

Korea's future growth engine: 'Software, Advanced Manufacturing, Global Brain'

- 'The Future of Work' innovation to lead improvements in productivity and efficiency of the manufacturing/service industry
- Need to enhance 'Innovation (driven by SMEs & Start-ups), Collaboration, and Education to ensure a supply of skills to meet industries' needs'

Seoul, July 8, 2015 - GE held a press briefing at the Intercontinental Seoul COEX Hotel and introduced Korea's new growth strategies that will allow the country to play a leading role in the future. These findings were published in a report, the 'The Future of Work in Korea'. GE defines 'The Future of Work' as a future industry that is driven by innovation of the advanced manufacturing and digital technology.

Marco Annunziata, GE's Chief Economist and author of The Future of Work said, "Korea has robust infrastructure as well as advanced digital technology and excellent talent. If Korea embraces the innovation of The Future of Work, it can be a game-changer for Korea."

GE Chief Economist Marco Annunziata, Vice President at the GE Global Software Center Bill Ruh, and Global Technology Director at the GE Global Research Center Danielle Merfeld attended the briefing.

Three pillars for The Future of Work, the driving forces to change the Korean industries

The Future of Work report analyzes three major challenges for Korea: strong competition from China and other countries, sluggish productivity in the service sector, and a rapidly aging population. The report also pointed out that while Koreans are highly educated, the education system has become less effective at providing the skills that are needed in the workplace, with an emerging skills gap. Moreover, SMEs play small a role in Korea's economy as until now the innovation is led by large conglomerates, and does not encourage collaboration. Korea's total R&D spending as a share of GDP is the highest in the world at over 4%. But such strong investment in R&D is now experiencing diminishing returns in terms of productivity growth and economic activity, especially vis-à-vis a number of its global competitors.

To address these challenges and to sustain past economic achievements, GE suggests that Korea strengthens its competitiveness by focusing on the next generation of industrial progress, or 'The Future of Work'. The Future of Work is driven by three interrelated and mutually reinforcing trends: the Industrial Internet, Advanced Manufacturing, and the Global Brain. GE expects these trends to play an important role in transforming Korea's current economic situation.

The Industrial Internet, which integrates big data analytics with industrial machinery, is software technology that prevents and reduces downtime, which results in greater efficiency and productivity. For example, GE's Wind PowerUp technology delivers a 4-5% increase in annual output, resulting in even greater improvements in profitability for wind farms. In aviation, Industrial Internet solutions are yielding important reductions in fuel consumption as well as in flight delays and cancellations.

Similar gains are within reach for Korea's key industries. In 2013, Korea imported \$170 billion worth of energy; but a 1% increase in energy efficiency would save around \$1.5 billion in annual energy imports. In the marine industry, data-driven solutions will help automate certain ship functions and optimize their routes. GE's SeaStream solutions can already increase uptime by 20%, which is a tremendous benefit for marine operators who currently suffer average annual losses of \$12 million per drillship due to unplanned downtime.

Advanced manufacturing combines new materials and advanced technologies like 3D printing and industrial robots, as well as the whole business process, design, engineering, manufacturing, supply chain, distribution and services into one intelligent system. By integrating software and data analytics as well, the factory results in shorter cycle times for product development and production, and in increased speed and flexibility. GE calls such innovative facility the 'Brilliant Factory'. Korean manufacturers can introduce elements of advanced manufacturing like virtual manufacturing, advanced technologies like 3D printer, sensor-enabled automation, factory optimization, and supply chain optimization into their own processes across industries. When combined with Korea's ICT capabilities, the advanced manufacturing technology will contribute to increasing productivity and competitiveness for Korean industries. GE is already utilizing these advancements into its own operations. In healthcare, high performance computing integrates the data systems used in the product design, engineering and manufacturing stages, and reduces cycle times by 30% and costs by 15%.



The Global Brain accelerates innovation through crowdsourcing and open collaboration. This kind of collaboration model creates great opportunities for SMEs and start-ups to take advantage of.

GE encourages Korea to make use of these industrial innovations to increase competitiveness in value added industries such as marine, renewable energy, including energy storage systems and fuel cell technologies. In doing so, Korea can boost the indigenous development of technologies that are crucial to the defense and aviation industries.

The growth model for Korea's future

GE suggests three growth models for Korea to increase its competiveness in the global market and to become a leader in high-value industries.

Stronger home-grown innovation: Korea has to pursue a more SMEs and start-ups centered innovation strategy, which is traditionally driven by the large conglomerates. The Future of Work provides great opportunities for SMEs with advanced manufacturing technology, and changes the traditional concept of economies of scale.

Collaboration: The Future of Work relies on collaboration between a variety of players ranging from SMEs, big conglomerates, and academia. Korea needs to expand open collaboration in R&D and tap into a wider network of global talent. Korea also needs to nurture innovation clusters where diverse companies collaborate and look for shared opportunities.

Education: The Korean education system needs to provide talent skills that the industry needs. Universities and companies should increase engagement by strengthening on-the-job training and by facilitating the transfer of knowledge.

It summarizes that by forming a diverse collaboration ecosystem, Korea should establish a balanced industry structure centered on SMEs and start-ups. And by enhancing its advanced manufacturing capabilities with software and data analytics, Korea will be able to increase its productivity and efficiency.

On July 8th, GE held the 'GE Innovation Forum 2015' under the theme <The Future of Work in Korea – A New Strategy for Growth>. Over 800 attendees from Korean and foreign companies and academia attended the event, showing great interest in Korea's strategy for future growth and industry.

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