



# Living Digitally – An evaluation of the CleverCogs™ digital care and support system

## Summary report

This report is a summary of an evaluation of CleverCogs™, commissioned by the Carnegie UK Trust and conducted by Just Economics. The evaluation was funded by the Scottish Government and was overseen by a steering group including Blackwood Homes and Care, Scottish Government, Just Economics and the Carnegie UK Trust. The evaluation was conducted by Dr Eilís Lawlor and Dr Sue Campbell, and qualitative research was carried out by Niamh Bowen. We would like to thank the research participants at Blackwood Homes and Care for their generosity with their time. The full evaluation report is available on request.



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# 1 Digital technology and social justice

It is well understood that digital technology has radically changed how we live our lives, transforming how we work, learn, consume, communicate and think. This transformation shows no sign of abating, as new technologies and opportunities emerge on an almost daily basis.

The gains that technology has brought for many of us are substantial, and in many cases, now so well ingrained that we take them for granted. Digital increasingly underpins our connections with family, friends and people with shared interests; access to a vast array of audio and visual content; personalised services; cheaper goods and products – and an incredible choice of these; the acquisition of new skills and knowledge; access to the labour market; and better health information and services.

Of course, digital technologies bring significant risks too, including implications for privacy, security, mental health, access to trustworthy news and information, and our ability to ‘switch off’ – and there is a growing recognition that more needs to be done to tackle and mitigate these problems.

But there are also significant risks for those who are currently unable to make use of digital technology in their lives. Those without access are unable to benefit from the remarkable opportunities that technology can present – and the data shows that those who are not online are often the very same people likely to be disadvantaged according to most other social and economic measures. Strong links have been found between digital and other forms of social exclusion – age, education, social isolation, and unemployment<sup>1</sup> – with researchers arguing that these trends are structural with those offline become more entrenched in their exclusion.<sup>2</sup> As a result, there is a very real risk that digital is already exacerbating rather than bridging existing inequalities in our society.



- 1 Helsper, E.J., 2012. A corresponding fields model for the links between social and digital exclusion. *Community Theory* 22, 403–426; Van Dijk, J.A., 2005. *The deepening divide: Inequality in the information society*. SAGE Publications, Incorporated; Warren, M., 2007. The digital vicious cycle: Links between social disadvantage and digital exclusion in rural areas. *Telecommunications Policy* 31, 374–388.
- 2 Helsper, E.J., Reisdorf, B.C., 2016. The emergence of a “digital underclass” in Great Britain and Sweden: Changing reasons for digital exclusion. *New Media Soc.* 1461444816634676. doi:10.1177/1461444816634676

## 2 Technology in Health and Social Care

Across the world, the costs associated with health and social care needs for older people are expected to rise considerably in the coming years. This is driven by several demographic trends including increased longevity, more complex and costly health problems in old age, demand for better, more personalised care and changes in the dependency ratio (the ratio of working age to older people).<sup>3</sup>

Harnessing digital technology to support existing carers and over time, provide care directly to people, provides an opportunity to help address these challenges. It is anticipated that the successful deployment of technology in the delivery of health and social care can deliver a range of benefits:

- A greater number of options in how people live in old age
- Improvements in health and quality of life of the older population
- Reductions in the costs of delivering care
- A reduced burden on families and informal carers.

Technology Enabled Care (TEC) refers to a situation “*where outcomes for individuals in home or community settings are improved through the application of technology as an integral part of quality cost-effective care and support*”.<sup>4</sup> It includes but is not limited to, the use of telecare, telehealth, video conferencing (VC) and mobile health & wellbeing (mHealth).

The Scottish Government has adopted the term TEC to reflect a shift in focus from the technology itself to the care provided by that technology, and Scotland is at the forefront of research, development and delivery of technology in health and social care.<sup>5 6</sup>

Internet access has been found to improve quality of life of older people and people with disabilities. For both groups, there is evidence that becoming digitally included improves measures of psychological well-being and reduces feelings of social isolation or loneliness,<sup>7</sup> and even that it improves cognitive performance in later life (Ordonez et al. 2011). However, in Scotland, as with other jurisdictions, people with disabilities and older people are two of the most digitally excluded groups in society.

3 <https://www.gov.scot/Publications/2010/11/24111237/0>; Lewin, D., Adshead, S., Glennon, B., Williamson, B., Moore, T., Damodaran, L., Hansell, P., 2010. Assisted living technologies for older and disabled people in 2030. Final Rep. Ofcom Lond. Plum Consult. 2010; Bourne, J., 2007. Improving services and support for people with dementia. National Audit Office 7.

4 <https://beta.gov.scot/publications/technology-enabled-care-programme-data-review-evaluation-options-study-summary/>

5 See also the findings of the Scottish Governments External Expert Panel <https://www.gov.scot/Publications/2018/04/6113>

6 Carretero, S., others, 2015. Mapping of effective technology-based services for independent living for older people at home. Institute for Prospective and Technological Studies, Joint Research Centre.

7 Cotten, S.R., Anderson, W.A. and McCullough, B.M., 2013. Impact of internet use on loneliness and contact with others among older adults: cross-sectional analysis. *Journal of medical Internet research*, 15(2). Cotten, S.R., Ford, G., Ford, S. and Hale, T.M., 2012. Internet use and depression among older adults. *Computers in human behavior*, 28(2), pp.496-499; Ordonez et al. Elderly online: Effects of a digital inclusion program in cognitive performance. *Archives of Gerontology and Geriatrics*, 53(2).

## CASE STUDY 1



### David Grant

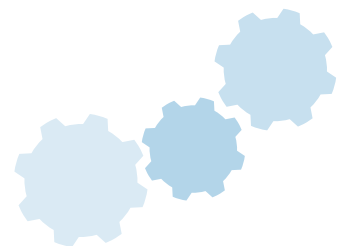
**“CleverCogs™ has wakened me right up. It’s made me come out of myself so I’m not just sitting at home anymore.”** David Grant

Until recently, David Grant led a fairly isolated life. He has epilepsy and suffers from chronic mental illness which made it difficult for him to socialise.

David has rapidly become one of CleverCogs™’ most enthusiastic users. Learning a whole new set of skills has given him the confidence to challenge himself and live life to the full.

Furthermore, David has used CleverCogs™’ bespoke system to educate himself on a range of topics including ways of managing his depression and anxiety. The outcome is that David says:

**“Almost every day I’m going out now and doing things for my neighbours if they’re struggling because of old age. I didn’t do that before, I just kept myself to myself.”** David Grant



## 3 The project – CleverCogs™

In 2015, Blackwood Homes and Care (Blackwood) began the development and implementation of CleverCogs™ a bespoke digital care and support system.

Blackwood is a housing and care provider specialising in homes and care services for people with disabilities in Scotland. It currently has over 1500 social housing tenants, just over 400 care-at-home customers, 60 residential care home residents and 17 night support service customers. Only around 30% of the people Blackwood serves are 'general needs' customers without some form of care and support need. While Blackwood predominantly works with those with a physical disability, its customers also include older people and people with a learning disability.

CleverCogs™ is delivered via a handheld touchscreen device (tablet). It is based on original software developed by a Dutch Company called Soft Orange. Blackwood used this software to develop 'CleverCogs™' as a bespoke package for its customers. The 'Cogs' represent aspects such as lifestyle, home automation, safety, health, wellbeing, entertainment, and so on. Blackwood's aim via CleverCogs™ is to provide services that improve the quality of life, choice and independence of their customers, in particular to increase digital participation in adults in receipt of care and support packages, and to enable increased use of Technology Enabled Care in service delivery.

A key feature of CleverCogs™ is that it can provide an option of 'simplified access' to the internet, for those who have either never used the internet or who do not have the technology, skills, confidence or ability to do so independently at home. The 'simplified internet access' product includes online entertainment, online health information and social media. The aim is that these features increase digital participation amongst a group who are some of the most digitally excluded, as well as increasing the amount of time customers spend on meaningful activity, which will in turn have positive impacts on wellbeing, social engagement and the self-management of health conditions.

CleverCogs™ also has the potential to support the delivery of Technology Enabled Care, through features such as automated medication prompts and automated appointment prompts for the customers, and automated handover notes for care staff and an alarm facility with care homes and Night Support Service.

The development and deployment of CleverCogs™ is largely funded by Blackwood as part of its own capital investment. The cost to Blackwood's customers is included as part of their rent or care package. The initiative benefited from two start-up grants from the Scottish Government and SCVO, which contributed to project management costs to roll out the system, some of the capital costs and digital skills training for tenants and carers.



## CASE STUDY 2



### Mandy McKenzie

A tenant at Broom Court, Stirling, Mandy has cerebral palsy and is a wheelchair user.

Through the use of CleverCogs™, Mandy has become more independent, socialising regularly and enjoying virtual family time as she can now 'visit' her sister through the video function. She has become a pioneer of the system, tutoring residents and building a better sense of community within Broom Court.

Mandy has developed the digital skills to be able to browse the internet, listen to music through YouTube and play games.

We were absolutely delighted that Mandy won the Service User Achievement Award in 2016's Scottish Care Home Awards and joined as a guest of honour to pick up The Herald Scottish Digital Business Award 2018 for Charity and Social Enterprise. Mandy shows us all how to live life to the full.





## 4 This report

The Carnegie UK Trust commissioned Just Economics to undertake an evaluation of CleverCogs™, to understand the impact of the system and the outcomes it is delivering for customers; for Blackwood; and for Scottish Government (in terms of national policy priorities). The evaluation was funded by Scottish Government and overseen by a steering group including Blackwood, Scottish Government, Just Economics and the Carnegie UK Trust.

This report sets out the key findings from the evaluation in relation to these outcomes. The full evaluation report is available on request.

## 5 Evaluation method

Although not strictly a Social Return on Investment (SROI) evaluation, Just Economics broadly followed the steps involved in carrying out an SROI. Consistent with SROI, the research followed a mixed methods study design. The main data collection tool was a survey of customers, which was carried out before installation of CleverCogs™ (baseline) and a minimum of three months post-installation (follow up). There were two additional tools used: a staff survey, and a time and motion study. Five Blackwood pilot sites were chosen: Edinburgh, Ayr, Glasgow, Aberdeen and Dundee. These were chosen to ensure a good spread of locations and types of customer.

In the pilot of CleverCogs™, 107 customers received the system and the evaluation sample was drawn from this group. A total of 93 customers participated in the original survey, however there was a sizeable drop out of 37 from the research during the pilot phase, giving a final sample size of 56.

Some drop out was to be expected, due to customers moving or passing away. However about 20% of customers who dropped out because they were not using CleverCogs™. 14 of these 19 customers completed the follow-up questionnaire. Their results were included in the analysis of internet usage among customers but excluded from the remainder of the analysis. The smaller final sample limited the power of some of the statistical analysis e.g. where Just Economics stratified the sample by a particular demographic.

Follow up and baseline responses were compared, and differences analysed using appropriate statistical tests. If answers were missing from either questionnaire, a 'pairwise deletion' approach was taken, which means that customer responses were removed if either their baseline or follow up responses were missing, but only when the relevant variables were being analysed.

The final sample consisted of 31 females and 25 males, aged between 24 and 76 years. A total of 20 customers were care home residents, and the remainder lived independently in the community. 70% of customers had a physical disability and 45% had a cognitive impairment.

# 6 Outcomes of CleverCogs™

The evaluation of CleverCogs™ developed a theory of change which mapped the two key features of CleverCogs™ – access to the internet and enhanced telecare – to a selection of 10 outcomes, both short and medium-to-long term.

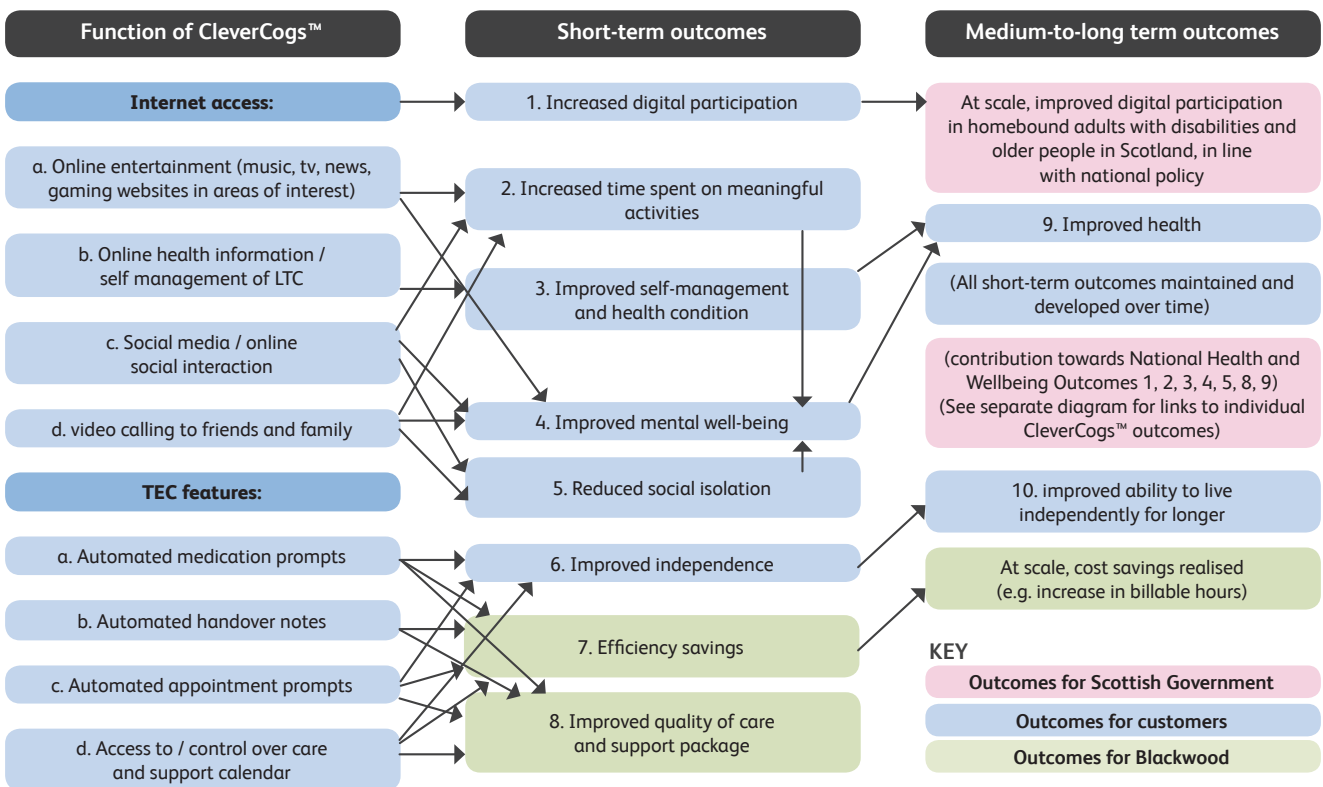
## Short term outcomes

- Increased digital participation
- Increased time spend on meaningful activities (reduced sense of boredom).<sup>8</sup>
- Improved self-management of health condition
- Improved mental well-being
- Reduced social isolation
- Improved independence
- Efficiency savings
- Improved quality of care and support package

## Medium-to-long term outcomes (out of the scope of the evaluation)

- Improved health
- Improved ability to live independently for longer

Figure 1: Theory of change for CleverCogs™



<sup>8</sup> CleverCogs™ also allows for communal use within care homes, but this is not examined in the evaluation report due to low numbers.

An assessment of progress against each of the eight short-term outcomes is set out below.

## OUTCOME 1: Increased digital participation

A key aim of CleverCogs™ was to increase digital participation for customers, which would give them access to new opportunities, information and interactions.

Before the introduction of CleverCogs™, 33% of customers were current internet users (23/70 customers). At the follow up survey, this figure had risen significantly to 79% (55/70) customers. The figure for the general population in Scotland is 84%.

The baseline survey showed that Internet use in CleverCogs™ customers aged 45yrs and older appeared to be well below the average for the population (for age groups 45-59yrs and 60-74yrs according to the Scottish Household Survey). At follow up, internet use was at least equivalent to, if not slightly greater than, the wider population for that age group for all age categories except 45-59.

Internet use for those aged between 60-74yrs rose by 20 customers, from 2/27 customers at baseline to 22/27 customers at follow up. There was only one customer in the oldest age group (75+); this individual was not an internet user at baseline, but was at follow up.

The evaluation also looked at frequency of internet use, type of online activities undertaken and self-rated digital skills as measures of digital participation. The following analysis only includes the 56 customers who were internet users at the follow up survey.

Frequent internet use was used as a measure of increased digital participation, as it demonstrates enthusiasm for the activity, and that the content is engaging for the customer. These factors increase the likelihood that individuals will benefit from going online. Moreover, where customers are using skills regularly, there is an increasing likelihood that these skills will become embedded.

The evaluation also asked about the type of activities customers participated in online to assess digital participation. At the follow up

stage, listening to music, watching television and reading the news were the most popular regular activities, and participation in these increased after the introduction of CleverCogs™. These activities are relatively passive and do not involve social interaction, however they may represent a wider choice of leisure activity than was previously available. There was also an increase in more active online activities such as gaming and social media. The most popular activities are also the activities chosen for the CleverCogs™ training, which focuses on 'entry-level' activities to encourage customers to start using the technology, and which may explain their popularity after the introduction of CleverCogs™.

When asked if the way they use the internet had changed since having CleverCogs™, 74% of customers (26 of the 35 customers who responded) said that their internet use had changed. All but one of these 26 customers reported that this change was due, at least in part, to CleverCogs™, and 19 reported that most or all of it was due to CleverCogs™.

## OUTCOME 2 Increased time spend on meaningful activities

Taking part in meaningful activity<sup>9</sup>, and the opportunity to do so, is important for quality of life and mental wellbeing for those living in a residential setting. For an activity to be meaningful, it needs to have been chosen by an individual, and tailored to their needs or interests. Using this definition activities such as listening to music or reading the news are meaningful, in that they have been chosen by individuals, despite their relatively passive nature. The number of customers who have participated in these meaningful activities has increased since the introduction of CleverCogs™, as demonstrated by the findings above.

9 NICE defines meaningful activity as 'physical, social and leisure activities that are tailored to the person's needs and preferences,' i.e. it is one that has been chosen by the individual from a range of options available at any given time <https://www.nice.org.uk/guidance/qs50/chapter/quality-statement-1-participation-in-meaningful-activity>

CleverCogs™ users were asked whether there had been a change in the amount of time they were spending on their hobbies. 36% of respondents (20/50 customers) reported that they were spending more time on their hobbies, however 34 customers reported no change and one reported spending less time on hobbies. Twenty-five customers reported that they could find out about sports, entertainment and leisure activities in their local area more easily or often since having CleverCogs™, however 28 reported no change and one reported it being harder.

The evaluation also asked customers about their television habits, and the number of hours they spent watching television per day. There were mixed findings, with almost half of the respondents reporting that they watched the same amount of television after the introduction of CleverCogs™ (23 of 50 respondents). However this is a subjective measure, as it may be difficult to self-report accurately, for example – the television could be on in the background while the customer is undertaking other activities. Further research is needed to understand this better amongst Blackwood customers.

### OUTCOME 3

#### Improved self-management of health condition

CleverCogs™ has a number of functions which could enable customers to improve their self-management of their health. However many of these features were not yet enabled, so no data were available on specific actions through the evaluation, such as whether medication prompts were helping customers to remember to take regular medication. However, there was an increase in customers regularly accessing health information online (at least once weekly) – from 11 customers to 25 customers. An increased number of customers also reported finding the health information useful, from 10 customers to 19 customers.

### OUTCOME 4

#### Improved mental wellbeing

The evaluation used the following measures for improved wellbeing: increased life satisfaction, increased subjective happiness, reduced boredom and reduced anxiety.

Before the introduction of CleverCogs™, the average life satisfaction of the customer group was 6.7, which rose to 7.6 at follow up to match the national average for Scotland.<sup>10</sup> The largest increase in life satisfaction was in the 55 to 64 year old age group, where life satisfaction rose from 6.6 to 8.3. Younger customers were mostly already accessing the Internet, therefore CleverCogs™ may have had less of an impact on their wellbeing. This may also reflect differences in wellbeing needs amongst different age groups.

The introduction of CleverCogs™ increased subjective happiness amongst customers, with 53% of customers reporting being happier since CleverCogs™ was installed (21 out of 40 respondents, with 18 reporting no change). Of the customers reporting being happier, 16 reported that it was at least in part due to CleverCogs™. 30 customers reported that CleverCogs™ had 'improved their life'.

Customers reported decreased feelings of boredom after the introduction of CleverCogs™; before 18 out of 29 customers reported feeling bored some or all of the time, however after CleverCogs™ was introduced this decreased to 8 customers. There was a statistically significant increase in customers reporting never feeling bored. Customers were also asked about how often they felt worried; before the introduction of CleverCogs™ 26 out of 29 respondents reported feeling worried some or all of the time, however at follow up this had decreased to 14 customers.

## OUTCOME 5: Reduced social isolation

There was very little data available for this outcome. The CleverCogs™ ‘Friends and Family’ feature, which allows customers to video call their friends and family in an accessible manner, with the aim of reducing customers’ social isolation and improve their mental wellbeing, was usually enabled once CleverCogs™ has been successfully installed for several weeks or months. However, only eight customers were known to have the ‘Friends and Family’ feature enabled at the follow up evaluation.

Qualitative research with Blackwood staff indicated that their social time spent with customers had increased. However, further research on this impact of CleverCogs™, most notably the Friends and Family app is required.

## OUTCOME 6 Improved independence

The timescale of the evaluation was not long enough to assess whether customers were able to remain living independently in the community for longer because of CleverCogs™, and this will be an important area for future research.

However, there were several indicators of improved levels of independence in customers’ daily living. 19 customers reported that their personal sense of independence had increased since CleverCogs™ was installed, with 35 customers reporting no change. 14 customers also reported that their day to day life seemed easier since having CleverCogs™, with 40 reporting no change. It is important to note that customers had existing high levels of satisfaction with the level of personal control they had over their daily lives, and so a longer period of time using CleverCogs™ would also be beneficial to understand the impact on these outcomes better.

## OUTCOME 7 Efficiency savings

Efficiency savings were identified through quantitative research with Blackwood staff. The findings indicated that staff using CleverCogs™ saved approximately five minutes on average per visit in time spent on administrative tasks. The qualitative research found that larger benefits could potentially be experienced by management in comparison to frontline staff in terms of time/cost savings, however management or back room processes were not included in the initial survey and this is an area for future investigation.

## OUTCOME 8 Improved quality of care and support package

The ability of CleverCogs™ to support the delivery of Technology Enabled Care, through features such as automated medication prompts and automated appointment prompts for customers, aims to improve the quality of their care and support package. However, as noted, there was no data available on use of these features by customers at follow up. Baseline data was collected and is available to Blackwood for future evaluation as its systems ensure robust delivery and monitoring of these functions.

## LONGER TERM OUTCOMES

The medium-to-long term outcomes of improved health and improved ability to live independently for longer were beyond the scope of the evaluation which took place relatively quickly after the installation of CleverCogs™. However a large data set was gathered at the baseline, and so it is hoped that Blackwood will be able to evaluate the achievement of these at a future date.

## 7 Economic findings

The evaluation included an economic analysis which balanced the costs of CleverCogs™ against the value of the outcomes delivered. Due to data limitations, this was not a full SROI analysis. Nonetheless, the analysis provides an indication of the social value created by the investment.

It is expected that, in time, CleverCogs™ will be rolled out to all Blackwood growing customer base, currently around 2000 households. Blackwood estimate that it will cost in the region of £300k to provide the necessary hardware, training and platform development. Ongoing revenue costs (including licensing and broadband provision) are estimated at £280K annually.

The method of analysis to value the benefits to customers was to focus on the outcomes that flow from becoming digitally included and to aggregate this for the wider group of customers. Previous research by Just Economics has attempted to value digital inclusion and these data have been usefully employed to consider the social value of CleverCogs™.<sup>11</sup> The outcomes included in the valuation are:

- Improved confidence/well-being
- Time savings/convenience
- Financial savings and
- Hobbies/use of time.

A further benefit of social isolation has not been included as there is not yet evidence of this from this evaluation. A variety of methods have been used to value these such as savings from using online shops and services and the value of time saved.

Using this method, the value per user that comes online and receives all of the associated benefits via CleverCogs™ is in the region of £1,457 per annum. If this is aggregated to a wider customer group, using the same estimates on outcomes, attribution and dropout the total expected annual value is over £400,000. There are also financial benefits to Blackwood from efficiencies, which Just Economics conservatively estimate at £157,000 per year.

Although social care is not a focus on this evaluation, CleverCogs™ has potential as a telecare device. As a result, the findings from a small parallel economic study of the Night Support Service (NSS) have been incorporated. This study found that the introduction of a video and responder relay system to replace overnight stays by care staff for 15 customers resulted in savings (estimated conservatively) of approximately £198,000 per year to the local authority.

The total Present Value of Benefits (PVB) of CleverCogs™ over the 5-year appraisal period is almost £3.5 million and the Present Value of Costs (PVC) is £1.7 million. If the costs and benefits are compared, Just Economics assess that there is a positive total return over the five years (1.5:1) suggesting that over £1.50 of social value is created for every pound of investment. On financial terms alone, the return to Blackwood is negative (0.3:1) as a result of the initial investment. However, if these calculations were extended to a larger number of customers, this is likely to become cost beneficial from Blackwood's perspective. In addition, we included the high dropout rate in our estimates, which greatly reduced the total value. If Blackwood was able to eliminate this dropout rate it would increase the annual value to customers to almost half a million and the return ratio of the scheme as a whole to 1.7:1. To do so may incur additional resources, nonetheless these are likely to be less than the expected benefits. As noted above, the infrastructure investment is not intrinsic to the rollout of CleverCogs™. When Just Economics estimate the overall return less this investment, it almost doubles to 2.7:1. However, it is not clear the extent to which the outcomes identified in this study would have happened independently of providing Wi-Fi for customers. A final caveat is that the social value calculations are limited only to a subset of benefits to customers. All of the customer benefits are not yet on stream and could not be included due to lack of data.

<sup>11</sup> Lawlor, E. (2014) Valuing Digital Inclusion BT [accessed online 6th June 2018] <https://www.btplc.com/Purposefulbusiness/Connectivity/Beingonlineisgoodforsociety/Valuing-Digital-Inclusion.pdf>

## 8 Implementation findings

There can be substantial barriers to technology implementation, and it is not unusual for projects to remain at the pilot phase, or to struggle to scale up. Implementation in this field is complex, dynamic and influenced by multiple factors: staff, customers, social, economic and organisational context. Considering this, some qualitative surveys were carried out with staff at the close of the project. Questions posed were drawn from the Implementation Science literature on typical barriers to implementation.

In general, the rollout has been challenging and Blackwood has reported that the pace of implementation was slower than anticipated. However, there is now additional resource in place to address this. With hindsight, more time would have been spent mapping the links to wider systems and current ways of working prior to implementation as well as spending more time testing solutions, involving more frontline staff in rollout and upskilling staff in some areas. Blackwood believes that the personalised approach – formal and informal information and familiarisation sessions – was key in building confidence in the innovations. In addition, it found that inviting customers, family and staff along to sessions enabling people to ask questions, and to have hands on sessions, worked well. Blackwood also believes it has a much better understanding of its business as the process has required examination of how all of its systems and processes interact.

Just Economics have made recommendations relating to implementation and the need for future research. One of the most notable areas to address in the rollout is the dropout rate. Reasons for the dropout rate include changes in customer circumstances, given the complexity of individual situations and conditions, and a need for additional follow up training. However, for some cases the reason is still unclear and requires further investigation. The cases where CleverCogs™ was not installed was due to a lack of internal resource available, which has now been addressed.

The process for how customers are introduced to CleverCogs™, and trained on it will need regular reviewing to ensure that it is appropriate for each individual and meeting their needs, as does the impact of cognitive impairments on this.

Staff and specialist skills are critical to the successful implementation of CleverCogs™. A second recommendation is to ensure that there is sufficient resource to support rollout and any further evaluation activities. Finally, the future adoption rates could be improved by employing a more formal set of implementation strategies to predict and circumvent future barriers as well as documenting the process to date.

Just Economics recommend that future data collection be conducted to measure the impact of features not yet enabled such as the Friends and Family app and enhanced telecare. In addition, they recommend further research on:

- The impact of communal devices within care homes
- The diversity of social activities
- Ways to respond to well-being needs of younger customers
- The impacts on business outcomes from improvements in the efficiency of management roles

## 9 Conclusions

There is good evidence for the impact of CleverCogs™ on outcomes for customers. This was consistently found from the qualitative and quantitative research. However, neither is the system right for every customer and opting in doesn't necessarily mean that it will be used and that benefits will be derived.

The findings would suggest that the system is an especially effective way of improving digital inclusion of older people with disabilities who are unlikely to go online independently. It is also an effective tool for improving life satisfaction and general well-being for this older group who have been shown to have high needs in this area. The system holds promise therefore for reaching those with the most entrenched digital exclusion and improving their quality of life. Future research on the more advanced features could contribute further to the evidence base in this area.









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