Technology and Ageing (POPH90263)

Assignment 3: Task 3C Peer Review

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13 December 2019

Executive Summary

Many reports in recent literature describe the profound consequences of the ageing population. For example, Vassli & Farschchian (2017) project that by 2050, there will be double the number of people aged over 60, and triple aged over 80. Given that age-related needs increase over time, how the healthcare sector meets the needs of an increasing older population will need some innovative solutions. Most people report that they prefer to live in their own home and maintain their independence for as long as possible (Vassli & Farschchian, 2017). This is also a preferred scenario for policymakers and the health sector due to budgetary and resource pressures. Technology is a key enabler to provide widespread services to older people who are less mobile and do not want to be in a 24-hour care setting. This evaluation will focus on assistive technology for those ageing in place.

Gokalp & Clarke (2013) found that the main concerns that older people have included security, safety, well-being, and falls. When aged-related challenges initially present themselves a personal alarm system is often the first device for those that live at home to address some of their concerns around safety and wellbeing.

This presentation focuses on the **INS LifeGuard SmartMobile** system, which turns a smartphone into a medical alert device by downloading the Lifeguard application (App). The technology was selected based both on its merits as an easy to use technology, as well as the additional capabilities it can connect to in the future as ageing needs change over time. A socio-technical analysis of the technology was applied and multifaceted aspects of the **INS LifeGuard SmartMobile** made it appealing. These include:

- the progression of INS technology over time, the latest being the SmartMobile application

- the company's health service experience of over 40 years,

- access to other telehealth technologies and portal development,

- the only Australian service connecting users directly to a registered nurse.

Beachley speculates that Internationally in aged care, organisations are rolling out technology at a rapid pace, "providing clients with tablets to encourage social interaction, assist with medications or monitor vital signs" (Egan, 2016, para.19). This could also be done with ageing in place whilst managed centrally by organisations like the INS Group. Importantly the technical work occurs centrally in the background leaving clients with nothing to worry about.

1. BACKGROUND

The product evaluated in this paper is the **INS LifeGuard SmartMobile** with an alarm function that dispatches help in emergency cases. It is an option most suitable for someone familiar with Smartphone technology or has the capacity and intention to learn it. The Lifeguard Application was selected for two key reasons. Firstly, as a suitable tool for those ageing in place and secondly because the application's connectivity can expand as a person's needs change with a range of other INS Group offerings such as telehealth. 30,000 residents within retirement villages already use various INS Lifeguard alarm systems. The recently developed SmartMobile application now extends an established health service to Smartphone users at home.
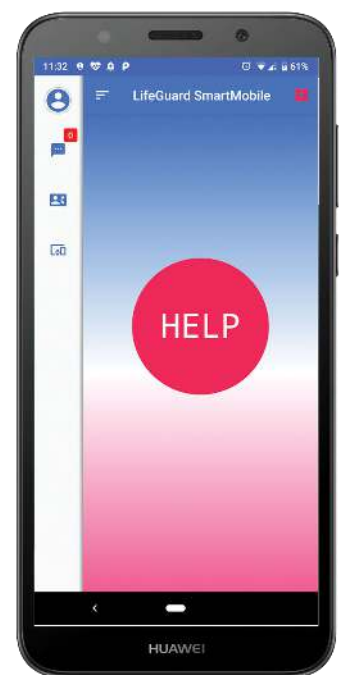
This evaluation specifically focused on a simple low-cost assistive technology that promotes independence and is easily adopted. Personal alarms are frequently offered as a first port of call by

Australian hospitals, My Aged Care assessors, community services and family. The user search for the best fit alarm can be a confusing exercise in a market that is not yet regulated. Though CHOICE Magazine rates and compares their features they no longer recommend any of them due to the many user reported problems and attribute this to problems within the personal alarm industry itself (Gallagher, n.d.). This is concerning given many Australian's rely on these for a sense of security, the Australian public health system suggests their take-up and their function can have a life or death outcome.

Research shows that older people are adopting technology and Smartphone use is on the rise with more people educated on consumer technology and operating systems. This is an opportunity the aged care sector can leverage in their operations and a market that the INS Group is tapping into. Beachley comments that "where you have people, who are used to using particular types of mobile phones and tablets, the ability to seamlessly provide certain types of services through those pieces of hardware is unprecedented" (Egan, 2016, para.18).

2.   RESEARCH STRATEGY

Research on personal alarms commenced with a list of nine options provided in a NSW public hospital in November 2019, and last updated in April 2014. The listed products were cross-referenced using CHOICE Magazine's published online comparisons. No alarm smartphone apps were yet reviewed however other INS alarm systems were.   The INS Group was then researched through their website, social media and the call-centre was directly contacted. Google searches revealed INS industry references, articles and the degree of Australian market presence. A general search expanded to technology and ageing within the public and private aged care sectors including government, service providers, peak bodies and the IT industry. Peer-reviewed academic articles were researched via

Google Scholar using terms including 'Ageing in place', 'Ageing and Technology' and personal alarms. The University of Melbourne's Technology and Ageing course references were also widely sourced.

3. <u>EVALUATION STRATEGY</u>

The Lifeguard application was analysed through Sittig & Singh(2010)'s socio-technical model due to its health information technology focus. It is a good fit model as it is health technology-focused and the dimensions examined not only the Smartphone application but also on how it is experienced by the user and the ecosystem within which it operates, the INS ecosystem and industry. This multi-faceted approach translates well to the aged care system and showed INS technology was been well-established within retirement villages throughout Australia and NZ, lending weight to their other capabilities and commitment to future services through technological solutions. This was pertinent because an older person's needs change and therefore access to broader services through familiar technology could contribute to their long-term wellbeing. In contrast other more high-tech offerings with expensive branding and grants have dissolved without the links to the aged care industry and health system required to maintain a presence.

Other models were more in-depth in putting the user perspective front and centre such as the 'Technology Adoption Model' (TAM) developed by Davis (Neves et al., 2015). Its three indicators rating well with the Smartphone application due to its 'Perceived Usefulness', 'Perceived Ease-Of-Use' and 'Attitude Toward Using /Behavioural Intention'. Silva et al. (2015)'s Heuristics model more specifically looked at Smartphone use in the context of age-related changes which helps zoom in on key issues such as "*the need for larger font sizes or buttons*" (p.3239). Neither the TAM or heuristics model, however, looked at the broader environment of the technology including the organisation and external forces.

4. <u>DESIGN</u>

The technology entails a standard free mobile

application available via Google Play for Android

Smartphones with a minimum 5.1" screen. Being

the same device as the user's existing phone using

the same docking station, accessories and charging

function is a design leverage of the application. The familiar look and feel with an additional alarm

function make the adoption seamless.   Amongst several design features that influence user perception

Gokalp & Clarke (2013) suggests, the less that older people must learn is key as they prefer familiar

tools making the Smartmobile app best for existing Smartphone users. This is echoed by Beachley who

adds that an intuitive user interface and simple user experience is key to the mobile app (Egan, 2016).

The existing touchscreen features a large red HELP button, clear for any user that can navigate a

smartphone. Smartphone design benefits include that they are 'almost always on' and highly portable,

provide real-time, on-demand communication, while their rich multimedia touch-displays operate with

increasing speeds.' (Boulos et al., 2014, p.2).

Another powerful design advantage is that being embedded in the Smartphone makes it discreet,

therefore avoiding any perceived stigmatisation. **Greenhalgh et al. (2013)** describe well the materiality

of technologies distinguishing the look and feel of the design from its sociological implications. For

older people design features such as shape, size of buttons and readability are understandably

important however the cultural meanings are just as powerful. Smartphones and other digital devices

'symbolise status, independence, modernity, and youth; others (such as alarms) may symbolise

precisely the opposite cultural phenomena: decay, dependence, stigma, and loss of youth' (Greenhalgh

et al., 2013, p.88). Whilst a pendant alarm is simpler to use, the loss of dignity some associate with it

around their neck can counter the benefit even for the oldest old. Alternatively, the Smartwatch is a modern wearable that can trigger an alarm however the small screen can rule out readability for many older people.

It's important therefore to consider the best fit personal alarm in the context of the user's physical and cognitive capabilities as well as what they feel comfortable with. The self-activated alarm must suit people who can activate the alert button during an emergency, even if injured.

5.   PERFORMANCE AND BENEFITS

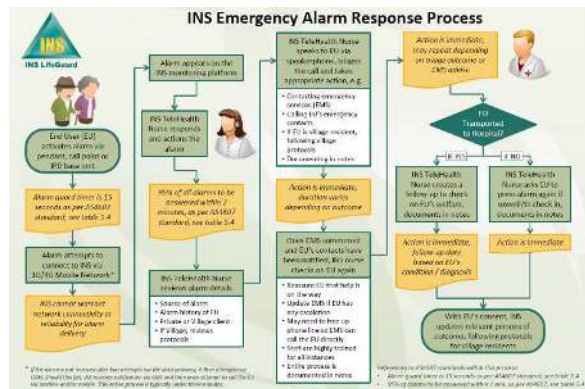The key benefits of the LifeGuard application can be summarised as follows:

- Turns a mobile device into a **Mobile Medical Alarm**

- **HELP button** triggers an alert to a registered nurse 24 hours a day

- **GPS locator -** allows the emergency response team to ascertain the user's whereabouts

- **2-Way Voice** and optional Video Alarm response by the LifeGuard Emergency Response Centre

- **Geofence** Alarm/tracking - useful for dementia sufferers and carers

- **Google Assistant -** allows command of device via voice (e.g. 'LifeGuard Help Help' sends alarm)

- **Optional Extras** – can record vitals, telehealth (option not evaluated in this paper)

- **Free** application download and available almost immediately.

- **Peace of mind for loved ones** – if user allows access to records

- **Client portal -** Update personal details, set reminders, share information with GP or family.

Mobile Medical Alarm System
LifeGuard SmartMobile
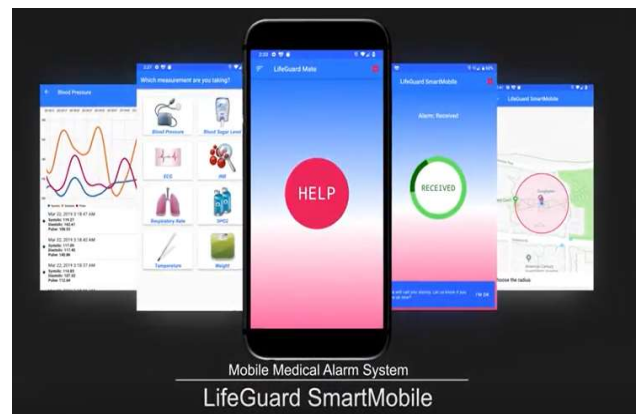
- **INS Ecosystem -** connects users to an ecosystem that easily integrates with users' devices to optimise safety outcomes for them or their carer.

An interesting point is raised by EFORTT (2012) in terms of the value in the complex adaptive system of telecare which can be applied to the INS service offering. The Lifeguard SmartMobile alarm alerts a registered nurse who provides over the phone care whilst coordinating an Emergency response. They also do follow-up calls and have personal chats with the user as needed. EFORTT (2012, p.24)'s point that 'tele-care' is critically dependent on human interactions, the emotional labour that takes place between carers, cared for, and in telecare monitoring centres' is an excellent example of why the socio-technical model picks up these additional elements to the technology. The best technology is ineffective if the Human-Computer interaction fails, which is why the INS channel collaboration between Customer, Nurse, Emergency services, Carer/Family and systems is important. A clear Emergency Alarm Response Process, backup systems, and policy standards provide comfort to try the INS Lifeguard Smartmobile.

Studies have shown that even if the alarm is never triggered 'a personal alarm service when compared to not having such a service, benefited the users in terms of feeling more safe and secure and being more active around the home (De San Miguel et al., 2017, p.175). According to Silva e. al. (2015) older people are the fastest-growing segment adopting smartphones hence a key benefit is having the device that your group is also familiar with. Also, older people are more willing to adopt technologies that their children or grandchildren like (Tsertsidis et al., 2019). A smartphone application, therefore, places the

user comfortably within their social circle and family, providing common ground and an accessible pool of knowledge.

Some of the negatives uncovered include:

- Only available for Android Smartphones

- The app is not regulated, nor the personal alarm industry

- Fall detection is not a feature as with wearables.

- Smartphone and internet affordability for older people

- Battery life and out-of-range problems still have to be dealt with

6. RECOMMENDATION

Ostherr et al. (2015) appropriately suggest that as more people age "with their laptops, smartphones, and tablets by their side, the use of ICTs [information and communication technologies] to help them manage their health will become unavoidable." (p.417). The Lifeguard Smartmobile application is recommended for people who have come to terms with accessing support to age in place and have the capacity to use the Smartphone technology. Some obstacles that they may have to overcome include concern about using the technology, device and internet affordability and seeing the devices as an intrusion on privacy (Glance, 2015).

As a first step assistive technology, the INS Lifeguard App characterises a successful method known as 'Bricolage'(combining new with legacy devices) (Greenhalgh et al., 2013). As older people use their Smart technology, overcoming a significant psychosocial transition in accepting assistance, then the opportunities for more support are significant. The background work is done by service providers such as the INS Group where their technical teams can deliver other services such as telehealth or concierge

services. The INS Group currently offer the Manager Portal and other capabilities (see INS Ecosystem)

which could be developed further and accessed in the future. Support for older people to transition to

smart technology whether through IT sessions at local community centres, or provider workshops

would be invaluable.

INS Group's capability to control and kiosk devices in private homes can open up more services.

SilverChain Technical Manager, Aaron Burt, states that "Staff can update, upgrade, pull apps on-

demand, push packages down to devices without users even noticing. When they have troubles with

their app or their phone, they can call up the helpdesk and we can remote in and see what they see"

(Egan, 2016, para.39).   Another suggested direction with regards to the Internet of Things is to leverage

the current use of mobility in the hotel environment where guests manage their entire experience from

a tablet with a single application. For example, from bed, someone can open the curtains, turn on the

heating or make a video call. The most important element here is that if there is a problem with the

device it can be managed centrally and addressed remotely (Egan, 2016, para.26)

FUTURE

The evaluation highlights the following key areas for further research and development:

1. An in-depth review of the Australian personal alarm industry to delve into why there are so many issues Gallagher (n.d.) claims whilst the public health system concurrently provides an outdated list of unregulated options.

2. With regards to the INS Smartmobile app, further research to understand the level of such take up, uses and the support older Australians require to benefit from smart technology. Are they truly promoting independence and if not, why and how do we bridge the generational divide? What better alternatives are there for those people that choose discreet and 'modern' digital support.

3. Lastly, more research into the integration and connection to other services as well as other devices such as glucometers. The development of the health system and how it interprets and consumes new forms of data will determine future suitability of this technology and reframe how ageing in place can look in the future.

In conclusion, Vassli & Farschchian (2017) aptly summarise aspects such as privacy, safety, and social relationships that should be key determinants when developing any health-related technology for home use. Not doing so will result in wasted technology investments, and may jeopardise the care factor in health care, missing the opportunity to help people stay independent and active for longer. The EFORTT research challenges 'technology fixes' to substitute traditional health care raising ethical and legal problems around safety, reliability, new provider-patient interaction and the risk of data breaches. (EFORTT, 2012). The fact remains that Australia's current health system is not equipped to face future challenges and a way to leverage technology whilst protecting the care element is a

framework that public and private stakeholders should aspire to. The INS Lifeguard Smartmobile app is

a tool to access human care with a nurse at the other end, available 24/7 whether in an emergency or

for 'a chat', which points to INS Group's understanding of this dual technology and care undertaking.

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