KPMG

Warehouse Automation: Transforming Retail

Industry focus

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KPMG in Thailand

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Warehouse Automation: Transforming Retail

Automation will play an even greater role in the warehouse of the future; and human-machine interaction is set to increase. It will become increasingly common to see scenarios such as robots collecting and depositing pallets, preparing them for shipping, before finally loading them into the back of a vehicle for delivery.

The International Federation of Robotics predicts that global robot sales will have seen an annual growth of 15% by 2018. The Internet of Things will lead to an explosion of smart production lines, feeding data back from multiple sensors to AI-enabled production control software, which will learn how to maximize efficiency and react to issues quickly as they arise.

Automated warehouses certainly seem to be the ultimate in modern distribution centers, needing very few people to operate, offering high levels of productivity (because as well as being fast, they can operate 24/7), and offsetting some of the power they use by operating in an unheated or un-cooled environment, with little – if any – need for artificial lighting.

Case study:

A large online grocery retailer in UK

Its warehouses use algorithms, machine-learning and sensors to carry items around a series of conveyor belts to pass on to human pickers to take to high-speed delivery trucks. They have also developed a warehouse which replaces this conveyor belt system with autonomous robots collaborating with each other to pick customers' groceries from a densely packed grid of crates. Furthermore, data analytics is used to predict demand and move goods into the most efficient locations.

Source: KPMG Publication – Real Estate in Digital Age, Robocalypse Now?, International Federation of Robotics, SCB EIC Analysis

Board of Investment (BOI) incentives[1]

Robotics and automation is one of the most talked about topics in various industries, especially in the e-commerce and warehousing business. These technologies can help improve supply chains in terms of quality and accuracy and, concurrently, in reducing overrun costs. Moreover, they can help manage health and safety issues in a business's workforce management.

Samples of eligible activities

Group	Eligible Activities[2]	Incentives		
		Income tax exemption	Additional income tax exemption	Exemption of import duty[3]
B2	5.8 e-Commerce	-	3 years with cap[4]	Yes
B1	7.4.1 Distribution center: DC	-	3 years with cap[4]	Yes
A3	7.4.2 International Distribution Center: IDC	5 years	3 years with cap	Yes
A2/A3	7.29 Product Development and Trade Complex[5]	8 years	3 years with cap	Yes

Consequently, the BOI have promoted the utilization of robotics and automation in the private sector, including in the e-commerce and warehousing business by incentivizing tax- and non-tax privileges (5.8), Logistic Service Centers (7.4), and the Product Development and Trade Complex (7.29). This promotion would encourage businesses and the private sector to utilize automated systems in their businesses, e.g. automated storage, automated packaging, autoloader, or silo automation, etc.

Note:

[1] These are based on Activities-Based Incentives only. There are incentives provided by the BOI Thailand subject to the eligible activities, location, criteria and BOI onditions.
[2] Other eligible activities can get a tax incentive if utilizing the robotics and automation systems in the business, which is to be considered on a case by case basis.
[3] Exemption of import duty on raw or essential materials and machinery used in manufacturing export products.
[4] The application must be submitted for additional three-year income tax exemption by 30 December 2020.
[5] The application must be submitted by 30 December 2018.

Non-tax incentives

Permit to bring in expatriates	Permit to own land	Permit to take or remit foreign currency abroad

Source: Board of Investment Thailand

"In the near future, we will increasingly see the utilization and replacement of processes with robotics and automation within the private sector, particularly BOI companies in Thailand. This of course includes the warehousing business as well. However, one of the questions is how Thailand will solve the decrease in tax revenue from employment and the expected rise of the unemployment rate when robotics and automation gradually replace human labor. Another question is whether the robot tax will be necessary in Thailand, or whether other tax measures will be introduced to limit investments in automated machines and strike a balance between human labor and robotics and automation when there is an over-use."

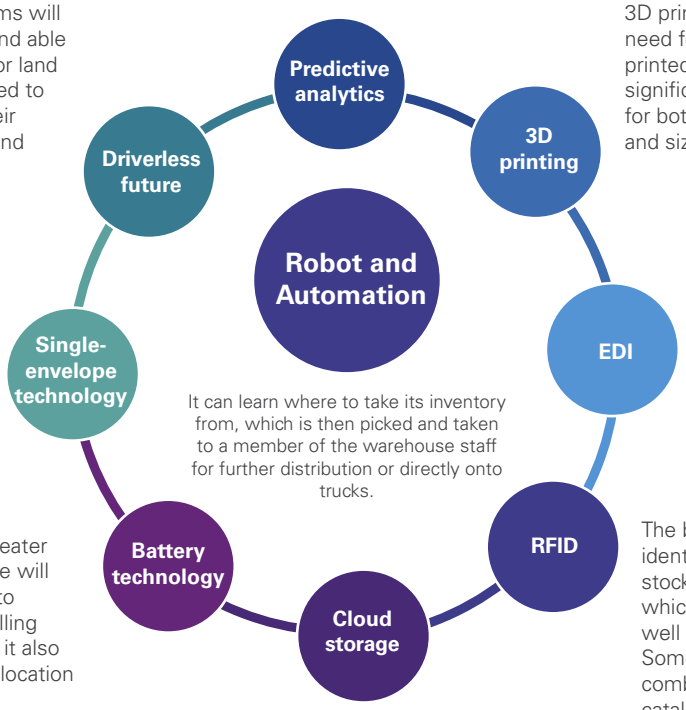
Auaychai Sukawong
Director, Tax and Legal
KPMG in Thailand

Key technologies applied in an automated warehouse

As part of their efforts to offer better value to consumers, retailers are employing predictive analytics to better manage stock and reduce wastage.

With autonomous vehicles, firms will be less restricted by location and able to move to areas where labor or land is cheaper. Businesses will need to assess whether to relocate their warehouses to cheaper land, and where this happens.

3D printing may reduce occupiers' need for space as parts can be printed on-site. This could have a significant impact on the demand for both retail and warehouse space, and size of units required.



By utilizing composite panels in the construction, energy efficiency, air-tightness and durability are increased. These are key benefits, especially for cold storage facilities.

Electronic Data Interchange (EDI) technology allows for sharing of documents, with a shared format, between two computer systems. This leads to the seamless and highly visible flow of information between two different computer systems.

Battery technology allows for greater automation as the energy source will be local and affordable enough to offset the upfront costs of installing automated systems. Moreover, it also allows for great flexibility in the location of warehouses.

The benefits of Radio-frequency identification (RFID) include greater stock visibility and transparency, which offers ease of inventory as well as a reduction in theft. Sometimes, drone tech is combined with RFID for inventory catalogue at a much faster pace.

Cloud storage can cut down on maintenance, infrastructure and labor costs that come from the installation and upgrading of warehouse management systems.

Source: KPMG Publication – Real Estate in Digital Age, ITE Transport & Logistics

Robot-friendly design	Energy requirements	Location	Flexibility
Developers also need to consider how technology will impact warehouse design, with racking automation.	For an autonomous warehouse, renewable energy sources and rechargeable batteries represent one of the best contemporary solutions.	With speed of delivery becoming increasingly important, we will see more urban hubs and larger regional distribution centers.	Firms will also require more flexibility in their leases to be able to adjust their warehouse footprint to evolving needs.

Key challenges

Cost and complexity	Cost and complexity of technology investment might discourage companies, particularly SMEs, from investing in new technologies. However, the real risk might not be from a technological investment that fails to profit, but rather from a failure to invest in competitiveness-enhancing technology.
People and structure	Employees need to develop new skill sets. In addition, organizational restructuring might be required in order to enhance decision making, particularly in the case of an SME, where a single individual often makes most of the decisions.
Risk management	In addition to technological change, other disruptions, e.g., natural disasters and cyber-security attacks, will play a greater role in transforming supply chains in the future. System maintenance is important, especially for IT systems, to prevent cyber-attacks like the WannaCry incident in 2017.

Source: SCB EIC Analysis

"The continuous trend of consumer spending towards online retail has significant impact on the logistics industry. The speed of delivery is becoming increasingly important. The automated warehouse is a solution to leaner, faster and more efficient processes, as well as the avoidance of expensive retrofitting or building obsolesce. There are many key technologies and key success factors to driving decisions around the location, size and design of warehouses. Cost, people development and risk management are key management challenges to consider."

Thanit Osathalert
Partner, Audit
Retail
KPMG in Thailand

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KPMG member firms provide a wide-ranging offering of studies, analysis and insights on the consumer and retail industry. For more information, please go to kpmg.com/th/consumer-and-retail.

FMCG and retail value chains
Shoppers, consumers and regulators are demanding ever more transparent product and value chain information. They want it in a digital format underpinned by data, in real time and at more granular levels. It will become imperative that the information is correct and consistent throughout the many sources of access available to consumers.

Robocalypse Now?
Picture the scene: armies of robots operating in industrial production lines, running day and night, performing the same repetitive tasks their programming dictates as their human masters look on. No, this isn't science fiction, but the reality of the modern production line, and a scene we're now very familiar with.

Retail think tank annual review 2017-2018
After a better-than-expected Christmas, the noticeable sigh of relief among retailers was quickly replaced by a large intake of uncertainty facing the year ahead. Also, the cost implications of building a truly omnichannel business model conspired to suggest that a bumpy ride was in store for the industry in 2017.

Annual Retail Survey 2018
Now in its fourth consecutive year, the KPMG Annual Retail Survey looks at the buying, returns and brand experience of over 1,600 KPMG employees in their capacity as consumers. Their insight gives us a clear customer perspective of the UK's shifting retail eco-system throughout Black Friday and the festive shopping period, and their experiences at every stage of the customer journey – whether they chose to buy in-store or online.

Click on the links above to access the publications.

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