Technology for home-delivered meal service for rural seniors living alone: Designing a mobile app for the meal delivery workers

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Background: Taiwan reached The World Health Organization's definition of an Aged Society in 2018 with over 14% of its population over the age of 65(National Development Council, 2020). While the topics of gerontological welfare and long-term care have been in the spotlight, the needs of those solitary rural elderly who are more vulnerable to food insecurity must also be taken care of. There are currently over 50 organizations in Taiwan that provide meal delivery service to the rural elderly, most of whom living alone. However, coordinated efforts to improve workflow efficiency of delivery workers for such meal services, such as technology programs implemented by Meals on Wheels in the US(Morris et al., 2019), are lacking. Most organizations' route sheets, driver assignment, message delivering, monthly reporting, etc., are still very much pen-and-paper rather than digital, making the delivery planning/logging process time-consuming and sometimes difficult to manage. **Objectives**: The purpose of this research was to design and develop a mobile app and an information platform that served as the app's backend, for meal delivery workers who provided meal delivery services to home-bound elderly people living alone in rural areas outside of the Taipei City. The design of the App aimed to correspond to the needs of the delivery workers during each of their meal delivery trips. **Methods**: The target participants included the meal delivery workers of the New Life Social Welfare Development Promotion Association ("New Life") in the Sanzhi district of New Taipei City in Taiwan. Six of the delivery workers participated in the research. The surrounding Sanzhi, Laomei, Shimen, Jinshan, and Danshui districts were used as research sites as these were the routes New Life delivered to. The research method was based on Action Research, which initially identifies the problem, analyzes the problem, and draws up a plan, puts the plan into execution, and then collects feedback and conducts refining and improvement in a continuous cycle until the problem is deemed solved (see Figure 1). To determine the delivery workers' needs and problems encountered while delivering meals, the researcher observed by following the objects, conducted literature research, and held a standardized interview with the objects. **Results**: Needs and problems encountered during the objects' delivery process that ranked as top 5 were identified and analyzed, and the BentoGo! APP, based on the user-centered design methodology, along with its backend information platform, were developed. Functions corresponding to the delivery workers' needs were implemented in the APP, including GPS positioning, displaying each case's meal information, delivery confirmation, recording of concerns, and contact-preloaded emergency notification. The APP also allowed batch mode non-real-time data transfer considering possibly less-than-ideal mobile data transmission environment in rural areas. **Conclusions**: Technology intervention such as the BentoGo! APP, adopting a user-centered design, can be deployed to meet the needs of the delivery workers and help solve problems encountered during delivering meals to vulnerable rural seniors living alone. Technology can even enhance delivery workers' performance that's hard to achieve with the traditional pen-and-paper model. Further research can be conducted to evaluate the workflow efficiency improvement as well as satisfaction of the delivery workers upon testing the BentoGo! APP on the routes.

References

Morris A. M., Engelberg, J. K., Schmitthenner, B., Dosa, D., Gadbois, E., Shield, R., . . . Thomas, K. S. (2019). Leveraging home-delivered meal programs to address unmet needs for at-risk older adults: Preliminary data. Journal of American Geriatrics Society, 67(9), 1946-1952. doi:10.1111/jgs.16013

National Development Council. (2020, August). Population Projections for the R.O.C. (Taiwan). https://popproj.ndc.gov.tw/main_en/dataSearch.aspx?uid=78&pid=78

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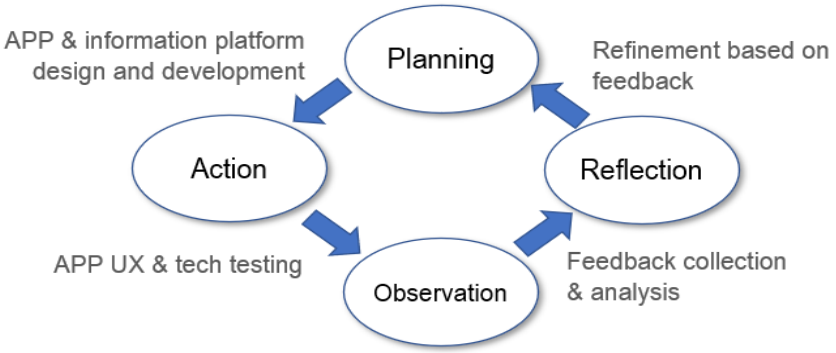

Figure 1. The procedures of action research in this study.