



**SmartClean Technologies:
Disrupting the Cleaning Market
of Today**

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SmartClean, founded in 2017, is a Singapore-based technology start-up that develops sensors which monitor the cleanliness of commercial properties and sends alerts to cleaners in real-time. The company is headquartered in Singapore with a 12-member team, along with an international presence in India and Dubai. The company is slowly entering the markets of Australia, Malaysia and Indonesia.

In 2017, the CEO and Founder of SmartClean, Mr Lav Agarwal, was pursuing a PhD in Electrical and Electronics Engineering from Nanyang Technological University. At that point in time, Mr Agarwal, an engineering by training, had a very limited understanding of the cleaning industry in Singapore and how cleaning should be done. Together with his company co-founders, Ms Stella Aw and Mr Abhishek Mishra, Mr Agarwal was convinced that the team could come up with solutions to issues related to sanitation as well as the high employee turnover of the cleaning industry through Internet of Things (IoT) technology and robotics automation. Such ambitions were driven with an "end in mind" attitude within the team to equip facilities management and cleaning companies with the tools and know-how in improving efficiency, with a focus on achieving productivity through effective manpower allocation. With Ms Stella Aw's prior experience in operating a family-owned cleaning business called 'Spotless', the team also conducted an in-depth market analysis to define and address the key problems in the cleaning industry.

Following successful testing of established prototypes in key projects, such as the JTC Summit (Singapore), JLL Accenture (India), and other facilities management companies, the first commercial version of SmartClean's solution was officially introduced in 2018.

This Feature No. 4 of the SBF Company Case Study Series looks at how SmartClean uses technology to differentiate its offerings, and adopts a calibrated approach when internationalising to better manage its risks when expanding to other markets.

¹ This case study is written by Yvonne Chiang. It is a publication of the Research & Publishing Department, Strategy & Development Division. This case study does not reflect the views of the sponsoring organisation nor is it intended to suggest correct or incorrect handling of the situation depicted. The case study is not intended to be a primary source of data. The company featured has consented to the publication of the study. References and sources are duly cited in footnotes.

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Technology-Driven Solutions

The problems faced by the cleaning industry include, amongst others, high employee turnover rates, shortage of cleaners, manual work schedules, lack of effective quality assurance systems and processes in place to deliver cleaning solutions, as well as the absence of a data-driven approach in tracking and monitoring performance trends. Moreover, the cleaning industry is crowded and competitive. Therefore, it is imperative for companies to outpace the competition by leveraging technology as a critical innovation driver while maintaining a core emphasis on customer needs — both now and in the future.

How does SmartClean leverage technology to solve these industry problems and differentiate the company and its processes while saving money by reducing time and resources without sacrificing quality service? SmartClean offers a game-changing approach for facilities cleaning, especially toilet cleaning with its ‘SmartToilet+’ solution. Under the ‘SmartToilet+’ solution, SmartClean offers real-time monitoring of its customers’ facilities using a range of its patented sensors mounted around the toilet. Like a "virtual cleaning supervisor", ‘SmartToilet+’ takes on a proactive and on-demand approach rather than reactive cleaning routines. The sensors track everything from air quality, moisture level, dispensers, footfall, and also collect valuable input from users through feedback modules. The system uses intelligent algorithms to alert cleaners if any problems occur so that they can be resolved quickly and efficiently. The Workforce Management System, specifically designed for managers, is another solution adopted to identify alerts sent by sensors and whether the alerted issues are being addressed by cleaners. The information makes the management of the workforce facile and optimises the use of the workforce, saving time and cost.

The end-to-end IoT & AI-based solutions enable data-driven cleaning operations and helps maximise overall manpower savings with increased efficiency and productivity. These solutions improve service quality and reduce negative user feedback and alerts, ultimately reflecting improvements in cleaning quality².

Market Entry via the Setting up Subsidiaries Setup vis-à-vis via Channel Partners

Within 3 years of its inception in 2017, SmartClean already has an international presence in India and Dubai. SmartClean is currently in the process of entering the markets of Malaysia,

² <https://www.smartclean.io/cases.html>

Indonesia and Australia. Other than having a local office set up in India, all of SmartClean's other market presence is managed via a channel partner model. Currently, India is one of the biggest markets for SmartClean.

Setting up a local team in India one and a half years ago did not come easy for SmartClean. A simple incorporation to get the company's name licensed without breaching trademarks took a substantial 6-months. In Australia, SmartClean utilises the Market Readiness Assistance (MRA) Grant of Enterprise Singapore (ESG) to set up a local subsidiary. This helps to fast-track the company's operations given the ready customer base in the market, highly educated workforce, and almost similar business regulatory environment to Singapore.

In Dubai, however, SmartClean opted for a simplified model of entry by partnering with Farnek, one of the top 10 facilities management companies in Dubai³. SmartClean is in the process of establishing its presence in Malaysia and Indonesia by choosing its entry through the channel partner model. Apart from the proximity of these countries to Singapore, the decision was also driven by SmartClean's Singapore partners already having an established market presence in these countries. By relying on the partners' experienced and established local knowledge and insights, SmartClean can then tap into these local markets as quickly as possible.

There are many "data" points for SmartClean to consider and weigh the risks in respect of its decision regarding the optimal entry model when expanding into new geographical areas (i.e. whether to operate via the establishment of subsidiaries or use a single and/or multiple channel partners model). External factors such as market competition, ability to meet consumer needs and demands, and legal and political risks all play a role in the decision-making process. Market entry via the channel partner model is one approach a small firm like SmartClean can 'de-risk' its new market entry, by reducing the costs related to starting up and implementation.

For SmartClean, the main determinant of the success of the channel partner is 'partnership with a shared goal' rather than technology. It is difficult to predict with confidence whether every partnership will work out, except through trial-and-error. Every business has unique strengths and honing the right collaboration approach to those strengths is important as SmartClean weighs its choices and considers important factors when selecting the right channel partner. Aside from taking into account factors such as the partner's strong reputation and its track record of performance within the industry, SmartClean also evaluates the quality of service and

³ <https://www.bayut.com/mybayut/best-facility-management-companies-dubai/>

operations of its partners based on the services it can deliver, ability to facilitate deployment and the supporting of maintenance activities.

No ‘One-Size-Fits-All’ Solution When it Comes to Internationalisation

Getting into the right market is important, even more so for a technology start-up. SmartClean considers several strategic decisions before it acts to expand abroad. One of these is identifying ready customers in the right market that is worth tapping into. As emerging technologies become part of the innovation landscape, the success of technological start-ups depends on how the capabilities of such innovations are perceived and what is needed for the company to grow and be ready when entering the market. With each market presence, distinct market challenges await SmartClean.

In markets such as Singapore and Australia, which are often at the forefront of technology adoption, it is easier for SmartClean to push its solutions to customers, given the high labour costs, foreign labour dependence and high turnover of the industry. From an investment perspective, expanding to markets with higher labour cost also means better rates of return for SmartClean.

Compared to markets with lower labour costs and where the state of ongoing technological progress is slower, different sets of challenges present themselves. In markets such as Malaysia, India and Indonesia, it takes far longer for SmartClean to gain foothold. Often, more project trials are needed in these markets to demonstrate how SmartClean's solutions can bring value to the optimisation of manpower, and enable cost-savings and the efficient distribution of resources, so as to convince and justify market buyers' decisions on investing in costly IoT systems and smart solutions.

Being Cognizant of Labour Market Considerations Locally and Abroad

Globally, the cleaning industry has always been labour-intensive, with high employee turnover rates and the need to attract new workers to keep up with the turnover rate. Especially in Singapore, with a small domestic population, this has led to a greater reliance on foreign labour. Given the social stigma and negative perception that cleaning is not a skilled job, it is also a challenge for companies to attract younger workers to the cleaning industry where there is little job satisfaction and opportunities for advancement.

One of the challenges SmartClean faces in implementing any project is the lack of skills as a large proportion of the cleaning workforce is not tech-savvy. In India, for example, just 4.7% of its workforce is formally skilled⁴. This has raised concerns as low-skilled workers are increasingly being displaced by an increasing reliance on automation, robotics, and machine learning. As such, bridging the skills gap by retraining, to keep pace with the adoption of technology, becomes increasingly important and necessary.

In Singapore, the government has been encouraging companies to adopt technologies that will help increase operational efficiency and productivity, as part of efforts to make the cleaning industry manpower-lean⁵. Correspondingly, to bridge the skills gap and sustain worker employability, the WorkPro Job Redesign grant by Workforce Singapore has been introduced. This complements the Environmental Services Productivity Solutions Grant (ES PSG) which constitutes part of the Environmental Services Industry Transformation Map's effort in helping cleaning service providers and service buyers transform and grow by leveraging easy-to-adopt job redesign solutions that will not only benefit older workers and optimise manpower resources, but also improve productivity⁶.

The higher the turnover of a cleaning business, the more costly it will be to hire and train. Fortunately for SmartClean, it is able to quickly transit into the technology-driven model with an invested amount of time and resources in supporting, educating, and re-training its cleaning staff to use its IoT systems. Instead of replacing the older workers, SmartClean helps to make their tasks less physically challenging by reducing repetitive and tedious work, which allows the workers to focus on higher-value job roles using technology and automation.

⁴ <https://www.nationalskillsnetwork.in/skill-index-for-differentiated-policy-response>

⁵ <https://www.tnp.sg/news/singapore/cleaning-firms-can-now-tap-30m-tech-grant>

⁶ <https://www.nea.gov.sg/industry-transformation-map/job-redesign-initiative>

According to a study by technology firm Cisco and economic forecasting agency Oxford Economics, about one-fifth of Singapore's full-time equivalent workforce (20.6%) will be displaced by 2028. This is higher than in Vietnam (13.8%), Thailand (11.9%), the Philippines (10.1%), Indonesia (8.1%) and Malaysia (7.4%)⁷. While technology continues to disrupt across industries, it remains critical for older and unskilled workers to stay ahead of the curve by embracing new technological skills with a focus on higher value-added jobs.

In Summary, Emerge Stronger by Leveraging on Opportunities in Adversity

Since the start of the COVID-19 pandemic, there has been no small amount of pressure placed on companies to spend a significant amount of time and resources in keeping their facilities clean. As the demand for deep cleaning and better sanitation increases, the challenges that arise as a result of the need to increase headcount for workers in this area also start to magnify. The situation is exacerbated when countries start to implement border control measures and impose strict entry and quarantine requirements to contain the spread of COVID-19, thereby limiting the entry of foreign workers into Singapore. Stricter cleaning protocols, the need for more types of facilities to be cleaned with higher frequencies, and the need for more cleaners to handle the increased workload are expected to stretch far beyond the outbreak.

Amidst such a situation, SmartClean saw an increase in demand for trials and the deployment of its cleaning solutions to other types of spaces, as more building and facilities management companies re-look at their operational strategies to enable a more rigorous cleaning process that also increases the frequency of sanitation. In this regard, companies are nudged into optimising their use of manpower with technology-driven systems and solutions.

It can be daunting for any commercial cleaning business to think about business sustainability within the industry, let alone internationalisation. This case study shows how SmartClean Technologies, in its vision of bringing its cleaning standards to more types of spaces and transforming the way properties are being cleaned today, turns to technology and automation to address the main challenges of the industry in its quest for cleanliness that pushes the limits of sustainability, innovation and productivity.

⁷ <https://www.channelnewsasia.com/news/singapore/pursuit-of-technology-what-happens-to-workers-skills-11309094>

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