

# A Preliminary Study on Industry 4.0 as a platform for University-Industry Collaboration

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**Abstract:** This is an organizational study on a group of companies which are vendors to Original Equipment Manufacturer (OEMs) in the automotive industry in Malaysia. The writer seeks to study on significance of Industry 4.0 in the collaboration between the university and industry. Key personnel from selected subsidiaries of this group of companies were given questionnaires to provide answers on the reasons and advantages in collaborating with universities, models of relationship, the projects developed with the universities and lastly the status and successes working with the universities. The main reason for the industry to work with the university in Industry 4.0 is that the latter has the latest knowledge in this field, they make the best partner and offers advantages such as flexibility and customisation to meet the industry's requirements. Universities' most attractive in feature in collaboration is that the knowledge can be shared and they are able to provide assistance in getting grants. The current mode of relationship is universities engaged as consultants and many believed that partnership would be the best form of relationship between the industry and the universities. Automation and Artificial Intelligence are mostly the projects being developed. The current success rate is only slightly more than 50% with the main challenge being the universities' inability in keeping the same speed with the industry. However, despite the challenges, Industry 4.0 is still deemed as the best platform for university-industry collaboration.

## 1. Introduction

The automotive industry started with Proton was the brainchild of Tun Mahathir's vision of an industrialised Malaysia. The 'Look East' policy has chosen Japan as the obvious model for the development of our national car. Since then, local vendors for our automotive industry have been partnered with Japanese vendors via Technical Agreements being the most popular means of collaboration [1].

The universities have always been in the background to support this industry especially in providing the relevant academic curriculum and skilled manpower. However, it has always been perceived that the industry is more knowledgeable in manufacturing as compared to the universities very much due to the training and knowledge transfer of the industry's foreign technical partners namely the Japanese. Hence, most multinational companies are not interested in investing or collaborating with local academia, as they perceive them as poorly prepared to handle challenges posed and possessing the adequate skills required by the current knowledge economy [2].

The nearly 40 years of collaboration with Japan which includes the procurement of tooling and machineries have further reinforced the knowledge, culture and values of Japanese style manufacturing and more importantly, the Lean concept. Even though Proton has since been acquired by Geely of China, the legacy of Lean lives on in the second national car Perodua. The Japanese influence in manufacturing is still very much alive [3].

Hence, it is deemed quite challenging for collaboration between the automotive industry and the university to be intensified through sharing of knowledge whereas if based on the present traditional platform of Lean Manufacturing; the industry is seen to be more advanced in terms of operational production knowledge as compared to the universities. Other collaborations such as a supply of workforce do exist although criticism of the new recruitment basic knowledge is still not at par with the industry's expectation [4].

There is also a mismatch between university's innovations and the industry's actual requirement. Although there are efforts in trying to narrow these gaps, the initiatives are still ongoing [5].

The advent of Industry 4.0 has created interest and promises improvement in manufacturing productivity and reduction in costs. However, its seemingly high investment potential and being a disruptive technology in nature has resulted in its slow adoption and certainly has made the vendors cautious in committing to its implementation [6].

## 2. Industry 4.0 in the automotive manufacturing

The Japanese came with their manufacturing knowledge and culture; with Lean Manufacturing being the most prominent manufacturing process based on an ideology of maximising productivity while simultaneously minimising waste – Muda, Mura and Muri. Muda means wastefulness, uselessness and futility, as opposed to value-addition. Mura means unevenness, non-uniformity, and irregularity. Lastly, Muri means overburden, beyond one's power, excessiveness,