it appears that the Germany and UK companies are ahead, performing at a 20,7 percent and 19,3 percent of their digital potential.

[3] Gross value added (GVA) is a productivity metric that measures the contribution to an economy, producer, sector or region. Gross value added provides a dollar value for the amount of goods and services that have been produced, less the cost of all inputs and raw materials that are directly attributable to that production. The relationship between GVA and GDP is defined as:
GVA + taxes on products - subsidies on products = GDP, or restated as:
GVA = GDP + subsidies - (direct, sales) taxes

2. Utilities Industry - Rotating to Digital

There is wide-spread evidence that all industries are impacted by digital. In fact, as per Accenture research, "every business is a digital business". However, as each industry is also unique, its digital rotation puts the emphasis on different parts of the value chain, which we refer to as "digital pivot points".

What are the digital pivot points?

Companies organize their business activities against value chains that typically consists of strategy, production, sales and customer services and operations. There is widespread evidence that all industries are impacted by digital. However, as each industry is also quite unique, its respective digital rotation places emphasis on different areas of the value chain. These areas are referred to as digital pivot points.

This below mentioned value chain (see Figure 9) will be used as our framework to identify the digital "pivot point(s)" of the Greek industries.

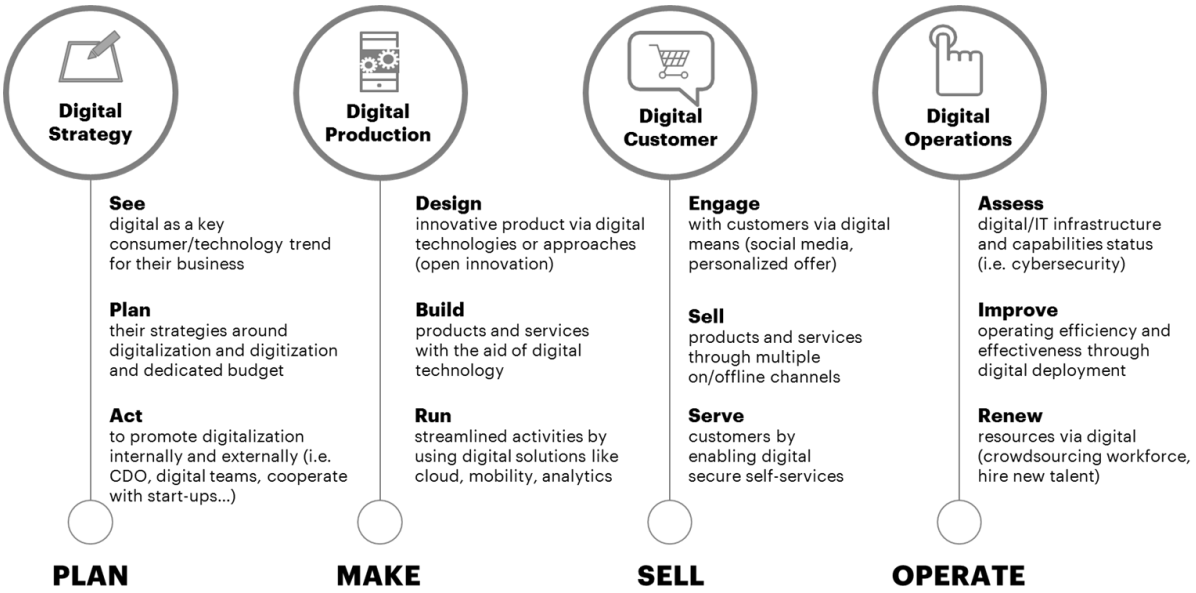


Figure 9: The typical Value Chain

2.1 Industry Clustering

According to our analysis on how digital impacts the Greek industries' value chain, we have placed the Greek Utilities industry within the second group of the Greek industries, the "In-transition" industries (see Figure 10).

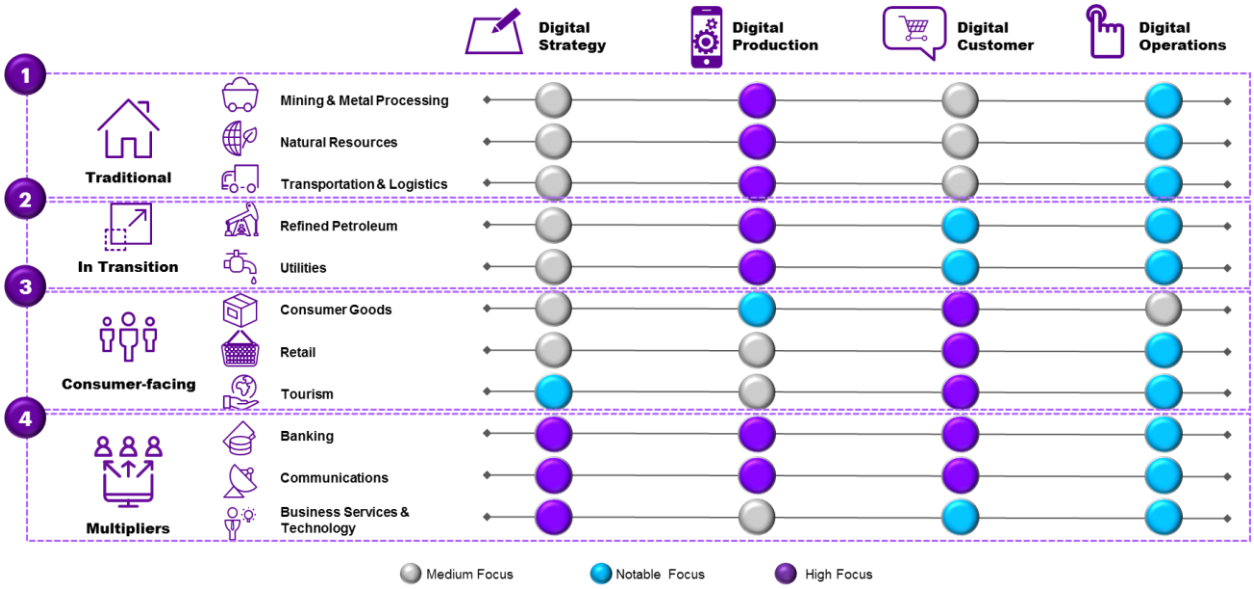


Figure 10: The Clustering of the Greek industries

The "In-transition" industries appear similar in characteristics with the "Traditional" group. However, in parallel with focusing on the digitalization of their production, these industries are starting to place significant emphasis and become more involved with their end-customers. Seven digital themes influence the "in-transition" industries as presented in the Figure 11 below. The description of the digital themes is presented in Figure 13.

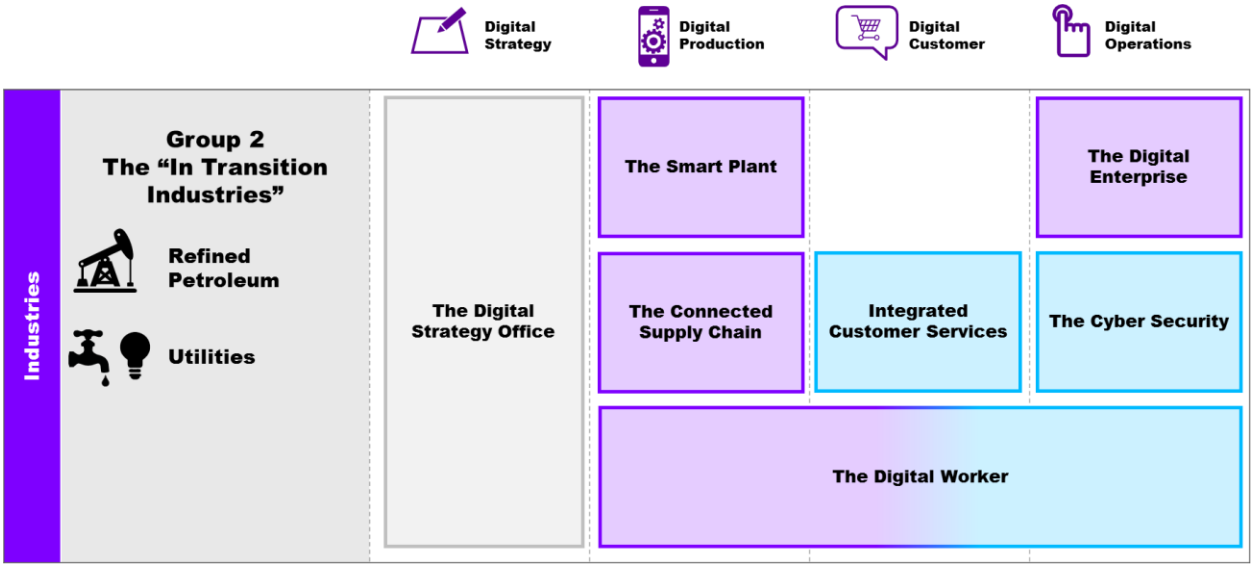


Figure 11: The "in-transition" industries

International best practices suggest that, at the core of their digital rotation, utilities companies have embraced digital technologies, to develop new, engaging digital services and introduce asset life cycle management capabilities to streamline their operations. Figure 12 illustrates elements of the above.

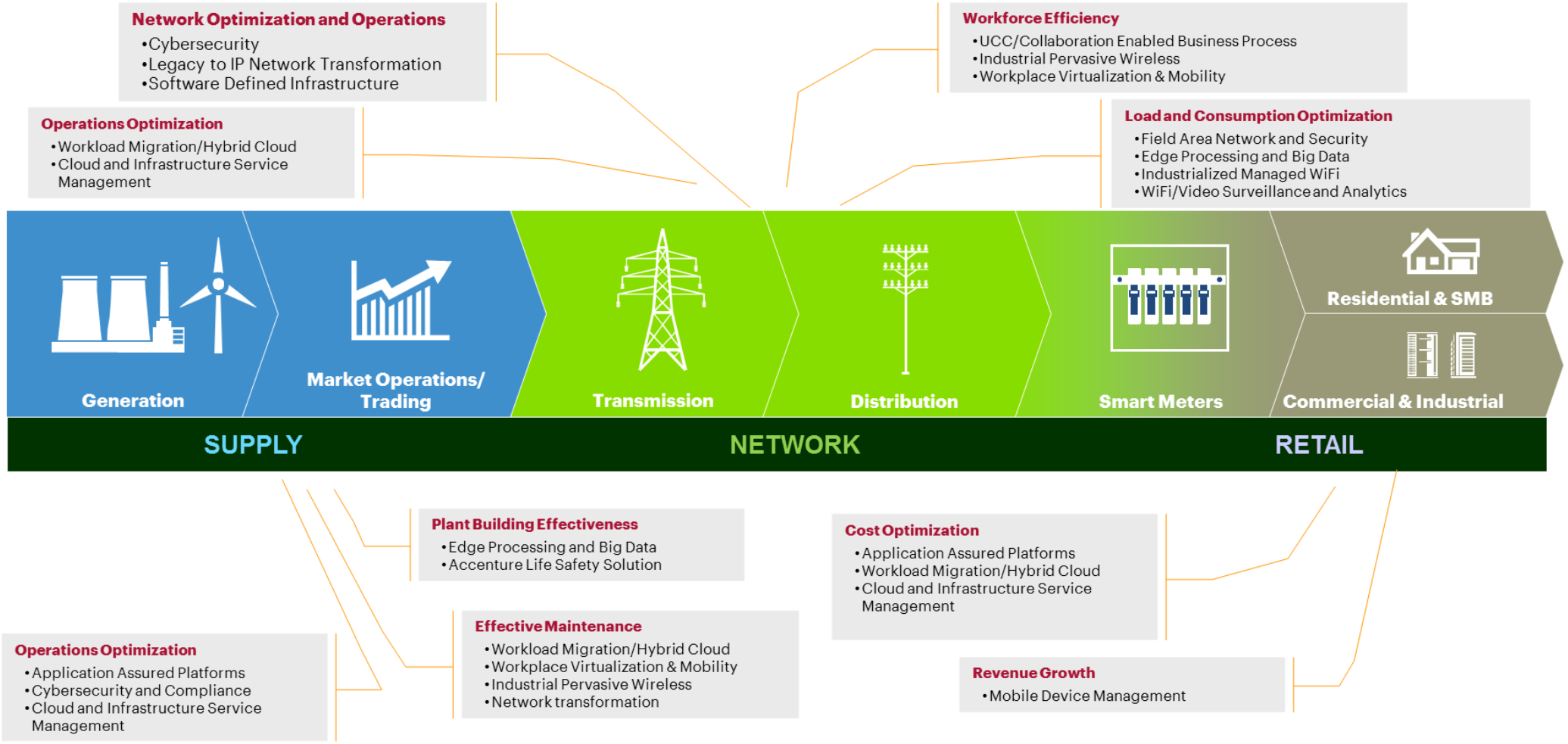


Figure 12: Digital Utilities

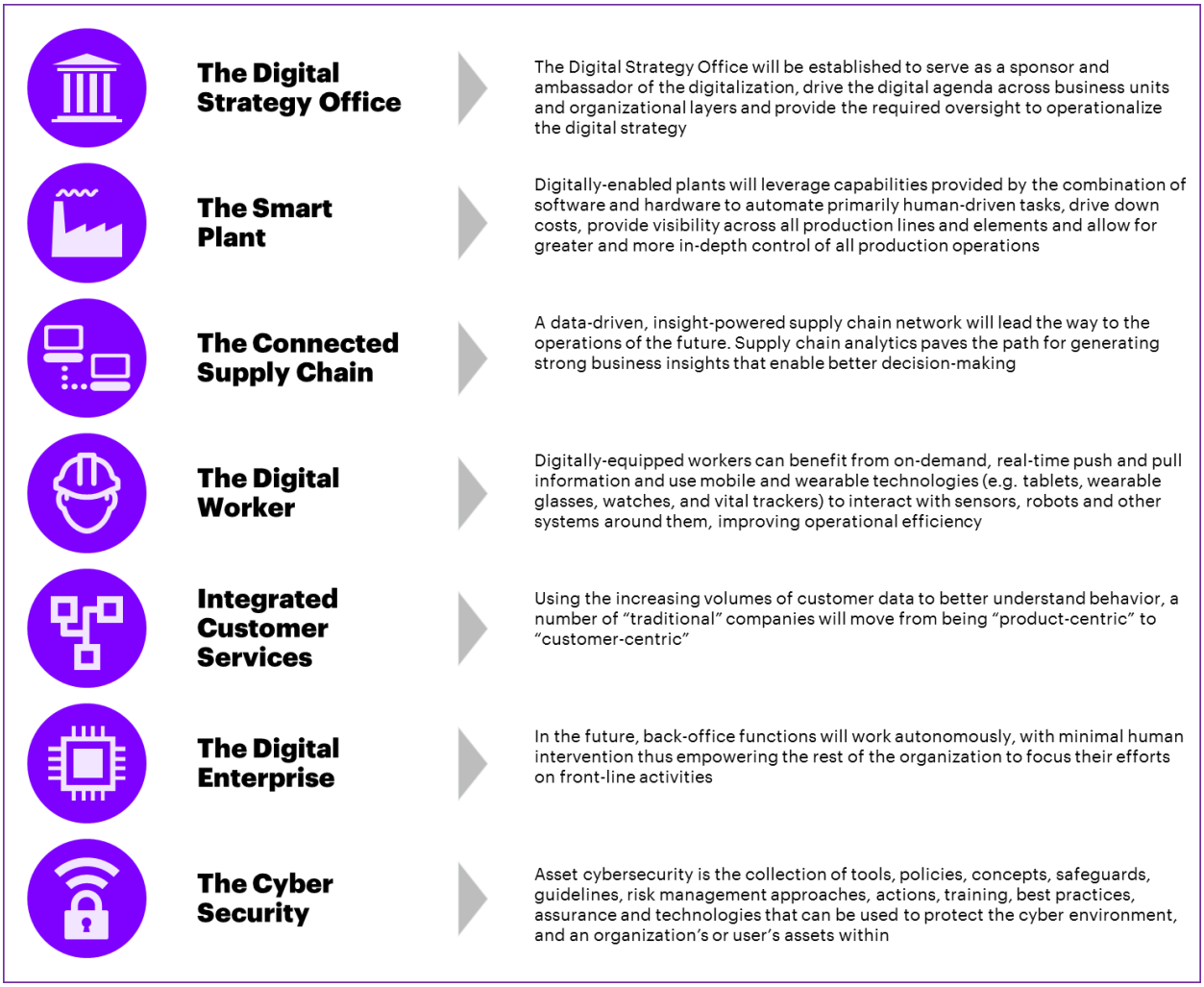


Figure 13: Digital Themes

2.2 Digital Pivot Points

Contextualizing these observations with industry's executives, we have identified the potential creation of a real-time demand and supply platform for electricity trading and the development of customer-centric services, like e-bills that provide transparency into consumption and payments. Figure 14 illustrates the emphasis on the different pivot points for the Utilities industry.

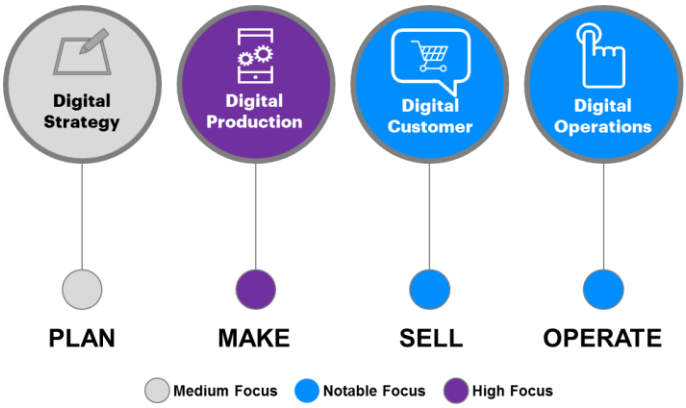


Figure 14: Utilities Industry - Digital Pivot Points

2.3 Initiating the digital transformation

With global best practices as our reference point, we propose a set of initiatives that will accelerate the industry's digital rotation. It is evident that not all initiatives may be applicable for all organizations within this industry; indeed, digital initiatives are recommended to be selected in accordance to the different strategy, business model, size, available budget and most importantly, each company's own digital aspirations and vision. The initiatives that follow, are broken down into tactical, which we call "**tactical moves**" and disruptive, which we call "**cut new ground**". In addition, they are linked to the digital themes presented previously that influence the specific group of industries. The classification of the identified initiatives is depicted in Figure 15.

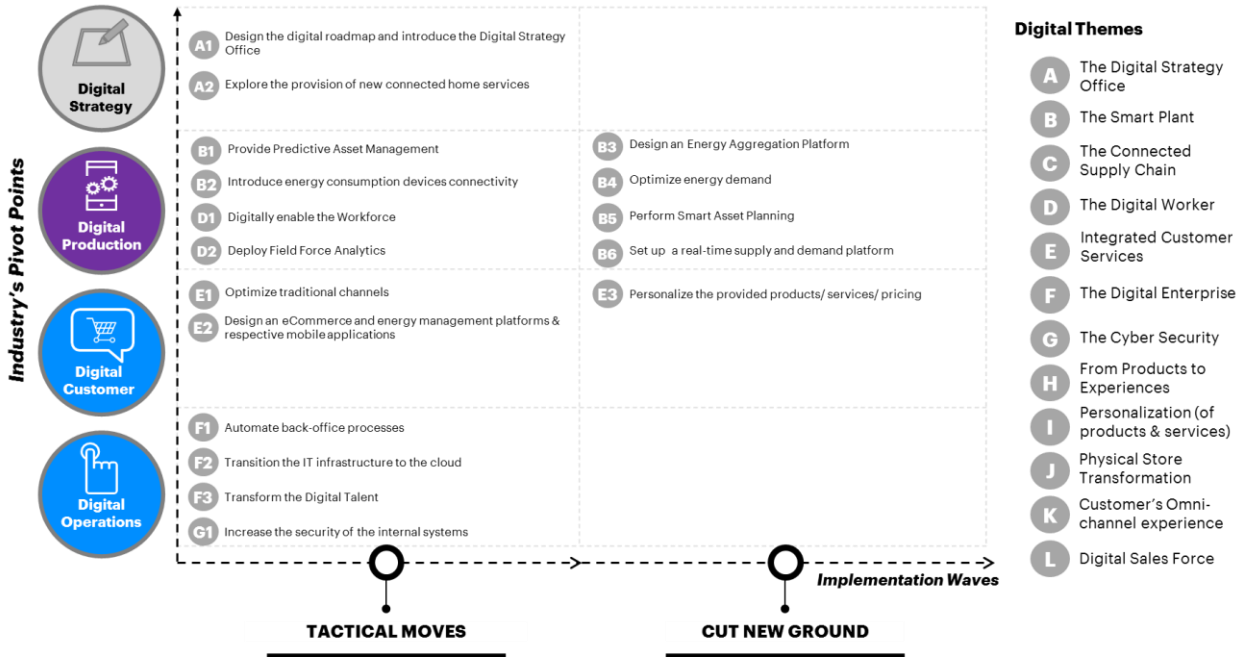


Figure 15: Classification of Suggested Initiatives Across Three Dimensions

A description of the proposed initiatives is presented in the table below:

#	Digital Initiative	Description	Value Chain Area
A1	Design the digital roadmap and introduce the Digital Strategy Office	Design and implement a digital roadmap that will incorporate all digital initiatives to be undertaken by the organization and set up the Digital Strategy Office that will be responsible for the effective operationalization of the digital roadmap	Digital Strategy
A2	Explore the provision of new connected home services	Perform a market assessment and strategy development for developing connected home capabilities including vendor assessment, partnering strategies, business case and market entry approaches	Digital Strategy
B1	Provide Predictive Asset Management	Set up an "early warning system" on (critical) equipment to anticipate future breakdowns. This "early warning system" will be based on live data, which shall be continuously collected from the equipment sensors and fed into an analytical solution. Advanced Big Data Analytics will run on the live data and identify the asset trending. Based on algorithms and data models, performance of the equipment will be monitored. When values will move outside of the predefined parameters, an alarm will be generated and the respective maintenance and/or operations accountable person will be informed. Actions will be triggered in the field and modified maintenance plans will be created	Digital Production
B2	Introduce energy consumption devices connectivity	Deploy smart and connected sensors on energy consumption devices to ensure device-to-device connectivity and collect and display energy consumption points for the utility. These connected devices can be also linked into the distribution network	Digital Production
B3	Design an Energy Aggregation Platform	Design an energy aggregation platform that will integrate energy sources into the grid and optimize the energy distribution. The platform shall bring small-scale distributed-energy sources – renewables such as photovoltaics, wind, biomass, combined heat and power, or diesel – onto a single platform, enabling a cluster of generators to act as one large power plant. This platform can both deliver electricity when it is required and store any surplus power, thereby balancing the grid	Digital Production
B4	Optimize energy demand	Deploy a network of smart meters for load and consumption optimization and data analytics for targeting customers and optimize switching and load management based on customer load profiles. As a next step, dynamic pricing capabilities can potentially be developed, as well as dynamic management of load and distributed generation	Digital Production
B5	Perform Smart Asset Planning	Deploy predictive analytics, machine learning and robotics to improve capital-project execution, including site and asset selection, installation and decommissioning	Digital Production
B6	Set up a real-time supply and demand platform	Set up a real-time supply and demand platform to establish an electricity trade market. The platform will provide the monitoring and communication of current load supply and demand, paired with a discriminatory pricing framework. This will allow for a fundamental change in behaviors through tariffs, localized pricing signals and interconnectivity	Digital Production
D1	Digitally enable the Workforce	Leveraging wearable solutions and analytics solutions to capture, analyze, communicate critical information to and from workers, and improve operational performance by supporting fact-based decisions in near real-time and remotely monitor	Digital Production

#	Digital Initiative	Description	Value Chain Area
D2	Deploy Field Force Analytics	Deploy Field Force Analytics and provide visibility into metrics and KPIs so that action can be taken to drive work efficiency on the field	Digital Production
E1	Optimize traditional channels	Optimize the traditional channels through IVR and call center digitization to reduce costs and increase self-serve	Digital Customer
E2	Design an eCommerce and energy management platforms & respective mobile applications	Design and introduce an eCommerce and an energy management platform and the respective mobile applications that shall enhance the customer experience while ordering online and shall provide transparency on their consumption and spending patterns	Digital Customer
E3	Personalize the provided products/ services/ pricing	Leverage advanced analytics to better understand consumers and their buying patterns. Retain high value ones via offering personalized products and services and/or via introducing loyalty programs. Depending upon the customer profile and loyalty, dynamic and personalized pricing schemes can be administered to improve retention	Digital Customer
F1	Automate back-office processes	Digitalize and automate end-to-end internal processes (i.e. finance, sourcing & procurement) powered by artificial intelligence (robotics) and big data analytics	Digital Operations
F2	Transition the IT infrastructure to the cloud	Move the IT infrastructure to the cloud to improve efficiencies, enable the seamless integration of business processes and provide immediate, on-demand access to the latest solutions and approaches and ready-to-deploy environments for creating and delivering the innovative business strategies and products	Digital Operations
F3	Transform the Digital Talent	Define the new digital roles, capabilities and skillset, assess the active workforce and design digital training sessions to digitally upskill and reskill the organizations' personnel according to their personal development needs	Digital Operations
G1	Increase the security of the internal systems	Strengthen internal systems and incorporate increased security measures as multilayered authentication and internal control processes to strengthen security and comply with increased regulations	Digital Operations

2.4 Global Leading Practices

- Case Study – AutoGrid

AutoGrid, an enterprise solution company founded in 2011, develops software that can analyze vast amounts of energy data, such as data regarding the amount of electricity used in homes and buildings, data from smart devices on the grid (transformers and generators), and data about grid problems like outages. The company's software can offer services to utilities and power companies, such as sending automated predictions, optimizing the performance of grid devices, and charting energy usage trends and reports. AutoGrid applications utilize petabytes of smart meter, sensor and third-party data, along with powerful data science and high-performance computing algorithms, to monitor, predict, optimize and control the operations of millions of assets connected across global energy networks. It provides unparalleled insights into consumption and as such the company become a key partner of major players such as E.ON.

Source: http://www.auto-grid.com/about, Accenture Analysis

- Case Study – British Gas

British Gas smartphone app enables smart meter customers to review energy usage information in real time. The app, called my energy live, was tested in urban cities of the UK ahead of a nationwide trial in late 2015, at which point British Gas' 1.5 million smart meter customers were given the choice between using the app or the physical in-home display.

The application informs customers about their energy usage, the related cost, and provides a predicted daily energy spend by day, week or month. The app also allows customers to set daily budgets for gas and electricity and supports multiple devices on one customer account thus enabling more than one member of a household to keep track of energy use and budgets. By providing these services to customers, British Gas, creates transparency and cultivates trust which results in increased customer loyalty for the company.

British Gas leveraged its dedicated Connected Home team to create "my energy live" app which is being billed by the utility as the latest in a series of innovations designed to give customers more visibility and control of their energy use.

Source: https://www.britishgas.co.uk/smart-home/smart-meters/my-energy-use.html

2.5 Maximizing the Utilities industry's economic output (GVA)

Our econometric analysis suggests that by 2021 the initiation of the digital rotation for the Utilities industry is expected to result to a moderate increase in the economic output by 1,45 percentage points equals to approximately €67 million[4]. The projected GVA uplift is a product of macroeconomic analysis assuming a 10% increase on the industry's digital maturity (Figure 16).

Source: Oxford Economics, Accenture analysis

Figure 16: Utilities GVA Uplift as % of the 2021 GVA baseline, (Million Euros, %)

[4] 2021 Gross Value Added is calculated from Eurostat data using Oxford Economics projected growth rates. The spill-over effect to the economic performance of other industries is not included in this figure.