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Research

Warehouse Automation in Malaysia

Challenges faced by industry players



Introduction

Economies and investors worldwide are increasingly concerned with human rights and improvements of Environmental, Social and Governance (ESG).

In recent years, several companies have incurred investment losses over alleged poor labour welfare. It is now certain that improving this situation is—among others—a matter of business continuity.

For many businesses and employers, improving workers welfare may require higher revenue generation which can be achieved via more-efficient operations.

In the logistics sector, a solution that has always been an option is adopting warehouse automation.

Yet, the adoption rate in the sector leaves much to be desired. JLL highlighted in our recent article that more than 80% of warehouses today have no automation whatsoever.



Automation undoubtedly brings with it improved financial gains. At least 5% - 7% revenue growth is recorded by companies as a direct result of the automation they adopted.




In the logistics sector, revenue boost is around 10% - 20% per square foot of space, particularly those used for e-commerce operations.

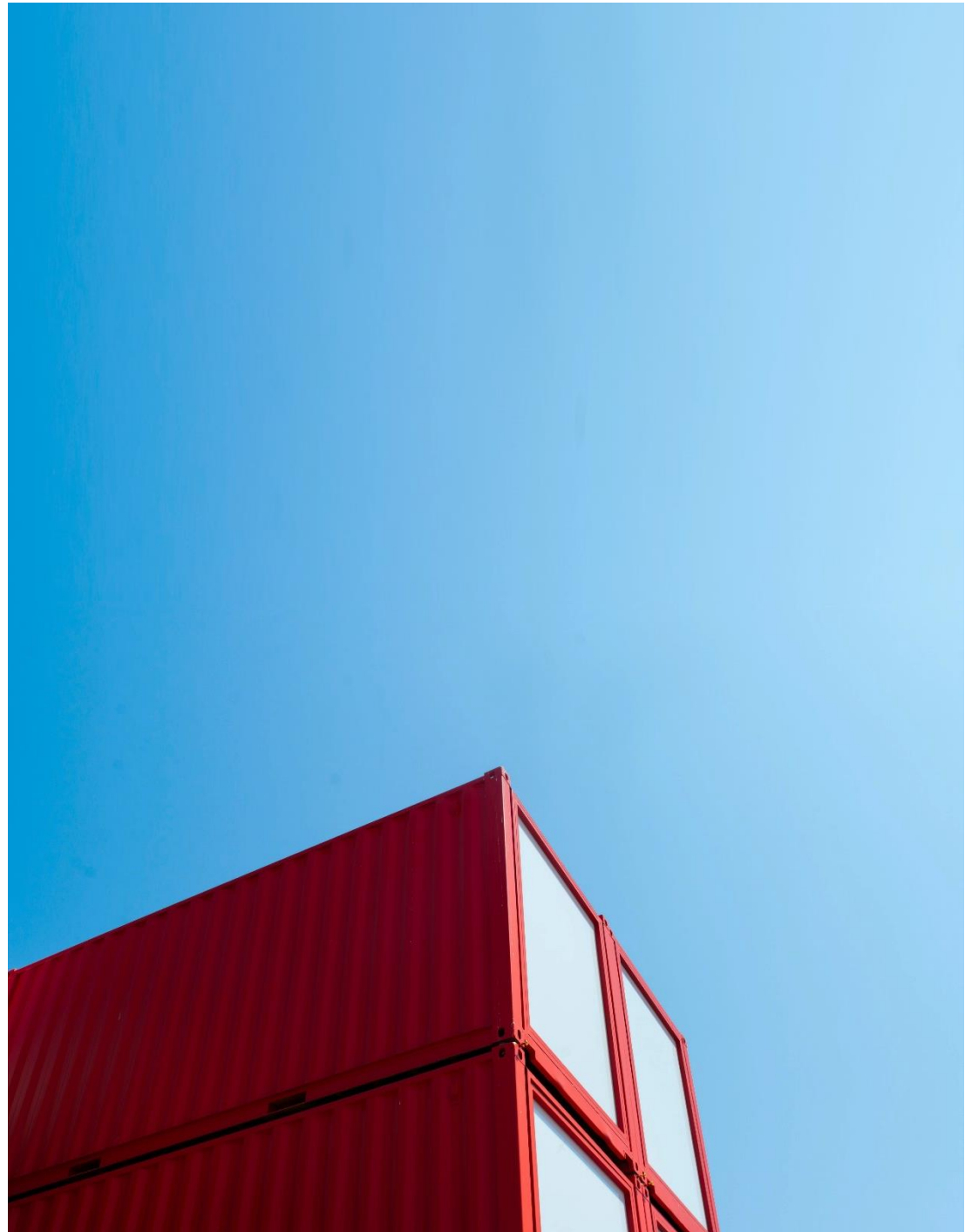
The benefit of industrial automation in Malaysia has been very apparent. From having 25 factory automation companies in 2010 with a total market value of MYR 234 million, the number grew to more than 50 in 2020, with the top 10 companies alone having total market value of more than MYR 25 billion.

Challenges

Despite the clear advantages, the low adoption rate for automation begs the need to investigate the potential hurdles and challenges faced by industry players.

We lay out three in this paper:

-  **Challenge 1:** Low Familiarity with Warehouse Automation's Flexibility
-  **Challenge 2:** Misconception on Adoption Cost
-  **Challenge 3:** Talent Shortage



Challenge 1: Low Familiarity with Warehouse Automation's Flexibility

The agility or flexibility of warehouse automation is highly important for both the developer/ facility provider as well as for the occupier.

We observed that some industry players are yet to be familiar with the flexibility and the wide variety of warehouse automation types.

A flexible automation will enable the developer to have wider target occupiers as well as to pivot relatively easier following the changing trends in the future.

Similarly, occupiers will also need their operation to be able to evolve and keep up with the ever-advancing technology.

Automation in the logistics sector is highly flexible as it comes in numerous types and scopes. Varying levels of adoption can therefore be decided depending on the logistics operations' needs.

Here, we discuss the variants that can be adopted by logistics players.

In general, the two main categories of automation in a warehouse are

- i. physical automation, and
- ii. non-physical automation.

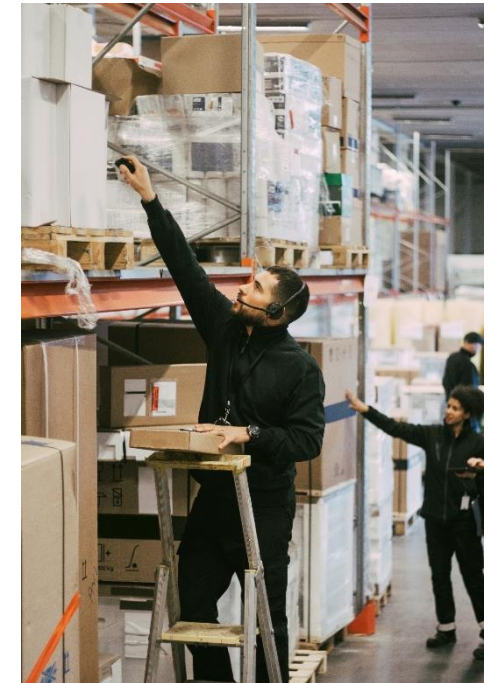


▼ Physical automation

- This includes the usage of robots for physical logistics activities such as picking, sorting, transporting and storing.
- Examples include programmable machines in the forms of carousels, Automated Guided Vehicles (AGV), Autonomous Mobile Robots (AMR) and Automated Storage & Retrieval Systems (ASRS).
- The likes of AGVs and AMRs are mobile and modular while ASRS involve a sophisticated racking system, complete with arms or conveyors among others.

▼ Non-physical automation

- Typically comes in the form of software such as warehouse management system (WMS).
- This system may offer automation based on certain algorithms and sensors in the warehouse, observing both the inventory as well as the workers (be it humans or robots).
- In addition, a “semi-physical” system is also offered such as light-picking or voice-picking systems whereby human workers are guided by the system via audio or visual in the logistics operation.

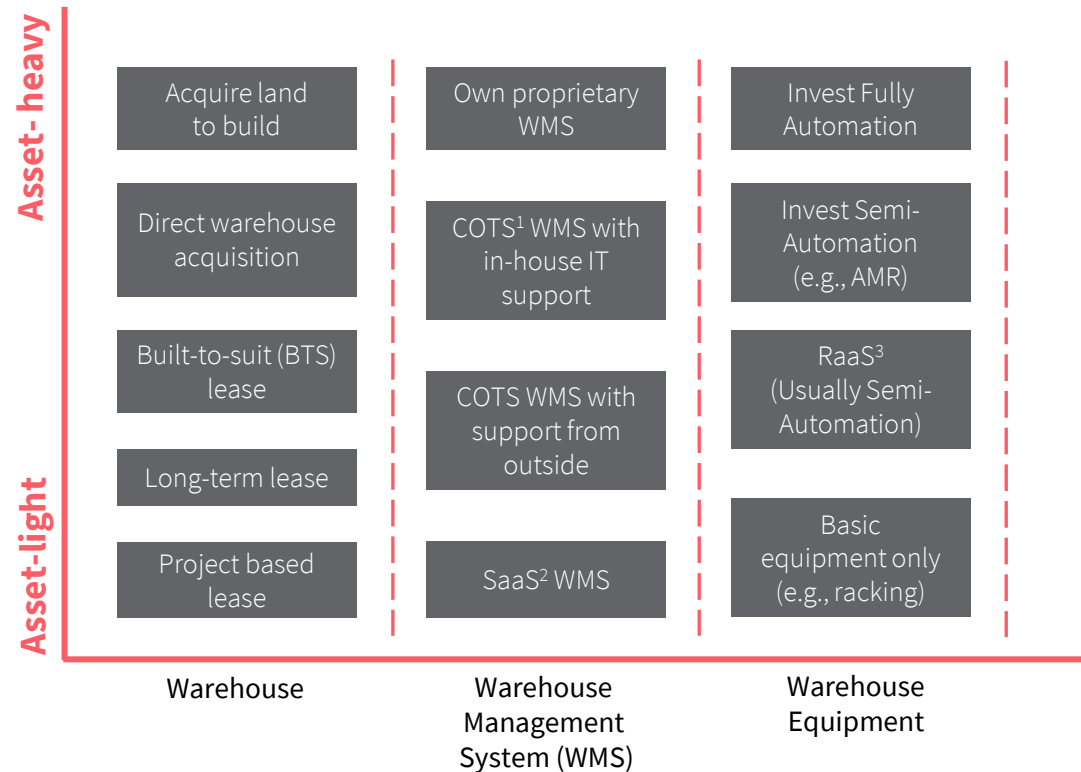




Both the physical and non-physical automations come with varying degree of services and types. Logistics players can choose depending on whether their operations is asset-light or asset heavy.

For example, ASRS warehouse is typically for asset-heavy logistics, while modular machines such as AGVs and AMRs can also be suitable for asset-light operations.

For high throughput or smaller operations, WMS and voice/light picking systems can be considered.



¹ Commercial off-the-shelf

² Software as a Service

³ Robot as a Service

Challenge 2: Misconception on Adoption Cost

As adopting automation is a significant commitment for the logistics players, especially in terms of capex, maintenance and operation management, it is important to quash the misconception that it always come with steep costs. The varying scales and types of warehouse automation as previously shown accordingly means adoption cost varies as well.

Systems that require physical installation and fittings and are non-modular such as ASRS will comparatively have higher price tag. As an example, ASRS adopters can potentially be looking at a cost of between MYR 800 to MYR 1,500 per pallet position.

Case in point, a manufacturing plant in Selangor paid MYR 78 million which translates roughly into MYR 1,560 per pallet positioning. Separately, a distribution hub—also in Selangor—invested MYR 199 million for ASRS, translating to about MYR 925 per pallet positioning. For the other ASRS adopters throughout Malaysia, we estimate the cost for many of them to be in the similar rate as well.

For mobile or modular robots, the cost can be much lower i.e., in the tens of thousands of ringgit depending on the robot models, service offered and complexity.

Non-physical automation, such as those provided by WMS, has even lower price tag, i.e. few hundred ringgit depending on the service and package offered (such as license types, number of users, etc.).



Challenge 3: Talent Shortage

Some of the highest barriers to adopt warehouse automation are the skills gaps in the labour market and the inability to attract specialized talent.

We indeed have room for improvement in talent upskilling. Instead of only one party, this effort should be supported by the government, the industry and by society or workers.

▪ **Government**

From the government side, training has been encouraged and incentivized. For example, the Human Resource Development Corporation (under the Ministry of Human Resources) offers funding aid for training course on automation and other tech-related training courses (e.g., cloud computing, autonomous system, etc.).

▪ **Industry players**

Logistics operators can capture the training incentives opportunities provided in order to empower their staffs in automation.

Providers of warehouse automations typically offer IT supports, maintenance service, aftermarket service, etc. as parts of their package, which can be utilized by operators as a learning steppingstone in growing their in-house talents.

JLL Research has been working closely with an ASRS warehouse developer and operator where in their upcoming operation, local talents will be trained to be the main operators of the system.

▪ **Workers**

As time goes, the cost of technology and automation is set to normalize and moderate, while labour cost will potentially increase, partially due to the heightened awareness of labour welfare. Workers will thus need to upskill in order to safeguard their employment.

Celebration of higher profit in automated logistics operations by highlighting reduction of workers should be balanced with reporting automation-related job creations. This is to assure the workers that job elimination will be offset with the need of new talents in warehouse automation.



Additional Consideration: Healthy Growth & Sustainability

There are several other matters worth to be considered when adopting and improving warehouse automation.

- **Job creation vs. Job loss**

More studies and clear indications are needed in demonstrating the fact that equal or more new jobs can be created with the adoption of warehouse automation compared to the loss of certain jobs.

Thus far, reports on reduction of workforce due to automation has been more apparent than the new jobs it reportedly needs. While this may be of little concern to many warehouse operators, it can understandably cause discontent among workers.

- **Energy efficiency**

The adoption of warehouse automation means increased usage of energy to power the machines. Green and renewable energy need to be the main source of power for automation in order to achieve a sustainable technology utilization.

- **Collaborative system**

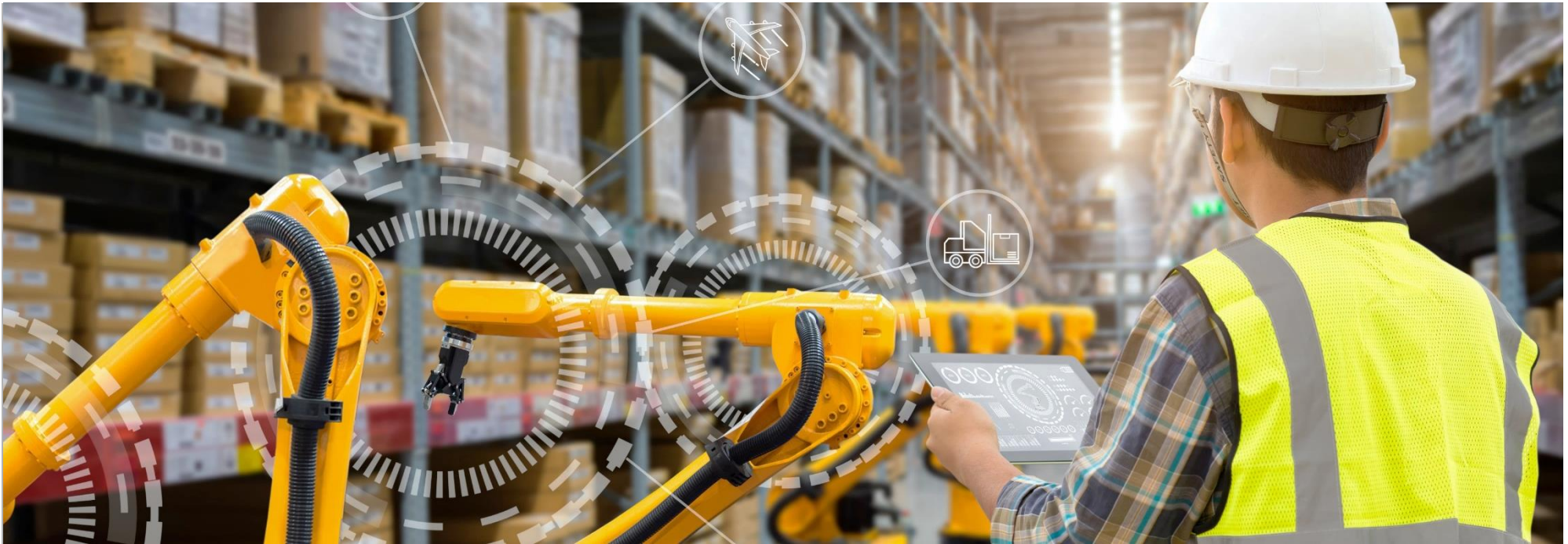
Consideration can be given towards focusing on semi-autonomous systems and collaborative robots (or ‘cobot’).

These types of automation can potentially reduce the risk of job elimination as human staffs will still be needed, all while still enjoying the boon of automation e.g. faster operation and less human-error.

- **Workers’ experience**

Logistics businesses can enjoy higher productivity and thus revenue with the adoption of automation.

On the other hand, workers can enjoy a safer workplace and less strenuous works. On top of this, boon from automation has the potential to be trickled down further to the workers, such as higher wage or lesser working hour.



Conclusion



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The low adoption of automation despite its advantage in the logistics sector demonstrates the reality of the challenges faced by industry players.

While the push factor has been apparent, such as the government's incentives and foreign investment's directive, the pull effort by warehouse operators has significant opportunities for improvement. Increasing the awareness on warehouse automation and eliminating misconceptions can potentially improve this situation.

Going forward, the three main parties i.e. the Malaysian government, the logistics industry, and the workers will have to play their significant roles in order to have higher adoption rate of automation in the sector.

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