Money Matters:

A Queen's University Study into the effectiveness of smart phone apps on financial capability

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1.0 Executive Summary

1.1 Contextual Summary

This project was undertaken by academics (Dr Declan French, Professor Donal McKillop and Dr Elaine Stewart) from Queen's University Belfast (Management School). The objective of the project was to determine whether mobile apps designed to enhance financially capable behaviours can help people from disadvantaged communities make better informed decisions about how to tackle debt, manage money day-to-day and prepare for life ahead. Four apps, packaged together under the title 'Money Matters', were provided to working age members (16-65 years) of Derry Credit Union (Northern Ireland). The project was undertaken between February 2017 and April 2018.

1.2 Evaluation Approach

The evaluation approach was a randomised control trial (RCT). An RCT is a rigorous approach to determine cause-effect relations between two groups by randomly assigning participants to a control group (i.e. those who do not receive the intervention) and a treatment group (i.e. those who receive the intervention). An RCT was chosen as it allows for rigorous randomisation by ensuring that allocation to the comparison groups is unbiased and allows for statistical analysis to efficiently investigate for causality. An initial baseline survey was carried out from June to August 2017 and resulted in 500 completed survey returns. Of the 500 completing the survey, 260 were allocated to the control group and 240 to the treatment group. The latter were provided with the 'Money Matters' apps (a loan interest comparison app, an expenditure comparison app, a cash calendar app, and a debt management app). A follow up survey to determine if changes in financial capability had occurred was carried out between February and April 2018. Therefore, in this study any behavioural changes in financial capability is essentially being assessed over a 9-month period.

1.3 Key Findings

- For the treatment group (i.e. all those who received the apps regardless of whether they chose to use or not use the apps) a statistically significant improvement was identified in '*personal and financial well-being and confidence*'. Receiving the mobile apps increased the probability of being very confident when shown information about financial products such as a loan, credit card or store card.
- For those assigned to the treatment group, statistically significant improvements were identified in measures designed to capture aspects of '*attitudes to money*'.
    - Access to the mobile apps encouraged users to think ahead and plan for future life events such as retirement. A more positive attitude was also identified towards the use of technology for day to day financial decision making.
    - Those provided with the apps were also identified at the end of the trial as having more favourable attitudes to borrowing. At first glance, this may seem counterintuitive. However, we should not be surprised if mobile apps designed to aid borrowing comparisons and which are shown to improve confidence about loans also reduce antipathy towards borrowing.
- No significant results were found for measures capturing whether *money is being managed well on a day-to-day basis including budgeting and tracking income.* However, receiving the mobile apps generally led to more positive results on these measures and made users aware that their current approach to keeping track of income and expenditures was not working.
- No significant results were found for those measures designed to capture *levels of over indebtedness,* or for indicators measuring *keeping up with bills and commitments,* or for measures capturing *product holding and credit use.*
- App usage was assessed through usage statistics provided by the app developers as well as through additional questions in the follow up survey. Usage statistics identified the cash calendar as the most used app followed by the expenditure comparison app. Over the course of the RCT the apps were most frequently used at the outset and when two reinforcement exercises were undertaken (a money skills workshop and a money skills competition). The apps were more frequently used by those with higher levels of education. Perceptions around the quality of the apps were encouraging as 58% identified

their ease of use as being the 'most liked' aspect and 51% stating that they would recommend the apps to a friend. Only 4% indicated a dislike of the apps.

- Infrequent users stated that they would use the mobile apps more often if the information provided by the apps was of greater relevance and if they had greater confidence in being able to understand the information retrieved from the apps.

- 25% of those provided with the apps believed that as a result of using the apps over the period, they now think more about how money advice and guidance could help them, understand the importance of timing in repayments and interest charges and have a greater awareness of their future financial needs and the importance of setting financial goals beyond the day-to-day.

1.4 Limitations

Incentives were provided to both treatment and control groups to participate in the study. The study sample is perhaps in greater financial need than the population of credit union members. Additional actions (financial literacy workshop and a money skills competition) proved necessary to promote greater usage of the mobile apps. The project has also highlighted the need for further empirical studies to explore the links between digital and financial capabilities. Indeed, emerging research continues to support our findings that digital skills are becoming increasingly useful and perhaps necessary to improve financial capability. This is an area which remains largely unexplored and we hope that the evidence presented encourages the sector to undertake further research.

1.5 Implications

Our findings suggest that digital solutions in the form of smartphone apps can be utilised to improve financially capable behaviours, particularly for the struggling and squeezed segments of the population. Opportunities for using digital technology has greatly improved in recent times with the growth in smartphone users, even among older age groups. We contend that our findings lend support to the possibility that digital technology is capable of providing cost-effective solutions to enhancing financially capable behaviour. The development costs of the four smartphone apps used in this investigation was approximately £50,000. Annual updating costs would be a further £3,000 per annum.

The project has also highlighted the need for further empirical studies to explore the links between digital and financial capabilities. While, emerging research supports our findings that digital skills are becoming increasingly useful and perhaps necessary to improve financial capability this is an area which on the whole remains largely under-explored. We hope that the evidence presented in this study encourages further research.

1.6 Learning and Sharing Activity

The key learning from the project is that mobile apps designed to aid financial decision making can improve various aspects of financial capability. This was demonstrated with reference to credit union members but is applicable to anyone with an interest in using mobile apps to help in the management of their financial affairs.

Sharing of the findings will be facilitated by (i) making the mobile apps available to credit union representative bodies and encouraging these bodies to make the apps available to member credit unions; (ii) publication of the findings in both academic and policy related journals; (iii) presentation at practitioner orientated conferences/ workshops; and (iv) a mini-conference organised by the Project Team to include credit unions, representative bodies, regulatory authorities and policy makers.

2.0 Overview of Project

2.1 Introduction

The availability of financial products and services on digital platforms is growing at an unprecedented pace. Digital platforms offer consumers the ability to connect to financial and other service providers through an online or mobile channel as an integrated part of their day-to-day activities.[1] From electronic bank statements, to consumer websites, to mobile banking apps, there are now more ways than ever to benefit financially through being online. Lloyds Bank 2016 Consumer Index highlights that an individual can on average save £744 annually from being online.[2] This represents an opportunity for the digitally savvy. However, the Office for National Statistics Labour Force Survey (2017) reports that in the UK 1 in 10 adults (aged 16+) have never used the internet, while Lloyds Bank 2017 Consumer Index estimates that 11.5 million people in the UK have no digital skills.[3]

This all emphasises that there are financial benefits to be had from being online but that a large percentage of the population are still not accessing these benefits. This phenomenon has in recent years been coined the 'digital divide': where the dependency on technology causes social and economic inequality (Norris, 2001).[4] While accessibility is identified as being a key issue in the digital divide debate, some have argued this to be over simplified and overlooking other socio-economic factors such as income, age, gender, culture, education and disability (Katz and Aspen, 1997[5], Cullen, 2001[6], Dugdale *et al.,* 2005[7] and Choudrie *et al*., 2013[8]). Recent evidence appears to corroborate these claims. For example, the Good Things Foundation in their 2017 report identified several indicators of no and limited use of the internet. For

[1] Ian Pollari, (2018), The rise of digital platforms in financial services, 2018 KPMG International Cooperative.
[2] https://www.lloydsbank.com/banking-with-us/whats-happening/consumer-digital-index.asp
[3] https://www.ons.gov.uk/businessindustryandtrade/itandinternetindustry/bulletins/internetusers/2017
[4] Norris, P. (2001). *Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide*. Cambridge: Cambridge University Press.
[5] Katz, J. and Aspden, P. (1997) Motivations for and barriers to Internet usage: results of a national public opinion survey. Internet Res., 7, 170–188.
[6] Cullen, R. (2001) Addressing the digital divide. Online Inform. Rev., 25, 312–320.
[7] Dugdale, A.D., Papandrea, F. and Maley, M. (2005) Accessing e-government: challenges for citizens and organizations. Int. Rev. Admin. Sci., 71, 109–118.
[8] Chouldrie, J., Ghinea, G. and Songonuga, V. (2013), Silver Surfers, E-government and the Digital Divide: An Exploratory Study of UK Local Authority Websites and Older Citizens, *Interacting with Computers* 25 (6), 417-42.

example, in sample of 15.2 million UK residents classified as being either non-users or limited users of the internet: "64.4% of non-users are aged 65 or over: 25.3% aged 65-74; and 39.1% aged over 75; 47.7% of non-users have a disability or long standing health issue; 49.5% of non-users are in DE social class; 44.5% of non-users have an annual household income less than £11,500 and 78.3% of non-users left education at aged 16 or under" (Good Things Foundation, 2017, p.4).[9] Indeed, the report highlights the need for research to be conducted in helping to understand both the motivations and barriers behind these trends.

The extent to which digital exclusion impacts on financial capability remains in large part unknown. The Financial Capability Strategy for the UK (2015) stated that digital inclusion could potentially be used as a tool to help improve people's financial capability by for example, helping them to keep on top of their finances.[10] A body of empirical evidence is now emerging highlighting possible correlations between digital and financial capabilities (Lloyds Bank 2017; Micklethwaite, 2017).[11] Many budgeting and saving apps are now available offering the potential to provide financial guidance at low cost. At present however, the extent to which digital literacy affects financial capability is under-researched.[12]

2.2 Our Project

The central hypothesis tested in this study (see Appendix) is: can mobile apps designed to enhance financially capable behaviours help people from disadvantaged communities make better informed decisions about how to tackle debt, manage money day-to-day and prepare for life ahead. More specifically, the study is designed to test whether the apps make a difference to the following outcomes:

i. Increase personal and financial wellbeing and confidence;
ii. Help people who are at risk of falling into problem debt (levels of over indebtedness);

[9] https://www.goodthingsfoundation.org/sites/default/files/research-publications/ofcom_report_v4_links.pdf
[10] https://prismic-io.s3.amazonaws.com/fincap-two%2Fa7749148-1272-4ceb-843f-36f01c9ea934_uk+financial+capability+strategy+-+with+supplementary+evidence+and+analysis.pdf
[11] https://www.goodthingsfoundation.org/news-and-blogs/blog/making-most-digital-improve-financial-lives
[12] https://www.fincap.org.uk/outcomes_adults

iii. Help people excluded from mainstream credit to make well informed decisions about selecting and using credit options that are available to them, and to build understanding of how best to improve their credit (product holding and credit use);

iv. Improve people's basic skills in applied numeracy, problem-solving and ability to use technology in personal finance applications (ability to save and budget);

v. Improve people's abilities to keep up with their bills and commitments; and

vi. Improve people's attitudes (value financial planning and saving, value setting financial goals, better attitudes to the future).

The target population is:

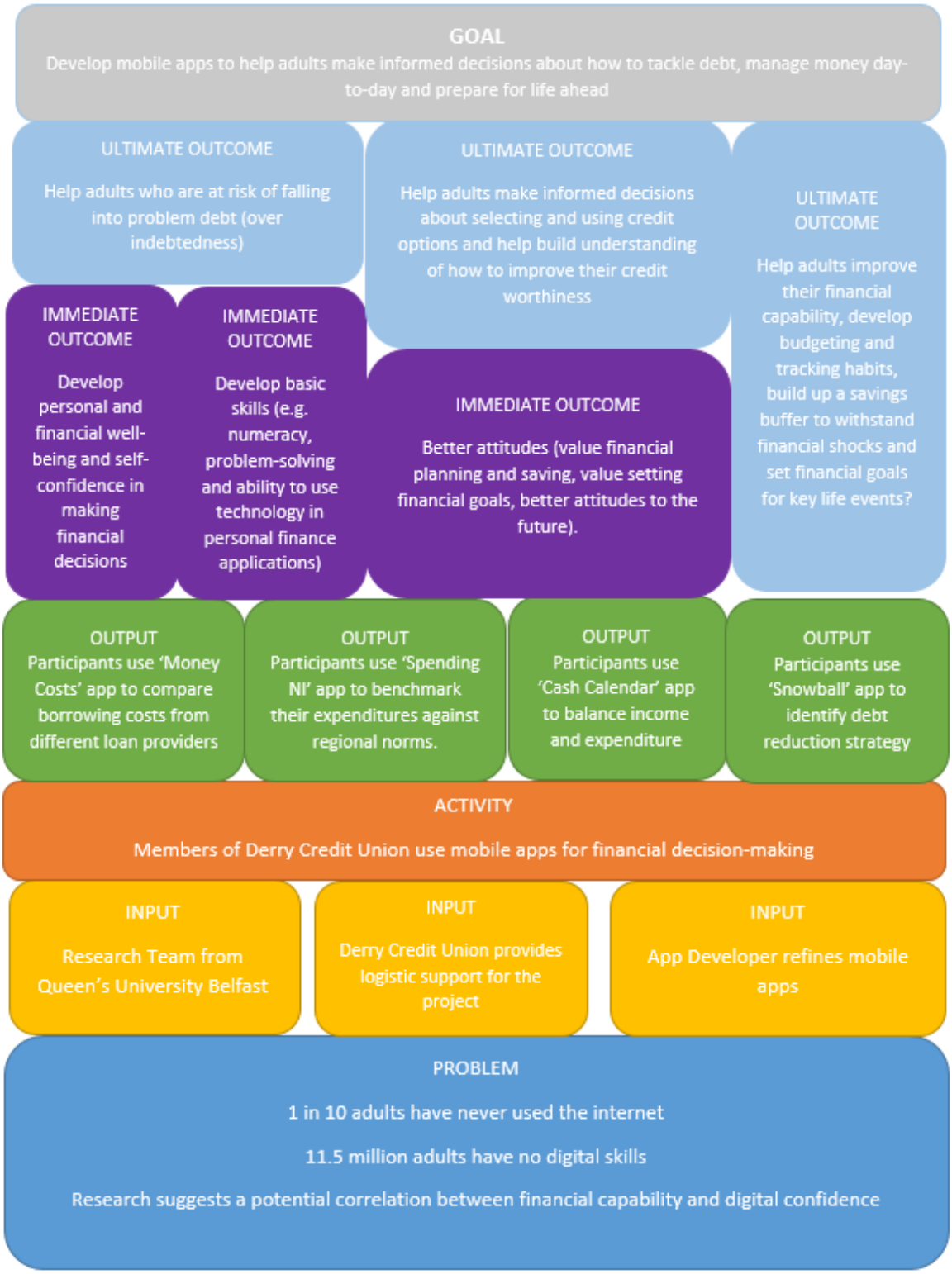
- Members of Derry Credit Union who are of working age (16-65 years)
- In general, Credit Unions draw their members from all segments of the community but a key element of their mission is to help disadvantaged communities. Many Credit Union members fall into the struggling and squeezed segments of the population.[13]

2.3 Theory of Change

The Theory of Change depicted in Figure 1 was created at the outset of the project. Figure 1 should be considered from the bottom upwards. Initially the problem is identified (row 1), the inputs required to undertake the project are then detailed (row 2), the primary activity undertaken is stated (row 3), the outputs from each of the four mobile apps is described (row 4), the immediate and the ultimate outcomes which are intertwined are then detailed (row 4 and 5), with the goal of the project documented at the top of Figure 1.

[13] The terms struggling, squeezed and cushioned were created by the Money Advice Service (2016, p.2) to "identify and profile the different groups of people in the UK that exist, and to understand their specific financial and advice needs". The struggling segment is defined as those people that "struggle to keep up with bills and payments" (p.5). The squeezed segment on the other hand is defined as "working age consumers with significant financial commitments but relatively little provision for coping with income shocks" (p.6).

Figure 1 Credit Union Study: Theory of Change



2.4 Context: Relevant Research and Policy Issues

Empirical research into levels of financial capability across NI is mixed. For example, the Northern Ireland Statistics and Research Agency (2014)[14] in their Omnibus Survey highlighted that people in NI consider themselves to be relatively good at managing money day-to-day, with 90% feeling that they were getting by either alright or very well financially, 59% believing they have an approach to budgeting that works and 63% confident that they could pay an unexpected bill of £300 from their own money or from savings without having to cut back. This is similar to the UK picture as approximately 6 in 10 adults believe they hold a savings buffer of £500 and overall, managing their money well on a day-to-day basis.[15] Other research by MAS (2016) however found that approximately 21% of the population in NI, the highest in any of the UK regions, find it difficult to keep up with bills and credit commitments and can be particularly susceptible to falling behind or missing payments. Further, it would appear that in NI, the provision for longer-term financial needs is lacking. For instance, 23% of working-age adults were found to have savings equal to at least 3 months' household income. Similarly, just 22% of over 50's had any sort of plan for long-term care. This suggests that people in NI are managing their money day-to-day more effectively than they are planning for life events and the future. With a third of people in NI highlighting their lack of confidence in having enough money to live comfortably throughout their retirement years, they are at greater risk of being unable to cope with financial shocks, prepare for their retirement and other significant life events such as bereavement (MAS, 2016). More broadly, ongoing issues in NI such as the collapse of the NI Executive, the harsh realities of the 2018-20 NI budgetary conditions and the impact of BREXIT suggest that the economic outlook for NI is set to remain unfavourable over the coming years.[16]Against this backdrop, empirical research into whether digital solutions in the form of mobile apps might help to improve people's level of financial capability is therefore perhaps even more important in NI than elsewhere in the UK.

[14]https://www.economy-ni.gov.uk/sites/default/files/publications/deti/final-fcs-2014-omnibus-survey-report.pdf

[15] https://fincap-two.cdn.prismic.io/fincap-two%2F98a4b453-cc74-48d0-a301-8c5274adc389_uk+financial+capability+strategy.pdf

[16] http://www.nifha.org/wp-content/uploads/Dept-Fin-Briefing-on-Northern-Ireland-Budgetary-Outlook-2018-20.pdf

This study builds on previous research by two members of the research team. The testbed for this research were members of five Northern Ireland Credit Unions.[17] Credit Unions form a significant part of the financial sector In NI. At the end of 2016 there were 158 credit unions in NI with 516,154 adult members (approximately 34 percent of the adult population), 760 staff and total assets under their control of £1.458 billion. Credit Union members are generally of modest means with many having limited financial capability (French and McKillop, 2017). Credit Unions have the financial education of their members as one of their seven core operating principles.

The prior research of members of the research team considered the impact of financial stress on health and the link between financial literacy and over indebtedness in low income households.[18] The analysis of financial literacy and over indebtedness considered two key components of financial literacy, that of numeracy and money management skills. The authors found that almost 25% of respondents did not answer any of the financial literacy questions correctly and only 8% of the sample correctly answered all four questions. Moreover, the research highlighted the difficulties credit union members have in comparing borrowing costs and their ill-judged use of heuristics such as assessing the cost of loans on the basis of the weekly repayment amount as opposed to total cost over the duration of a loan.

Based on this study and through working closely with credit union partners, the authors successfully secured funding for the initial development of four mobile apps targeted at different facets of financial decision-making (see Figure 2).[19]

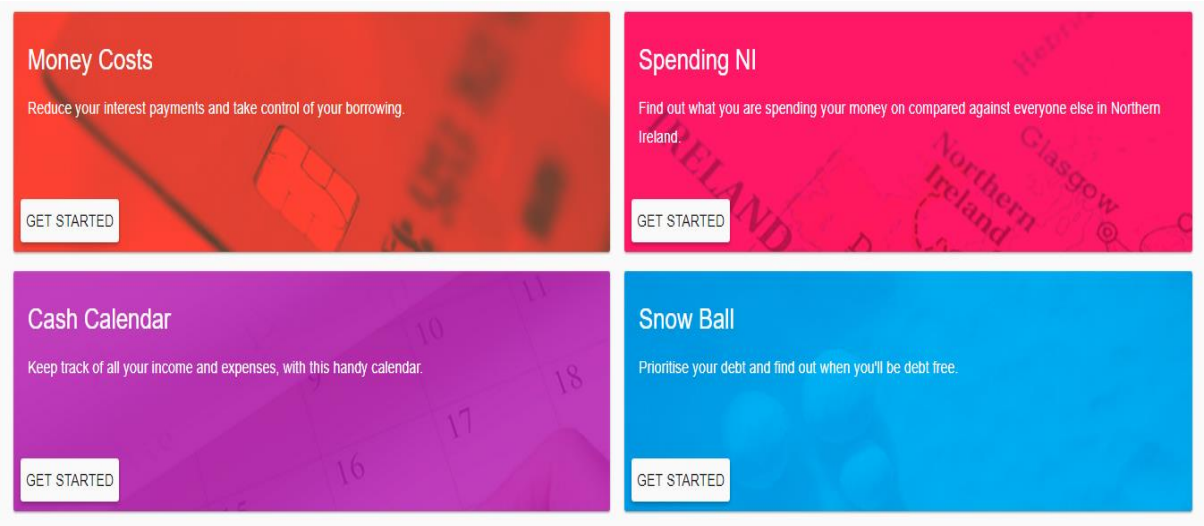
[17] Dr Declan French, Professor Donal McKillop and Rachel Keys (a PhD student) developed web-based tools with the help and support of Cloughfern, Court, Newington, Newry and Ormeau credit unions.

[18] French, D., and McKillop, D.G. (2017), The Impact of debt and financial stress on health in Northern Irish households, *Journal of European Social Policy* 27 (5), 458-473.

French, D., and McKillop, D.G. (2016), Financial Literacy and Over Indebtedness in Low-Income Households, *International Review of Financial Analysis*, 48, 1-11.

[19] Funding for the initial development of the apps and the building of partnership arrangements was provided by the Queens University Business Alliance fund and the Economic and Social Research Council Knowledge Exchange programme.

Figure 2 "Money Matters" Mobile App Package



Developed by the authors and a local web developing company, each app has been specifically designed to target, facilitate and improve different aspects of an individuals' financial capability. The first app (Money Costs) is a tool to enable participants to easily compare different types of borrowing using different amounts and time periods. The second (Spending NI) provides an indicator of how much a user spends against the Northern Ireland average household spend in various spending categories. The third (Cash Calendar) is a budgeting tool designed to help a user balance income and expenditure over time. This app was designed in light of recommendations by a particular Credit Union concerned about the impact of Universal Credit on its members' ability to avoid overdrafts. The fourth (Snowball) was developed for users with multiple debts and provides them with an optimal debt reduction strategy. All four apps are packaged together under the name 'Money Matters' (see Figure 2).

3.0 Overview of the evaluation approach

3.1 Introduction

The central hypothesis tested in this study is: can mobile apps designed to enhance financial capable behaviours help people from disadvantaged communities make better informed decisions about how to tackle debt, manage money day-to-day and prepare for life ahead (see Appendix).

The outcomes evaluation needs to assess the extent to which the pilot has achieved the intended outcomes mapped out in the Theory of Change (see Figure 1) and part of the MAS Adult Outcomes Framework.[20] We sought to contribute to the evidence gap of the potential interlinkages between digital inclusion and financial capability evidence, specifically, to see if digital inclusion (via our smartphone apps) could help improve people's financial capability by:

i. Increasing personal and financial wellbeing and confidence *[MAS Financial wellbeing, ability and mind-set outcomes]*
ii. Helping people who are at risk of falling into problem debt (levels of over indebtedness) *[MAS Financially capable and ability outcomes - Understanding of financial products and concepts]*
iii. Helping people excluded from mainstream credit to make well informed decisions about selecting and using credit options that are available to them, and to build understanding of how best to improve their credit (product holding and credit use) *[MAS connection and ability outcomes]*
iv. Improving people's basic skills in applied numeracy, problem-solving and ability to use technology in personal finance applications (ability to save and budget) *[MAS ability outcomes]*
v. Improving people's abilities to keep up with their bills and commitments *[MAS ability outcomes]*

[20] The Adult Outcomes Framework was developed through the Financial Capability Strategy for the UK and describes the key elements of financial capability for people from 18 years old through to later life. For more information, please refer to: https://www.fincap.org.uk/outcomes_adults

vi. Improving people's attitudes (value financial planning and saving, value setting financial goals, better attitudes to the future) *[MAS mind-set outcomes/ Basic attitudes and motivations - Self-control]*

3.2 Methodology

An RCT is a rigorous approach to determine cause-effect relations between two groups by randomly assigning participants to a control group (those not receiving the intervention) and a treatment group (those receiving the intervention i.e. the mobile apps). The groups are then followed up and compared for the outcomes of interest (change in various aspects of financial capability) in order to determine the efficacy of the treatment. An RCT is an effective research technique when trying to detect associations between the control and treatment groups for a number of reasons:

- It ensures that allocation to the comparison groups is unbiased and thus not determined by the researcher or study participants
- It tends to produce comparable groups with no systematic differences such that any known and unknown prognostic factors at the time of randomisation will be evenly balanced between the two groups
- Allows for statistical analysis to efficiently investigate for causality

3.3 Data Collection

3.3.1 Background

The sample participating in the trial were members of Derry Credit Union, the largest Credit Union in NI. Recruitment for the trial began in April 2017 and involved an opt-in approach for participants through a combination of posters, Facebook advertisements and direct recruitment in the Credit Union. Each approach was directly linked to a questionnaire facilitated through Google Forms. Having considered multiple options such as Survey Monkey, Smart Survey and Doodle, Google Forms was chosen for its ease of use in distributing the form and its ability to export the data in Excel format, which can be easily converted to Stata or SPSS

for further analysis. The information gathered at this stage included: *name; email; telephone number; full address (including postcode); and whether they were a member of Derry Credit Union*. By the end of August 2017, a total of 835 individuals voluntarily registered to be part of the trial. After screening and consent, participants were randomised using the random function in EXCEL to either receive the mobile app (treatment) or not (control). In addition, an in-depth survey was created to explore participants' financial circumstances, employment, income, attitudes to risk and household demographics. The survey features questions from the (MAS) Adult Financial Capability Framework (Financial Capability Strategy for the UK, 2016) and elements from previous work conducted with Northern Irish Credit Unions (French and McKillop 2016).[21] These questions were designed to measure participants' levels of financial capability in the outcomes as identified in the Appendix.

A local market research company was recruited to administer the survey. Prior to going out into the field, the survey company piloted the survey on eight people who had signed up to take part in the study. As highlighted by Bryman (2012), piloting survey questions allows a researcher to determine the adequacy of instructions to the interviewers, test if the questions make sense to respondents and interviewers, helps to equip the interviewers with a greater sense of ease and confidence when asking the questions, ensures that the flow of questions has been adequately considered and helps to identify whether the research instrument operates well as a whole.[22] Through this piloting phase, we were able to identify that the survey was too long and detailed and so through further refinement, we were able to achieve our goal of a 45-minute survey completion. As a goodwill gesture, each participant received £40 for their time (i.e. £20 for completing the initial survey and £20 for completing a follow-up survey)

3.3.2 Baseline Survey (June-August 2017)

The initial baseline survey was carried out from June to August 2017 by the market research company until the sampling frame was exhausted resulting in 500 completed surveys (including the eight pilot surveys) and a response rate of 60%. Of the 500, 260 were randomly assigned to the control group and 240 to the treatment group.

[21] French, D, and McKillop, D (2016), 'Financial Literacy and Over-Indebtedness in Low-Income Households', International Review of Financial Analysis, Vol. 48, pp. 1-11.
[22] Bryman, A (2012). Social Research Methods. 4th ed. Oxford: Oxford University Press.

Table 3.1 presents some descriptive statistics for the 500 respondents in the initial sample. As would be expected given the random assignment, the values across the groups are similar and present no statistically significant differences. Participants were found to generally have lower levels of education – only 17% of the sample has a university education, 57% of which is in the intervention group, 10% have no educational qualifications and 17% are educated to A-Level. Incomes are low in our sample with 43% having a weekly household income of below £480. Comparable figures for the Northern Irish population are 24% with a university education, 29% with no educational qualifications (NISRA, 2012) and an average household budget of £454 a week (authors' calculations based on 2013-14 Continuous Household Survey). There is a greater proportion aged 25 to 49 in this sample (62%) than in NI (45%) and average sample household size (2.28) is smaller than typical Northern Irish households (2.5). Interestingly, 14% of our sample stated that they did not know their gross household income and this was split evenly across the treatment and control group (53% compared to 47% respectively).

Table 3.1 Descriptive Statistics (Baseline Surveys)

Variable	*Control Group (Did not receive app)*		*Intervention Group (Received App)*		*P-Value*
	Mean	SD	Mean	SD	
Age	39.41	13.97	39.62	13.04	.5396
Female	0.77	0.42	0.77	0.42	.7854
Has partner	0.48	0.50	0.51	0.50	.9967
Educated to degree level	0.24	0.43	0.35	0.48	.2494
Education	0.18	0.38	0.16	0.36	.6959
Employed	0.44	0.50	0.46	0.50	.7979
Unemployed	0.08	0.27	0.10	0.30	.2135
Retired	0.07	0.26	0.05	0.23	.6628
Confidence- Managing Money	0.79	0.41	0.81	0.40	.8243
Confidence- Understanding financial products	0.63	0.48	0.67	0.47	-.6689
Debt trouble	0.06	0.24	0.08	0.26	.4574
Residual money at end of week/ month	0.27	0.44	0.26	0.44	.5698

3.3.3 Intervention Period (September 2017- January 2018)

During the intervention period, we conducted three exercises to reinforce and encourage use of the apps - regular push notifications via the apps, a money management skills workshop and a competition. With respect to the first, push notifications were sent via the apps to the treatment group on a weekly basis. The nature of these notifications included a combination of updates on the study (including information on the workshop and the competition), any relevant media updates highlighting issues and ways to improve areas of financial capability and "did you know" about features in each of the apps. Push notifications are considered a valued way of 'connecting' with your audience. The downside however was that as the notifications were informative only and do not allow for interaction, there was no way to determine how effective these were in reaching the participants in the treatment group. This is an area highlighted further in Section 7 of the report. The second intervention was a pilot workshop. We offered a workshop that was informative i.e. raising the awareness of what financial capability is with some empirical evidence showing key facts and statistics in the UK and NI, and participative i.e. where attendees would participate in exercises with the use of the apps to both test their current abilities and offer suggestions as to how to improve upon them. The workshop was trialled in September with 4 people from the treatment group, (disappointingly 12 people failed to show up). Initial feedback from the participants on the usefulness of the workshop was positive.

Following the feedback gained from the September workshop, the intention was to hold another workshop during November but it failed to go ahead due to poor demand. As an alternative, we decided to engage with treatment group participants by way of a competition. Drawing from telephone conversations with treatment group participants, the competition was structured around financial problem setting. Seven problems were set and required users to use the mobile apps to determine solutions. Those getting all seven answers correct were entered into a prize draw. This exercise took place over a two-week period in December 2017 and 85 participants in the treatment group entered the competition. Of these 85, 29 (34%) got all seven problems correct and were entered into a prize draw. Three winners were chosen at random to each receive a £100 gift voucher.

3.3.4 Follow up Surveys (February-March 2018)

The follow-up survey was conducted between February and March 2018. An issue faced in RCTs is the potential loss of participants for the follow-up survey. To mitigate this regular email communication with participants was maintained throughout the RCT. This included monthly updates for all participants on the progress of the study and regular reminders that the market research company would be getting in touch to arrange a time and date for the follow-up survey. This approach proved very successful. Of the 500 which completed the initial (baseline) survey, 403 completed the follow-up survey (a response rate of 80%).

3.4 Changes to the Evaluation Methodology

There were two major changes to the evaluation methodology with both occurring at the beginning of the project. Initially, we thought that to get the requisite number of participants it would be necessary to work with three credit unions. However, Derry Credit Union, the largest credit union in NI, agreed to participate in the study and this enabled us to concentrate efforts around the membership of just one credit union. Having members of only one credit union in the RCT eliminates any unobserved confounding effects of different operating practices and initiatives at different credit unions. The second major change centred on the data available for analysis. The initial intention was to evaluate financial capability using both survey information and member-specific loan data provided by the Credit Union. Due to data protection concerns, Derry Credit Union decided that they would not be able to provide the loan information on their members. Therefore, the findings presented in Section 4 are based only on survey data.

4.0 Key Findings - Outcomes Evaluation

4.1 Background

The core aims of the outcomes evaluation are to assess the extent to which the study has achieved the intended outcomes mapped out in the Theory of Change (Section 2.3) and part of the MAS Adult Outcomes Framework. In summary, the evaluation sought to determine whether the mobile apps:

i. Increase personal and financial wellbeing and confidence;
ii. Help people who are at risk of falling into problem debt (levels of over indebtedness);
iii. Help people excluded from mainstream credit to make well informed decisions about selecting and using credit options that are available to them, and to build understanding of how best to improve their credit (product holding and credit use);
iv. Improve people's basic skills in applied numeracy, problem-solving and ability to use technology in personal finance applications (ability to save and budget);
v. Improve people's abilities to keep up with their bills and commitments; and
vi. Improve people's attitudes (value financial planning and saving, value setting financial goals, better attitudes to the future).

Additionally, in this Section we detail the extent to which the mobile apps were used by participants in the treatment group and their views on the relevance and quality of the mobile apps.

4.2 Pre and Post-Intervention Surveys

Pre and post-intervention surveys were carried out by a market research company (Perceptive Insight) June-August 2017 and February-March 2018. From a sampling frame of 835 registered individuals, 500 respondents were interviewed in the pre-intervention survey. Of these, 403 people were surveyed post-intervention (81%) including 191 (80%) of those allocated the app (see Table 4.1).

Table 4.1 Post-intervention response

	Treatment			Control
	Downloaded app		Total	
	Yes	No		
Pre-intervention survey	176	64	240	260
Post-intervention survey	147	44	191	212
Response	84%	69%	80%	82%

The survey explored participants' financial circumstances, employment, income, attitudes to risk and household demographics. It featured questions from the (MAS) Adult Financial Capability Framework (Financial Capability Strategy for the UK, 2016) and elements from previous work conducted with Northern Irish Credit Unions (French and McKillop, 2015).

Table 4.2 below confirms that those in the treatment and control groups interviewed in the post-intervention survey are statistically the same for known factors associated with financial capability. The means for each variable are reported with a statistical test for differences. For every variable, the p-values are well above the conventional 5% or 10% levels of significance.

Table 4.2 Comparison of treatment and control group for known confounders

Variable	Control	Treatment	p-value
Female	0.76	0.77	0.715
Partner	0.47	0.54	0.147
Employed	0.43	0.46	0.589
Retired	0.08	0.06	0.501
Education	0.60	0.64	0.354
Age†	39.6	40.4	0.547
Children†	1.0	1.0	0.919
Income(£)‡	25669	31973	0.447

Notes : † t-tests of equality of means ‡ Chi-square test of independence. All other statistical tests of differences are tests on the equality of proportions. *Female* Proportion of female respondents *Partner* Proportion of respondents with partner *Employed* Proportion of respondents employed *Retired* Proportion of respondents retired *Education* Highest educational qualification obtained A-level or above *Age* Respondent age *Children* Number of children living in household *Income* Household's total gross income from all sources (in categories). p<0.10 * p<0.05 **.

In the analysis below we generally compare the treatment and control group using a series of ordered probit regressions[23] where, in the first instance, the only explanatory variable is whether the individual was a member of the treatment group or not. We use an 'intention-to-treat' (ITT) approach where all those in the treatment group are analysed regardless of whether they downloaded (or used) the apps or not. This is standard in RCTs as it maintains random assignment and provides a pragmatic assessment of intervention effectiveness (Hollis and Campbell, 1999).[24]

In the second set of regressions, we additionally control for the known confounders identified above to test the robustness of our results. As the statistics in Table 4.2 indicate this is unnecessary, we interpret this second set of results as confirmation (or not) of the first set of results but our focus is still principally on the results from the basic model.

For the purposes of the analysis, some variables have been re-ordered so that the highest values always correspond to the most financially capable result for all variables. For example, the *Money Over* question asked *'How often would you say you have money over at the end of the week, or end of the month if you budget by month?'* on a scale of 1 to 6 where 1=Always and 6=Never. In the analysis, this variable has been reordered so that 1=Never and 6=Always. This way a positive coefficient always equates to a 'positive' result. The study group is not large enough for analysis by each app separately hence our findings show all outcomes for the apps as a package.

4.3 Personal and Financial Well-being and Confidence

In Table 4.3, we see that the mobile apps have increased confidence about understanding the total amount to be repaid when shown information about a financial product such as a loan, credit card or store card. The coefficient of 0.180 means we can say that receiving the mobile apps increases the probability of being very confident when shown information about financial

[23] The ordered probit model takes the form:

$$y^* = \alpha T + \boldsymbol{X}'\boldsymbol{\beta} + \varepsilon$$

where the actual rating y^* is unobserved, where T is a dummy for assignment to the treatment group and $\mathbf{X}$ are the covariates (female partner, employed, retired, education, age, children, income).

[24] Hollis, S. and Campbell, F.' (1999). "What Is Meant by Intention to Treat Analysis? Survey of Published Randomised Controlled Trials." *BMJ : British Medical Journal* 319.7211: 670–674.

products by 6.9%. The coefficient is increased when adjusting for potential confounders (β=0.235) and is still statistically significant at the 10% level (p=0.066).

For the remainder of variables there are no statistically significant results and no clear pattern that the intervention generally improved all measures. When we control for possible confounders there is an indication that the treatment group are less optimistic about the future but this result was not observed in the basic model.

Table 4.3 Estimates of treatment effect for Personal and financial well-being and confidence

	No covariates			With covariates		
Variable	Coeff.	p		Coeff.	p	
Life satisfaction	-0.015	0.886		-0.083	0.487	
Financial satisfaction	0.029	0.772		0.044	0.711	
Money management confidence	-0.060	0.557		-0.053	0.656	
Loan confidence	0.180	0.099	*	0.235	0.066	*
Debt trouble	-0.053	0.668		-0.182	0.205	
Money over	-0.058	0.580		-0.081	0.503	
Managing financially	-0.013	0.911		-0.072	0.583	
Health‡	-1.247	0.477		-1.646	0.370	
Bounce back	-0.079	0.491		-0.215	0.107	
Surviving stressful events	-0.073	0.504		-0.100	0.433	
Recovering from stressful events	0.060	0.590		0.057	0.655	
Snapping back	0.014	0.902		0.043	0.738	
Coming through difficulties	0.117	0.307		0.153	0.256	
Getting over setbacks	0.050	0.662		-0.071	0.601	
Expect the best	-0.025	0.828		-0.045	0.731	
Things going wrong	-0.112	0.298		-0.243	0.053	*
Optimism about future	-0.087	0.442		-0.083	0.530	

Notes : ‡OLS All other regressions ordered probit. *Life satisfaction* 'Overall, how satisfied are you with your life nowadays?' (0-10) *Financial satisfaction* 'How satisfied are you with your overall financial circumstances?' *Money management confidence* 'How confident do you feel managing your money?' (0-10) *Loan confidence* 'When you are shown information about a financial product such as a loan, credit card or store card, how confident are you that you understand the total amount you need to repay?' (1-5). *Debt trouble* 'Thinking back over the past 6 months, how often would you say you have trouble with debts that you found hard to repay?' (1-4) *Money over* 'How often would you say you have money over at the end of the week, or end of the month if you budget by month?' (1-6) *Managing financially* 'Taking everything together, which of the phrases on this card best describes how you are managing financially these days?' (1-4) Health 'Please tell me the number between 0 and 100 that you feel best shows how good your health is today' *Bounce back* 'I tend to bounce back quickly after hard times' (1-5) *Surviving stressful events* 'I have a hard time making it through stressful events' (1-5) *Recovering from stressful events* ' It does not take me long to recover from a stressful event' *Snapping back* 'It is hard for me to snap back when something bad happens (1-5) *Coming through difficulties* 'I usually come through difficult times with little trouble (1-5) *Getting over setbacks* 'I tend to take a long time to get over set-backs in my life' (1-5) *Expect the best* 'In uncertain times, you usually expect the best' (1-5) *Things going wrong* 'If something can go wrong for me, it will' (1-5) *Optimistic about future* 'I am always optimistic about my future' (1-5) .p<0.10 * p<0.05 **.

4.4 Levels of Over Indebtedness

For our two indicators of problems with over indebtedness, there are no statistically significant results and no clear pattern that the intervention generally led to positive results. These conclusions are not altered by controlling for possible confounders.

Table 4.4 Estimates of treatment effect for Levels of over indebtedness

	No controls		Controls	
Variable	Coeff.	p	Coeff.	p
Bills and credit burden	-0.125	0.283	-0.116	0.400
Bills and credit arrears †	0.040	0.824	0.145	0.522

Notes : †Probit regression. Other regression ordered probit. *Bills and credit burden* 'To what extent do you feel that keeping up with your bills and credit commitments is a burden? (1-3) *Bills and credit arrears* In the last 6 months, have you fallen behind on, or missed any payments for credit commitments or domestic bills for any 3 or more months? (Y/N). p<0.10 * p<0.05 **.

4.5 Product Holding and Credit Use

According to the Financial Capability Strategy for the UK (2016)[25], to be financially capable is to have an ability to select financial products or services that meet their needs and access them via appropriate channels (digitally or offline).

For our three indicators of shopping around for better deals, there are no statistically significant results even when controlling for possible confounders. We note that the coefficients are all positive in the model including the covariates but the p-values for each variable are very far from levels of statistical significance.

Table 4.5 Estimates of treatment effect for Product holding and credit use

	No controls		Controls	
Variable	Coeff.	p	Coeff.	p
Get deal on financial products	0.064	0.629	0.007	0.964
Get deal on utilities	-0.044	0.727	0.025	0.861
Get other deal	0.055	0.660	0.052	0.721

Notes : All probit regressions. 'In the last 6 months, have you tried to get a better deal on.....' *Get deal on financial products* '.....financial products (for example: current account/ credit union account, credit card, savings account, home buildings/ content insurance)' (Y/N) *Get deal on utilities* '.... Household utilities (for example: gas, electricity)' (Y/N) Get *other deal* '.....other (for example mobile, internet)' (Y/N) . p<0.10 * p<0.05 **.

[25] Financial Capability Strategy for the UK (2016), Adult Outcomes Framework. [Online]. Available at: <http://www.fincap.org.uk/outcomes_adults>

4.6 Ability to Save and Budget

Managing money well day-to-day including budgeting and tracking income was identified by the UK Financial Capability Strategy as a key domain of financially capable behaviours. We do not find any statistically significant results for indicators in this domain in our basic model. The best that can be said is that receiving the mobile apps generally leads to more positive results on these measures and makes users aware that their current approach to keeping track of income and expenditures is not working. When we include covariates in the model there is an indication that receiving the mobile apps encourages users to check how much money is in their current account more often.

Table 4.6 Estimates of treatment effect for Ability to save and budget

	No controls		Controls		
Variable	Coeff.	p	Coeff.	p	
Know balance	0.048	0.662	0.170	0.181	
Check account	0.097	0.395	0.278	0.037	**
Save monthly†	0.047	0.748	0.065	0.716	
Savings amount	0.047	0.661	-0.051	0.683	
Tracking finances†	0.013	0.946	0.376	0.122	
Tracking approach works	-0.157	0.136	-0.120	0.324	

Notes : †Probit regressions. All other regressions ordered probit. *Know balance* 'Which of these best describes how accurately you know the balance on this account?' (1-6) Check account 'How often do you normally check how much money is in this account?' (1-5) *Save monthly* 'Do you currently save some money each month?' *(Y/N) Savings amount* 'Approximately how much, if anything, do you and your partner/spouse currently have in savings and investments?' *(1-5) Tracking finances* 'Do you keep track of your personal income and expenditure?' (Y/N) *Tracking approach works* ' Thinking overall about yours and your partner/spouse's approach to keeping track of income and expenditure, how well do you think this approach works?' (0-10). p<0.10 * p<0.05 **.

4.7 Bills and Commitments

For our two indicators of problems keeping up with commitments, there are no statistically significant results in our basic model. Controlling for possible confounders would indicate that receiving the mobile apps worsens food security but it is not clear how this would have occurred.

Table 4.7 Estimates of treatment effect for Bills and Commitments

	No controls		Controls		
Variable	Coeff.	p	Coeff.	p	
Keeping up with bills	0.078	0.494	0.014	0.918	
Food security	-0.202	0.136	-0.490	0.009	**

Notes : All regressions ordered probit. *Keeping up with bills* 'Which one of the following statements best describes how well you are keeping up with your bills and credit commitments at the moment?' (1-5) *Food security* ' Which of the following statements best describes the food eaten in your household in the past 6 months?'.(1-4) p<0.10 * p<0.05 **.

4.8 Attitudes to Money

The financial capability strategy for the UK defines attitudes as an "*expression of underlying beliefs that may influence behavioural intention*" (Bagwell et al., 2014:9). Indeed, financial capability research has shown that attitudes are a key driver to behaviour and can greatly influence the financial decisions we make in our lives (Moore, 2003[26], Atkinson and Messy, 2012[27], Bagwell et al. 2014[28]). As highlighted by the financial capability strategy for the UK, "there is strong evidence that attitudes towards money can either increase or decrease the risk of experiencing adverse financial outcomes, even after adjusting for socio-economic status (Bagwell et al., 2014:24).

We find a number of statistically significant results for variables capturing aspects of attitudes to money. Those in the treatment group tend to disagree with the statement that 'When it comes to money I prefer to live for today rather than plan for tomorrow'. The coefficient of 0.178 means we can say that receiving the mobile apps increases the probability of strongly disagreeing with this statement by 4.5%. The mobile apps therefore encourage users to think ahead and plan for the future which is one of the four key domains of financially capable behaviours identified in the UK Financial Capability Strategy. This result is not robust to the inclusion of covariates in the model.

[26] Moore, D (2003), 'Survey of Financial Literacy in Washington State: Knowledge, Behavior, Attitudes, and Experiences'. Technical report 03-39, Social and Economic Sciences Research Center, Washington State University.
[27] Atkinson, A. and F. Messy (2012), 'Measuring Financial Literacy: Results of the OECD / International Network on Financial Education (INFE) Pilot Study', OECD Working Papers on Finance, Insurance and Private Pensions, No. 15, OECD Publishing. http://dx.doi.org/10.1787/5k9csfs90fr4-en
[28] Bagwell, S., Hestbaek, C., Harries, E, and Kail, A (2014), 'Financial Capability Outcomes Framework' [Online]. Available at: <http://www.thinknpc.org/wp-content/uploads/2014/09/Financial-Capability-Outcome-Frameworks-MAS.pdf>

We also see that receiving the mobile apps is strongly associated with what at first glance seems like a counterintuitive result. Those in the treatment group tend to disagree with the statement that 'I hate to borrow – I would much rather save up in advance'. The coefficient of 0.402 is relatively large and means we can say that receiving the mobile apps decreases the probability of strongly agreeing with this statement by 12.4%. However, we should not be surprised if mobile apps which have been designed to aid borrowing comparisons and which have been shown above to improve confidence about loans also reduce antipathy towards borrowing. This result is also seen to be robust to the inclusion of covariates in the model.

Table 4.8 Estimates of treatment effect for Attitudes to Money

	No controls			Controls		
Variable	Coeff.	p		Coeff.	p	
Live for today	0.178	0.093	*	0.142	0.250	
Anxiety about finances	0.120	0.258		0.027	0.827	
Self-efficacy	0.083	0.447		0.016	0.900	
Hate borrowing	-0.402	0.000	**	-0.321	0.011	**
Happy to use tech	0.231	0.033	**	0.215	0.091	*
Save for rainy day	0.075	0.530		0.027	0.850	
Save for retirement	0.118	0.293		0.029	0.825	
Keep track of finances	0.108	0.385		0.045	0.757	
Shop around	-0.003	0.978		-0.078	0.582	
Buy on impulse	-0.032	0.758		0.026	0.827	
Spend like friends	-0.061	0.577		-0.047	0.714	
Spend on children	0.135	0.248		0.049	0.717	

Notes : All regressions ordered probit. *Live for today* 'When it comes to money I prefer to live for today rather than plan for tomorrow' (1-5) *Anxiety about finances* 'Thinking about my financial situation makes me anxious' (1-5) *Self-efficacy* 'Nothing I will do will make much difference to my financial situation' *Hate borrowing* 'I hate to borrow – I would much rather save up in advance' (1-5) *Happy to use tech* 'I would be happy to use technology to help me in my day to day financial decision making' (1-5) 'How important, if at all, do you think it is to…' *Save for rainy day* '..Save money for a rainy day ' (1-5) *Save for retirement* '...Put aside money for your retirement' (1-5) *Keep track of finances* '.... Keep track of your and your partner/spouse's income and expenditure' (1-5) *Shop around* '.... Shop around in order to make your money go further' (1-5) *Buy on impulse* ' I often buy things on impulse' (0-10) *Spend like friends* 'I feel under pressure to spend like my friends even when I can't afford it' (0-10) *Spend on children* 'I feel under pressure to spend money on my children even when I can't afford it.' p<0.10 * p<0.05 **.

Encouragingly, we also find that receiving the mobile apps is associated with more positive attitudes to using technology. Those in the treatment group tend to agree with the statement that 'I would be happy to use technology to help me in my day to day financial decision making'. The coefficient of 0.231 means we can say that receiving the mobile apps increases the probability of strongly agreeing with this statement by 7.9%. The mobile apps are therefore

sufficiently user-friendly and of sufficient utility to users to encourage them to use technology for financial planning. This result is also robust to the inclusion of covariates in the model.

4.9 Assessment of Mobile Apps

The remainder of this Section provides data on when and how often each of the mobile apps were used. This information was recorded by the App Developer and provided to the Project Team over the course of the trial. The follow-up survey had questions on app usage, the quality and relevance of the mobile apps and whether as a consequence of using the apps attitudes towards the use of digital technology had changed. This survey information is also analysed in this Section.

4.9.1 Mobile App Usage (App Developer Data)

Usage data in terms of when each mobile app was used was recorded by the App Developer. The Cash Calendar was found to be most popular, making up 32% of the total usage (number of times used), followed by Spend NI (28%) with the Snowball and Money Costs apps each making up 20% of total usage.

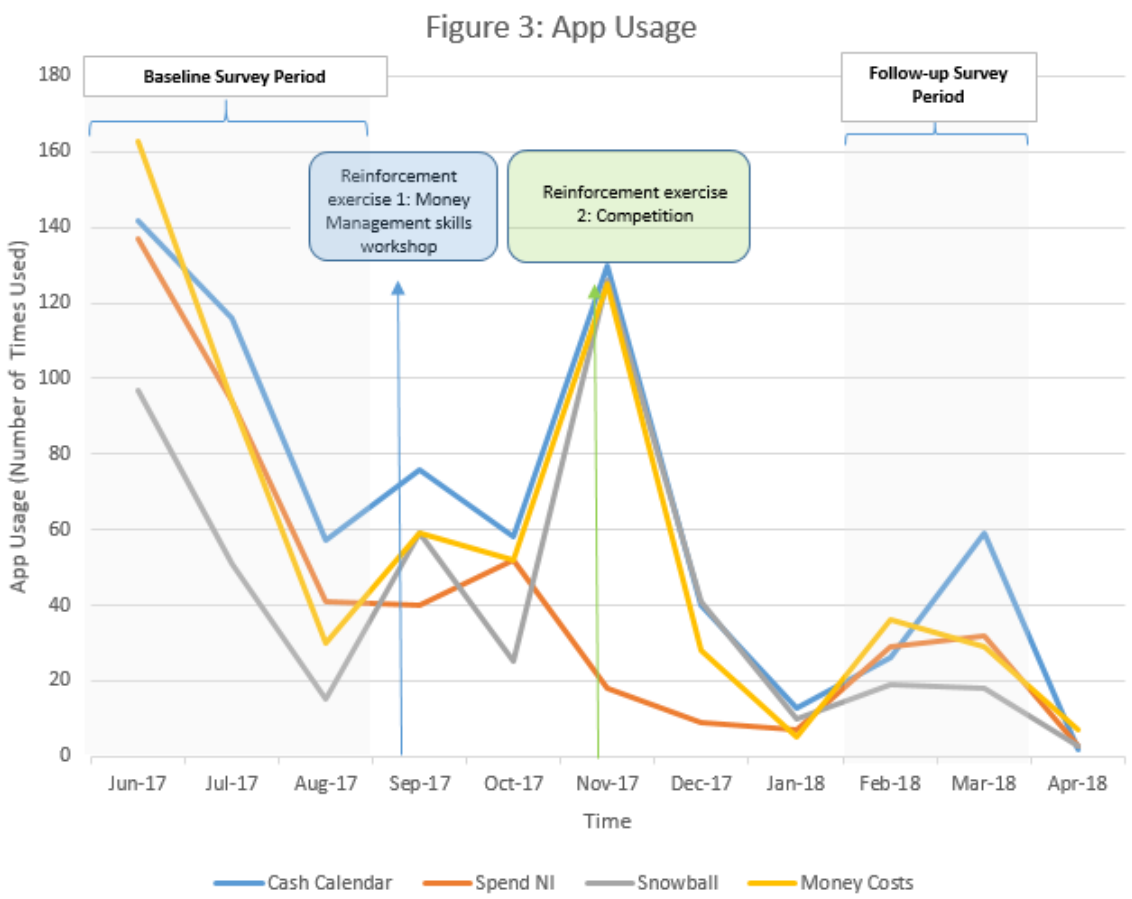
Figure 3 profiles the usage provided by the App Developer over the course of the RCT. Initially usage is high but declines steadily between June and August 2017. Usage during this period reflects the initial download of the apps which were provided to participants on a rolling basis over the June to August period. Engagement and user retention are two of the most commonly identified problems in mobile application usage. For example Statista found that for 2017, approximately 24% of apps downloaded from Google Play were accessed only once during the first six months of ownership.[29]

Throughout the RCT use of the apps was promoted through weekly push notifications where information of various forms was sent to participants in the treatment group. In September 2017, the Project Team undertook a money management skills workshop to showcase the capabilities of the apps. This reinforcement exercise resulted in a marginal increase in app

[29] https://www.statista.com/statistics/271628/percentage-of-apps-used-once-in-the-us/

usage (see Figure 3), with the increase in engagement due to both the promotion of the workshop (via Facebook, emails and push notifications) and the workshop itself.

Figure 3 App Usage



A money skills competition was run over a two-week period in early December 2017. The competition took the form of seven problems and required participants to use either the Cash Calendar, Snowball or Money Costs applications to determine answers. The competition was promoted during November (by email and push notifications) with the deadline for submission of answers early December (see Section 3.3.3 for additional details). Figure 3 highlights a pronounced increase in the use of the Cash Calendar, Snowball and Money Costs applications during the promotion phase and over the two-week period in December that the competition

was open. Usage of the Spending NI application which was not part of the competition did not experience any increase in use over the same period.

Figure 3 also highlights a further increase in app usage in February and March 2018. This coincided with the period over which the follow-up survey was undertaken. It may therefore be the case that the increase in usage was triggered by fresh communications from the Survey Team as they sought to set up suitable interview dates with participants.

4.9.2 Mobile App Usage (Survey Data)

Our App Developer data indicated that 86 (45%) used the apps frequently (5 or more times during the intervention period). A further 61 (32%) used the apps infrequently (less than 5 times during the intervention period) while 44 (23%) either didn't download or didn't use the apps over the intervention period.

Our follow-up survey results revealed that across all age groups, more women than men used the apps. Frequent users were also found to have relatively high levels of education, with 59 (69%) educated to university level and the remaining 27 (31%) educated to A-Level. This contrasts with 24 (39%) of the infrequent users being educated to university level and 7 (11%) of infrequent users having no formal qualifications. Both frequent and infrequent users identified themselves as being active users of the internet, spending on average more than 20 hours per week online, either by tablet, phone or computer.

Those that infrequently used the apps were asked to detail the reasons for using the apps infrequently (see Figure 4) and also to identify factors which might encourage them to use the apps more frequently (see Figure 5). Reasons most commonly identified for infrequency of use were forgetting about the apps, having a general interest in digital skills but no interest in our apps, forgetting about what the apps were for and losing their phone. When asked what would encourage greater use of the apps the answer which dominated was if the information provided by the apps was of greater relevance to them. The second most important factor identified was if they had greater confidence in being able to understand the information retrieved from the apps.

Figure 4

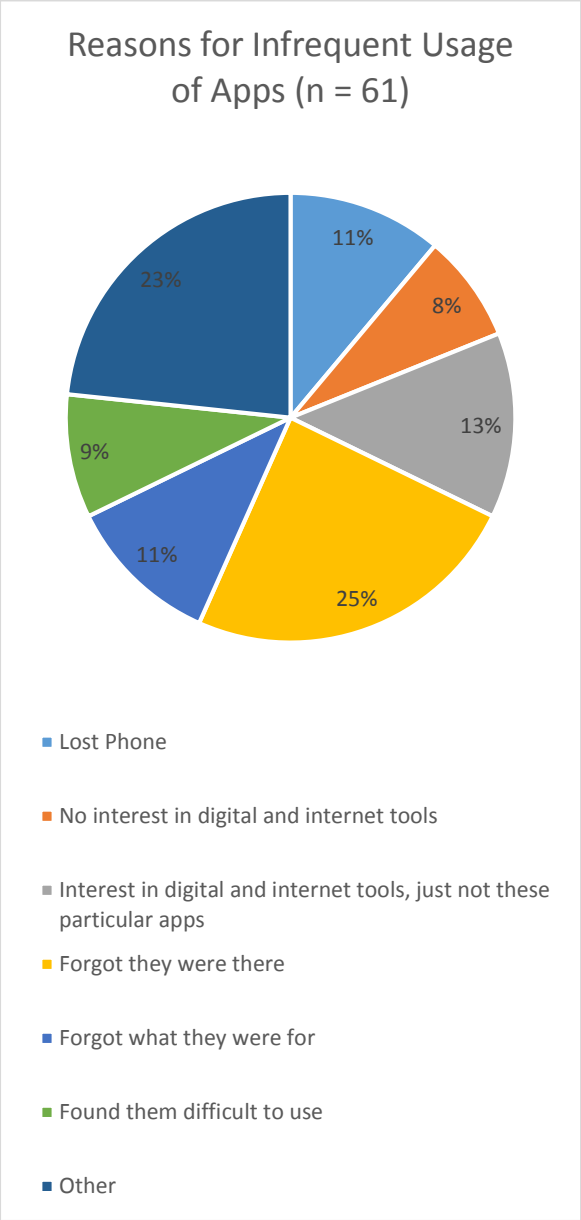
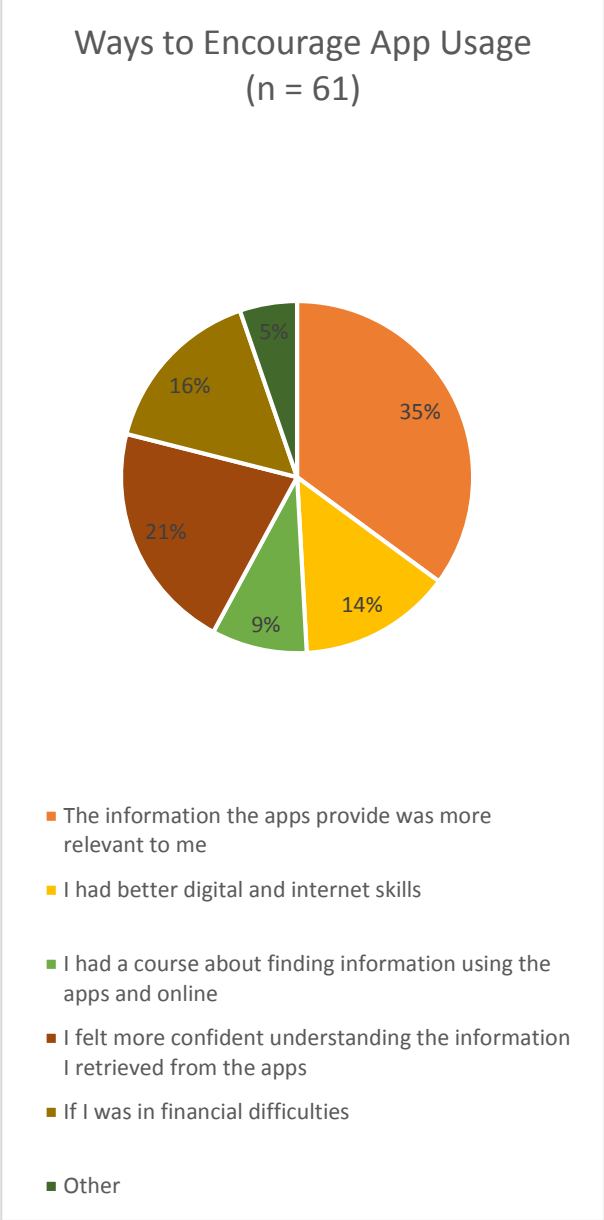


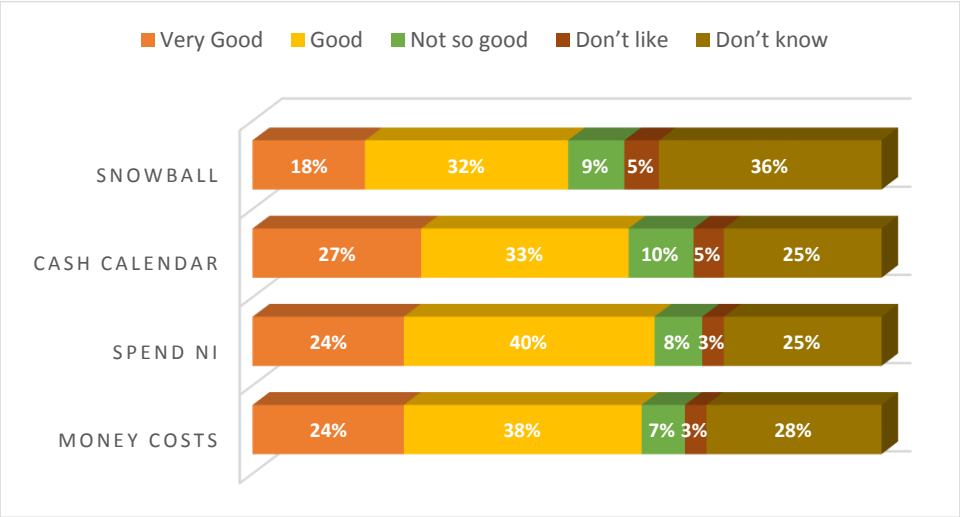
Figure 5



4.9.3 App Quality (Survey Data)

Participants in the treatment group were asked to assess the quality of the apps (see Figure 6). In general, the quality of the apps was viewed positively with on average 59% of those that downloaded the apps considering them as either very good or good. The Spend NI app was viewed as best (64% rated it as either very good or good) while the least popular was the Snowball app (50% rated it as either very good or good). Only a small percentage of participants (3 to 5%) indicated that they did not like the apps.

Figure 6 Ratings per app



Participants in the treatment group were then asked to identify what they most liked about each of the apps (see Figure 7)). They were provided with five options to choose from. *Ease of use* was the feature that was most liked across all four apps followed by *content* and then *functionality* while *speed of use* was seldom selected as the most liked feature. Approximately 25% of the treatment group chose that they *don't know* what they most liked about the apps. We also disaggregated responses to this question by those using the mobile apps frequently, (see Appendix, Figure 7A) and those using the mobile apps infrequently (see Appendix, Figure 7B). Comparison of Figures 7A and 7B highlights that those using the apps more frequently were more positive about all of the mobile apps' attributes with the most pronounced difference between frequent and infrequent users being for *content.*

Participants in the treatment group were also asked to identify what they what they least liked about each of the apps. Figure 8 highlights that in excess of 50% of treatment group participants chose that they '*don't know*' what they least liked about the apps. Only a relatively small number of treatment group participants opted to identify *ease of use, content, functionality* or *speed of use* as their least liked option. Participants were also given the option of including any "other" least liked aspects of the apps. The most frequent comment found was that they found nothing to dislike about the apps. For those that highlighted "other" two indicated that the apps took up too much space and two suggested it slowed down their phone. Again we disaggregated responses to this question by those using the mobile apps frequently, (see Appendix, Figure 8A) and those using the mobile apps infrequently (see Appendix, Figure 8B). Responses by both groups are broadly similar with the exception of *ease of use* for Spend NI which was much higher as least liked for infrequent users.

Figure 7

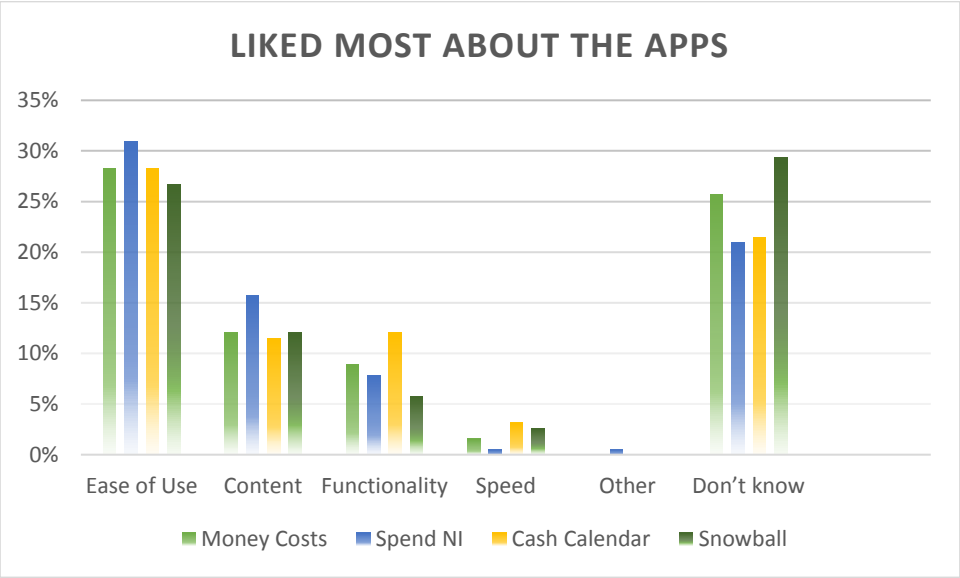
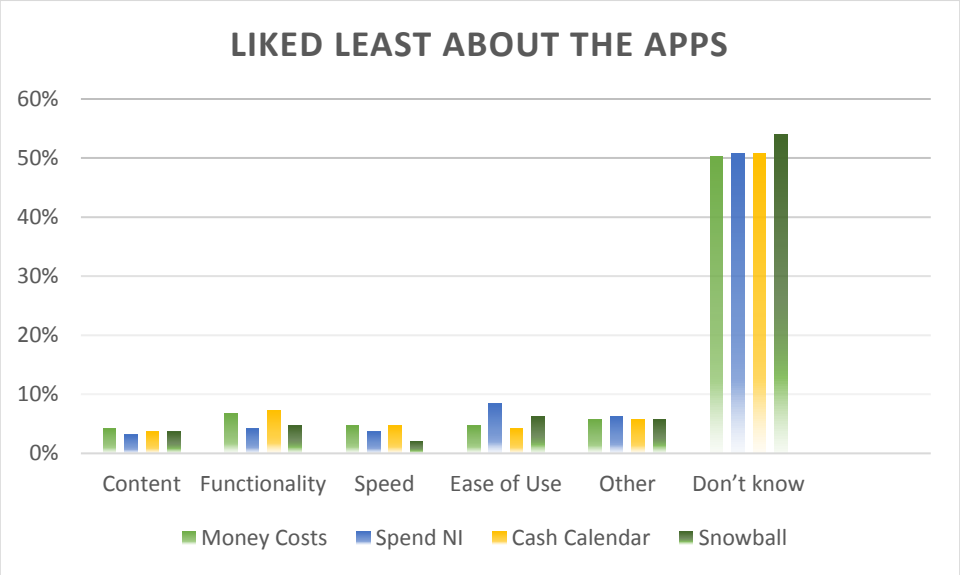


Figure 8



4.9.4 Attitude to Digital Technology (Survey Data)

In the follow up survey a number of questions were asked to assess changes in attitude to digital technology. Specifically, participants in the treatment group were asked if '*as a consequence of using the mobile apps their attitude towards the use of digital technology had changed*' (48 (25%) answered 'Yes', 96 (50%) 'No' and 47 (25%) 'Don't know'). Those that answered 'Yes' were asked to identify in what ways change had occurred. They suggested the following:

- They now think more about how online money advice and guidance could help them;
- They now see the importance of timing in repayments and interest charges;
- They see the importance of setting financial goals for the short to medium and longer term; and
- They recognise the importance of thinking about future financial needs

4.10 Summary of Findings

Statistical analysis of the treatment and control groups provided some evidence of an improvement in *personal and financial well-being and confidence*. In particular, receiving the

mobile apps increased the probability of being very confident when shown information about financial products such as a loan, credit card or store card. An improvement for those receiving the apps was also identified in a number of the measures designed to capture aspects of *attitudes to money*. Access to the mobile apps was found to encourage users to think ahead and plan for the future. Those in the treatment group were also found to have a more positive attitude towards the use of technology for day to day financial decision making. They were also identified as having a reduced antipathy towards borrowing. This latter finding was explained by the fact that the mobile apps were designed to aid borrowing comparisons and had also been shown to improve confidence about loans.

No significant results were found for the measures capturing whether *money is being managed well on a day-to-day basis including budgeting and tracking income* The best that could be said is that receiving the mobile apps generally led to more positive results on these measures and made users aware that their current approach to keeping track of income and expenditures was not working. No significant results were found for those measures designed to capture *levels of over indebtedness,* or for indicators measuring *keeping up with bills and commitments,* or for measures capturing *product holding and credit use.*

The Cash Calendar was found to be most popular mobile app followed by the Spend NI app. Usage data highlighted that 45% of those in the treatment group used the mobile apps frequently (5 or more times during the intervention period), 32% used the app infrequently (less than 5 times during the intervention period) and 23% either didn't download or didn't use the apps. Across all age groups, more women than men used the apps. Those that used the apps frequently had relatively higher levels of education. Infrequent users stated that they would use the mobile apps more often if the information provided by the apps was of greater relevance and if they had greater confidence in being able to understand the information retrieved from the apps.

5.0 Process Evaluation

Process evaluation was not a major part of this project. There were, however, two noteworthy process evaluation questions (i) could the Project Team secure enough participants? and (ii) will treatment group participants engage with the mobile apps?

5.1 Recruitment of participants

Initially the expectation was that it would be necessary for the Project Team to work with a minimum of three credit unions to ensure that a sufficient number of credit union members would be recruited for the RCT. Ultimately this was not required as a large number of potential participants were obtained through engagement with one credit union, Derry Credit Union which has a membership of 27,000. Recruitment for the trial began in April 2017 and lasted through to August 2017. Participants were informed of the project through posters displayed in Derry Credit Union which included details of how members could register for the trial; through Facebook advertisement which also included registration details and through direct recruitment by members of the Project Team in Derry Credit Union. By the end of August 2017, 835 individuals had registered to be part of the RCT. From this base, 500 eventually participated in the RCT.

A key element in the success of the recruitment exercise was the mixture of approaches used to attract participation. The Project Team found that the most successful method was having an actual physical presence in Derry Credit Union. However, this was extremely labour intensive and as the recruitment phase progressed advertisement through Facebook became equally if not more important. The Project Team also believe that a further factor in the success of the recruitment exercise was the strong and continual support of the project by the Manager and other staff members in Derry Credit Union.

5.2 Engagement with Mobile Apps

The project team were also concerned about the treatment group's level of engagement with the mobile apps. Ongoing assessment of usage was gauged through usage statistics provided by the App Developer. Initially, the Project Team believed that regular push notifications would

be sufficient to ensure ongoing engagement with the apps over the course of the RCT. The push notifications, however, appeared to have only a marginal impact on usage. The Project Team therefore decided to undertake financial capability workshops with treatment group participants to support and encourage app usage. Only one workshop was undertaken due to limited uptake and although app usage did improve it was more to do with the promotion of the workshop rather than attendance at the workshop. It was then decided to hold a competition with the potential of a prize for those who successfully answered a number of questions which could only be answered through using the apps. This intervention proved highly successful with a pronounced increase in usage during the promotion of the competition and over the period that the competition was open.

Ultimately, a majority of the treatment group used the apps but without the intervention of the competition usage could perhaps have been much lower. The competition with the potential of a prize proved highly effective in promoting uptake. A learning from this experience would be that the process could be improved by staging a small number of competitions over the course of the RCT, with one at the start of the trial to encourage immediate engagement.

6.0 Limitations

This section discusses methodological limitations of the evaluation, their potential effects on findings and ways in which future evaluation could improve the robustness of the evidence presented from this study.

6.1 Limitation 1 – Data Access

The evaluation sought to test whether mobile apps designed to enhance financial capability behaviours can help people from disadvantaged communities make better informed decisions about how to tackle debt, manage money day-to-day and prepare for life ahead. Our evaluation approach in addressing this objective was to use a combination of the findings from the RCT alongside an analysis of participants' savings, loans, arrears and withdrawals accessed via credit union systems at months three and nine of the RCT, an approach that had been used in prior research conducted with other credit unions in NI. In this instance, however, it was not possible to access the data. The Board of Directors of Derry Credit Union felt to do so would be a breach of data protection. Despite highlighting this as a potential limitation of the evaluation approach, the access to savings, loans and arrears data was only requested as a backstop with the expectation that in the relatively short period covered by the trial little change could be expected to occur in the money value of savings, loans and arrears.

6.2 Limitation 2 – Download of Apps

As previously highlighted, we use an 'intention-to-treat' approach where all those in the treatment group are analysed regardless of whether they downloaded (or used) the apps or not. In RCTs this is common practice. Despite this, we highlight the inability to ensure that everyone in the treatment group downloaded the app as a second limitation of the evaluation approach. At the beginning of the trial 240 participants were randomly selected to take part in the treatment group. Following the completion of the baseline surveys, it transpired that only 100 had actually downloaded the mobile apps. To redress this problem, those that had not downloaded were contacted by either phone or email and encouraged to do so and also asked why they had failed to download the apps. Through these efforts, a further 76 participants downloaded the apps. Of the remaining 64 that did not download the app, 8 admitted to not wanting to, 10 said they would but failed to do so, 5 stated they had no email and therefore

couldn't download the app, 2 had phones that were incompatible with the apps while 39 could not be contacted either by phone or email. Going forward this problem could be better managed through a refinement of the apps. For example, the apps could be customised to allow immediate identification of those that had and those that had not downloaded the apps. More immediate contact could then be made with those not downloading to both find out why and to encourage downloading.

6.3 Limitation 3 – The Necessity of Incentives

It is also important to identify the potential limitation of using incentives to encourage engagement. We highlighted above that efforts to encourage engagement via a money management skills workshop was poor in comparison to the money skills competition which offered a monetary prize (money voucher). Going forward, further work is required both to identify the best means of encouraging participation and the best ways of showcasing the potential benefits of improved financial capability. The identification of better approaches might be aided through themed focus group discussions.

6.4 Limitation 4 – Project Duration

A final methodological limitation related to timing constraints. The total duration of the project and each stage in the evaluation was tightly time bounded. The effects of the mobile apps on different aspects of financial capability might in some cases emerge over a longer period of time. These potential longer term effects could not be observed in this analysis which had a one-year duration period. One possible way to redress this issue is to secure additional funding to assess the control and treatment groups at a future point in time.

7.0 Implications and Recommendations for Policy and Practice

7.1 Key Learnings – Working with Partners

The partnership approach adopted in this study was key to the successful implementation of the project. Without the commitment and support of our partner, Derry Credit Union, it would have proved extremely difficult to attract the number of necessary participants for the RCT. Working with Derry Credit Union also had the added advantage of helping to ensure the mobile apps were tailored to the specific needs of credit union members.

Working with a partner that is held in high esteem across the credit union sector will also make it easier to encourage other credit unions to engage with the learnings emanating from this study. It will also help assure other credit unions that if they invest time to adopt digital financial technology solutions this will ultimately improve the financial capabilities of members.

7.2 Capacity, Sustainability and Scalability of the Project

The intention is to make the mobile apps more widely available within the credit union sector through the credit union representative bodies. These representative bodies will be asked to promote and educate affiliated credit unions in the use of the mobile apps. Involving the representative bodies can be expected to increase the number of credit unions adopting the apps thus scaling the initiative and enhancing the prospects of longer term sustainability.

There are five main representative bodies in the UK. They are the Irish League of Credit Unions (ILCU) and the Ulster Federation of Credit Unions (UFCU) which together represent 158 credit unions in Northern Ireland. The Scottish League of Credit Unions (SLCU) which represents 32 credit unions in Scotland and the Association of British Credit Unions (ABCUL) which represents 195 credit unions in Great Britain.

7.3 Future Development of the Project

Overall, we have produced some evidence to suggest that mobile apps can enhance financial capability behaviours of financial services users in the form of credit union members. We found evidence to suggest that receiving mobile apps helps to improve personal and financial well-being and confidence when shown information about financial products such as a loan, credit card or store card. Access to our mobile apps was also found to encourage users to think ahead and plan for the future. Those in the treatment group were also found to have a more positive attitude towards the use of technology for day to day financial decision making.

However, the time frame over which the RCT was undertaken was one year and to understand the full impact of using mobile app technology to assist in improving financial capabilities attitudes, the measurement of long term behavioural change is required. A natural extension of the project would be a longitudinal study based upon for example university students over the three or four year of their degree programmes. Existing evidence suggests that younger adults are among the worst affected by the economic downturn, with a 34% rise in the number of under 25's seeking help with high credit costs according to Citizens Advice.[30]

[30] https://www.theguardian.com/money/2017/sep/20/young-people-debt-crisis-rent-arrears-benefits-work

8.0 Sharing and Learning Activity

The following activities are planned over the next 18 months commencing May 2018:

- We will provide feedback to Derry Credit Union and other Credit Unions in the North West of Northern Ireland about the findings from the study.
- We will organise a mini-conference to discuss the project with credit union members, credit union representative bodies, regulatory authorities and policy makers from the NI Financial Capability Strategy. This mini-conference will also explore areas for future development. The mini-conference would be facilitated through working with The Centre for Not-For-Profit and Public-Sector Research at Queen's University Belfast[31]
- Members of the Project Team have been asked to present the findings of the study at University College Cork's Annual Summer School (30th and 31st May 2018). This Summer School is targeted at credit union practitioners. We will also offer to present the study findings at the World Council of Credit Unions Annual Conference (July 2019). Credit union practitioners from around the globe attend this event.
- We will present the study findings at academic conferences. For example, the British Accounting and Finance Association Conference (April 2019).
- We will endeavour to disseminate the findings through publication in peer reviewed journals. Two journals will be targeted (i) Public Money and Management and (ii) Financial Accountability and Management.

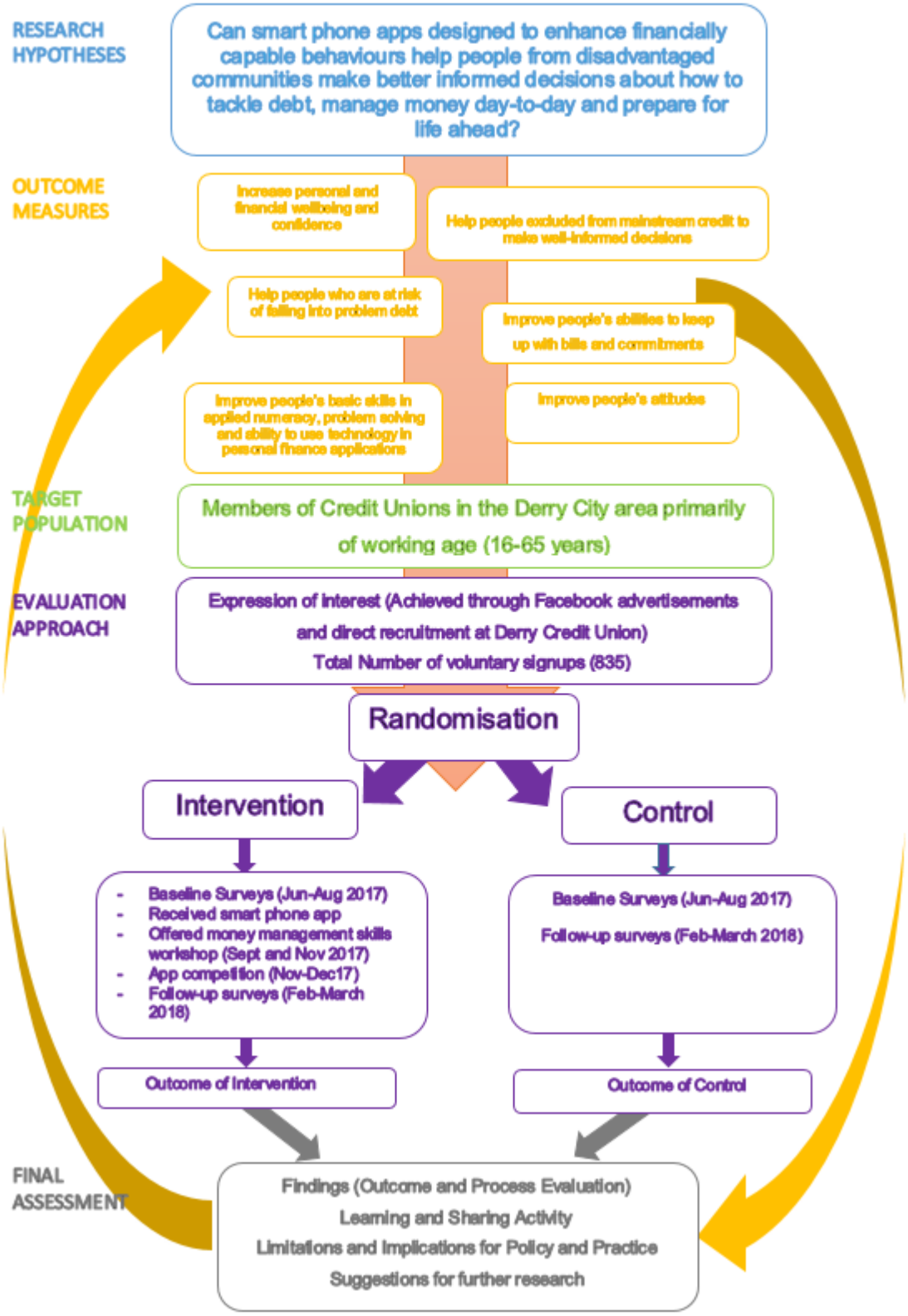
In sharing the learning from the study, we aim to:

- Promote recognition of the benefits of digital technology to enhancing financial capability. Additionally, we aim to encourage the credit union sector to feed these learnings into their own practice and ultimately provide the mobile apps for use by their members.

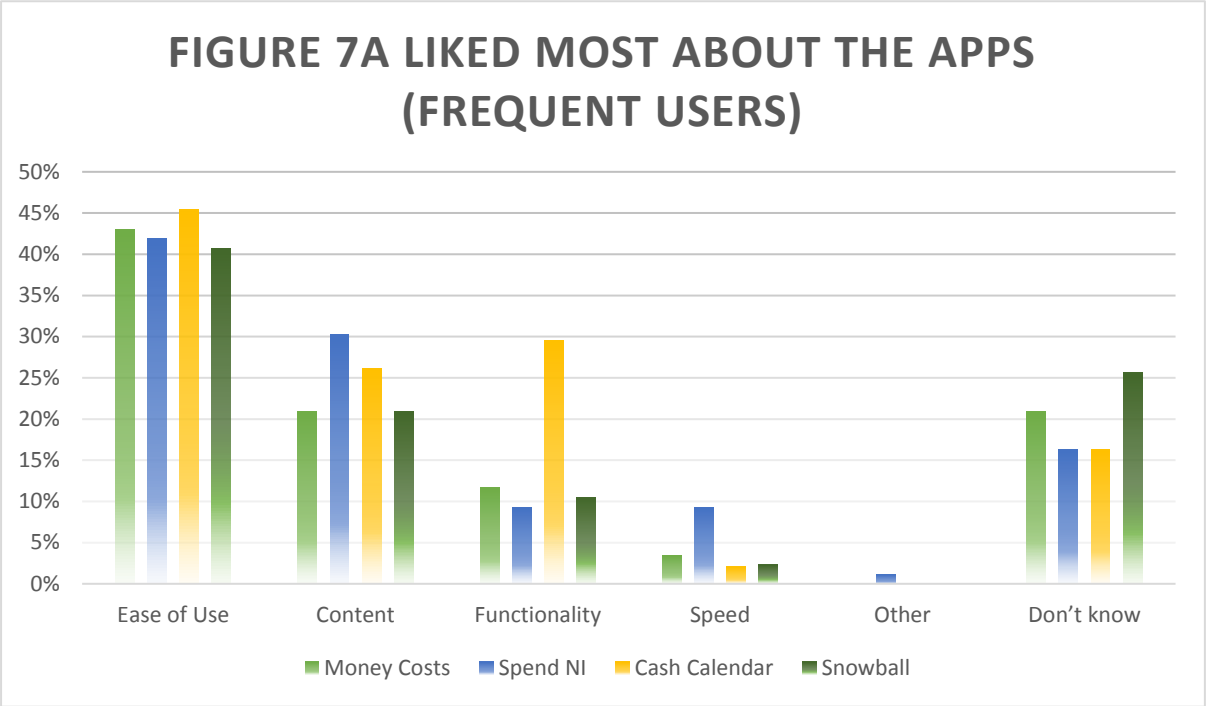
[31] http://www.qub.ac.uk/schools/QueensManagementSchool/Research/CentreNotforProfit/

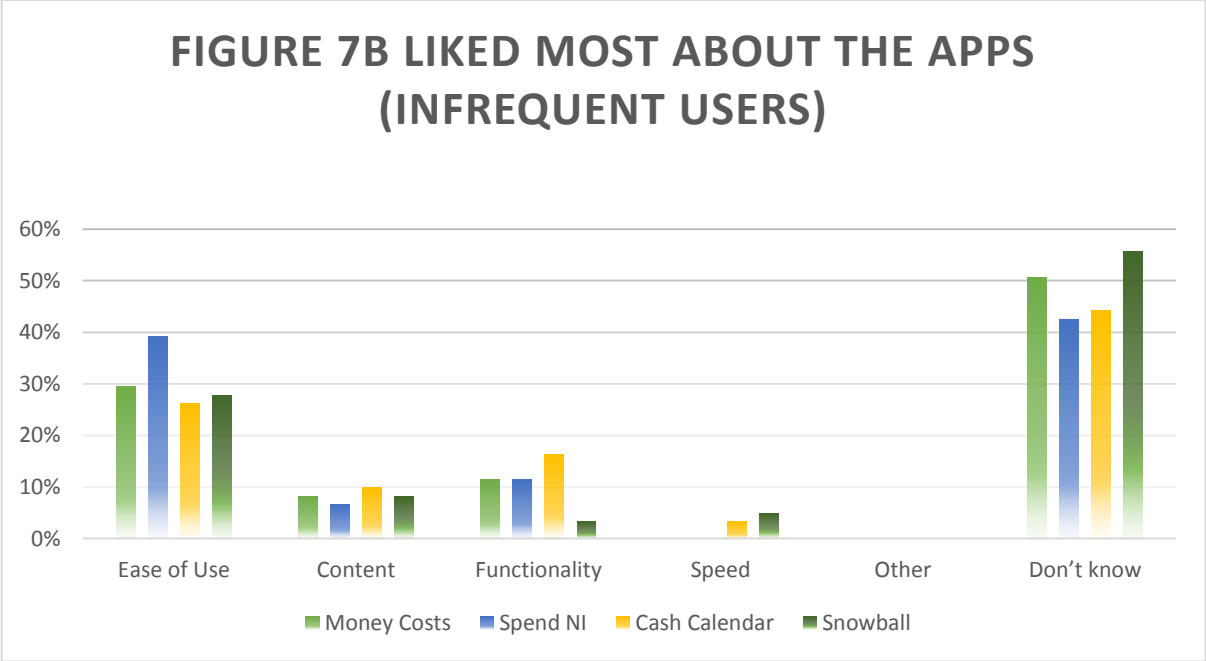
- Influence policy-making by raising awareness of the impact of digital technology on financial capability.
- Create further partnerships and source additional funding to further refine the mobile apps and scale the research.

Appendix: Project Overview



Appendix: App Quality





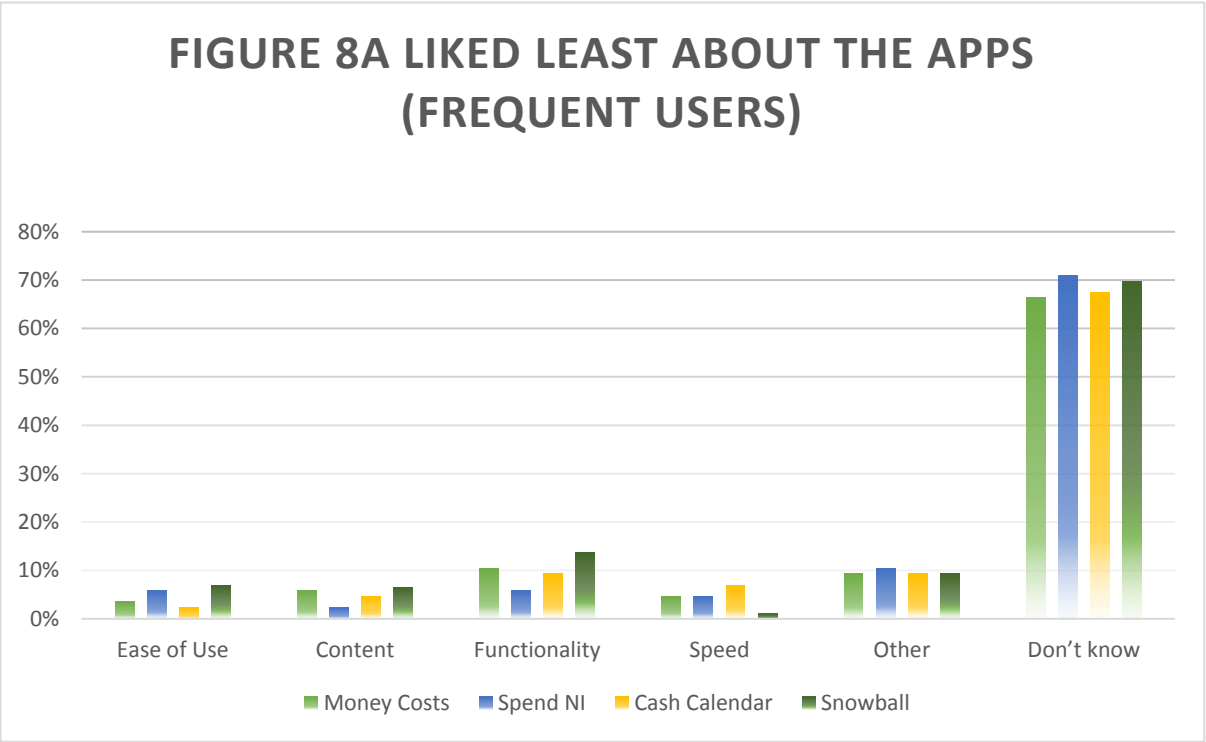


FIGURE 8A LIKED LEAST ABOUT THE APPS (FREQUENT USERS)
80%
70%
60%
50%
40%
30%
20%
10%
0%
Ease of Use
Content
Functionality
Speed
Other
Don't know
Money Costs
Spend NI
Cash Calendar
Snowball

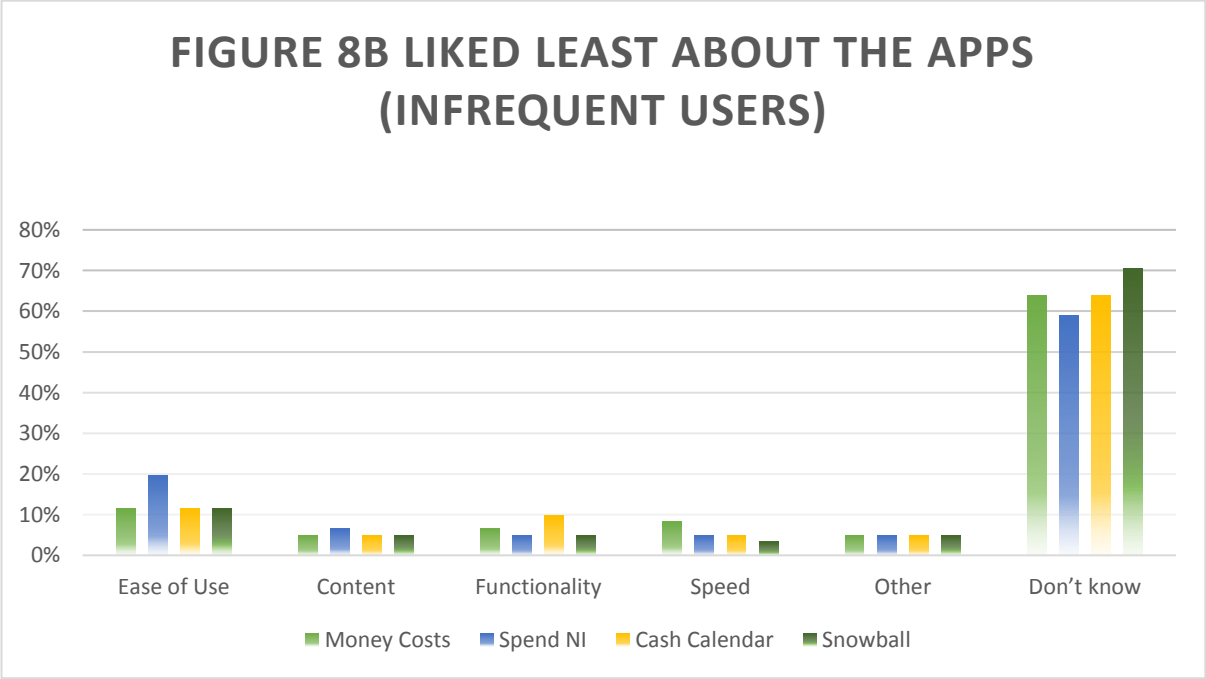


FIGURE 8B LIKED LEAST ABOUT THE APPS (INFREQUENT USERS)
80%
70%
60%
50%
40%
30%
20%
10%
0%
Ease of Use
Content
Functionality
Speed
Other
Don't know
Money Costs
Spend NI
Cash Calendar
Snowball