

An Analysis on the Intelligent Automation Demands of Taiwanese Companies in Southern China

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Abstract: To comprehensively elucidate the intelligent automation (IA) demands of Taiwanese companies in Southern China, the researchers administered a structured questionnaire to Taiwanese companies invested in Dongguan region, which was one of the earliest regions to undergo economic reform. A total of 30 valid questionnaires were recovered. Research findings showed that most responders are medium- and large-sized enterprises with production plants in Mainland China. The research also revealed that the higher levels of IA are in the processing, assembly, securing (e.g., tightening screws/fixtures), and quality assurance processes under the category “Manufacturing”, and the hardware connection (connecting computer and equipment) and software integration (i.e., MIS, MES, and ERP, among others) processes under “System Integration”. The majority of these processes possess corresponding mature solutions. The core issues are maintaining production flexibility and reducing payback periods.

Keywords: Intelligent automation, Taiwanese company in southern China, market analysis

Introduction

Southern China was one of the first regions of China to undergo economic reform. It is the second largest area in China for Taiwanese investors. The majority of the Taiwanese companies in this region are traditional industries, including apparel, footwear, bathroom hardware, and electronic components, among others. In the past, these companies primarily utilized labor to actuate production flexibility. However, with increasing labor costs and plummeting immigration of workers, companies now turn to intelligent automation (IA) solution.

Methodology

The researchers of this study selected Dongguan City in the Guangdong Province of China as the research region, because Guangdong Province was the first region to undergo economic reform. In addition, this region received 126 investment cases in 2013, ranking Guangdong Province the region with the most Taiwanese investment cases in China.

The researchers administered an IA questionnaire to members of the Dongguan Taiwanese Business Association (DGTBA), and 30 valid questionnaires were recovered. The content of the survey comprised members’ basic demographics and the current level of IA, etc.

The data collected from the Taiwanese companies in Southern China indicated that the majority of the companies were involved in 3K production (40%), followed by consumable electronics companies (33%). In addition, the majority of the companies were large-scale companies with a capital exceeding NT \$80 million (46%) and demonstrated a scale of operation with over 200 workers (69%), highlighting the representativeness of the responding companies.

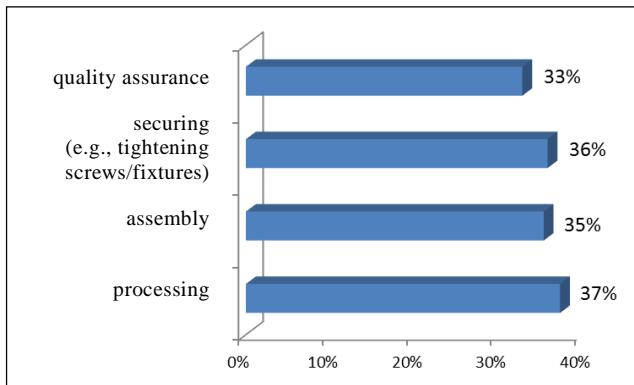
Findings

1. “Manufacturing” IA

The researchers characterized “Manufacturing” IA into four types, specifically, “processing,” “assembly,” “securing (e.g., tightening screws/fixtures),” and “quality assurance.” A total of 30 valid questionnaires were recovered.



Findings showed that “processing” was the type with the highest level of IA among the Taiwanese companies in Southern China (37%). Processing is the fundamental type of manufacturing. Numerous items in this type are 3K processes and exhibit recruitment difficulties. The levels of IA for the remaining types of manufacturing IA, specifically, “securing (e.g., tightening screws/fixtures),” “assembly,” and “quality assurance,” were 36%, 35%, and 33%, respectively. These percentiles are correlated to the development of immigration of labor in Central and Western China, as shown in Fig. 1.



Note: 1. N=30; multiple choice;
 2. Percentile = Number of Reactions / Number of Valid Samples

Source: ITRI IEK (09/2014)
 Figure 1. The “Production and Manufacturing” IA of Taiwanese Companies in Southern China

2. “Material Handling” IA

The researchers characterized “Material Handling” IA into four types, specifically, “transporting,” “storing,” “packaging,” and “loading/unloading.” A total of 30 valid questionnaires were recovered.

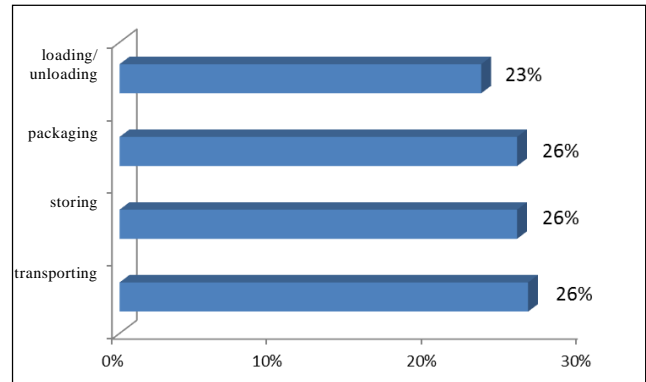
Findings showed that “storing,” “transporting,” and “packaging” were the stages with the highest levels of IA among the Taiwanese companies in Southern China (26%), followed by “loading/unloading” (23%). These processes are relatively simple but are prone to work injuries. Thus, automating these processes would be extremely beneficial to the production plants. The core issue is to satisfy the demand for production flexibility, as shown in Fig. 2.

3. “System Integration” IA

The researchers characterized “System Integration” IA into two types, specifically, “hardware connection (connecting computer and equipment)” and “software integration (i.e., MIS, MES, and ERP, among others).” A total of 30 valid questionnaires were recovered.

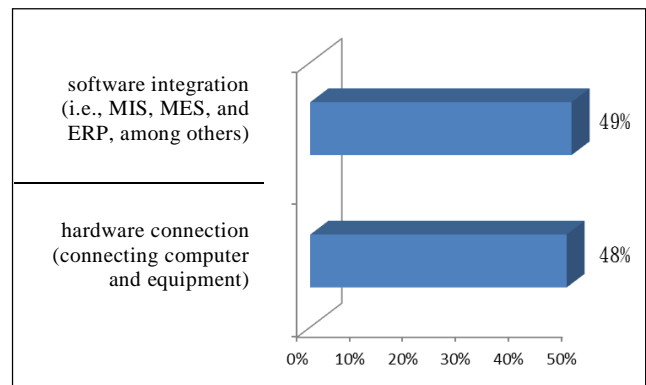
Findings showed that “software integration (i.e., MIS, MES, and ERP, among others)” was the type with

the highest level of IA among the Taiwanese companies in Southern China (49%), followed by “hardware connection (connecting computer and equipment; 48%). There are no significant differences between the two types. These processes are not the primary processes of manufacturing, but are the important tools in production management for providing more manufacturing information and effectively resolving production problems, thereby improving production quality, as shown in Fig. 3.



Note: 1. N=30; multiple choice;
 2. Percentile = Number of Reactions / Number of Valid Samples

Source: ITRI IEK (09/2014)
 Figure 2. The “Material Handling” IA of Taiwanese Companies in Southern China



Note: 1. N=30; multiple choice;
 2. Percentile = Number of Reactions / Number of Valid Samples

Source: ITRI IEK (09/2014)
 Figure 3. The “System Integration” IA of Taiwanese Companies in Southern China

Conclusion

Southern China was one of the first regions of China to undergo economic reform. It is the second largest region for Taiwanese investors. The majority of the Taiwanese companies in this region are traditional industry manufacturers. In the past, these companies primarily utilized labor to actuate production flexibility.

However, with increasing labor costs and plummeting immigration of workers, companies now turn to IA solution.

Research findings revealed that the higher levels of IA are in the processing, assembly, securing (e.g., tightening screws/fixtures), and quality assurance processes of under the category “Manufacturing”, and the hardware connection (connecting computer and equipment) and software integration (i.e., MIS, MES, and ERP, among others) processes under “System Integration”.

The majority of these processes possess corresponding mature solutions. The core issues are maintaining production flexibility and reducing payback periods.

Moreover, the rapid development of Chinese manufacturers has heated up the competition for the Taiwanese companies in Southern China. Thus, regaining competitive advantage by improving quality, developing brands, providing customized products, or offering added value is an operational facet that should be extensively discussed.

