Future-ready graduates for Industry 4.0: Transformations of mindsets and competencies of the construction industry

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An issue of employment is the disparity between the expectations of employers and the ability of future graduates to meet these expectations. Industry 4.0, categorised by technologies such as big data and automation, permeates the construction industry, exacerbating the rift that future graduates have to bridge (Sarmadi, 2014; Frey & Osborne, 2013). This results in graduates being ill-prepared to handle the demands of the industry. Thus, soft skills are needed to support, materialise and enhance one's existing technical skills. Despite this problem, there is little research about the future mindsets required by the workforce to prepare graduates for impending changes. Moreover, the government's and companies' one-sided focus on promoting skills upgrading leaves many to wonder about the soft skills needed to stay competitive and the approaches to enhance them. The study focuses on the local construction industry that has been traditionally slow at matching technological advancements, made worse by its inherently fragmented nature.

An adapted framework from the SERVQUAL model for service quality, USEM employability model and concepts from the Theory of Planned Behaviour (TPB), is used. Nine essential soft skills — Resilience, Curiosity, Adaptability, Insight, Empathy, Emotional Sensing, Entrepreneurial Thinking, Pursuing Convictions and Vision — for Industry 4.0 identified by the Centre of Future-Ready Graduates (CFG) were used to craft the survey (Lew et al., 2018). Following this, drivers, barriers and solutions to improve significant soft skills divides were explored through interview sessions with future graduates.

Gap and t-test analyses based on the survey results from 30 employers and 33 Year Four students from the B.Sc. (Project and Facilities Management) programme at the National University of Singapore (NUS) concluded six significant discrepancies amongst the nine soft skills—Resilience, Curiosity, Adaptability, Entrepreneurial Thinking, Pursuing Convictions and Vision—showing a significant difference between the mean expectations of employers and soft skills capabilities of Project and Facility Management (PFM) students.

Results suggest that students are unprepared to meet the needs of the industry. Therefore, teaching of soft skills has to take a higher priority in the curriculum. University education could incorporate soft skills training as an essential part of the curriculum. The importance of soft skills development could, therefore, be highlighted to professors as well so that they actively embed this belief into lessons. Additionally, academics could work closely with students to identify developmental opportunities. Mentorship programmes can be implemented for professors to share industry experiences or knowledge on a specific interest one-to-one.

Thirdly, the University may consider increasing internship opportunities, exchange programmes, leadership opportunities and case competitions for students to work on particular soft skills such as Curiosity, Vision or Adaptability. Fourthly, students could be more proactive in seeking opportunities to obtain advice and understand their potential employers' expectations by participating in networking sessions. Fifthly, students could be encouraged to step out of their comfort zone and pursue their interests by enrolling in the Co-Curricular Activities (CCAs) as they aid in character development. CCAs could hence be more actively promoted, especially to freshmen so they would be aware of the opportunities available. The University could also work with students to sustain the diverse choices it has to fulfil most needs. Lastly, education institutes are recommended to promote CFG's workshops more actively as many students are unaware of the programmes offered. Perhaps CFG could work closely with various faculties to tailor programmes that target specific soft skills development.

The study commenced with identifying the nine soft skills that employers across the construction industry value for Industry 4.0 and analysed the gaps between the current state of soft skills students possess and their employer's expectations. After which, recommendations are made for educational institutions to work together with students to remain competitive in the future workforce.

Keywords

Industry 4.0, the construction industry, educational institutions, employability, soft skills

References

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