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TACKLING SOCIETAL CHALLENGES

This is a monthly series on SMU research which aims to create significant impact by addressing these five societal challenges: *Economies & Financial Markets, Social Fabric & Quality of Life, Boundaries & Borders, Sustainability, Innovation & Technology.*

In this issue, SMU researchers offer insights on tackling the societal challenge of strengthening social fabric and quality of life.

Using tech to boost seniors' wellbeing

An SMU team is working with NTUC Health Co-operative to improve community programmes for the elderly by leveraging technology



Associate Professor Tan Hwee Pink

When NTUC Health Co-operative Ltd (NTUC Health) realised that its manual system for recording data was hampering the effectiveness of its community programmes for seniors, and important information that they wanted to develop new programmes with also could not be easily analysed, they decided to collaborate with Singapore Management University (SMU) to use smart technology to overcome these challenges.

NTUC Health, one of the largest health and eldercare providers in Singapore, offers active ageing, senior day care, home care and nursing home services.

In addition, they support vulnerable seniors in the community through senior activity centres and programmes such as the Community Befriending Programme that deploys volunteers to visit vulnerable seniors, as well as the Cluster Support Programme where its social workers ensure that such seniors receive the support they need.

Its manual processes of record keeping meant that resources were not being put to their most productive use.

At its centres, for instance, records of attendance for each activity were tracked manually on paper, and transferred to Excel spreadsheets for reporting.

Home visit details and information on the seniors' health and wellness were also manually recorded on paper which the seniors needed to sign off.

This was very time consuming and can sometimes result in recording errors.

SMU worked together with NTUC Health on a digital data collection process to allow for easier analysis, which is valuable in understanding the seniors' physical, emotional and mental improvement or decline; and in determining whether the activity participation or befriending support is appropriate for the seniors.

One of the solutions proposed involves providing Bluetooth Low Energy (BLE) beacons to the seniors.

By connecting the beacons to the BLE receivers located at each centre, the receivers are able to accurately record the time instances when each senior's beacon is in proximity for attendance-taking.

Another solution involves deploying BLE beacons at the homes of the seniors. The data from the beacons are captured by mobile applications and sent to a cloud server.

Staff will be able to view the details on the system which include live and historical attendance data, and validation of home visits.

"Our solutions will improve the efficiency and accuracy of data collection, allow real-time views, as well as analytics to be performed. In this way, staff and befrienders can channel time previously spent on manual recording processes to engage and care for the seniors," said Associate Professor Tan Hwee Pink from SMU's School of Information Systems, who is leading the project with NTUC Health.

Each solution begins with the gathering of requirements, both from management and the ground, followed by real user testing with a few

centres or homes, and subsequent refinements before full-scale roll-out.

Generating valuable insights

"The technology addresses a big administrative pain point and also improves our understanding of seniors' preferences and needs. The evidence-based approach also helps us make better decisions on how we design our programmes for seniors' health and well-being," said Ms Jeannie Ho, Director, Senior Cluster Network of NTUC Health.

Preliminary results based on data collected from the first two centres where the digital collection systems have been deployed are already yielding valuable insights.

For instance, early results seem to suggest that seniors' attendance fall within several distinct clusters, with a significant proportion averaging a daily attendance of about 30 minutes. Based on this finding, programmes could be tailored to better suit seniors in these clusters.

For this two-year initiative with NTUC Health, Prof Tan and his team leveraged their extensive ground experience in developing and deploying senior-centric technologies from previous research projects at SMU, which also involved developing systems for staff from caregiving organisations to carry out actions based on objective data.

"The experience from these earlier research projects emphasised to us the importance of the usability of technology. Simply put, technology will more likely be adopted if it does not require a change in routines for seniors, or if it complements instead of burdens the caregiver," explained Prof Tan.

Looking ahead, SMU plans to have conversations with key stakeholders involved in the project on post-project support for the solutions developed, explore possible extensions of the technologies to meet the needs of other business units with NTUC Health, as well as other eldercare service providers.



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Bridging the gap in financial literacy

More effort should be made to improve Singaporeans' knowledge of financial management to ensure they have sufficient savings for retirement



Professor Benedict Koh

Singaporeans should work to improve their knowledge of personal financial management so that they are better equipped to achieve financial security when they retire.

Research worldwide has shown that financial literacy is associated with more financial planning and savings, better investment behaviour, and a better understanding of managing retirement drawdowns.

Conversely, societies with low financial literacy will suffer when their elderly are ill prepared for retirement.

A recent study conducted by Singapore Management University's Professor Benedict Koh and his co-authors Olivia Mitchell and Susann Rohwedder showed that Singaporeans who are financially literate have the confidence to invest in complex securities to earn higher average returns.

The results also revealed that the financially literate accumulate more wealth, are more assured of financial security, and have better diversified portfolios.

"A clear inference from this research is that the more financially literate a society is, the more likely its citizens will secure a better retirement," said Prof Koh, who is Professor of Finance (Education) at SMU's Lee Kong Chian School of Business.

One surprising finding from his research is that older Singaporeans' levels of financial literacy are comparable overall to those in the United States, even though older Singaporeans score slightly lower on some dimensions, such as knowledge of interest and inflation, and slightly higher on their knowledge of risk diversification.

"Given the maturity of the US financial markets and the access to extensive financial news coverage and analyses in the US, we had expected the elderly in the US to be more financially informed than their counterparts in Singapore," said Prof Koh.

Lacking knowledge of financial instruments

Despite the encouraging results, Singaporeans surveyed in the study were lacking in knowledge when it came to financial markets and risk diversification in investment. Only 47 per cent of the survey respondents answered the question on risk diversification correctly, with many selecting the "Do not know" option.

According to Prof Koh, this reflected a lack of knowledge among Singaporeans of how to utilise investment instruments traded in markets to grow retirement savings.

"It is therefore not surprising that most elderly Singaporeans prefer to invest their savings in simple financial products and avoid complex investment vehicles. Elderly Singaporeans tend to invest their retirement savings in property, savings or fixed deposits, bonds and whole life insurance products and avoid complex investment instruments such as shares, unit trusts, investment-linked insurance policies, investment properties and gold," he said.

Singaporeans are also lagging when it comes to the diversification of their investment portfolios.

Very few of them were found to adopt asset allocation, and many also do not reduce the risk exposure in their portfolio holdings as they age.

Gender gap in financial literacy

Prof Koh's research also showed that women are less informed than men about stock diversification, although this gender gap in financial literacy is not unique to Singapore.

Existing studies have shown that this phenomenon exists worldwide.

"For the pioneer generation, many women did not work or have opportunities to pursue higher education. Hence, their lack of education may limit their exposure to financial markets and investment vehicles such as stocks and unit trusts," explained Prof Koh.

More financial education required

Prof Koh also noted that those with a high level of education may not necessarily be more knowledgeable about personal financial management. As such, he urged for more financial literacy programmes to be introduced in Singapore's education system.

"Financial literacy should be regarded as a life skill that everyone should possess. Some countries have introduced mandatory financial literacy programmes in schools, colleges and tertiary institutions. If Singapore is serious about improving the financial literacy of its citizens, the authorities and regulators should consider how to formally introduce such life skills into the school or university curriculum," he said.

As Singaporeans generally lack specific knowledge regarding asset allocation, complex investment vehicles and risk diversification in a portfolio context, financial services providers should also educate their customers prior to persuading them to purchase financial products.

Said Prof Koh: "Although the MoneySense financial education platform initiated by the Monetary Authority of Singapore provides useful information and content to enhance financial literacy of Singaporeans, more efforts can be made to reach the audience at the grassroots level."



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emba@smu.edu.sg (65) 6828 0882