

# AN INVESTIGATION INTO ATMs

## A USER-CENTERED STUDY FOR THE DEVELOPMENT OF INCREASED SECURITY & USABILITY BASED ON USER BEHAVIOUR.

**INTRODUCTION |** The first Automated Teller Machine was introduced to the Irish landscape by Bank of Ireland in 1980, aiming to make the lives easier for its customers establishing the fundamental foundations of the self-service banking industry. It has since then become a ubiquitous and simple piece of technology in 21st century not only Ireland, but the whole world. Financial institutions continue to be driven by the growing consumer trends toward self-service banking. These days, their customers are demanding greater control over their financial information, and they're looking for additional solutions to self-manage their financial situation.

ATMs have become an essential part of our lives. They coincide with our local banking branch, creating a relationship and community that goes beyond the average working day, making life easier for not only customers but also the financial institutions themselves. The intent of this research project is to conduct a user centred study into the usability & security of the ATM channel as well as a behavioural analysis of the people using them on a daily basis.

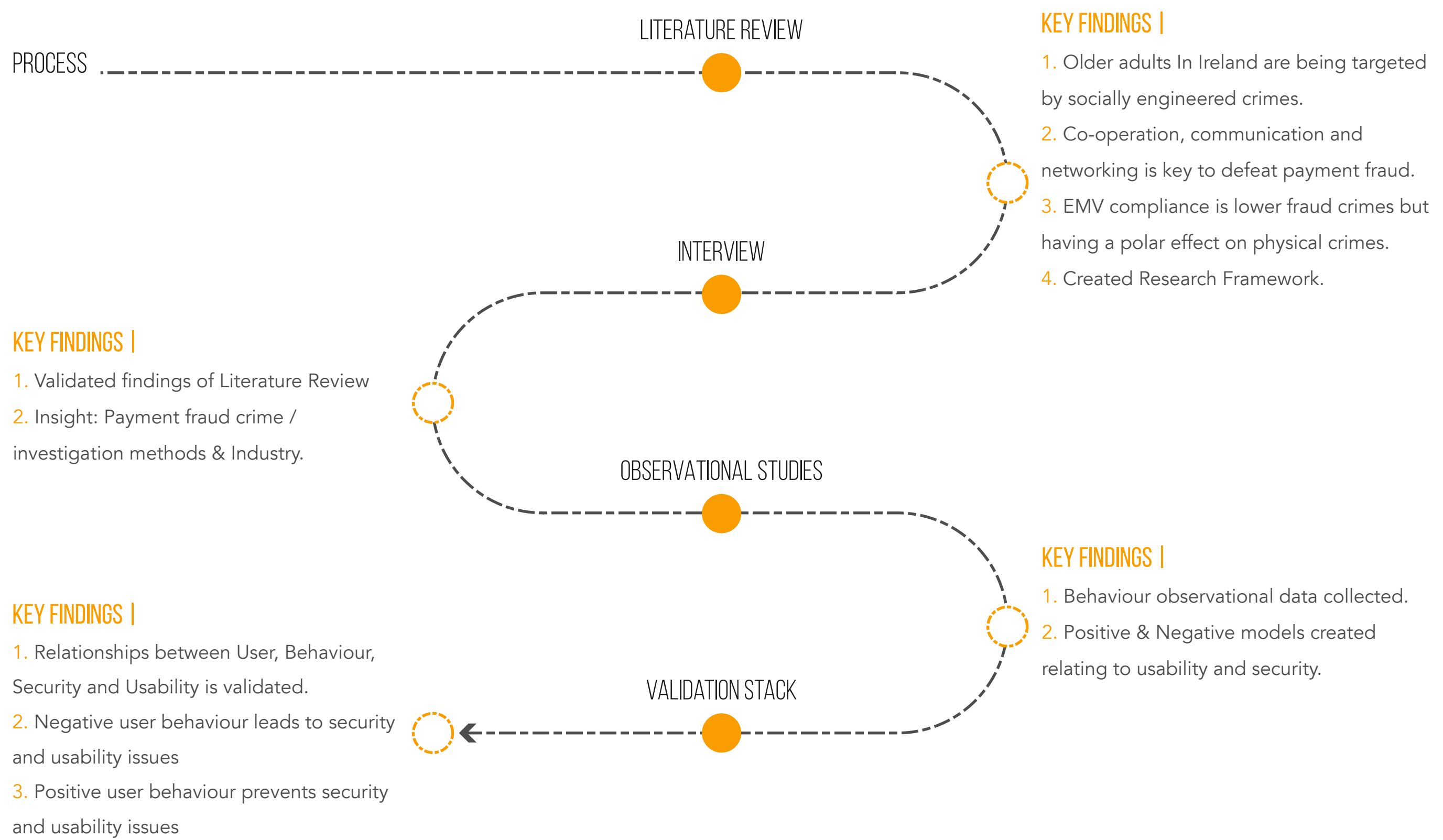
**DISCOVERY |** This stage of the project is all about better understanding the area of research. Developing in-depth knowledge of what is happening on the ground, the stakeholders involved, the problems related to the area and who these problems are affecting.

### 'SOCIAL ENGINEERING IS THE BIGGEST THREAT TO THE ATM CHANNEL'

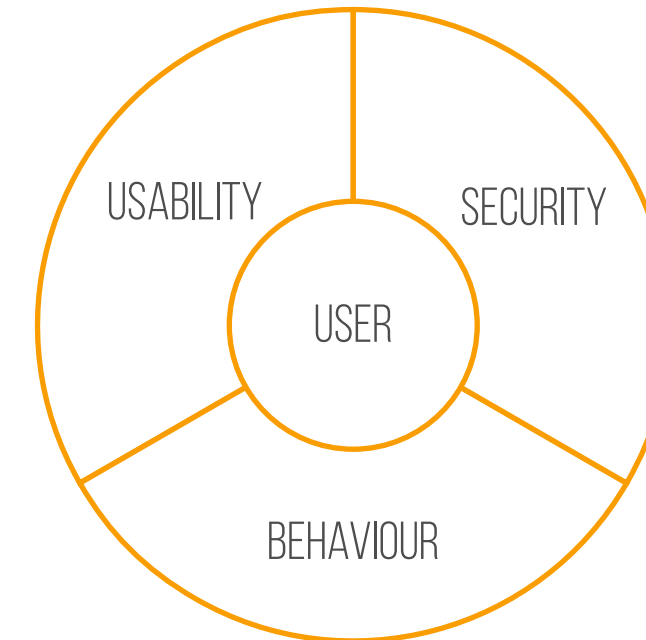
- GUNN, 2015

**LITERATURE REVIEW |** The key conclusions from the literature review were that the ATMs in Ireland have seen an increase in physical confrontations and social engineering incidences amongst users do to a polar effect EMV compliance was creating. The more worrying conclusions was that older aged adults and other vulnerable users were increasingly becoming the targets of these incidences (IPSO, 2014 & Hayes, 2014). The Banking and Payment Federation (BPF) 2005 of Ireland maintain that co-operation, communication and networking is key in tackling payment card fraud and crime.

**OBSERVATIONAL STUDIES |** This study involved undergraduate students from IT Carlow and Auburn University, Alabama. The students conducted observational research of ATM users, note-taking and analysis within a AEIOU framework. The aim of the set framework was to formalise the data collected so it could be analysed appropriately upon conclusion.



Throughout the process of analysing and synthesising literature, a framework was created to organise the research that was collected and to inform the structure the Validation Stack. The research framework consisted of User, Behaviour, Security and Usability.



The key goal of the observation study was to gather qualitative and quantitative data relating to user behaviour while interacting with the ATM Channel. ATM's have become a common piece of technology with many users interacting daily. Dr Dan Lockton makes the point that each user embodies different attributes to how they behave and think while interacting with products. This point lets us explore the idea that ATM's embody a particular model of how users think and behave (Lockton & Harrison 2012).

To analyse the data that was uncovered, an affinity diagram was created and coded into user categories of ages. This method allowed for the information that was gained to be visual synthesised into 'Positive' and 'Negative' sections. Modelling the behaviour of users into behaviour statement relating to security & usability of the ATM Channel.

**VALIDATION STACK |** The purpose of the validation stack was to justify that behaviour habits of users, both good and bad, have an effect on the usability and security of the ATM Channel. By stacking the layers upon each other, it shows the relationships and interaction points that they share. The objective of this approach is to use multiple sources of research to validate, direct and further justify the project using visual thinking & analysis.

**INTERVIEW |** A Semi-structured interview was organised with Detective Sergeant Matt Sheridan of An Garda Síochána - Bureau of Fraud Investigation & Crime (Ireland's National Police Service). The interview gave an insight into the state of ATM Fraud in Ireland and validated many of the conclusions that were derived from the Literature Review.

The key conclusions that were validated were the increased level of physical confrontations and social engineering incidences amongst users. It also validated that older aged adults were increasingly becoming the targets of these incidences.



**INSPIRATION |** This stage of the project is focused on the users, their problems and issues. With this knowledge solutions can be developed to help them with the problem or ways of better understanding the issue. A research hypothesis was created, informed from the conclusions of the previous stage of work.

### 'I ALWAYS USED THEM, BUT I HAVEN'T THE CONFIDENCE FOR ANY OF THAT NOW'

- FOCUS GROUP PARTICIPANT, 2015

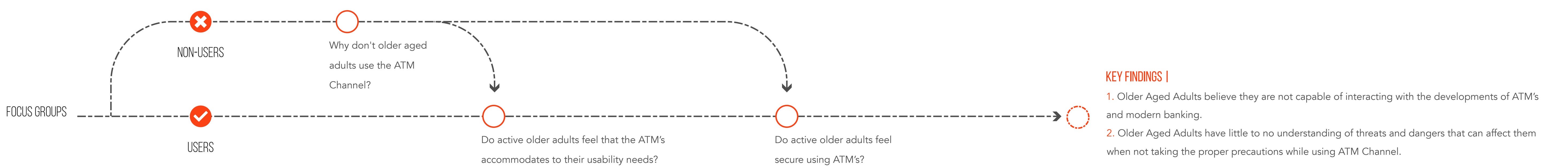
**FOCUS GROUPS |** Although there has been much innovation and development in security and usability of the ATM Channel, it was concluded from the initial Discovery stage of the research that Older Adults security and usability were not being fully accommodated. The objective of this stage of the project was to gain an understanding of the opinions and attitudes of active older adults on the topic of ATM usability and security.

The research framework created from the literature review (also used to structure the validation stack) was used to frame the objectives and knowledge needed to achieve the purpose of the stage. Two focus groups were established with older aged adults (40 in total) in the Kilkenny City, Ireland that are active and non-active users of ATM's. From this, an understanding was developed of their concerns, needs and opinions of banks, ATM's and modern technology.

**RESEARCH HYPOTHESIS |** ATM's & Older Aged Adults: An Investigation into usability & security of the ATM Channel regarding Older Aged Adults as users.

The reason for the proposed research is to use the insight gained to profile the users into personas and create a thematic framework to help identify where a design intervention/s can aid the next stage of the project

From these focus groups it was discovered that Older Aged Adults believe they are not capable of interacting with the developments of ATM's and other aspects of modern banking. And those that do interact have little to no understanding of threats and dangers that can affect them when not taking the proper precautions while using.



**IDEATION |** This stage of the research is all about identifying the design opportunities, generating ideas, users testing and refining a solution.

### 'DESIGN INTERVENTION THAT KEEPS OLDER AGED ADULTS INFORMED & EDUCATED WITHIN THE BANKING COMMUNITY'

**PERSONAS |** Persona based design is a method used to represent users in a format that communicates their behaviours, wants, needs, goals, frustrations, pleasures and fears. They are a way of modelling and summarizing research about people who have been observed or researched in some way in order to humanize the design focus and test scenarios. "Personas are not real people, but they are based on the behaviours and motivations of real people" (Cooper et al. 2014)

**THEMATIC FRAMEWORK |** The thematic framework was created to help identify, organise and connect the most common themes that were emerging from the qualitative data collected. The linear graphic below is the framework designed to illustrate were a design intervention can address the issues of usability and security with older aged adults (active / non-active users) with the ATM Channel.

**DESIGN HYPOTHESIS |** It should be possible through design mythologies to create an design intervention that supports usability and reassures security of Older Aged Adults using the ATM channel, while also keeping them educated with developments in the banking community.

While designing with personas it's important to know the users they are based on. Those users can be contacted at any stage of the design process with any questions, ideas or prototype/usability testing. This is referred to as 'participatory design' and will help to facilitate the iterative design process between a designer and user.

The first phase of the framework is in the area of user creation, inform, educate and nurturing those who display negative behaviour. A design intervention here would aim to develop these users to a stage where they are confident, informed and using positive behaviour at the ATM Channel. The second phase of the framework is to develop and educate these users about technological developments in the banking community as well as future crime developments.

