

HOW DOES THE RESILIENCE OF OLDER ADULTS EMERGE IN ONLINE COMMUNITIES

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Abstract

The population of older adults is increasing rapidly, becoming the largest segment of population. As a result, there have been calls in research to further understand how to improve their wellbeing. A significant element of wellbeing for older adults is resilience, the process of bouncing back from adversity, which focuses on the empowerment of older adults. While research has shown that resilience strongly depends on the existence of internal and external resilience resources (e.g., external connection, grit, and positive perspective on life), questions remain as to how resilience in older adults can be developed.

Emerging insights from Information Systems (IS) have suggested that resilience of older adults can be developed in Online Communities (OCs). In OCs, older adults partake in several practices to interact with their peers, and it has been suggested that resilience development of users can be facilitated through practices such as exchange of resources (e.g. knowledge and information). Yet, although resilience is a significant aspect of older adults' wellbeing, and there is initial evidence of the relationship between participating in OCs and the resilience of older adults, the nuances of the relationship between the participation of older adults in OCs and their resilience has to a large extent been unexplored.

To address this issue, this study aims to conceptualise how the resilience process among older adults is facilitated by OCs. Specifically, this study seeks to answer the following research questions: 1) What influences the resilience of older adults in OCs? 2) Why do older adults engage in OCs to develop resilience? 3) What are the resilience outcomes for older adults engaging in OCs?

Considering the interdisciplinary nature of this research, a qualitative multimethod sequential design methodology that aligns with constructionism was developed and performed. As such, three systematic literature reviews were performed followed by two case studies: an exploratory case study and the main case study. In addition, qualitative interviews were conducted to ensure the comprehensiveness and the reliability of findings. To analyse the collected data, the six-step guideline suggested by Braun and Clarke (2006), inductive thematic analysis, was followed for all datasets.

The three systematic literature reviews conducted in this study revealed: 1) Potential benefits of participating in OCs for older adults, including self-empowerment, wellbeing improvement, and social support, can support several resilience resources of older adults. 2) Potential benefits of participation of older adults' caregivers in OCs, including sharing and receiving social support, and self and moral empowerment, can support several resilience factors among older adults. 3) Older adults engage in four value co-creation and value co-destruction practices: communal coping, happiness creation, social capital generation, and disparaging practices.

In addition, in this study, an exploratory case study was performed. Findings of the exploratory case study can be divided into two parts: 1) Older adults engage in four value co-creation and co-destruction practices in OCs, including, communal coping, social capital generation, happiness creation, and disparaging practices confirming findings of the systematic literature review. 2) Participation of older adults in OCs can benefit them through social support access, wellbeing improvement, and self-empowerment.

In the main case study, how the resilience process of older adults unfolded in OCs was examined. Based on the findings of the case study and informed by the resilience model (Richardson, 2002), practice theory (Reckwitz, 2002), and value co-creation (Vargo & Lusch, 2017) - which were all identified as important through the systematic literature reviews and exploratory case study – the Digital Resilience Process Model (Figure 24) was developed. The Digital Resilience Process Model demonstrates that older adults join OCs to receive support from their peers regarding the stressors they face in their lives. The shared stressors trigger the resilience process whereby older adults can engage in seven practices in the OC involving communal coping, sharing experience, sharing information, providing emotional support, creating happiness, sharing instrumental resources, and disparaging. Through these practices, users share different types of resources, which the focal older adult actor can either apply or not apply. As a result of the application of resilience resources four different outcomes are observed: *revitalising and growing*, *devitalising and shrinking*, *indeterminacy and ambiguity*, and *simultaneous revitalisation*. These findings were further validated and extended through conducting supplementary interviews.

In summary, this research has several theoretical and practical contributions, including, the development of the Digital Resilience Process Model (DRPM), explaining the process of resilience in OCs, clarifying core concepts within seminal resilience models by identifying the stressors, unpacking the reintegration phase, and articulating the resilience reintegration outcomes. Overall, through the development of the DRPM, this research addresses one of the service science priorities by identifying the impact of value co-creation on wellbeing in the context of OCs and older adults.

Keywords

Older Adults, Online Communities, Resilience, Value Co-creation, Value Co-destruction, Older People, Virtual Communities, Social Media, Practice, Service Dominant Logic, Resource Sharing, Resilience Factor, Resource Integration, Reintegration.

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List of Abbreviations

| Abbreviation | Term |
|---------------------|----------------------|
| OCs | Online Communities |
| VCC | Value Co-creation |
| VCD | Value Co-destruction |
| OAs | Older Adults |
| FA | Focal Actor |

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: [QUT Verified Signature](#)

Date: 23/06/2022

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Chapter 1: Introduction

Older adults are increasingly joining Online Communities (OCs) to receive support and share different types of resources (e.g. knowledge, information) with their peers (Nimrod, 2014), and this can impact their resilience, as resilience is highly dependent on having access to resources (Liddell & Ferreira, 2018). Resilience is significant to the wellbeing of older adults (Resnick, 2014). There is evidence showing the potential benefits of OCs for older adults (Nimrod, 2013). Yet to a large extent, there is a paucity of literature that systematically analyses the relationship between participation of older adults in OCs and their resilience. Given that resilience is critical to the wellbeing of older adults through empowering them to overcome adversities in challenging times, and the potential benefits of OCs for the resilience of older adults, it is vital to comprehensively understand how the process of resilience emerges in OCs and how OCs can help to develop the resilience of older adults. Therefore, this research aims to develop a theory that recognises the complex nuances of the resilience process in OCs.

The objective of this chapter is to provide an overview of the research background, problem, purpose, scope, design, and contributions. Therefore, this chapter first explains the research background followed by research gap and the rationale for investigating the research problem. This is followed by research objectives and research questions. Then, the scope of the study will be described. Next, a summary of the research design is explained. Subsequently, theoretical and practical contributions of the study will be highlighted. Finally, an outline of the remaining chapters of the thesis will be explained, and the chapter concludes with a short summary.

1.1 RESEARCH BACKGROUND

Today, older adults are the fastest growing segment of the population (Seah et al., 2018). For example, as of 2015, 20% of the Australian population was aged over 60, and this is projected to increase to 29% by 2050 (O'Loughlin, Browning, & Kendig, 2017). Despite the society's negative perception of ageing (Ambe et al., 2019; M. Tam, Boulton-Lewis, Buys, & Chui, 2017), most older adults in developed countries live the majority of their remaining life in good health (Agree & Glaser, 2009). However, ageing affects the social, political, cultural (Tam, Aird, Boulton-Lewis, & Buys, 2016), and health (Nimrod, 2011) aspects of human life. Due to these changes, older adults can often experience increasing social isolation, with reduced access to valuable resources such as social support (Polson, Gillespie, & Myers, 2018). Social isolation often negatively impacts health (Quinn, 2018). In addition, while older adults may lose their connection with society, they experience difficulty to find meaning in life and to maintain their personal social roles (Pan, 2018).

Among the many theoretical perspectives of ageing¹, the resilience theory (Richardson, 2002) describes the process of how older adults can bounce back from adversity. Resilience is a significant factor in the wellbeing of older adults (Resnick, 2014) and explores both negative and positive aspects of ageing by focusing on the strengths of older adults more than their weaknesses (Wild, Wiles, & Allen, 2013). Resilience is important because it empowers older adults to recover from adversities more easily and enables them to utilise their resources for better coping mechanisms. Individuals with lower resilience get overwhelmed easily and are more likely to turn to isolation and avoidance (Fletcher & Sarkar, 2013). The process of resilience is strongly dependent on the existence of personal, social and environmental resources (Wister et al., 2016). The more resources a person accesses, the more resilient he/she might be (Liddell & Ferreira, 2018). Social isolation can decrease access to these resources, thus impeding resilience (Inoue & Yamaoka, 2017b). However, access to resources can be facilitated through participation of older adults in communities.

From an IS perspective, the term resilience is conceptualised in different ways. In IS, the concept of resilience is usually referred to as “digital resilience” and has been

¹ Disengagement Theory, Successful Ageing Theory, etc. (See Section 2.1.1)

defined on a spectrum ranging from pure technological oriented perspectives to socio-technical perspectives. For instance, a technological viewpoint defines digital resilience as the ability of *systems* to cope with external shocks (Heeks & Ospina, 2019) where socio-technical perspective defines digital resilience as the phenomenon of designing, deploying, and using IS to recover from or adjust to instabilities from shocks (Boh, Constantinides, Padmanabhan, & Viswanathan, 2020). This research is aligned with the latter perspective and seeks to explore how individuals (i.e., older adults) use IS when they face stressors, and what specific practices they engage with. The focus of this research is on the individual-level because the fabric of communities is dependent on individuals generating content through sharing resources by describing their experiences and problems. In addition, the concept of digital resilience in IS aligns with the notion of resilience in gerontology because both concepts focus on the process of bouncing back from shocks through relying on an using of a specific set of resources. To date, the IS literature provides an important foundation for our understanding of the relationship between IS and resilience (Heeks & Ospina, 2019). However, that foundation is small.

Nevertheless, as Ryu, Basu, and Saito (2019) suggest, providing knowledge and information positively impacts the resilience of individuals. Having access to multiple sharing networks (such as participating in communities either online or offline) ensures diversification and redundancy of resources, which are the two important characteristics of resilience (Ryu et al., 2019; Xu & Kajikawa, 2018). However, social isolation is considered as a barrier for some older adults to actively participate in communities and social activities (Usher & Yang, 2013). According to Michailidou, Parmaxi, and Zaphiris (2015), technological artifacts such as OCs can play an important role by removing geographical barriers and enabling older adults to stay connected with society. This is further supported by Nimrod (2014), who stated older adults' participation in OCs helps keep them connected with society and promotes their psychological wellbeing. OCs are computer-mediated places where people with common interests come together with others and share different resources such as information and knowledge (Petric, 2014). OCs encourage connections (Huang, Nambisan, & Uzuner, 2010) and provide greater accessibility to diverse human resources that may not be locally available (Booth & Kellogg, 2015).

The features of OCs can be used to exchange resources (e.g. knowledge, information) where users can interact and co-create value (Chamakiotis & Panteli, 2017). Value is often referred to as worth, utility, price and benefits (Loane & Webster, 2014). This process of reciprocal value creation among various actors is called value co-creation (Blaschke, Haki, Aier, & Winter, 2018). The process of value co-creation in OCs takes place through resource integration, which is defined as accessing, combining, and applying of resources (Peters et al., 2014). Hence, in OCs, older adults can access and apply rare resources that are offered by other users. Emerging insights suggest evidence that resource sharing (Ryu et al., 2019) and value co-creation in OCs (Sankaran & Demangeot, 2017) can facilitate resilience.

Despite these bodies of literature and the importance of resilience among older adults and their increasing participation in OCs, very little is known about how the resilience process happens in OCs. How does the reintegration of resources take place in OCs as well as within the process of resilience? In addition, the resilience outcomes of participating in OCs for older adults are unknown. Therefore, more research is warranted into understanding the complex nuances of how the resilience process emerges in OCs.

1.2 RESEARCH PROBLEM AND RATIONALE

An initial scoping review of the literature performed in this study showed that the importance of resilience for the wellbeing of older adults and different aspects of the resilience among ageing population (older adults above age 65) are largely examined within the gerontology domain (Resnick, 2014). Resilience has been found as a significant aspect of wellbeing among older adults as it gives older adults the ability to recover from adversity, thrive and grow in the world of changes (Fletcher & Sarkar, 2013). It gives individuals the emotional strength to overcome trauma, and hardship, and enables them to utilise their resources and capabilities, empowers them to accept, adapt to the situation and move forward. Those lacking resilience get easily overwhelmed and may turn to unhealthy mechanisms such as isolation and avoidance (Fletcher & Sarkar, 2013).

Older adults are increasingly joining OCs and participating in resource sharing and value co-creation practices with their peers. Within the IS domain, several studies

investigated the benefits of participation in OCs for older adults and their role for tackling geographical barriers and social isolation (Khosravi, Rezvani, & Wiewiora, 2016; Nimrod, 2014). Through reviewing the literature, I identified that OCs as value co-creation entities can support the resilience of older adults as they facilitate resource sharing and resource availability which is critical for resilience (Liddell & Ferreira, 2018). But what was being shown was that in many aspects, this relationship, and the impact of participating in OCs on the resilience of older adults were not clear. For example, how the process of resilience triggers in OCs, how sharing resources among users of OCs can help develop the resilience of older adults has been overlooked. In addition, digital resilience is missing a clear conceptualisation in IS research (Sakurai & Chughtai, 2020) and most IS research doesn't provide a concrete framework to understand the concept (Heeks & Ospina, 2019). The lack of fundamental knowledge about this concept resulted in a call for research by Boh et al. (2020) to understand leveraging digital platforms to build resilience across an ecosystem, and to understand leveraging digital technologies in mobilising community resources and services to respond to stressors.

Furthermore, from the perspective of service science, the relationship between the participation of older adults in OCs, their value co-creation practices, and how this is related to the emergence of resilience is understudied. Addressing this issue is important because first: it clarifies aforementioned grey areas, and second: it is one of the service science priorities to identify the impact of value co-creation on wellbeing (Ostrom et al., 2021). Rapid changes in societal and service context requires a multidisciplinary approach to resolve a set of research priorities for service science (Ostrom et al., 2021). One area warranting attention is understanding users' experiences in ecosystems particularly involving how adopting technologies can shape the well-being or ill-being of individuals (Ostrom et al., 2021). Particularly, in line with Field et al. (2021) service science research should focus on specific groups of individuals such as vulnerable groups who have less access to important resources (e.g., older adults)

Moreover, early models of resilience outside of OCs (Richardson, 2002; Wister et al., 2016) suggest that the process of resilience triggers with a stressor/s and this results in the reintegration process so the stressed individual can reintegrate by

leveraging the available resources he/she access, and that level of access can define the outcome of the reintegration process. Yet there is not enough knowledge about the stressor types in the resilience process among older adults and specifically those stressors that they disclose online. Further, resilience reintegration as a critical phase of the resilience process remains unclear and not explained sufficiently in previous resilience models (Wister et al., 2016). In other words, when older adults face stressor/s and the process of resilience starts, it is not clear how resource integration happens, and whether older adults can cope with the adversity by relying on resilience resources (Wister et al., 2016).

In addition, the role of resilience resources in the reintegration phase is very important as the more resilience resources a person gains, the more resilient he/she can be (Liddell & Ferreira, 2018). Indeed, OCs mitigate the social isolation and afford older adults with value co-creation practices, which can facilitate resource sharing and access among them (Fletcher & Sarkar, 2013), and this can result in access and utilisation of more resources and a higher resilience. But it is not clear how participation of older adults and their value co-creation practices in OCs can impact their access to resilience resources.

Additional canvassing of the literature and performing the exploratory case study revealed that the reintegration phase of the resilience process in OCs is strongly intertwined with not only value co-creation practices of users but also the co-destruction practices that older adults perform in OCs. Hence, there are not always activities that can positively impact the resilience of older adults, but there are disparaging practices that might negatively affect the resilience of older adults. However, it is not clear what those practices are, and how they can shape the reintegration phase and resilience outcomes of the resilience process. Therefore, we need to understand how both positive and negative practices unfold and impact the formation of resilience in OCs.

To summarise, the previous resilience models of Wister et al. (2016) and Richardson (2002) provide much needed insights but are incomplete. Indeed, it is not clear that how accessing and utilising resilience resources in the reintegration phase impact the outcomes of the resilience process. Addressing this issue forms and improves the resilience model, which contributes to both theory and practice. This

becomes more important as with the current rapid joining of OCs by older adults, the model will be the first resilience model in the digital environment.

1.3 RESEARCH OBJECTIVES AND QUESTIONS

Resilience is very significant for the wellbeing of older adults as it empowers them to overcome challenges, thrive, and grow in adversities. Previous sections highlighted that resilience among older adults can be supported by participating in OCs through value co-creation. However, despite its importance, this is an understudied area of research.

Conducting the initial literature review along with the exploratory case study of the research resulted in identification of several gaps in the literature about the phenomenon, including, the paucity of knowledge on 1) the relationship between participation in OCs and the resilience of older adults; 2) impact of resource sharing on resilience (Ryu et al., 2019); 3) value co-creation practices of older adults in OCs, and the relationship between value co-creation in OCs and resilience (Sankaran & Demangeot, 2017); and 4) the main constructs of the resilience process such as the types of stressors, the reintegration phase (Wister et al., 2016), and the outcomes in the context of OCs. Hence, the overall aim of this research is to understand how the resilience of older adults emerges in OCs. Thus, to address the research objective, several research questions need to be answered.

Due to the constructionist approach of this study, the problem and overarching questions were progressively defined using a combination of systematic literature reviews (SLR) and an exploratory case study, highlighted in the research design later (See Figure 10). This iterative approach helped to define the scope of the research problem and select suitable theoretical lenses as well. Accordingly, the overarching research question of this study is:

Research Question: How does the resilience of older adults emerge in OCs?

To address this overarching research question, it is vital to conceptualise the process of resilience for older adults in the context of OCs. This requires exploration of literature in the areas of IS and Gerontology, around the use of OCs by older adults and its relationship with their resilience. Specifically, answering the research question

involves drawing on insights from ageing theories, including the resilience theory, and reconciling these theoretical concepts with studies of OCs, value co-creation and practices. The overarching research question of this work encompasses three sub research questions as follows.

Sub Research Question 1: What influences the resilience of older adults in OCs?

The first sub-research question seeks to identify what impacts the resilience of older adults in OCs by examining the reintegration phase of the resilience process through the lens of value co-creation. The reintegration phase of the resilience process has been continuously emphasised in previous resilience models (Richardson, 2002; Wister et al., 2016). However, limited research has been devoted to unfolding this important construct of the resilience process.

Sub Research Question 2: Why do older adults engage in OCs to develop resilience

The second sub-research question aims to identify the stressors that older adults share in OCs. Stressors are the triggers of the resilience process (Richardson, 2002) and any findings regarding the resilience process can be considered within the context and existence of specific adversity (Windle, 2011). Therefore, identifying the stressors is crucial to theorise the process of resilience in OCs, as stressors are the first theoretical construct of the resilience process (Richardson, 2002; Wister et al., 2016).

Sub Research Question 3: What are the resilience outcomes for older adults engaging in OCs?

The third sub-research question will uncover the resilience outcomes for those older adults who engage in OCs. This will involve extending the four resilience outcomes suggested by Richardson (2002), by clarifying how value co-creation practices in OCs can shape the resilience outcome, and modify the resilience resources among older adults.

1.4 SCOPE OF THE STUDY

To determine the scope of this study, several factors have been considered, including: 1) unit of analysis, 2) user type, 3) resilience level, and 4) OC type.

1.4.1 Unit of Analysis:

According to Wild et al. (2013), resilience can be conceptualised at multiple levels (Figure 1), including, individual, household, neighbourhood, family, community, and societal resilience. This research is scoped to the individual unit of analysis because this research is focusing on the relationship between how older adults use and engage in OCs and how that influences their resilience.

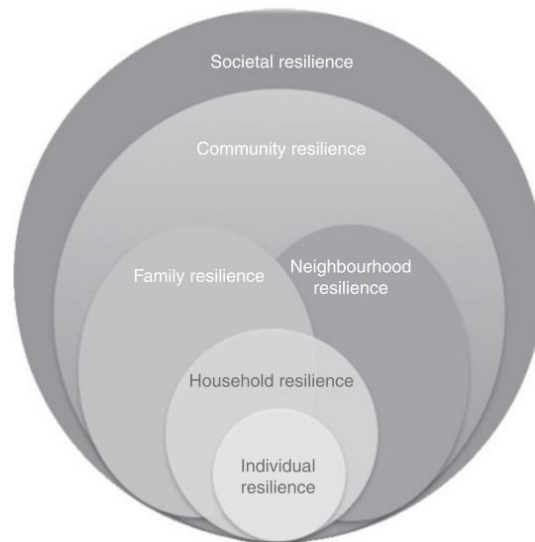


Figure 1) *Resilience Levels* (Wild et al., 2013)

1.4.2 Types of Online Communities:

There are different types of OCs created due to the vast arrays of users, their characteristics, and their purposes (Muniz & O'guinn, 2001). In general, there are considered to be four types of OCs, including:

- Transaction-oriented (acting as a bridge between buyers and sellers)
- Interest-oriented (discussion forums where users talk about a topic of interest)
- Fantasy-oriented (create a new environment for users to meet and playout different roles in virtual worlds)
- Relationship-oriented (concentrate on establishing communications with friends and strangers) (Armstrong & Hagel, 2000).

This study is scoped to the interest-oriented type of OCs as they are more holistic in term of diversity of shared resources among users. As such, Reddit, which is an interest-oriented OC, was selected as the case study for this research. Reddit is a social news/discussion website and encompasses discussion forums where users talk about a topic of interest.

Within an interest-oriented OC, various types of interests are shared. Based on the objectives of this research, this study is scoped to the OCs, which are established for the needs of older adults. In Reddit this would encompass Subreddits, which are targeted towards older adults.

1.4.3 User Types:

Generally, older adults are the dominant group of users in the OCs, which have been developed for the needs of older adults. However, other user groups also join these OCs. Within the scope of this study, the user type is limited to those users who are older adults, or their informal caregivers who participate in OCs with the aim of supporting the older person.

This study distinguishes between two types of users: focal actors and contributing actors. The focal actor is the older adult who shares his/her stressor to receive support from contributing actors. Therefore, this study focuses on active users. Hence, lurkers (defined as anyone who reads but seldom contributes to an online group (Nonnecke & Preece, 2003)) are out of the scope of this study.

1.5 RESEARCH DESIGN

Every research design is developed based on and influenced by the researcher's philosophical, epistemological and methodological preferences (Guba & Lincoln, 1994). Therefore, the following sections will explain the research philosophy, design, and methodology of this study.

1.5.1 Research Philosophy

There are various epistemological and philosophical approaches in IS. The epistemology of this qualitative study is constructionism in which all knowledge and reality is contingent upon human practices and constructed through the interactions between humans and their world in a social context (Charmaz, 2006; Creswell & Poth,

2007) (Explained in more depth in Sections 1.1 and 3.2). Hence, meaning is inductively constructed. In constructionism, the same phenomenon can be understood differently by different individuals in the same social context (Crotty, 1998). In addition, the researcher's intention is to inductively interpret the meaning others have about the world.

This study will use constructionism because in OCs, the resilience process is a phenomenon that is happening and existed. Older adults engage in several practices which can modify their resilience. In addition, the role of resilience resources in the process and the reintegration phase are vague. Hence, this research will construct the phenomenon by combining existing literature, but also will address the missing gaps and further the understanding of unclear issues by constructing and pairing the phenomenon with a combination of current knowledge and participants' views.

Many theoretical constructs of the resilience process are explained enough, and knowledge about practices of older adults in OCs is limited. In addition, it is not clear how different properties of the resilience process are residing in these practices. Further, it is vague how each user perceives the resilience process and how participation impacts each user differently. Accordingly, constructionism is the best approach as this study aims to interpret the meanings participants give to the phenomenon and inductively construct a meaning for this phenomenon through combination of the current knowledge and participants' views.

In terms of the philosophical perspective, this research will follow interpretivism, which is used to acquire an understanding of the world from individuals' perspectives and deals with the construction of the meaning that people give to things toward certain phenomenon (Neuman & Robson, 2007). Interpretivism is inductive (Neuman & Robson, 2007) and emphasis is on developing theory (Creswell & Poth, 2007).

This study will follow interpretivism because it believes that objective reality cannot be captured. Therefore, in line with Gregor (2006), this work aims to develop theory through studying people's perceptions of the reality and understanding the phenomenon deeply to create a conceptual model to help others bring meaning to this phenomenon. This will be through understanding how the resilience process emerges

in OCs. This work will allow participants to express their experiences of using OCs. This will enable researchers to better understand the phenomenon by answering how and through what practices older adults use OCs, and how this can benefit them and impact their resilience.

1.5.2 High Level Research Design

The transdisciplinary nature of this study requires knowledge from several research domains within the categories of IS and Gerontology (e.g. OCs, value co-creation and co-destruction, practices, older adults, and resilience). Considering the interdisciplinary nature and the epistemological view of this research, a multi-staged research design was developed and followed.

As shown in Figure 10 (See Chapter 3:), the research design consists of four phases, including, 1) Understanding research problem, 2) Conceptualisation, 3) Data collection and Analysis, and 4) Credibility, theorising, and discussion. A high-level research design of the study is shown in Figure 2 below.

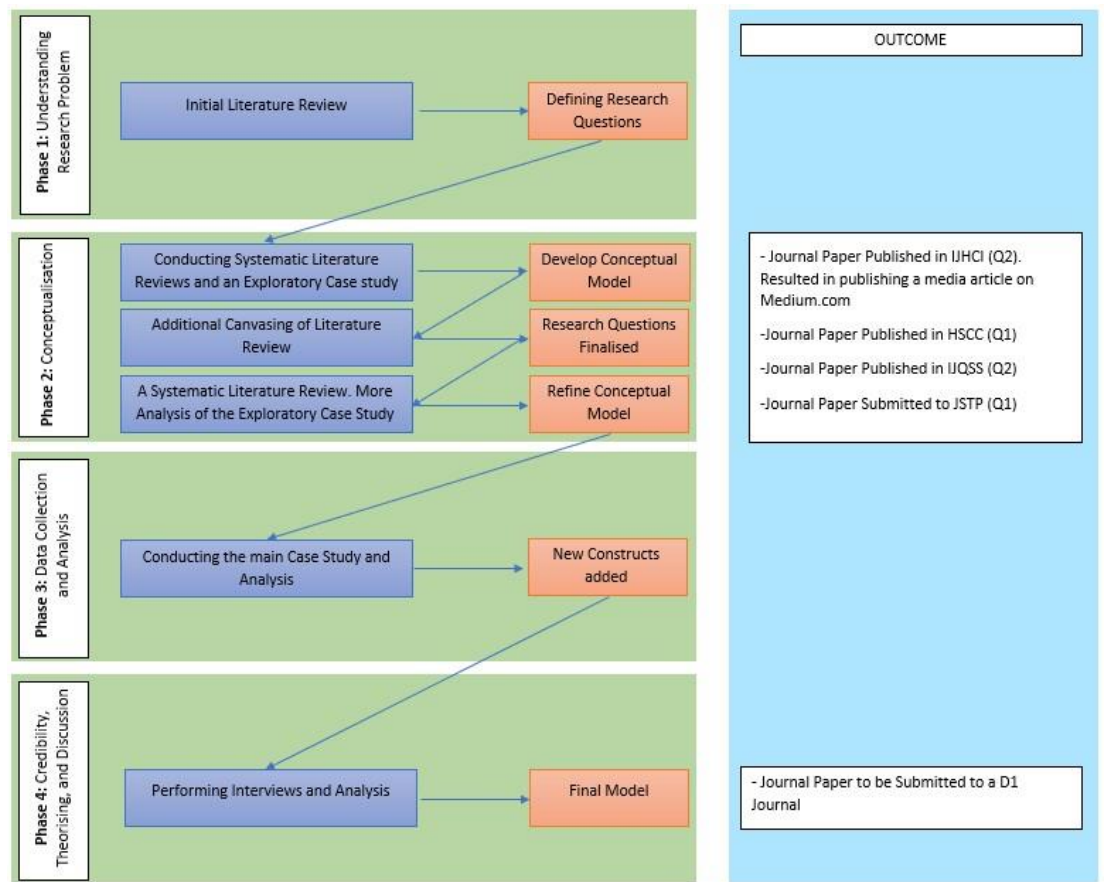


Figure 2) *High-Level Research Design*

In phase one, the initial literature review was conducted to understand the research problem, narrow down the scope of the study, and define the research questions. As a result, the resilience theory was selected, and the overarching research question was formed. Through conducting additional reviewing of literature, the importance of value co-creation in the process of resilience was identified, which resulted in another refinement of the overarching research questions.

In phase two, along with two systematic literature reviews, an exploratory case study was performed to understand the relationship between the potential benefits of OCs and the resilience of older adults. This resulted in the development of the initial conceptual framework. Through additional literature review and empirical insights regarding the phenomenon, the practice theory was added as a theoretical lens to the study, which helped to finalise the research questions. Adopting the practice theory, another systematic literature review was conducted along with more analysis of the

exploratory case study dataset to understand the role of practices in value co-creation in OCs. Consequently, the conceptual framework was refined.

In Phase three, the main case study was performed, which provided new insights into the findings. Accordingly, the focus was first to identify the stressors that focal actors share on Reddit, and then to uncover how the interactions of users and their practices shape the process of resilience reintegration and what are the outcomes of that process. In phase four, interviews were performed. This phase helped with the final refinement of the conceptual framework, and validation of the findings.

1.5.3 Research Methodology

This research will use an overarching qualitative multimethod sequential methodology which aligns with constructionism and interpretivism. Qualitative studies answer ‘how’ and ‘why’ questions (Creswell & Poth, 2007), and this work is aiming to understand viewpoints, experiences, and perceptions of using OCs in relationship with users’ resilience. Moreover, this study is intending to address the IS and service science research priorities which are not studied sufficiently yet. Therefore, an explorative and qualitative approach is a suitable strategy for conducting this study.

This research will perform a qualitative multimethod sequential design where different methods come to play in the single study. As shown in Figure 11 in chapter 3, two qualitative methods will be conducted, including two case studies and interviews. The research design of this study has three steps, including: 1) an exploratory case study, 2) the main case study, and 3) supplementary interviews. In this approach, multiple qualitative techniques of data collection will be performed and analysed by having a single worldview (Hesse-Biber, Bailey-Rodriguez, & Frost, 2015). Accordingly, the subsequent qualitative method will take a secondary role in the service of the primary method. This approach includes separate studies where the second or the subsequent method ensues and develops from the main qualitative method (more explained in section 3.3).

To analyse the findings, the thematic analysis suggested by Braun and Clarke (2006) will be used for all datasets. More information regarding data analysis is provided in section 3.5.

1.6 SIGNIFICANCE OF THE STUDY

Providing insights about how the resilience of older adults emerges in OCs, the findings from this research have significant implications for both theory and practice as outlined below.

First, significant points of this study from an IS perspective are mentioned.

- The development of a new process theory explaining “Digital Resilience” Concept in the context of OCs and older adults, in line with the explanation approach in theorising (Gregor, 2006).
- This work contributed to an emerging IS concept (Digital Resilience) and conceptualised digital resilience in IS by providing a comprehensive digital resilience framework explaining how the process of digital resilience takes place, and how IS can support resilience of those individuals who use OCs.
- By examining the individual level, this work provides insights into the most recent call for research to two key research gaps:
- understanding digital resilience (Boh et al., 2020) through investigating how leveraging digital platforms can build resilience across an ecosystem, and to identify how leveraging digital technologies can mobilise community resources and services to respond to stressors.
- The outcome of this research contributed to the theory and produced several conceptual frameworks regarding participation of older adults in OCs.

Further, through reconciliation of IS and Gerontology, this work is significant for the service science research by addressing several service science research priorities such as studying how adopting technologies can shape the well-being and ill-being of individuals, particularly vulnerable groups such as older adults.(Ostrom et al., 2021)

- This study theorised the value cocreation practices older adults perform within OCs whereby the community represents an ecosystem of contributing and focal actors who share similar interests. This theorisation recognises that adopting online communities does not

guarantee the wellbeing of its users. Instead, OCs provide a platform which facilitates dyadic interactions between actors within the OC.

- This study identified what are the specific practices that older adults engage with and how these practices can shape their resilience resources.

In addition, from the perspective of a Gerontology field, significances of this research are:

- Reconciling Gerontology and IS and development of the first Digital Resilience Process Model (DRPM) in the context of OCs and older adults.
- Improvement of the salient resilience models (Richardson, 2002; Wister et al., 2016).

1.7 THESIS OUTLINE

This report includes six chapters and is structured as follows.

Chapter 1 provides a brief overview of the motivations behind this research, and why is it important to study the resilience process of older adults in OCs. After justifying the research problem, objectives of the research are explained, followed by research questions. Then, the scope clarifies the unit of analysis, OC type, and user types. Next, the qualitative sequential multimethod design, epistemological and philosophical perspectives, data collection and analysis methods are explained. This continues with explanation of the theoretical and practical implications of the study, and the chapter ends with a thesis outline and a summary of the chapter.

Chapter 2 reviews previous works through a combination of literature review and three published systematic literature reviews to identify research gaps and obtain insights regarding older adults and their use of OCs in relation to the process of resilience, and value co-creation and co-destruction practices. The existing gaps will be used to form and refine the research questions.

Chapter 3 provides a comprehensive explanation of the research design of the study. First, the epistemological and philosophical perspectives of the study will be explained. To do so, constructionism and interpretivism will be explained. Next, the qualitative multimethod sequential design methodology of the study will be discussed

and justified. This will show how three qualitative methods (exploratory case study, the main case study, and interviews) are used and how they inform each other. This continues with the explanation of the analysis approach. Accordingly, the thematic analysis guideline of Braun and Clarke (2006) will be justified as the analysis strategy of this work. Next, the credibility strategies of the research, such as triangulation, will be explained, and the chapter ends with the ethical consideration and a summary.

Chapter 4 details the analysis and findings of the study. To do so, findings of the exploratory case study, the main case study, and interviews will be presented in three separate sections.

Chapter 5 discusses the final research outcomes. First, the theoretical conceptual framework of the study will be presented and explained. Then, the model will be compared with previous resilience models. Next, the findings regarding the resource integration and value formation will be discussed.

Chapter 6 concludes the thesis by summarising the outcomes as well as the limitations and outlines potential directions for future research.

1.8 CHAPTER SUMMARY

In brief, this chapter explained the importance of participation of older adults in OCs and how this can influence their resilience, the process of bouncing back from adversity (Resnick, 2014). However, despite the potential benefits of OCs for the resilience of older adults (Kamalpour, Watson, & Buys, 2020), it is not clear how the resilience process emerges in OCs. Thus, this research seeks to answer the overarching research question of: *How does resilience of older adults emerge in OCs?* Also, the following sub research questions are:

SRQ1: *What influences the resilience of older adults in OCs?*

SRQ2: *Why do older adults engage in OCs to develop resilience?*

SRQ3: *What are the resilience outcomes for older adults engaging in OCs?*

In answering the aforementioned research questions, a qualitative multi sequential design approach will be followed, including an exploratory case study, main case study, and interviews. This research considers the resilience process model (Richardson, 2002) as a lens to understand how the resilience process among older

adults emerges in OCs. To do so, the theoretical constructs of the model will be assessed in OCs. Accordingly, motivations of older adults in OCs to develop their resilience will be studied. This will be followed by exploring what influences the resilience of older adults through uncovering the practices of users in OCs from the practice theory lens to understand how resilience resources can be developed or declined through these practices. Finally, the outcomes of the process will be investigated to understand the outcomes of participation of older adults in OCs, regarding their resilience.

Thus, this research will benefit both theory and practice through different ways:

- By developing a new process theory explaining the ‘Digital Resilience’ Concept in the context of OCs and older adults, in line with the explanation approach in theorising (Gregor, 2006).
- By contributing to the theory by producing several conceptual frameworks to explain (i) how OCs support resilience factors among older adults, (ii) the process of value co-creation and value co-destruction in OCs, (Bughin & Hagel) the theoretical link between the literature and the practice of creating happiness in OCs.
- By improving the resource integration model of Frow, McColl-Kennedy, and Payne (2016) by shifting the idea that resource integration occurs not only by accessing and sharing resources but also by the application of them.
- By identifying the value co-creation and co-destruction practices of older adults in OCs.
- By improving previous resilience models (Richardson, 2002; Wister et al., 2016) by introducing the “Digital Resilience Process Model” (DRPM) through identifying stressors, unpacking the reintegration phase, and clarifying the outcomes of the resilience process in OCs.
- By identification of the resilience resources that can be developed or declined in OCs.

- By addressing one of the service science priorities and identifying the impact of value co-creation on wellbeing (Ostrom et al., 2010) in the context of OCs and older adults.

The following chapter provides a comprehensive overview of the literature into the concepts of resilience of older adults, the relationship between resilience and OCs, and value co-creation and resource integration.

Chapter 2: Literature Review

As outlined in Chapter 1, this study aims to investigate the role of Online Communities (OCs) in the resilience of older adults through the lens of value co-creation. This chapter reviews the literature regarding the relevant topics of this research. Bandara, Miskon, and Fielt (2011) suggested that literature review is useful for refining the research context and guiding the pathways for successful research outcomes. Hence, the approach of this literature review section was to explore relevant academic publications, to identify major concepts in the domain of older adults, resilience, online communities, and value co-creation, and to ensure the success of the outcome of the research.

As this work covers the distinct fields of gerontology and service science, the objective of this section is to understand the background of the study, position the research, and determine the appropriate theoretical lens to address the research question.

Therefore, through systematic and non-systematic approaches, this chapter reviews the relevant literature, beginning with the concept of older adults, ageing theories, and participation of older adults in online communities (For the methods of the systematic literature reviews please refer to Appendix A and Appendix B). The chapter continues with a presentation and discussion of the arguments in the literature about the concept of resilience and how online communities can support the resilience of older adults. Next, the chapter introduces the concept of resource integration from a value co-creation perspective. This continues with the review of the literature regarding value co-creation and value co-destruction practices in online communities. The chapter concludes with the explanation of the findings reported in the chapter, and identification of the research gap.

2.1 RESEARCH CONTEXT

This section provides an overview of the relevant literature pertaining to the research context of older adults incorporating gerontology theories and the use of Online Communities (OCs) by older adults through the lens of value co-creation. In

addition, the chapter shed light on how participation of older adults in OCs and their engagement in value co-creation and value co-destruction practices is related to the resilience of older adults.

2.1.1 Ageing Theories and Older Adults

The following paragraphs provide different insights into the older adult populations and different theories that have been used previously in older adults' research. The world's population is ageing dramatically (Gerino, Rollè, Sechi, & Brustia, 2017). It is expected that the population of older adults, which is now around 7% of the world population (Lewandowska-Gwarda & Antczak, 2020), will reach 21 % by 2050 (Whitson et al., 2015).

Older adults, also referred to as older people (Beard et al., 2016; Cotterell, Buffel, & Phillipson, 2018), elderly (Schwartz, Wang, Zeitz, & Goss, 1963), elderly people (Ukawa, Tamakoshi, & Sakamoto, 2015), and senior adults (Tam et al., 2016), are usually considered as people above age 65 (Edmund, 2012). The WHO defines older adults as the proportion of people in post-working age (usually 65 years and more) (Lewandowska-Gwarda & Antczak, 2020).

There have been different theoretical perspectives taken to older adults and the challenges they face. Early theories of ageing encompass theories such as disengagement theory (Cumming & Henry, 1961) and activity theory (Havighurst, 1963). The involvement of these theories with an interdisciplinary perspective on ageing, based on physiological/medical data, psychology, and sociology contributed to the development of the gerontology field in the 1950s and 1960s (DeLiema & Bengtson, 2017). The first theory of disengagement was proposed by Cumming and Henry (1961) ,as 'An inevitable mutual withdrawal or disengagement, resulting in decreased interaction between the ageing person and others in the social systems he belongs to' (DeLiema & Bengtson, 2017). Disengagement theory received negative comments, especially from sociologists (e.g. Neugarten and Levin (1969)) who claimed that the impact of social structure and social status on the ageing experience had been discounted by the disengagement theory. In addition, Parker (1995) suggested that one of the major problems with disengagement theory is that many older adults remain extremely active in later life. He also suggested that the disengagement

theory is focused on the negative aspects of ageing. Furthermore, the theory apparently ignores personality factors and their influence on the process of disengagement.

Concurrently the idea of activity theory emerged. The activity theory roots date back to the 1960s to the work by Havighurst (1963, p. 8) where he supported the concept of “successful ageing, which refers to the maintenance as far and as long as possible of activities and attitudes of middle age”. This theory provided an alternative approach to ageing in contrast with the disengagement theory of Cumming and Henry (1961). Later, Neugarten and Levin (1964) stressed the relevance of social engagement and being active in successful ageing. It was one of the most influential ageing theories until the late 1980s and the emergence of the successful ageing concept by Rowe and Kahn (1987). The proponents of the activity theory assert that disengagement theory may be relevant to only a certain minority of older adults, generally the very old group, but for the majority of older adults, maintenance of an active lifestyle has a positive effect on their wellbeing (Maddox Jr, 1964).

The evolution of ageing theories kept continuing with the emergence of successful ageing theory, which is defined as “the enjoyment of health and vigour of the mind, body, and spirit into middle age and beyond” (Wagnild, 2003, p. 43). “Successful Ageing” introduced first by Havighurst (1963) and extended by Rowe and Kahn (1987, 1997) suggests that successful ageing has three main components of “low probability of disease and disease-related disability, high cognitive and physical functional capacity, and active engagement with life” (Rowe & Kahn, 1997, p. 433). Rowe and Kahn (1997) pictured these three components in a model that has been criticised by social gerontologists for almost two decades as it has not covered the personal, social, economic, and political aspects of ageing (Martinson & Berridge, 2014). Opponents claim that as not every person has access to resources to ensure successful ageing, categorising older adults as successful or unsuccessful ignores the socioeconomic context of people (Collins, 2014).

In summary, early theories such as disengagement stressed on the negative aspects of ageing whereas newer generations of theories like successful ageing altered the view of ageing as a progressing stage, and not the last stage of the life, and focused on ageing well or successful ageing (Jopp et al., 2014). Nevertheless, review of the literature shows that there is an overall lack of attention to personality factors and their

influence on the process of ageing among all these theories. In addition, a balanced view of the ageing process, which considers both withdrawal and growth, is neglected among them.

Comparatively more recent views regarding ageing, focus on the social and emotional aspects of later life (DeLiema & Bengtson, 2017), and specifically resilience rather than decline (Rogerson, 2009). Resilience is the process of bouncing back from adversity and is critical for the wellbeing of older adults (Resnick, 2014). Unlike earlier theories, resilience theory focuses on personality factors and their influence on the ageing process. In addition, resilience is achievable as it explores the experience of vulnerability rather than avoidance, and focuses on the strengths of older adults, which makes it achievable for everyone (Wild et al., 2013). Hence, resilience is focusing on concurrent withdrawal and growth, which in contrast with earlier theories provides a more balanced view of the ageing process. Resilience theory will be used in this study and will be discussed in more detail in section 2.2.

It is suggested that resilience results from the interaction between people and their environment (Pangallo, Zibarras, Lewis, & Flaxman, 2015). Technology can facilitate the interaction between people and their environment by eliminating geographical barriers (Nimrod, 2010). For instance, technological artefacts such as Online Communities (OCs) can play this role and enhance people's resilience by enabling them to interact with their environment (Sankaran & Demangeot, 2017). Despite the evidence that participation of users in OCs contributes to their resilience, the impact of older adults' participation in OCs on their resilience is still scarce. Therefore, the next section will explain the concept of online communities, their characteristics, and their usage by older adults.

2.1.2 Online Communities, Older Adults (Definitions, purposes, features, characteristics)

“Community” is a group of people with shared and common interest. People form communities when they interact with each other based on a shared and common interest (e.g. hobbies, jobs, topics of discussion) (Aumayr, 2017). In modern life, people form Online Communities (OCs) where they gather based on a common interest, discuss various topics, and provide support to their community members (Aumayr, 2017). OCs operate through diverse applications such as email distribution

lists, newsgroups, chat rooms, social media sites (e.g. Facebook, Twitter) (Nimrod, 2014), or online forums such as Reddit (Aumayr, 2017).

OCs, also known as virtual communities (Michailidou et al., 2015), are described as ‘computer-mediated places where people come together with others to converse, exchange information or other resources, learn, play, or just be with each other’ (Petric, 2014, p. 82). Michailidou et al. (2015) defined OCs as virtual places where users share similar experiences, problems, passions, beliefs, and hobbies.

Due to the vast types of users and their purposes for joining OCs (Muniz & O'guinn, 2001), there are different types of OCs created. There have been attempts to create typologies for OCs to better understand their differences. For instance, Armstrong and Hagel (2000) classified OCs into four types: transaction-oriented (acting as a bridge between buyers and seller, such as Amazon), interest-oriented (discussion forums where users talk and share information about a topic of interest), fantasy-oriented (create a new environment for users to meet and play out different roles in virtual worlds, e.g. video games), and relationship-oriented (concentrate on establishing communications with friends and strangers, e.g. Facebook). However, some scholars (Johnson, 2014) suggest that there is a sharp distinction between OCs and relationship-oriented OCs such as Facebook as usually OCs are established on the interaction of people who don't know each other offline, but social media platforms such as Facebook are places where users often already know each other.

In this study we investigate Reddit OC. Following the categorisation of Armstrong and Hagel (2000), OCs such as Reddit falls into the category of interest-oriented OCs because all communities on Reddit are formed based on the shared interests among users, and usually participants share information regarding their interests. Interest-oriented and information sharing category is the most common type of OC in which users meet, discuss and share information about any topic (Aumayr, 2017). However, interest-oriented OCs can also be categorised into different subcategories such as online health communities, online fitness communities, and online tourism communities. Within interest-oriented OCs, discussions can range from casual to profound topic-focused, with participation of different types of users (Aumayr, 2017).

In general, OCs have four common characteristics, including a minimum level of interactivity, a variety of users, a minimum level of sustained membership, and a virtual common public space where interactions of users occurs (Zhang & Watts, 2008). Typically, OCs have various stakeholders such as community founders, community leaders, moderators, business managers, and community members (Lazar & Preece, 2002). However, in the scope of this study, we focus on community members, and specifically older adults who are the members of Reddit.

Usually, among “community members”, there are different groups of people within various age groups who have joined OCs for different purposes. They have different needs, and they play various roles such as leaders, protagonists, and moderators, performed based on different policies that represent forms of governance and capture the norms and rituals that are established in the community (Aumayr, 2017). This is because each type of OC attracts different types of users. Therefore, users’ intentions for joining OCs result in different norms within the community (Preece & Maloney-Krichmar, 2003). For instance, users are generally motivated to join an online health community to receive informational or emotional support from peers (Loane, 2015). This differs from a fitness community where users have a common goal of being fit (Dessart & Duclou, 2019). However, there are some overlaps among all types of communities. For example, as mentioned above, all OCs allow their users to share their experience of certain types of issues, but the type of shared experience is different. For instance, in OCs for older adults, users might share their experience about retirement or ageing issues, which is not a norm in other OC types. These examples show that a variety of OC aspects (e.g., user type, member needs) define the different types of OCs.

This study is focusing on those OCs that are dedicated to the needs of older adults so they can join and communicate with other older adults. In the context of this study, there are various types of community members who join this type of OC, such as older adults, informal caregivers of older adults who are looking for support from other users, professional individuals, and organisations. However, the dominant user group of these OCs are older adults themselves and they usually join OCs to seek social support (Klinger, 2011). It is important to mention that regardless of the type of user, in OCs, there is normally a focal actor who posts a thread and there are a range of other

users who respond to the focal actor, so we call them contributing actors. The terms ‘focal actors’ and ‘contributing actors’ will be used later.

For older adults, OCs play the role of a communication medium, so they can make new friends by removing geographic barriers. In addition, OCs serve as an information source so older adults can share information regarding various topics such as health, ageing, and technology. Further, older adults use OCs as a task-oriented tool (e.g., shopping, financial management, and travel planning), and also for leisure activity (Nimrod, 2010).

Indeed, the increasing participation of older adults in OCs has been found beneficial for older adults (Nimrod, 2014), and the impact of this participation on older adults’ wellbeing has become a key issue in gerontology research (Nimrod, 2010). For instance, OCs can empower older adults, facilitate provision of social support for them, and positively impact their wellbeing, which has the potential to contribute to their resilience (Kamalpour et al., 2020) by helping them to better cope with stress, losses and negative life events, and to protect, restore, and transform their self-perceptions (Nimrod, 2010). To better understand the role of OCs in the resilience of older adults, first, there is a need to explore what influences the resilience of older adults. Therefore, the next section discusses and conceptualises the term ‘resilience’ in detail, to contribute to addressing the first sub-research question of the study:

Sub-Research Question 1: What influences the resilience of older adults in OCs?

2.2 RESILIENCE

This study investigates the role of OCs in the resilience of older adults through the lens of value co-creation. To better understand what influences the resilience of older adults, this section conceptualises the term resilience. First, the term resilience will be explained in detail, highlighting the different levels and types of resilience. Then, we discuss the resilience process and resilience resources. Subsequently, the concept of resilience resource modification will be explained.

2.2.1 What is Resilience?

Resilience is described in different ways. Resilience is a multidimensional process (Gaffey, Bergeman, Clark, & Wirth, 2016) described as the bouncing back

from an adversity, reintegrating and preferably growing from the experience (McClain, Gullatt, & Lee, 2018; McClain, Lee, & Gullatt, 2017; Resnick, 2014; Whitson et al., 2015). It is suggested that resilience is an essential element of successful ageing (Kwong, Du, & Xu, 2015; McClain et al., 2018). As Stephens, Breheny, and Mansvelt (2015) note, resilience is defined as flourishing despite adversity. Cosco, Howse, and Brayne (2017) described resilience as maintaining a high level of functioning despite having adversity. Resilience can result from the interaction between people and their environment (Pangallo et al., 2015). Being resilient shows that the person is able to cope with trauma, tragedy, hardship, adversity and ongoing life stressors (Donnellan, Bennett, & Soulsby, 2015). Resilient people tend to exhibit more adaptive behaviour regarding social functioning, health, and morale, and are less likely to surrender to illness. Resilience allows older adults to understand personal challenges that are physical, emotional, and social (Liebenberg, Joubert, & Foucault, 2017). Therefore, resilience is a significant element of wellbeing and can be defined as coping with adversity through sustaining high-level functioning, performing adaptive behaviour, reintegrating, and growing regardless of the adverse situation.

In contrast with successful ageing, which is not achievable for everyone, resilience is open to all people as an integral part of human experience (Wild et al., 2013). Unlike successful ageing, developing resilience is possible for many older adults regardless of cultural and social backgrounds or cognitive and physical impairments (Wild et al., 2013).

Literature suggests that resilience can be categorised into several types: general health resilience, psychological resilience, dispositional resilience, emotional resilience, cognitive resilience, mobility resilience, and social resilience (See Table 1). Resilience types might overlap with each other. For example, an individual may be socially resilient, but he or she may not necessarily be emotionally resilient (Wild et al., 2013).

Along recognising the different types of resilience for older adults, there is a need to acknowledge the different levels of resilience (also known as scales, or ecosystems) (Wild et al., 2013). According to Wild et al. (2013), among older adults, the individual resilience is situated within household, family, neighbourhood, and community resilience, which are inter-related, overlapped, and each level can

contribute to other levels (Wild et al., 2013). For instance, mobility resilience “might refer to an individual’s personal mobility in terms of whether they are able to walk, whether they have a car, or whether they are physically fit, but also to broader environmental elements of mobility, such as whether there is an accessible high-quality public transport system or other forms of collective transport, whether a neighbourhood has high ‘walkability’, or what road conditions are like and to the degree to which a person feels safe to use them” (Wild et al., 2013, pp. 150-151). For instance, technically, an older person may be able to drive, but prefers to do so along carefully planned routes and at specific times to avoid high-density traffic.

Table 1) Resilience Types among Older Adults

| Resilience Type | Definition |
|---------------------------------------|--|
| General Health Resilience | The capacity of an older adult to maintain good health in the face of significant adversity (Resnick, 2014). |
| Psychological Resilience | A combination of positive features of personality and coping to facilitate recovery associated with life stressors (Resnick, 2014). |
| Dispositional Resilience | Incorporates three personality characteristics, including commitments to others, a sense of control over outcomes, and a willingness to learn from the current situation (Resnick, Galik, Dorsey, Scheve, & Gutkin, 2011). |
| Emotional Resilience | Older adults’ ability to regain emotional stability after suffering through difficult and stressful times (Resnick, 2014). |
| Cognitive Resilience | Older adults’ ability to overcome noted changes in his or her cognitive ability, negative comments he or she may hear from others, and associated stress related to cognitive performance and embarrassment (Resnick, 2014). |
| Mobility Resilience | The ability of a mobility infrastructure system to manage shocks and return to a steady state in response to an extreme event (Roy, 2018) |
| Social or Community Resilience | ‘The capacity of actors to access capitals in order to – not only cope with and adjust to adverse conditions (that is, reactive capacity) but also – search for and create options (that is, proactive capacity), and thus develop increased competence (that is, positive outcomes) in dealing with a threat’ (Obrist, 2016, p. 267). |

This research scoped to focus on resilience at the individual level. However, different levels of resilience are inter-related. Therefore, participation of older adults in the community can have impact on their own resilience and also the resilience of the community.

2.2.2 Resilience Process

This section explains the process of resilience reintegration and resilience factors among older adults. One of the first ideations and conceptualisations of the resilience process proposed by Richardson (2002), designed the resilience reintegration model (Figure 3). This model applies to all resilience levels, including individuals, couples and families, and communities, and explains the dynamic pathway of reintegration back into life after disruption of homeostasis (Richardson, 2002).

According to the model, an individual who is in homeostasis (state of stability or constancy (Cannon, 1929)) might experience disruption by stressor, adversity, or negative life events. Then, relying on “*Protective Factors*” defined as the factors that help a person to overcome adversity or to avoid the adverse effects of the risk (Wild et al., 2013), the individual may reintegrate positively and grow through a challenging experience, remain the same, or they may reintegrate with loss or demonstrate some type of dysfunctional reintegration such as depression. Therefore, protective factors are central to the process as they can positively impact the outcome of the process. The term “protective factors” have been applied in numerous ways by researchers in conjunction with other terms. Henceforth we use the term resilience resources to refer to protective factors.

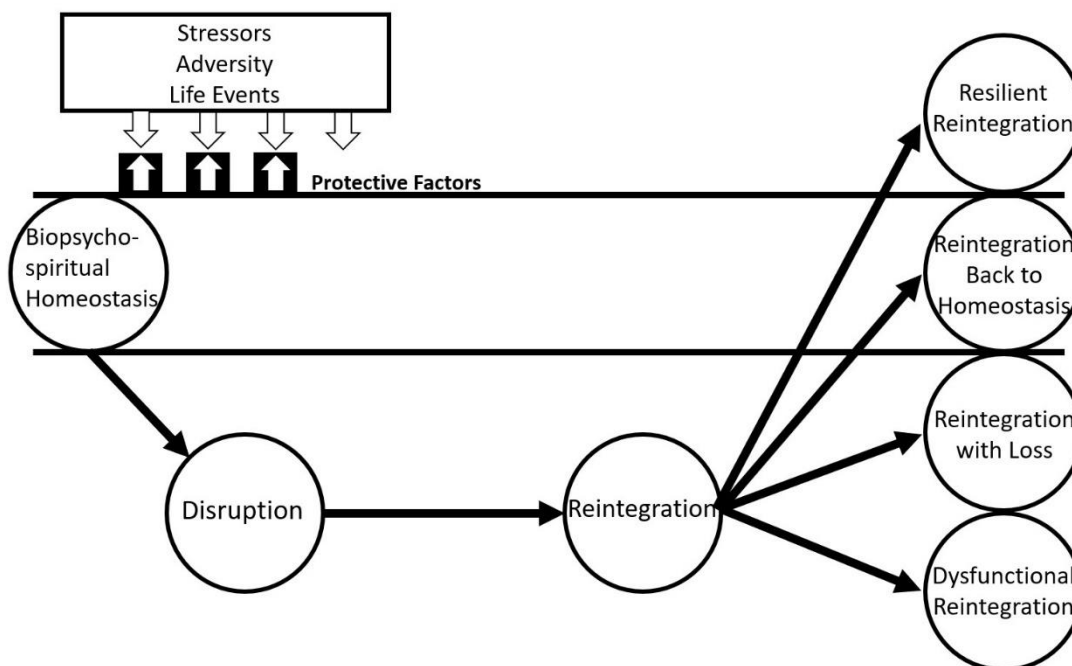


Figure 3) *Resilience Model (Richardson, 2002)*

A decade later, Resnick (2014) adopted Richardson’s model and provided further explanation and details about the importance of resilience resources and their role within the process of resilience among older adults. Two years later, Wister (2016) proposed a lifecourse resilience model (Figure 4) inspired by Richardson’s model (2002) and drawing on the Garmezy’s (1991) resilience factors. However, he criticised Richardson’s model because he believed that the model focused on individual level rather than environmental and did not answer the question of how the resilience process happens. Wister et al. (2016) suggested a new model that had some similarities and differences with Richardson’s (2002) model. Wister’s model shows the process of resilience reintegration in the lifecourse of individuals who are experiencing multimorbidity and disability. Accordingly, an individual experiences an adverse event that results in a stressful situation, and disruption happens. Then, the person harnesses individual, social and environmental resources, which require motivation, energy, and access. This process further engages coping processes and emotional regulation, which results in reintegration and positive adaptation (Wister et al., 2016).

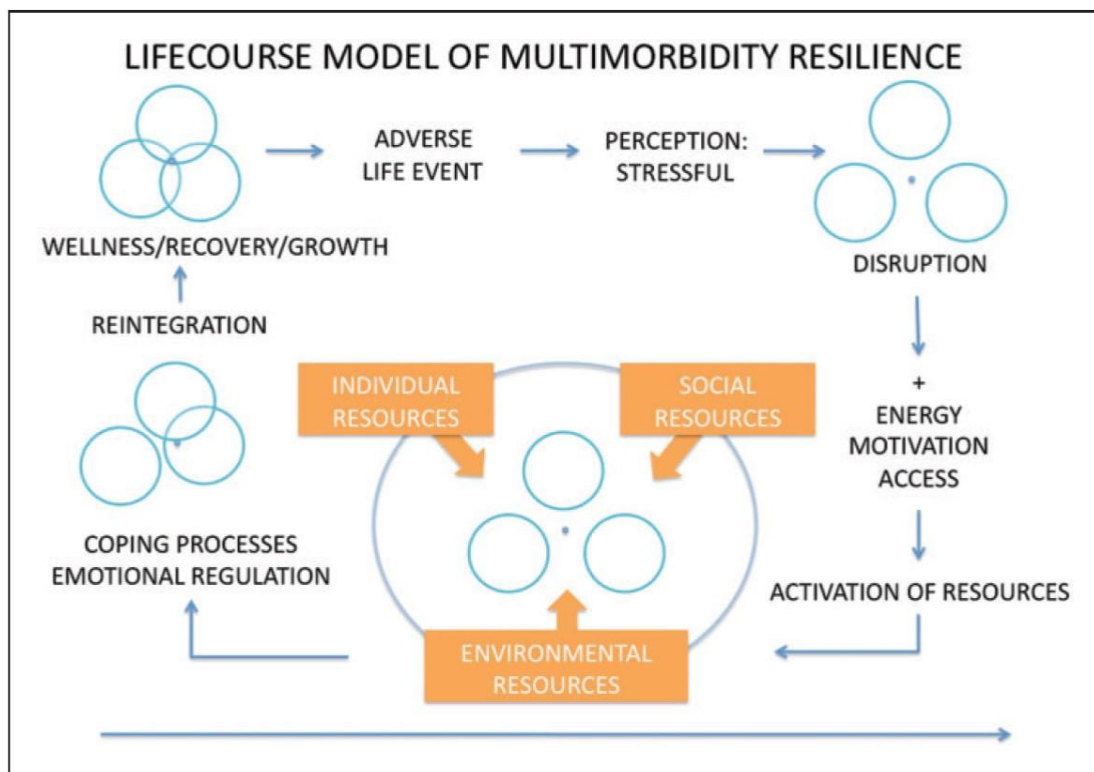


Figure 4) *Resilience Model by Wister et al. (2016)*

Comparing Richardson (2002) and Wister et al. (2016) models, both works tried to explain the resilience process. Stressors, disruption, resource application, reintegration process, and reintegration outcomes are the key elements described in both models. While Richardson's model can be applied to individuals, families and communities and it is applicable to any type of stressor (Richardson, 2002), focus of the model by Wister et al. (2016) is solely on stressors related to illness, and disability among older adults. As mentioned earlier, Richardson's model (2002) was criticised by Wister (2016) because he believed that the model did not answer the question of how the resilience process happens and there is a lack of focus on the reintegration process in the model. While Wister et al. (2016) sought to address this issue, their model did not sufficiently improve Richardson (2002) as the reintegration process remained a black box. Nevertheless, Wister's model improved Richardson's model by adding the statement that application of resources engages the process of coping and emotional regulation (Wister et al., 2016). In terms of resilience resources (both models referred to resilience resources as protective factors), both works mentioned resilience resources as critical elements of the process. Finally, regarding reintegration outcomes, Richardson's model clearly indicates four possible reintegration scenarios that might occur, whereas Wister's model only mentioned the positive reintegration outcomes and neglected two scenarios where reintegration might be with loss or side effects such as depression.

In this study, we use Richardson's Model for several reasons. First, the model is applicable to all types of stressors and adversities, and not only on illness and disability-related issues. Second, Richardson's model is valid for all resilience levels and not only individuals. Third, Wister's model represents positive outcomes of the reintegration process only; Richardson's model is more comprehensive as it covers all positive and negative reintegration scenarios. Even though Richardson's model did not delve into the process of reintegration and did not elaborate on how reintegration happens, Wister's model has the same limitation as well. As one of the contributions of this study, this work will improve Richardson's model by investigating how the resilience process takes place in OCs through the lens of value co-creation.

In addition, in the context of OCs, it was not clear that what are the triggers for the participation of older adults in OCs to develop their resilience. Based on this the second research question has emerged:

Sub-Research Question 2: Why do older adults engage in OCs to develop resilience?

2.2.3 Resilience Resources

The resilience process is strongly dependent on the availability of resilience resources (Resnick, 2014) defined as the factors that help a person to overcome adversity or to avoid the adverse effects of the risk (Wild et al., 2013). These resources are also referred to as “resilience factors”, “assets”, “resources”, or “strengths” (Egeland, Carlson, & Sroufe, 1993; Fergus & Zimmerman, 2005; McClain et al., 2018; Resnick, 2014; Werner, 2000; Windle, 2011). This study will use the term resilience resource when referring to terms such as resilience protective factors, assets, and strengths.

Review of the literature regarding the resilience concept shows that most researchers treated resilience resources as internal and external resources, which are coming from within the individual or from their environment. For instance, Werner (2000) suggests that resilience resources fall into the two categories of internal and external resources. Consistent with Werner (2000), Egeland et al. (1993) classified resilience resources as internal and external resources, where internal resources refer to personal qualities of individuals, and external resources refer to sources of support from the environment. Supporting previous works, McClain et al. (2018) indicate that individuals rely on interlocked internal and external resources from self, community, and society to overcome their adversities.

In contrast with aforementioned researchers, Windle (2011), Fergus and Zimmerman (2005), and Sacker and Schoon (2007) refer to resources only as environmental influences such as family support. In their opinion, personal qualities and competences are self-assets and not resources. For instance, Windle (2011), referred to resilience resources as resources and assets within the individuals, their lives, and environments that facilitate the capacity for adaptation and ability to bounce back from adversity. Consistently, Fergus and Zimmerman (2005) and Sacker and

Schoon (2007) label the individual-level resilience resources as assets, while they viewed resources as external to the individual. Therefore, assets might include factors such as competence and efficacy, and resources that encompass the contextual or environmental influences, such as family support and community services.

Based on what is explained above, resilience resources have commonly been identified across three levels of functioning; individual (psychological, neurobiological), social (family cohesion), and community/society (support systems generated through social and political capital, institutional and economic factors) (Windle, 2011).

The following paragraphs will explain different common categorisation of resilience resources among older adults and clearly explain each of the resources. As highlighted above, literature often categorises resilience resources into the two groups of internal and external resources. *Internal resources* are attributes from within the individual contributing to reintegration such as self-reliance (McClain et al., 2018; Resnick, 2014), self-efficacy (McClain et al., 2018; McClain et al., 2017; Resnick, 2014), self-esteem (Resnick, 2014), psychological health (Kim, Ford, Mauss, & Tamir, 2015; McClain et al., 2018; Resnick, 2014), physical health (McClain et al., 2018; McClain et al., 2017; Resnick, 2014), and emotion regulation (Gaffey et al., 2016; Gross, 1998; McClain et al., 2018)

Alternatively, *external resources* are resources from the environment such as social support (Donnellan et al., 2015; Gaffey et al., 2016; McClain et al., 2018; McClain et al., 2017), spirituality and religious engagement (Liebenberg et al., 2017; McClain et al., 2018), and financial resources (McClain et al., 2018). Regarding the social support resource, Kamalpour et al. (2020) suggested that social support consists of five types of support; informational, emotional, network, resource exchange, and instrumental support.

Furthermore, Wister et al. (2016) provided a different classification of resilience resources and suggested that an individual may use a combination of *personal*, *social*, and *environmental* resources. Personal control and high self-efficacy were found related to the mobilisation of other resources. Resilience resources suggested by Wister et al. (2016), covered a broader range of resources compared with previous works.

Another classification of resilience resources for older adults is done by Bolton, Praetorius, and Smith-Osborne (2016), in which the authors performed a systematic integration of findings of existing qualitative studies premised in exploring resilience resources among older adults. The authors categorised resilience resources in nine groups; *External connection, Meaningfulness, Grit, Positive perspective on life, Previous experience with hardship, Self-care, Independence, Self-acceptance, and Altruism*. Table 2 below provides a description and examples for each of these resilience resources.

The classification of the resilience resources for older adults by Bolton et al. (2016) profoundly differs from other classifications. Their classification does not locate resources in a specified frame such as “Internal-External” or “Individual-Social-Environmental”. However, the authors covered a large number of resilience resources for older adults in their article, which creates a holistic view of resilience resources among older adults. Also, their work is the most recent paper that has tried to systematically categorise resilience resources. Therefore, this study relies on the classification of resilience resources suggested by Bolton et al. (2016).

| Resilience Resource | Definition | Examples |
|-------------------------------------|--|---|
| External Connection | Accessing environmental resources through connections with family, society and community. | Relational living, family support, attachment, social support, social connectedness, overcoming loneliness, external resources, empowering relationships with professionals, etc. |
| Meaningfulness | Having a purpose and meaning in life beyond the idea of religious grounding. | Creating meaning, spiritual grounding, existential aloneness, spirituality and faith, culture. |
| Grit | Having courage, strength, perseverance, and determination in one’s character, and moving forward with life challenges. | Perseverance, self-reliance, determination, head-on approach to challenges, moving forward with life, will to live, anticipating ones future losses. |
| Positive Perspective on Life | The skill of seeing things in a positive manner and viewing hard situations as a possible stage to pass. | Optimism, desire, motivation, internal locus of control, balance view on life, |

| | | |
|--|---|--|
| Previous Experience with Hardship | The successful experiences of overcoming hardships in past. | Getting through hard times, experience with loss and grief, preparing, doing what you have to do, not adapting the role of a victim. |
| Self-care | Any activity by older adults that contributes to their physical or mental health. | Access to care, self-care activities, self-management, staying healthy and active, curiosity/ever seeking, acceptance of help and support, accessibility of health and social services |
| Independence | The ability of older adults to have control on their thoughts, choices, and behaviours. | Feeling independent, personality characteristics. |
| Self-acceptance | The acceptance of oneself, acceptance of the ageing process, and acceptance of experiences throughout life. | Confronting mortality and death, pride about one's personality, acceptance and openness of one's vulnerability |
| Altruism | Unselfish devoting of self to the welfare of others. | Care for others, generativity, extending self to others, the power of giving |

2.2.4 Resilience Resource Modification

The previous section discussed different types of resilience resources and the process of reintegration. Also, it was suggested that the more resources a person gains, the more resilient he/she is likely to be (Liddell & Ferreira, 2018; Van Kessel, 2013; Xu & Kajikawa, 2018). Research has recommended that resilience should be viewed as being fluid overtime (Meichenbaum, 2008). Therefore, resilience resources should not be viewed as stable attributes. Rather than being stable, they are dynamic and can be modified. For instance, in a study of resilience resources among children, Traub and Boynton-Jarrett (2017) found that several resilience resources among children are modifiable. For instance, positive perspective on life and optimism can be modified through improving self-esteem, internal locus of control and cognitive flexibility by exercise and therapy. Also, self-care skills are developable, and this can result in improvement of health resilience.

The phenomenon of modification of resilience resources can be seen and supported from the lens of value co-creation and resource integration, which suggests that exchange and application of resources can result in resource development or

integration (Vargo & Lusch, 2017). Hence, resources can be considered as fluctuating attributes because their states can change over time. Fields external to resilience of older adults have acknowledged resource integration as part of a theoretical concept of value co-creation (Frow et al., 2016; Vargo & Lusch, 2017). However, impact of resource sharing on resilience is still unclear (Ryu et al., 2019), and the phenomenon of integration and modification of the resilience resources among older adults have not been investigated yet. In addition, it is not clear how resilience resources among older adults modify through development or decline. Therefore, in the next section, we turn to broader literature and theories of value co-creation and resource integration to uncover more about this phenomenon.

In summary, recent gerontology studies have had a strong focus on the concept of resilience, the process of bouncing back from adversity. Resilience is achievable for everyone by relying on the strengths and being aware of unavoidable vulnerabilities at the same time. There are various types of resilience within different levels of the ecosystems. In addition, resilience resources are one of the determinant elements of the resilience process. Literature suggests that the more resilience resources a person has, the more resilient he/she might be. These resources can be modified and integrated through certain circumstances. It means they are dynamic attributes, which can be developed or declined during the time. However, it is not clear how this process of resilience reintegration happens (Wister et al., 2016). The next section aims to investigate this grey area of research (resilience reintegration process) through the lens of value co-creation and resource integration.

2.2.5 Resilience Through Participating in Online Communities

Through conducting a systematic literature review ² (For the method see Appendix A), three high level benefits of online communities were identified – social support, self-empowerment, and health improvement - which will be discussed in the

² This is an artifact of the following paper: “How Can Online Communities Support Resilience Factors Among Older Adults” published in International Journal of Human-Computer Interaction in April 2020. This systematic literature review has been published and citation details are as follows: Kamalpour, M., Watson, J., & Buys, L. (2020). How can online communities support resilience factors among older adults. *International Journal of Human-Computer Interaction*, 36(14), 1342-1353.

following sections. Subsequent, to analysing these benefits, we examine their impact on resilience resources.

2.2.5.1 Social Support

Many older adults join OCs to receive social support. Review of the literature showed that in OCs, older adults receive five types of support from other users. These supports are informational, network, emotional, tangible, and resource exchange support. Frequency of each type is shown in Figure 5 below.

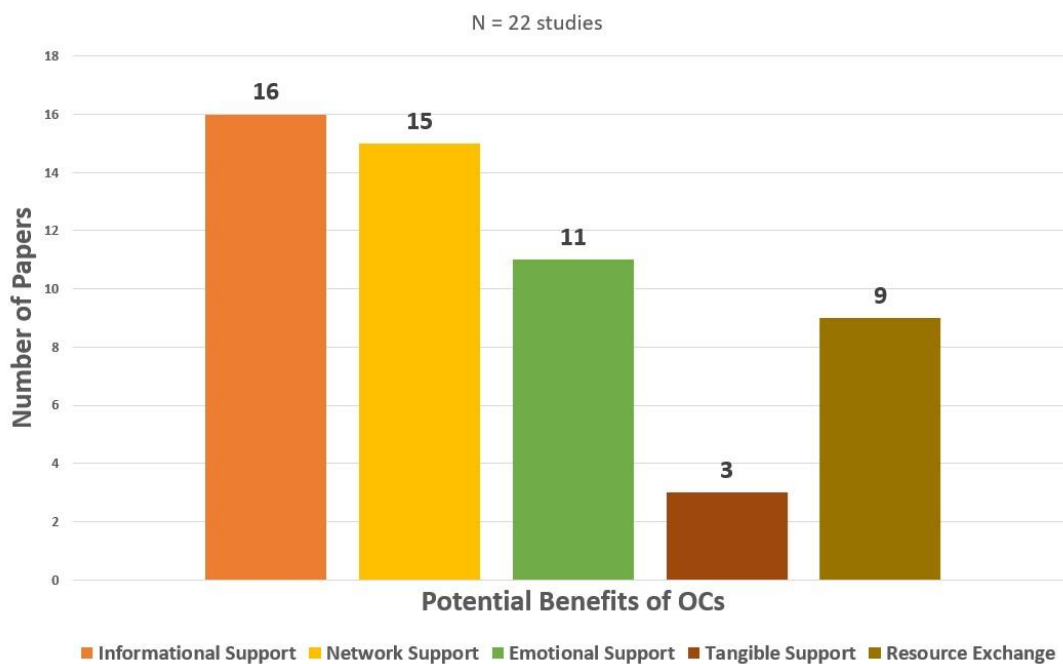


Figure 5) Frequency of each type of Social Support in the SLR Sample (Sample Size =22)

Informational Support provides individuals ‘with advice or guidance concerning possible solutions to a problem’ (Loane, 2015, p. 38). About half of older adults above age 60 use social media to seek information and communicate with others regarding lifestyle and health issues (Litchman, Rothwell, & Edelman, 2018; Pálsdóttir, 2016), and in return, OCs enable informational support for older adults through features such as text-based forums (Harley, Howland, & Harris, 2016), public groups, and private channels (Pan, 2018). There are different types of information such as health and medical, lifestyle (Pálsdóttir, 2016), personal and family (e.g. photos and videos) (Leist, 2013), and advice and guidance information (Ciboh, 2017). Informational

support within OCs benefits older adults in various ways including improvement of self-efficacy (Leist, 2013), self-care (Litchman et al., 2018), well-being and life satisfaction (Leist, 2013). Furthermore, informational support can be a cost-effective strategy for healthcare (Litchman et al., 2018), because healthcare professionals share related information (Daneshvar, Anderson, Williams, & Mozaffar, 2018) remotely, which reduces healthcare costs for older adults.

Network Support refers to feeling part of a group with shared interests and concerns (Loane, 2015), and results from social informal and formal relationships that connect individuals to larger communities (McClain et al., 2018). Support from network members enables users to access social capital that was not accessible offline (Sankaran & Demangeot, 2017). This enables older adults to access three levels of social capital through bonding, bridging, and linking (Ciboh, 2017). OCs afford network support, enabling their users to get involved in leisure and recreational activities (Sherbourne & Stewart, 1991), which can result in loneliness reduction, depression reduction, and improve wellbeing of older adults (Choi et al., 2014). Network support also enables them to make new friends (Booth & Kellogg, 2015), and actively connect with others (Loane, 2015). In addition, users feel connectedness among network members through social interaction (Pan, 2018). Being connected and receiving network support allows older adults access to various resources (Usher & Yang, 2013), and has significant implications for the subjective well-being of older adults (Pan, 2018). Further, the network support through OCs allows older adults to participate in religious activities, which enables them to stay active, and promotes their level of self-esteem (Choi et al., 2014), and well-being (Loane, 2015). It is suggested that religious activities expand the social network (Usher & Yang, 2013), enhance quality of life (Choi et al., 2014), promote coping skills and feelings of having a purpose in life (Polson et al., 2018).

Emotional Support refers to providing intimacy, caring, attachment, and concern (Ciboh, 2017) by relying upon the ability to turn to others for comfort and security during times of stress, which leads the person to feel that he or she is cared for by others (Loane, 2015). OCs allow their users to share problems and difficult emotions with each other through synchronous instant messaging (Harley et al., 2016). Emotional support is beneficial to health outcomes of chronic illnesses and may protect

individuals from some of the adverse outcomes of significant illness or stressful situations (Sherbourne & Stewart, 1991). In addition, emotional support bolsters a sense of self-worth (Gaffey et al., 2016) which increases feelings of self-esteem (Crocker & Wolfe, 2001).

Tangible Support refers to provision of behavioural assistance and material aid (Ciboh, 2017; Sherbourne & Stewart, 1991) and it consists of tangible acts such as assisting with finance or transportation (Gaffey et al., 2016). Participation in OCs can lead to the acquisition of tangible capital (Booth & Kellogg, 2015) by behavioural and material assistance from other users (Ciboh, 2017).

Resource Exchange and Value Co-creation were found as another benefit of OCs for older adults. Some older adults use OCs as a way of sharing interests, discussion, activities, and social support with other online peers (Harley et al., 2016). It can take place either publicly in posts for the entire group or through private communication channels. A high level of reciprocity may facilitate social interaction within an OC, which results in positive feelings of connectedness among users (Pan, 2018), and empowerment of older adults by enabling them to exchange health information (Daneshvar et al., 2018). Furthermore, users' engagement, and resource exchange can create value (Cao & Wang, 2018), which is central to build resilience (Karpouzoglou et al., 2016). Consequently, building resilience can have positive impact on the well-being of users (Beirão, Patrício, & Fisk, 2017). OCs are known as value co-creation entities (Chamakiotis & Panteli, 2017), and reciprocal relationship and exchange of services and resources among OC stakeholders results in co-production (Daneshvar et al., 2018), or, in other words, co-creation of services (Agarwal, Soh, & Yeow, 2016; Galvagno & Dalli, 2014), and this is where value co-creation takes place (Agarwal et al., 2016; Beirão et al., 2017; Chen, Du, Li, & Fan, 2017). Value co-creation within OCs as a central indicator of resilience (Karpouzoglou et al., 2016) can have positive impacts on well-being of users, enabling them access to more information, which leads to increased knowledge and more informed relationships with professionals (Beirão et al., 2017).

2.2.5.2 Self-empowerment

The second category of potential benefits of participation in OCs for older adults is self-empowerment. In fact, engagement of older adults in OCs can empower them through improvement of self-efficacy, independence, self-esteem, self-disclosure, and meaningfulness in life. Frequency of each subtheme is shown in Figure 6 below.

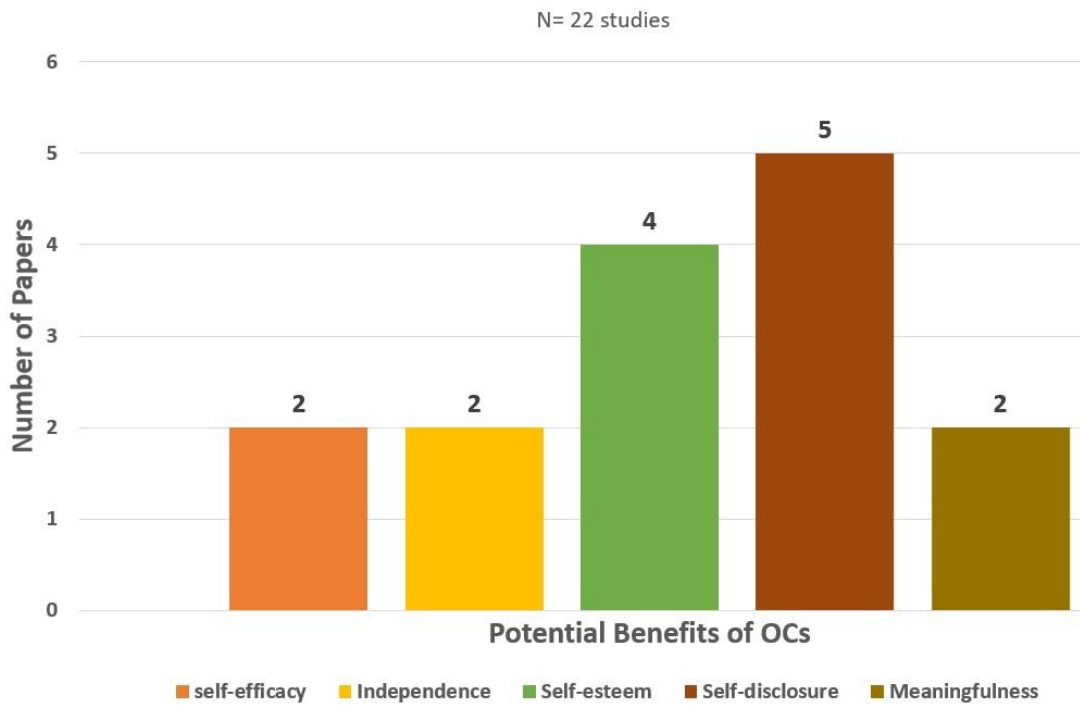


Figure 6) *Frequency of the subthemes for Self-empowerment in the SLR sample (Sample size=22)*

Self-efficacy is an individual's perception of his or her ability to overcome adversity (McClain et al., 2018). Participation in OCs provides older adults with learning opportunities that can raise their feeling of self-efficacy (Liebenberg et al., 2017). This feeling is found as result of five factors involved in the participation in OCs including 1) emotion expression and connection, 2) knowledge and information gain, 3) effects of social processes and interpersonal connections, 4) influences on decision making, and resulting action, and 5) the psychological impact of writing (Leist, 2013).

Independency is an intrinsic trait, which can be attained over the life-course and can be improved among older adults through their participation in OCs (Emlet, Tozay, & Raveis, 2010). Older adults tend to stay connected, and OCs may help them to

function independently. Being independent helps older adults to handle their tasks by themselves so it would be beneficial and enable them to age in place.

Self-esteem is another potential benefit of OCs for adults (Baker et al., 2018; Ciboh, 2017; Pan, 2018). Bonding social capital (such as access to rare resources, emotional, and substantive support) (Ciboh, 2017), and social support (Pan, 2018), which are afforded by OCs, have positive impact on the self-esteem of older adults.

Self-disclosure refers to expressing the bottled up emotions of self (Nimrod, 2014). According to the theory of online disinhibition effect, online users tend to have a greater level of self-disclosure and more frequently in comparison with their offline normal daily behaviours. For instance, older adults' OCs enable their users to discuss sex-related concerns, and they can easily disclose their personal issues with others with minimised risk of being shamed or socially sanctioned. This in turn, fosters the possibility of informational support to older adults, and promotes their wellbeing due to the effects on users' attitudes and offline sexual behaviour (Berdychevsky & Nimrod, 2015).

Meaningfulness is described as the understanding that life has a purpose and meaning (Nygren et al., 2005). In essence, involvement in communities helps older adults to reduce the feelings of loneliness and create a new sense of purpose in life by giving social roles to them (Harley et al., 2016). In addition, OCs enable meaningful remote activities such as religious meetings (Iqbal, Ahsan, Hussain, & Nadeem, 2016), and entertainment (Choi et al., 2014). It is also suggested that the knowledge exchange within OCs has positive impacts on older adults' meaning in life (I.-C. Chang, Chang, Lian, & Wang, 2018). Positive outcomes of meaningfulness are lower levels of loneliness and depression (Usher & Yang, 2013), successful ageing (Chun, Heo, Lee, & Kim, 2016) and a positive view of the future (Nygren et al., 2005).

2.2.5.3 Health Improvement

The third benefit of OCs for older adults is health improvement. Participation of older adults in OCs has the potential to improve their health through improving older adults' care access and care activities, stress relief, depression relief, loneliness, and wellbeing. Frequency of each subtheme is shown in Figure 7 below.

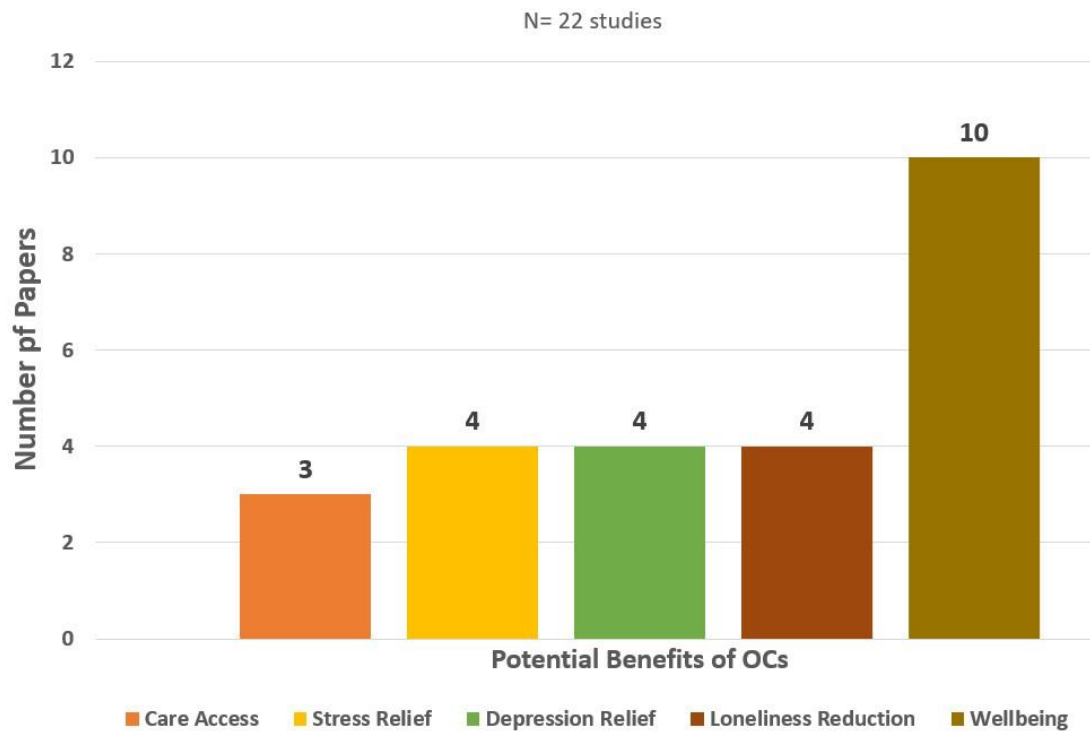


Figure 7) *Frequency of the subthemes of Health Improvement in the SLR Sample (Sample size=22)*

By eliminating geographical barriers, OCs enable care access and activities for their stakeholders including such as older adults. OCs enable their users to connect with each other so that they can share different types of resources such as health information and mutual support, which may lead to co-production of services. Furthermore, the telehealth afforded by OCs results in lower healthcare costs (Daneshvar et al., 2018). In addition, the audiovisual and text information within OCs can enhance health information recall, and assist in the understanding of health information (Dumbrell & Steele, 2014).

Stress Relief can contribute to health improvement of older adults as a result of participation in OCs (Leist, 2013). The social support through emotional, informational, and tangible support within OCs can relieve the stress among older adult users (Ciboh, 2017). In addition, OCs afford expanded networks and high levels of social connectivity, which reduce the stress experienced in daily life (Pan, 2018).

Depression Relief is significantly associated with the social support (Ciboh, 2017; Pan, 2018) and informational support (Lee, Kahana, & Kahana, 2016; Pagán-Ortiz, Cortés, Rudloff, Weitzman, & Levkoff, 2014) that older adults receive within

OCs. Hence, as depression is associated with many negative issues such as physical and cognitive problems (Gooding, Hurst, Johnson, & Tarrier, 2012), and quality of life decline (Usher & Yang, 2013), therefore participation in OCs can relieve depression, which results in a better health and quality of life.

Loneliness Reduction is another potential benefit for older adults afforded by OCs. Loneliness is defined as ‘the unpleasant experience that occurs when a person’s network of social relations is deficient in some important way, either quantitatively or qualitatively’ (Usher & Yang, 2013). Being lonely can increase depression (Harley et al., 2016), leads to decline in overall health (Quinn, 2018), and reduces self-efficacy (Gerino et al., 2017) among older adults. Participation in OCs can reduce the negative impacts of loneliness and improve the health status of older adults (Baker et al., 2018; Quinn, 2018).

Ultimately, potential affordances of OCs such as informational (D. Zhang et al., 2018) and emotional support (X. Huang et al., 2015; Inoue & Yamaoka, 2017a) can enhance the level of older adults’ wellbeing in various ways. It is suggested that the network support and resource exchange (Ciboh, 2017; Pan, 2018) afforded by OCs enable religious activities (Loane, 2015), social support and leisure activities (Choi et al., 2014) that promote the wellbeing of older adults.

2.2.5.4 Contribution of OCs’ Potential Benefits to the Resilience of Older Adults

Previous sections explained the benefits of participation in OCs for older adults. To better understand how these benefits support resilience among older adults, a systematic literature review was performed² (See Appendix A for the method). Figure 8 illustrates the findings of the review and proposes a high-level view of the relationships between the potential benefits of OCs and resilience resources among older adults.

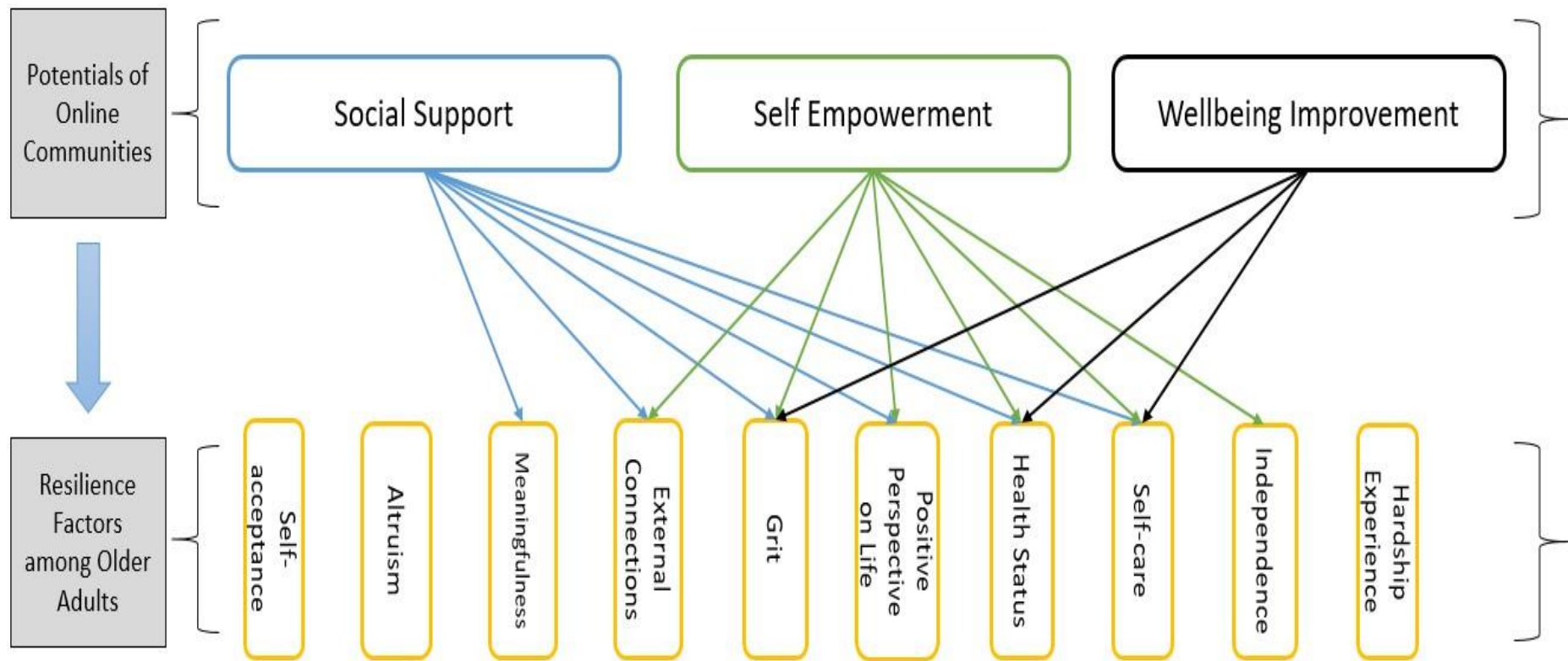


Figure 8) Proposed relationships between the potentials of OCs and resilience resources among older adults based on the systematic review.

As explained below, social support in OCs can support six resilience resources among older adults, including external connection, self-care, grit, health status, meaningfulness, and positive perspective on life.

Informational support encourages the *external connection* resilience resource by enabling older adults to overcome loneliness and stress (Leist, 2013), and providing social support (Pan, 2018). Informational support also promotes *self-care* by providing self-care opportunities (Litchman et al., 2018). In addition, it supports the *grit* resource by promoting the feeling of self-efficacy (Leist, 2013), and finally it supports the *health status* resource by reducing health-care costs (Dumbrell & Steele, 2014). OCs support the *meaningfulness* resource through network support by providing leisure activities (Sherbourne & Stewart, 1991), and a new sense of purpose in life (Harley et al., 2016). Network support also supports the external connection factor by allowing older adults to make new friends (Booth & Kellogg, 2015), reducing loneliness (Harley et al., 2016), encouraging social connectedness (Pan, 2018), and accessing different types of resources (Sankaran & Demangeot, 2017; Usher & Yang, 2013). In addition, network support through social connectedness, and resource access (Pan, 2018), can support *self-esteem* and *health status* resources. Emotional support provides stress relief (Sherbourne & Stewart, 1991), which can support the *health status*, and self-esteem by bolstering a sense of self-worth (Gaffey et al., 2016), which supports the *grit* factor. Tangible support can promote the *health status* resource through stress relief (Ciboh, 2017). The last potential within the social support category is resource exchange. It supports the *external connection* resource by enabling social interaction, feelings of connectedness, and social support (Harley et al., 2016), which are subsets of external connection. The reciprocity resource exchange also supports the *meaningfulness*, and the *self-care* resources. It is also suggested that value co-creation, which results from resource exchange, is critical to building resilience (Karpouzoglou et al., 2016) but research in this area has remained scant.

Self-empowerment of older adults in OCs can support six resilience resources, including external connection, grit, positive perspective on life, health status, self-care, and independence. The *grit* resource can be improved by improving feelings of self-efficacy (Leist, 2013), and *external connection* by mobilising other resources such as social support (Wister et al., 2016). The independency benefit of OCs can support three

resilience resources. By facilitating independence for older adults, they can handle their tasks by themselves. It consequently supports the *independence* resource by enabling ageing in place (Hutto et al., 2015), *health status* by improving health, and *self-care* by lowering institutional care and increasing their physical activity (McClain et al., 2018). Self-esteem benefit of OCs, which results from resource access, social support, and emotional support (Gaffey et al., 2016), can support the *grit* resource. A self-disclosure benefit allows older adults to express their bottled up emotions, such as those associated with sexual issues (Berdychevsky & Nimrod, 2015). It improves wellbeing and can support the *health status* resource. Finally, the meaningfulness benefit of OCs supports the *positive perspective on life* resource by creating a positive view of the future (Nygren et al., 2005), *health status* by lowering depression, and *external connection* by reducing loneliness (Usher & Yang, 2013).

Wellbeing Improvement of older adults through participation in OCs supports three resilience resources, including grit, health status, and self-care. The telehealth and telecare feature afforded by OCs (Leist, 2013) enable care access and activities that can support *self-care* resource. It also supports the *health status* resource by lowering health-care costs. Stress relief and depression relief as benefits of participation in OCs can support the *health status* resource by improving wellbeing. In addition, loneliness reduction supports *grit* and *health status* resources by relieving depression (Harley et al., 2016) and providing higher self-efficacy (Gerino et al., 2017). Eventually, wellbeing potential benefit of OCs for older adults can support *health status* resource through cognitive (Pan, 2018; Quinn, 2018), and psychological improvement (Leist, 2013; Pan, 2018).

2.2.6 Summary

This section provided an overview of the literature of the resilience concept among older adults. Resilience as the process of bouncing back from adversity is very important in the wellbeing of older adults. The resilience process emerges when an individual faces adversity and then, relying on internal and external resources, the person can cope with the adverse situation. This usually results in one of four scenarios. In the best scenario the person copes and grows, and in the worst scenario the person might not cope and face dysfunctions such as loss. Resilience among older adults can be supported by their participation in OCs. In fact, OCs can support

resilience of older adults through provision of social support, self-empowerment opportunities, and contributions to the health of older adults.

2.3 VALUE CO-CREATION AND RESOURCE INTEGRATION

The aim of this section is to conceptualise the phenomenon of resilience resource integration through the lens of value co-creation. This section explains three different concepts: 1) value co-creation and co-destruction, 2) value co-creation and co-destruction practices, and 3) value co-creation and co-destruction practices of older adults in the process of resilience formation in OCs.

2.3.1 Value Co-creation and Value Co-destruction

It has been suggested that value co-creation can contribute to resilience through provision of resources (Sankaran & Demangeot, 2017). To better understand the concept of value co-creation, first it is necessary to know what value is. Value is often misinterpreted. In the literature, value is usually referred to as worth, utility, price, and benefit (Loane & Webster, 2014). Value has been conceptualised differently across disciplines such as health, business, marketing, and economics, and there is no consensus among scholars about the different types of values. For instance, in sociology, value is referred to as the representation of personal values held by community and influencing social behaviour (Loane & Webster, 2014). In economics, value is the surplus created when a person sacrifices something in order to receive something (Chang & Dibb, 2012). In business, value is often linked with profit maximisation of the firm by cost control and access to rare resources (Arvidsson, 2011). Within the marketing literature, value is referred to as the outcome of exchange between customers and firms (Loane & Webster, 2014). However, there is a definition of value where it is described as ‘an improvement in system well-being’ (Beirão et al., 2017, p. 229). Within the concept of this study, value is referred to as benefits, which online community users perceive through resource sharing.

In service ecosystems, which are self-adjusting and self-contained systems of actors connected by shared norms and service exchange (Beirão et al., 2017), value co-creation is a critical feature (Hsieh, 2015). Value co-creation is referred to as a collaborative process of reciprocal value creation among various actors. So, actors mutually create benefits for themselves and other actors of the ecosystem (Vargo &

Lusch, 2017). The actors can be any economic or social agent such as individual, family and firm that provide input to the process of value creation to benefit other actors. A good example can be Lego, that enables its customers to contribute a newer design on a digital platform; once the design garners a certain number of followers, Lego brings it onto their shelves. So, both customers and the company mutually create value for each other (Orcik, Stojanova, & Freund, 2013).

Actors co-create value via resource integration and service provision in a service ecosystem (Blaschke et al., 2018; Kleinaltenkamp et al., 2012). Resource Integration is one of the core concepts of the value co-creation process (Frow et al., 2016; Vargo & Lusch, 2017). In contrast with Goods Dominant (G-D) Logic that resources have been seen as tangible things that human use, in S-D logic, resources are viewed as anything that an actor can draw on for support. As such, resources encompass not only static, natural, and tangible resources (e.g., raw materials), but also intangible and dynamic functions of human ingenuity and appraisal (e.g., information, knowledge, experience) (Blaschke et al., 2018; Madhavaram & Hunt, 2008). In section 2.2.4, resilience resources were explained as individuals and environmental resources that can be modified at different circumstances. However, despite the importance of resilience research, especially in the context of older adults, there is not enough knowledge about resilience resource modification in this area. To better investigate this phenomenon, the following paragraphs explain the concept of resource integration in more detail.

In service ecosystems, value co-creation as the outcome of resource integration is influenced by the ability of the actors to access, adapt, and integrate resources. Therefore, resources do not have value intrinsically, and actors co-create value when resources are combined and used in different ways (Beirão et al., 2017; Madhavaram & Hunt, 2008). This is in line with the majority of the literature, which suggests that resource integration is defined as accessing, combining, and applying of resources (Kleinaltenkamp et al., 2012; Peters et al., 2014; Vargo & Lusch, 2008).

Resource Integration is a continuous process and defined as a series of activities carried out by an actor (Payne, Storbacka, & Frow, 2008) for the benefit of another actor (Peters et al., 2014) which is aligned with the application of resources through certain arrangements (Vargo Stephen & Lusch Robert, 2004). In this sense, a focal

resource becomes a resource only when it is used for a specific intended activity (Peters et al., 2014). This is in accordance with the sixth and seventh foundational premises (FPs) in S-D logic (Vargo & Lusch, 2016) that suggest actors cannot deliver the value but can engage in the creation of it (FP7), and the beneficiary is always a part of the value co-creation process (FP6). This shows that if the resource is offered by an actor but not used by the beneficiary, resource integration and value co-creation don't take place. Similarly, the first premise of the S-D logic suggests that a fundamental unit of exchange is the application of specialised resources (Vargo & Lusch, 2016).

Nevertheless, resource integration processes among actors do not always result in value co-creation and might result in value co-destruction, which is an opposing phenomenon to value co-creation (Echeverri & Skålén, 2011; Kokko, Vartiainen, & Tuunanen, 2018). Consequently, based on the type of interactions between users of the ecosystem, through the process of resource integration, resources might recurrently gain or lose their resource status (Peters et al., 2014). From an S-D logic lens, value co-destruction is seldom examined, especially concerning the online communities of older adults, but it is necessary to do so. Because, in essence, value co-creation and value co-destruction are the two essential aspects of value formation (Echeverri & Skålén, 2011; Kokko et al., 2018).

In the literature, there are very few studies that suggest co-creation or co-destruction of the value can happen when resources are only shared. Indeed, the fact that resources should be applied and consumed is neglected in this point-of-view. For instance, Frow et al. (2016) created a model that shows how, through interaction of actors and by only sharing of resources, resources are modified and become stronger. However, this study is in line with most studies that are highlighted above, and based on the fact that resource integration happens when the resource is accessed, shared, combined, and applied by the beneficiary.

As mentioned earlier, one of the important aspects of the value co-creation process is purposeful practices of the actors for the wellbeing of the ecosystem (Vargo & Lusch, 2017). The next section will explain co-creation and co-destruction practices and provides different examples of how these concepts are investigated by others.

2.3.2 Co-creation and Co-destruction Practices

From another perspective, an important aspect of the value co-creation process is purposeful practices, which are the activities that actors perform to co-create value towards wellbeing of the ecosystem (Vargo & Lusch, 2017). Indeed, practices are activities and interactions that individuals based on their understanding of the world (Frow et al., 2016), and comprise unfolding of behaviours, such as representations, performances, and activities (Warde, 2005).

Through the process of resource integration and value co-creation, actors engage within different practices. Recently, co-creation researchers are widely focused on practices through which ecosystems' actors interact, and how these practices may lead to the co-creation of value drawing on practice theory (Frau, Cabiddu, Lombardo, & Moi, 2017; Frow et al., 2016; McColl-Kennedy, Cheung, & Ferrier, 2015). A collaborative engagement of actors in the resource integration activities within a social context is described as co-creation practice (Frow et al., 2016). Reckwitz (2002, p. 250) suggests social fields are built on routines of social practices, and practices are sets of routinised bodily and mental activities carried by agents/actors. Hence, agents/actors, activities, and social fields are three elements of structuring practices (Reckwitz, 2002). Consistent with Frow et al. (2016) and Reckwitz (2002), we conceptualise practices as repeated performing of customary and habitual activities by actors in a social system.

Scholars have categorised practices from various perspectives. For instance, Kjellberg and Helgesson (2007) have categorised practices in marketing context as *exchange practices* (activities of actors regarding economic exchanges), *representational practices* (activities that represent the market and the function of the market), and *normalising practices* (activities that show how actors interact with each other). Frow et al. (2016) developed a typology consisting of eight co-creation practices in the health care ecosystem and identified how these practices could impact the wellbeing of the ecosystem. The typology includes the following practices: 1) endowing actors with social capital, 2) providing an ecosystem with a shared language, symbols, signs and stories, 3) shaping an actors' mental models, 4) impacting the ecosystem, 5) shaping existing value propositions and inspiring new ones, 6) affecting access to resources within an ecosystem, 7) forging new relationships, generating

interactive opportunities, and 8) intentionally destructing, creating imbalance within the ecosystem. Frau et al. (2017) investigated value co-creation practices between service providers and customers in a road-railway project. The authors identified forty-two value co-creation practices classified by the capital they affect (cultural, economic, social, symbolic), and the capital variation factors they enable (providing access, enabling exploitation, preventing attrition, obstructing misintegration). However, in line with the recognition of exploring value co-creation for wellbeing as a core research priority of service science (Ostrom et al., 2010), research of value co-creation practices in other contexts is encouraged by these authors; and our preliminary search showed that no study had explored value co-creation and co-destruction practices of older adults in OCs.

Technology is often central to the integration process (Kleinaltenkamp et al., 2012) and OCs are often regarded as value co-creation entities (Chamakiotis & Panteli, 2017; Mein Goh, Gao, & Agarwal, 2016), and value co-creation has been found a key for resilience (Sankaran & Demangeot, 2017). This is basically because in OCs, users engage in the process of resource sharing and that can result in application of the offered resources by the beneficiary through purposeful practices, which can facilitate the resilience of the actors (Sankaran & Demangeot, 2017). However, it is not clear what the resource integration practices of older adults in OCs are, and how these practices have impact on the resilience of older adults.

Therefore, the next section will highlight what literature suggests regarding the value co-creation and co-destruction practices of older adults in OCs. This will be helpful as it creates the first step of understanding the relationship between value co-creation and co-destruction practices in OCs and the resilience of older adults.

2.3.3 Co-creation and Co-destruction Practices in Resilience Formation in OCs

In this section, we focus on co-creation and co-destruction practices of older adults in OCs. This will be helpful to better understand their practices, so we can have a better comprehension about how users' practices are related to resilience resources and how these practices can support or decline resilience of older adults. Through

conducting a systematic literature review ³ (See Appendix B for method), four main practices were uncovered, including communal coping practices, happiness creation practices, social capital generation practices, and disparaging practices.

2.3.3.1 Communal Coping Practices

Communal coping practice is one of the common activities of older adults in OCs and we did see some evidence that communal coping practices exist and are prevalent in literature. Several authors highlighted how users cope with their problems communally and with the help of other users, but overwhelmingly it hasn't been much. For instance, Pfeil, Svangstu, Ang, and Zaphiris (2011) suggested that OCs' users normally discuss their problems together and discuss coping strategies in OCs so they can overcome their adversities. Daneshvar et al. (2018) and Nimrod (2014) suggested that OC users help each other in findings ways to approach professional caregivers. Also, it is suggested that users communally help each other and engage in co-learning practices regarding new treatments about diseases, other people's lives, and experiences (Daneshvar et al., 2018; Litchman et al., 2018)

2.3.3.2 Happiness Creation Practices

Participation of older adults in OCs can result in their happiness through several practices, as shown in Figure 9. In OCs, older adults encourage peers and distribute positive mood through encouraging them to have more participation and reciprocity, inviting others to join other communities, liking other people's posts, and welcoming new members (Daneshvar et al., 2018; Pálsdóttir, 2016; van't Klooster et al., 2011). Also, in OCs, older adults participate in meaningful activities such as sharing jokes and funny stories, playing online games, sharing a sense of humour, achieving a sense of generativity. They benefit from engaging in altruistic activities, taking online information to use for offline leisure, and recording personal memories by creating photo albums (Berdychevsky & Nimrod, 2015; Frohlich, Lim, & Ahmed, 2016; Kong & Lee, 2017; Leist, 2013; Litchman et al., 2018; Nimrod, 2010; Nimrod, 2011; Nimrod, 2013; Nimrod, 2014; Norval, Arnott, Hine, & Hanson, 2011; Pfeil et al., 2011).

³ This systematic literature review is not published yet.

In addition, in OCs, older adults try to gain recognition through seeking dignity and trying to stand out by creating social roles for themselves, trying to be known in the community, and achieving recognition (Harley et al., 2016; Kong & Lee, 2017; Nimrod, 2014). Furthermore, in OCs, older adults engage in self-empowerment activities through self-management (Daneshvar et al., 2018; Litchman et al., 2018).

Another practice that can result in happiness is network support activities in which older adults find a sense of belongingness to the community through seeking, receiving, and giving network support, and by trying to be included in the groups (Daneshvar et al., 2018; Kong & Lee, 2017; Nimrod, 2014). In addition, OCs enable older adults to participate in self-disclosure activities through sharing resources that they normally might not share in offline communities, and by revealing their personal situation and private information about themselves (Berdychevsky & Nimrod, 2015; Daneshvar et al., 2018; Erickson, 2011; Leist, 2013; Litchman et al., 2018; Nimrod, 2013; Nimrod, 2014; Norval et al., 2011; Pfeil et al., 2011). Finally, in OCs, older adults engage in self-expression activities, which they communicate by sharing their feelings, emotions, interests, and intimacy with others (Berdychevsky & Nimrod, 2015; Coto, Lizano, Mora, & Fuentes, 2017; Nimrod, 2011; Nimrod, 2013; Nimrod, 2014; Pfeil et al., 2011).

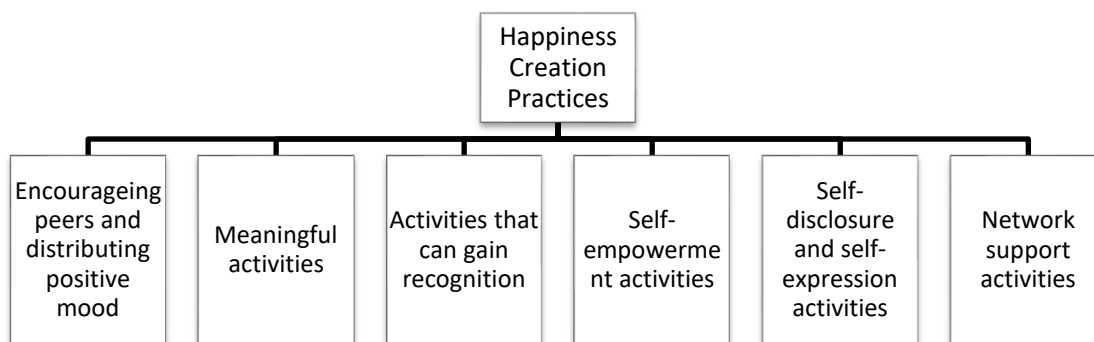


Figure 9) *Happiness Creation Practices in OCs*

2.3.3.3 Practices Resulting in Generation of Social Capital

In OCs, older adults engage in several practices that can result in generation of social capital, such as participating in discussions, advising other users, exchanging information and knowledge, exchanging experience, exchanging miscellaneous resources, engaging in reciprocity activities, exchanging support, contacting other

people and socialising. Table 3 below explains these practices in a more comprehensive way.

| Practice | Description | Reference |
|---|---|---|
| Participating in discussions | Older adults participate in discussions related to ageing, retirement, pensions, relocation, health, shopping, political issues, religion and spirituality, technology, travel, alcohol consumption, and professional care practices. | (Berdychevsky & Nimrod, 2015; Daneshvar et al., 2018; Erickson, 2011; Monachesi & de Leeuw, 2018; Nimrod, 2010; Nimrod, 2011; Nimrod, 2013; Nimrod, 2014; Pfeil et al., 2011) |
| Advising | Older adults seek, give, and receive advice regarding medical, family relationships, parenthood, beauty, and nutrition issues. | (Coto et al., 2017; Daneshvar et al., 2018; Dumbrell & Steele, 2014; Leist, 2013; Litchman et al., 2018; Nimrod, 2010; Nimrod, 2011; van't Klooster et al., 2011) |
| Information and knowledge exchange | Older adults seek, give, and receive different types of information regarding finance, jobs and courses, recreation, aged-care, sex, and health issues. They also share information with health and aged-care service providers. | (Berdychevsky & Nimrod, 2015; Coto et al., 2017; Dumbrell & Steele, 2014; Erickson, 2011; Leist, 2013; Lian, 2017; Litchman et al., 2018; Monachesi & de Leeuw, 2018; Nimrod, 2013; Nimrod, 2014; Norval et al., 2011; Pálsdóttir, 2016; Pfeil et al., 2011; van't Klooster et al., 2011; Xie, Watkins, Golbeck, & Huang, 2012) |
| Experience exchange | Older adults share their medical experience with each other. | (Daneshvar et al., 2018; Erickson, 2011; Leist, 2013; Litchman et al., 2018) |
| Miscellaneous Resource exchange | Older adults share different types of resources with each other such as articles, files, multimedia contents, and weblinks. | (Dumbrell & Steele, 2014; Leist, 2013; Lian, 2017; Nimrod, 2014; van't Klooster et al., 2011) |
| Reciprocity | Older adults engage in reciprocity activities in OCs by offering knowledge and experience about a topic as they want to give back what they have gained from the community. | (Daneshvar et al., 2018; Litchman et al., 2018) |
| Support exchange | Older adults seek, give, and receive different types of support, such as emotional, mental, and financial. In | (Daneshvar et al., 2018; Dumbrell & Steele, 2014; Erickson, 2011; Leist, 2013; Litchman et al., 2018; Nimrod, |

| | | |
|--------------------------------|--|---|
| | addition, some older adults seek to be heard, and they try to voice their opinions in online communities. | 2013; Nimrod, 2014; Norval et al., 2011; Pfeil et al., 2011; van't Klooster et al., 2011) |
| Contacting other people | Older adults contact their peers in different ways such as chatting with others via text, audio, and video message, communication with caregivers, commenting on others' posts, and exploring local connections. | (Erickson, 2011; D. Harley, Howland, Harris, & Redlich, 2015; Lian, 2017; Nimrod, 2014; Norval et al., 2011; Pálsdóttir, 2016; van't Klooster et al., 2011) |
| Socializing | Older adults socialise in OCs through creating positive relationships, making new friends, and make new friends for offline activities. | (Daneshvar et al., 2018; Erickson, 2011; Frohlich et al., 2016; Nimrod, 2013; Nimrod, 2014; Norval et al., 2011; van't Klooster et al., 2011) |

2.3.3.4 Value Co-destruction Practices

Literature suggests that participation of older adults in OCs does not always have a positive outcome, but sometimes results in adverse outcomes. Value co-destruction practices can be through sharing misleading information (Daneshvar et al., 2018; Leist, 2013), misconduct through rude and harmful behaviour (Leist, 2013; Litchman et al., 2018), misusing information through using other people's personal information with criminal intent (Leist, 2013), and negatively reacting to other people's activities by leaving groups, or being aggressive towards and blaming others for their posts (Berdychevsky & Nimrod, 2015; Daneshvar et al., 2018; Litchman et al., 2018).

2.4 CHAPTER SUMMARY

This chapter reviewed the literature regarding the resilience of older adults and the relationship between participation of older adults in OCs and their resilience through the lens of value co-creation. To do so, a review of ageing theories was performed. This resulted in the selection of the resilience concept referred to as the process of bouncing back from adversity (Resnick, 2014), as the focus of our study. Then, section 2.2 comprehensively explained the concept of resilience. First, the resilience process was explained, different models and points of views (Richardson, 2002; Wister et al., 2016) regarding the process discussed. In addition, at this step, the

importance of resilience resources as one of the critical pillars of the resilience was illustrated. Therefore, different classifications of the resilience resources were reviewed and as a consequence, the categorisation by Bolton et al. (2016) was selected as the lens of this study. Then, further review of the literature revealed that resilience resources are dynamic attributes, which can be modified and integrated in certain circumstances and through exchange of support.

Until this point, the review of the literature resulted in emergence of a research gap. Indeed, as Wister et al. (2016) mentioned, it was not clear how the process of resilience integration happens. It was also evident that resilience resources are dynamic attributes which can be modified at certain circumstance. From this point, literature of value co-creation furthered our understanding and helped us to think more about how this gap can be addressed in the context of OCs. In fact, having in mind the importance of value co-creation in service science, and the positive role of value co-creation and resource sharing for resilience, helped to make the main research question of the study:

How does the resilience of older adults emerge in OCs?

Therefore, we looked at the concept through the lens of value co-creation in OCs. To do so, a revision of value co-creation and value co-destruction in OC literature was performed. First, the main concepts of value co-creation and value co-destruction were explained. Then, value co-creation and value co-destruction practices were illustrated. This was followed by a review of the literature regarding the value co-creation and co-destruction practices in OCs and the four main practices of older adults in OCs were uncovered (See section 2.3.3).

The next section will explain the research design of the study.

Chapter 3: Research Design

The objective of this study is to enhance our understanding regarding the role of online communities facilitating older adults’ resilience development through the lens of value co-creation. The objective of the study produces several research questions mentioned in Chapter one with the main research question of how does the resilience of older adults emerge in OCs? This chapter will discuss (See Table 4 below) the epistemological and philosophical perspectives, research methodology, and methods that are used to answer the research questions, followed by data analysis, credibility, ethical considerations, and a summary.

| Table 4) Research Steps and Strategies | |
|---|---|
| Steps | Approach |
| Epistemology | Constructionism |
| Theoretical Perspective | Interpretivism |
| Methodology | Qualitative Multimethod Sequential Design |
| Data Collection Methods | -Exploratory case study (Yellow Squares Online Community) -The main case study (Reddit Online Community) -Supplementary interviews (Reddit users) |
| Data Analysis | Thematic analysis ((Braun & Clarke, 2006)) |
| Credibility | Following the guideline by Lincoln and Guba (1985) |

Figure 10 below highlights that the research was comprised of four different stages. In each stage, different activities were performed to achieve specific goals to assist in formulating the research questions, defining the research problem, and forming the proper research methodology for this research. As it is shown, this research performed several literature reviews, two case studies, and interviews to construct and validate the outcome.

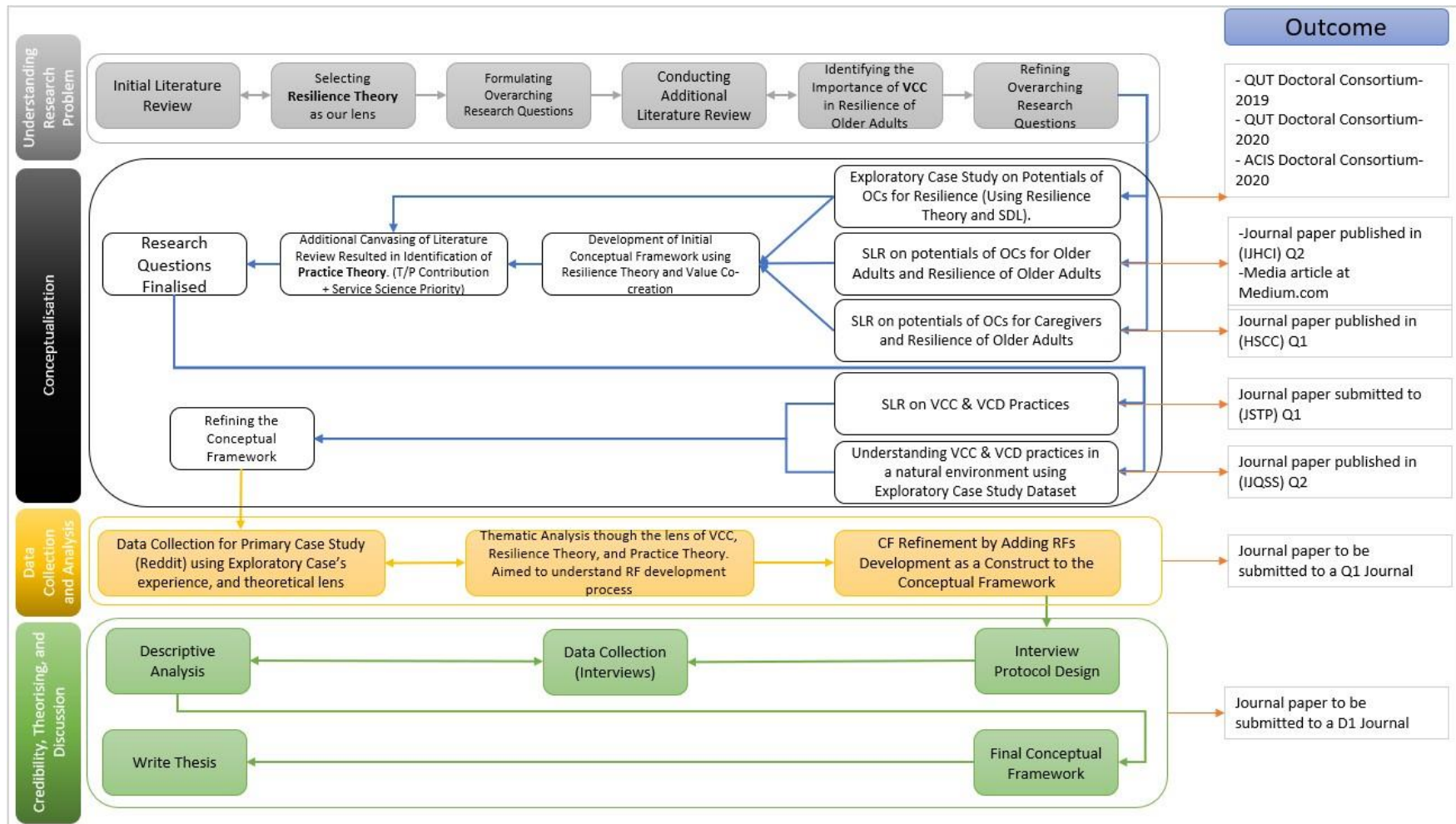


Figure 10) *Research Design*

3.1 EPISTEMOLOGY

Epistemological assumption of research explains the relationship between the researcher and phenomenon of interest (Creswell & Poth, 2007). The epistemology of this qualitative study is constructionism. According to constructionism, all knowledge and reality is contingent upon human practices, and constructed through the interactions between humans and their world in a social context (Charmaz, 2006; Creswell & Poth, 2007; Crotty, 1998). Accordingly, meaning is not discovered but inductively constructed. This is in contrast with objectivism, which considers meaning inhered in an object. In constructionism, the same phenomenon or object can be understood differently by different individuals in the same social context (Crotty, 1998). Indeed, human beings can ascribe different meanings to the same phenomenon based on their understanding of their world. Because of this, a constructivist research should rely on the participants' view of the phenomenon as much as possible (Creswell & Poth, 2007). In constructionism, the researcher's intention is to inductively interpret the meaning others have about the world. Table 5 below is a summary of the characteristics of the constructionism approach.

| Characteristics | Reference |
|--|--|
| Meanings are often formed through interaction with others. | (Charmaz, 2006; Creswell & Poth, 2007) |
| Inductively develops a theory or pattern of meaning. | (Creswell & Poth, 2007) |
| The researcher relies on participants' view of the phenomenon. | (Creswell & Poth, 2007) |
| The researcher's intention is to interpret the meaning others have about the world. | (Creswell & Poth, 2007) |
| The same phenomenon or object can be understood differently by different individuals in the same social context. | (Crotty, 1998) |
| Human beings can ascribe different meanings to the same phenomenon based on their understanding of the world. | (Crotty, 1998) |

Constructionism can be used to study the subjects of this research because: in OCs, the resilience process is a phenomenon that is happening and exists. Older adults and their caregivers involve themselves with different activities and practices, which can result in the resilience process. Also, resilience factors can be supported through

the engagement of users. But it is not clear how and through what activities the resilience process is happening, and how participation can support the resilience factors. Therefore, there is a need to construct an answer to these questions.

This research is constructing the phenomenon from a mixture of the existing literature. However, to further understanding of the missing gaps and unclear issues, there is a need to pair and construct the phenomenon through a combination of the existing works and participants' viewpoints. Because the participants in OCs all engage in different practices, therefore, they perceive the affordances of OCs differently.

Furthermore, the knowledge about the process and the contribution of participation in OCs to the resilience of older adults is limited. To date, the different aspects of the process of resilience in OCs remain unclear. It is not known how participants perceive the affordances of OCs with respect to their resilience. In terms of practices, it is not clear what older adults or their caregivers do in OCs, what their aims for participation are, how different properties of resilience are residing in these activities, if the participation can result in resilience, and if the answer is yes, how it is taking place, etc. The answer for each of these questions above can be different for each user as users join different communities because they have different goals for joining. Therefore, each user engages in different activities, and those activities can result in a different perception for the user. Every user comes from a different background and worldview and with a different resilience level. For example, while receiving information about a certain issue might be crucial for a user, the same information for another user might make no sense. Or, when a user is receiving support from other users, it is not clear whether or not the received support impacted the resilience of the beneficiary. These might not be observable through browsing of OCs as each user can be considered as a very unique instance for this phenomenon. Therefore, constructionism is a suitable approach as this work aims to interpret the meanings participants give to the phenomenon and inductively construct a meaning for this phenomenon by combining participants' point-of-view with the current knowledge.

3.2 PHILOSOPHICAL PERSPECTIVE

Information Systems (IS) studies can be categorised into three philosophical paradigms; positivist, interpretivist, and critical studies (abductive) (Myers, 1997; Neuman & Robson, 2007). The theoretical perspective of this study is interpretivism.

Interpretivism and constructionism are often aligned with each other (Creswell & Poth, 2007; Schwandt, 1994). An interpretive study is associated with qualitative research and used to obtain an understanding of the world from an individual's perspective, and deals with the construction of subjective experience, perceptions, and the meanings that people give for things toward certain phenomenon (Neuman & Robson, 2007). These views or meanings are often formed through interaction with others based on the norms that operate in individuals' lives (Creswell & Poth, 2007). Interpretivism is fundamentally inductive (Neuman & Robson, 2007). Therefore, emphasis on the drawing of conclusion and developing a theory or pattern of meaning (Creswell & Poth, 2007).

In line with constructionism (Crotty, 1998), interpretivism suggests that meaning can be understood through getting inside the world of those producing the knowledge. Interpretivists believe that to understand the meaning, one must interpret it (Schwandt, 1994), and the role of the researcher is to interpret these meanings (Creswell & Poth, 2007). In addition, interpretive research might be influenced and shaped by the researcher's background, experience, prior assumptions, and beliefs (Creswell & Poth, 2007; Orlikowski & Baroudi, 1991).

In line with the characteristics of the interpretivism approach, the philosophical perspective of this study is interpretive. This work is interpretive because, it is based on the belief that objective reality cannot be captured. Hence, this work, as Gregor (2006) suggested, constructs theory through studying people's perceptions of reality and understanding the phenomenon in depth to create a conceptual model to help others bring meaning to this phenomenon of interest.

To be more specific, through interpretivism, this study aims to better understand how participation in online communities can support resilience among older adults. This will be through allowing participants to share their experiences and understanding of the phenomenon on how and through what activities they use OCs, and how the use

of OCs and interacting with other users in OCs can benefit them and support the resilience of older adults. This is facilitated through asking open-ended questions. Recommended by Creswell and Poth (2007), this research relies on the experiences of participants about the phenomenon as much as possible through inductive interpretation of these experiences and the meanings that participants give to the phenomenon.

3.3 METHODOLOGY

Qualitative research seeks to obtain and analyse qualitative data consisting of textual or visual material such as interview transcripts, documents, images, videos, and internet sites (Saldana, 2011) to answer the how and why questions about the phenomenon under study (Creswell & Creswell, 2017). This research is using an overarching qualitative multimethod sequential design methodology, which aligns with constructionism and interpretivism.

In line with the nature and characteristics of qualitative research, since the work is mainly looking for older adults and caregivers' viewpoints, perceptions, and experiences of using OCs with respect to the resilience of older adults, qualitative approach is the best approach to conduct this research. Because it allows the researcher to have a deeper understanding of the context from different angles, which is fundamental to this study. It is important to add that, understanding of the perceptions and experiences of older adults and caregivers is not completely understandable through performing quantitative methods.

In addition, because there is little knowledge regarding the concept of digital resilience, which is further exemplified by the service science priority areas related to this work, an exploratory qualitative approach is suitable. This is further substantiated by the lack of robust theorisation, in terms of theoretical constructs and how can they be measured. Therefore, due to the characteristics of the qualitative studies, and the aims and goals of this study, the methodological approach of this study falls into that of the qualitative.

Regardless of the qualitative or quantitative nature of a study, a research can employ one or more methodologies (Venkatesh, Brown, & Bala, 2013). This research performs a qualitative multimethod sequential design, where different methods come

into play in the single study. As a part of this design, two qualitative methods will be employed including two case studies and interviews. Figure 11 below shows the multimethod sequential design of this study, beneath three qualitative data collection steps, and accordingly, an exploratory case study was the first procedure of the data collection. Then, the main case study was conducted, and this was followed by supplementary interviews.

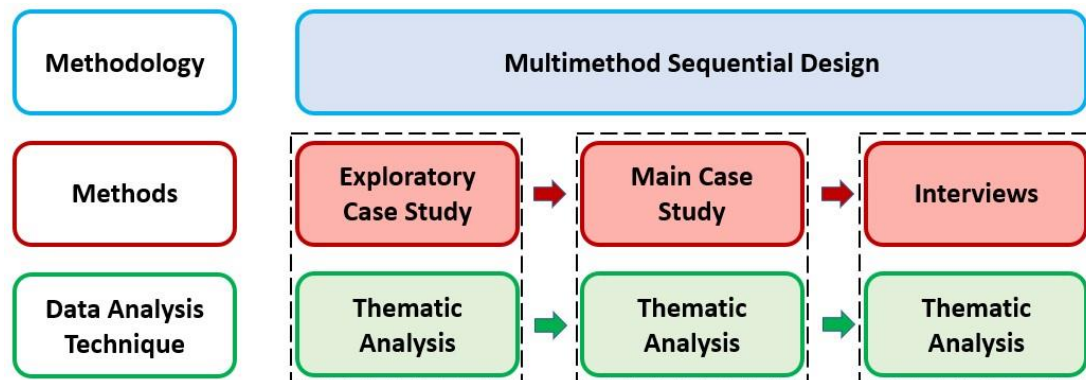


Figure 11 *Multimethod Sequential Design*

In this work, the thematic analysis suggested by Braun and Clarke (2006) was used as the analysis technique for every single piece of data. The way this was employed was slightly different for each method because each dataset aimed to address different areas. However, they are fundamentally following the same approach that Braun and Clarke (2006) have suggested.

In contrast to mixed methods research, which employs qualitative and quantitative methods with multiple worldviews, multimethod research employs multiple qualitative techniques of data collection and analysis by having a single worldview (Hesse-Biber et al., 2015; Venkatesh et al., 2013). In this approach, the subsequent qualitative method would take on a secondary role in the service of the primary qualitative method. Also, the second qualitative method can serve a supplementary function to answer different questions, but the main goal is to support the main qualitative method and question (Driessnack, 2006; Hesse-Biber et al., 2015).

In some studies, it might be difficult for the researcher to define the exact design of the research up front, as often the overall process of the study is iterative, which means the data leads the researcher to ask another set of questions that might need

another particular type of method (Hesse-Biber et al., 2015). Therefore, adopting a multimethod design might not be the goal of the researcher at the beginning of his/her work, but it might be employed later when unexpected areas are unanswered concerning the main research question (Driessnack, 2006; Hesse-Biber et al., 2015).

A multimethod sequential design includes separate studies where the second or the subsequent method ensues and develops from the main qualitative method. The design is often made of two or more separate datasets, different participants, and data collection methods. In this scenario, the first study is carried out, including data collection and analysis. Then, the second method will be employed and builds upon the outcome of the main method. Sometimes the reader might ask him/herself if this type of multimethod design is useful. Nevertheless, this approach helps to obtain a more detailed external perspective of the phenomenon. Also, the second component can be used to verify the findings from the primary method (Driessnack, 2006; Hesse-Biber et al., 2015).

In line with the iterative approach to research, an exploratory case study was performed. This revealed insights regarding the potential benefits of OCs for older adults and their resilience. Later, another case study was carried out to have more insights about the phenomenon. However, as the study evolved, the necessity of deeper insights was noticed regarding the perceptions of the users about the resilience process, and the affordances of OCs in relation to the resilience of older adults. Hence, another qualitative method was needed to address this issue and to do so, supplementary interviews were added as the secondary qualitative method.

As shown in Figure 11 above, this study is following a multimethod sequential design consists of content analysis of an exploratory case study, content analysis of the main case, and supplementary interviews. In this work, in line with the common characteristics of the multimethod sequential design, in every step, a different dataset is collected and analysed. In addition, the findings of each method informed the plan of the next method. The following illustrates the main methods used in this study, including case studies and interviews.

3.4 METHODS

This section explains the qualitative data collection methods of this research. As highlighted earlier in the previous section, the qualitative multimethod sequential design of this work consists of two different procedures including two separate case studies and supplementary interviews. It is important to acknowledge that case studies can be considered both a methodology or a data collection method, and in this study, case studies are treated as a method nested under the multimethod sequential methodology.

3.4.1 Case Studies

Case study research is a qualitative approach that involves the study of an issue explored through one or more cases within a bounded system (Robert Yin, 2017). In case studies, the researcher employs in-depth data collection techniques involving multiple sources of information such as observations, interviews, audio-visual material, documents or reports (Creswell & Poth, 2007). Case studies examine the phenomenon in a natural setting and are appropriate for studies where research and theory are at their early stages. In addition, case studies are suitable where the experiences of the actors are important. Also, data collection methods can be changed during the study as the researcher develops new insights and understanding of the phenomenon (Benbasat, Goldstein, & Mead, 1987). Finally, in case studies, a theory can be the final product of the research (Walsham, 1995).

According to Creswell and Poth (2007) and Stake (1995), there are three types of case studies (explained in Table 6 below), including the single case study, the multiple case study, and the intrinsic case study.

Proposing a 2×2 matrix, Robert Yin (2017) proposed another classification of case study. According to him, single and multiple case studies represent different design situations and within these two circumstances can be unitary or multiple units of analysis. Single cases have two variants of holistic design and embedded designs. An important step in single cases is to set the unit of analysis or the case itself. If the single case is cooperated with subunits of analysis within itself, then the embedded design is developed (Robert Yin, 2017). The embedded approach is suitable when the researcher considers that data can be analysed within the subunits separately, between

the different subunits, or across all of the subunits (cross-case analysis) (Baxter & Jack, 2008).

| Case Study Type | Definition |
|---|---|
| Single Case Study | The investigator focuses on an issue or concern, and then selects one bounded case to illustrate this issue |
| Multiple Case Study (Collective) | The investigator focuses on an issue or concern but selects multiple case studies to illustrate the issue. Multiple Case study design often is based on replication in which the researcher replicates the procedure for each case, but as a gen rule, qualitative researchers are unwilling to generalise from one case to another as the contexts of cases differ. However, to best generalise the researcher needs to select a representative case for inclusion in the qualitative study. |
| Intrinsic Case Study | The investigator focuses on the case itself such as evaluating a program, or a student having difficulty. |

As in the main case study of this work, the same phenomenon and unit of analysis in one holistic environment (R Yin, 1984) are being investigated; this study selects the holistic single case study design and the Reddit platform is selected as the main case study for investigation. This will be through collection and analysis of the aggregated data in subreddits related to older adults or their caregivers. The case will be further explained in section 3.4.1.2. The following paragraphs will explain the three different methods used in this study.

3.4.1.1 Exploratory Case Study

This study aims to build theory and address important research priorities in IS and service science by exploring how older adults and their caregivers participate in OCs and how this participation can support resilience among older adults. Exploratory case studies are often a preliminary step to inductively generate insights regarding the phenomenon of interest (Ogawa & Malen, 1991), and can be used a first step of the study when there is not extensive empirical examination of the phenomenon (Mayer & Greenwood, 1980; R Yin, 1984). Exploratory case studies enable researchers to perform a comprehensive open-ended exploration for relevant information, and identify core themes and patterns associated with the phenomenon under study. Also, they are helpful to develop constructs that embrace patterns, refine research questions,

and suggest conceptual perspectives that might serve as a fruitful roadmap for subsequent investigations (Ogawa & Malen, 1991).

Therefore, as this work aims to explore an understudied phenomenon, an exploratory case study is appropriate. Through the exploratory case study, relevant preliminary information about how participation of older adults and their caregivers in OCs can support resilience among older adults will be acquired.

3.4.1.1.1 The Case, Data Collection, Data Type and Storage

The case that has been selected for the exploratory case study of this work is an OC entitled “Yellow Squares”. The OC was one component of an overarching research project of three component parts under the Senior Living Innovation umbrella, aimed to address both the challenges and real opportunities for Australians in providing living environments conducive to healthy ageing. The OC was run in mid-March 2017 to capture virtual discussions over three days to better understand the future housing needs of mature Australians. The OC ran by a private online forum contractor, “Yellow Squares”. Yellow Squares handled the platform, recruitment, and digital infrastructure.

For the exploratory case study of this research, an archival OC (The Yellow Square) was selected. However, in the data collection stage of the original research, the private contractor was asked by the original research team to recruit 70 or more participants aged 50 and over from a mix of regions and states, life stage, and household structure in Australia. Eventually, 90 participants were recruited and divided into three groups and answered and discussed three open-ended questions per day. The research team set the open-ended topic questions for each day and monitored the responses and discussion from participants and reacted to any questions raised and/or the responses/discussion during the forum time of 30 minutes each day for each of the three days that the OC ran. The research team was also handling the moderation of responses and discussion and were interacting with participants with more probing questions to clarify discussion points.

As explained above, the Yellow Square OC developed and temporarily ran for other research. After several sessions with the original research project leader and reviewing the dataset with the help of the supervisory team, this case was selected as the exploratory case study of this research. Therefore, clearly the main researcher of

this study had no role in the extraction of the data for the Yellow Squares OC, and after clearing the ethical issues, the dataset was shared with the researchers of this work.

The dataset included three Microsoft Word files. Each file was related to one of the groups and included all conversations between the participants during the project. Their conversations were through the sharing of different resources in the forms such as text, link, and image. All the files were saved in a secure virtual location for further analysis.

3.4.1.2 The Main Case Study

As highlighted in the research design earlier (see Figure 10), performing the exploratory case study provided a variety of details, from which, the focus area was selected for the next stages, such as relevant information about the phenomenon, identification of major themes and patterns, refinement of the research questions, development of the initial conceptual framework, and creation of a guideline for further investigations. The knowledge gains from the exploratory case study contributes to the IS and service science research priorities and provides an initial understanding about the concept of digital resilience and purposeful co-creation and co-destruction practices of older adults in OCs for their wellbeing.

After the analysis of the exploratory case study, and in line with the multimethod sequential design of this research (see Figure 11), the second qualitative method was performed through the content analysis of an existing OC called Reddit. In line with the epistemological and theoretical perspective of this work, this case study aims to construct the phenomenon through interpreting the conversations of older adults and caregivers in OCs to better understand how the participation of older adults and their caregivers in OCs can support the resilience of older adults. Besides, there is not sufficient knowledge about the IS and service science research priorities. Hence, the main case study is helpful to test the themes and the conceptual model that developed through the exploratory case study, and also to have insights about the phenomenon. This section explains the process of data collection for the main case study. An overview of the process is pictured in Table 7 below, and more detailed information for each step is provided in the following sections.

| <i>Table 7) Overview of the Process for Finding Suitable OC Platform, communities, and threads for the Main Case Study</i> | |
|---|---|
| Activity | Result |
| 1- Searching for a suitable OC platform for the main case study based on <ul style="list-style-type: none"> - Research objectives - What was learned from the exploratory case study - Inclusion criteria for the OC platform selection (See Table 9) | A list of potential OC platforms (See Appendix C). |
| 2- Precise comparing of the potential OC platforms based on <ul style="list-style-type: none"> - Inclusion criteria for OC platforms (Table 9) | A shortlist of five OC platforms (See Appendix C), and Reddit was selected as the case. |
| 3- Searching for suitable Subreddits (communities) on Reddit based on <ul style="list-style-type: none"> - Inclusion criteria for Subreddits (Cases) (Table 8) | Selection of 7 Subreddits (Section 3.4.1.2.4). |
| 4- Extracting all threads from selected Subreddits <ul style="list-style-type: none"> - Between the time period of X and Y | All threads were extracted and stored. |
| 5- Selecting relevant threads for analysis based on <ul style="list-style-type: none"> - Inclusion criteria for threads - Two perspectives of the value co-creation concept | 91 threads in total were selected for analysis. |

3.4.1.2.1 Searching for Suitable Communities and Inclusion Criteria for the Main Case Study

Selecting the right OC for the main case study was very important. My initial search identified hundreds of OCs dedicated to the needs of older adults. However, not all observed OCs were in accordance with the objectives of this study and with different inclusion criteria that were defined for OC selection (a comparison of OCs is in Appendix C). To identify relevant OCs, the following keywords were used in Google search: older adults, older people, seniors, and elderly online communities, and were assessed using specific inclusion criteria based on the aims of this study. Accordingly, first, I looked for the OCs with a minimum of 30 members. Because, in the exploratory pilot study, in each community, there were 30 users, and with this number of participants preliminary understanding of the phenomenon could be obtained. Therefore, a minimum of 30 users was set as the minimum number of

community members for the main case study. Second, as the aim of this study is to better understand how the participation of older adults and their informal caregivers in OCs can support the resilience of older adults, only communities in which the majority of their users were either older adults or their informal caregivers were included. Third, as the value co-creation concept is a theoretical lens of this study, only OCs that allow their users to actively participate in value co-creation activities were included. Fourth, as the stressor is a vital element of the resilience process (Resnick, 2014), and this work aims to better understand this phenomenon in OCs' environment, communities in which users were able to share the daily problems and stressors were searched. Fifth, OCs with free data access were included. Finally, to avoid the translation difficulties, communities with English language were considered. A summary of the inclusion criteria for the OCs selection is provided in Table 8 below.

| Main Criteria | Sub-Criterion |
|-------------------------------------|---|
| Community size | <ul style="list-style-type: none"> • Minimum 30 members |
| Members type | <ul style="list-style-type: none"> • Communities where the majority of their users are either older adults or informal caregivers of older adults. |
| Relationship with value co-creation | <ul style="list-style-type: none"> • Communities that enable their members to actively participate in interaction and resource integration |
| Relationship with resilience | <ul style="list-style-type: none"> • Communities where their members share the problems and difficulties in their lives. |
| Data accessibility | <ul style="list-style-type: none"> • Ability to access the community data • The locality of the community as a preference |
| Language | <ul style="list-style-type: none"> • Community with the English language |

3.4.1.2.2 Potential Online Communities

Based on the inclusion criteria (See Table 8 above), a variety of OCs were investigated. A full list of these OCs associated with the inclusion criteria for each is provided in the Appendix section (See Appendix C). A precise exploration of these websites revealed several facts. First, it was noticed that some of the websites did not provide a forum for mutual interaction of users, so they were removed from the list. Second, in some OCs, older adults were not the majority of the users. Indeed, these OCs were public venues rather than a place dedicated to older adults. Hence, these OCs were not selected for further investigation. Third, all remaining OCs were assessed for the language criterion, and all were included as English was the spoken

language in all. Fourth, all remaining OCs had sufficient size and seemed suitable. However, I could not identify the exact number of the members in two of the OCs, but the structure and number of the groups within the OC were showing the sufficiency of the size, so they were included. Fifth, the nature of the remaining OCs was assessed for the presence of value co-creation to check that if the users were able to actively participate in resource integration and value co-creation process. Sixth, the nature of the interactions and the conversations of the users regarding the resilience phenomenon were assessed to ensure that the OC was suitable for studying the resilience process. To do so, I looked for those interactions where users shared their problems or sought support. This criterion was considered, as disruption is one of the main elements of the resilience process (Resnick, 2014). Eventually, in the first phase, five OCs (highlighted in green in Appendix C) met the criteria for further assessment. Later, in the next step, Reddit was selected as the main case study of this research. The process and rationale of the selection of Reddit are explained in the following paragraphs.

3.4.1.2.3 Selection of Reddit and Rationale

After comparison of all potential OCs (details about other OCs is provided in Appendix D), Reddit was selected as the main case study of this work. According to their website, Reddit is a social and discussion website founded in June 2005. Registered members post a variety of content to the site such as, texts, images, and links, which are voted up or down by users. This website consists of all types of users (approximately about 330 million users) in different age groups and with diverse needs. On Reddit, there are several communities dedicated to older adults and their caregivers. Accordingly, older adults and caregivers can join these communities (user-created areas of interest called “Subreddits”) to post texts, images, links, etc. This enables users to access a massive amount of information regarding their needs. For instance, a subreddit called “Retirement” is a place for everyone who is interested in talking and discussing retirement issues. Another Subreddit called “Agingparents” with approximately 4800 members is a venue for dealing with issues regarding caregivers or ageing parents. So, if users have a question or concern about caregiving affairs of their family members, they can easily share it with other members within the Subreddit, and consequently, they may receive dozens of solutions from other members regarding the issue. Another example is a Subreddit called

“AskRedditOver60”. In this Subreddit, users of any type can ask questions from users above age 60. So older adults above age 60 can share their experience and knowledge with other people.

Reddit met all the inclusion criteria and was selected as the main case study for the purpose of this study for several reasons. First, the data is accessible, so accessing the data was not contingent on website owner’s permission. Second, as it is shown in Table 10 below, there are several Subreddits regarding older adults and their informal caregivers, which provided a valuable set of data. Third, regarding resilience, initially, dozens of examples were observed about how users look for coping strategies regarding their difficulties and adversities. Fourth, due to the large number of users in most Subreddits, users can engage in the process of value co-creation through resource integration. Fifth and finally, the language spoken in Reddit is English, and there was no difficulty in translation. That said, Reddit was an excellent source of data to investigate how online communities can facilitate the resilience of older adults through the lens of value co-creation. Table 9 below shows examples of the Subreddits on Reddit that are created and dedicated entirely or partially to the needs of older adults.

Nevertheless, Reddit was selected as the primary case study as it showed more potential compared with other OCs. Reddit members are 330 million people globally, and this puts Reddit significantly ahead of the other OCs on the shortlist. In fact, this is a significant factor as the more people participate in the community, the more communication takes place, and we can have a more robust dataset. Also, Reddit has above 100,000 communities tailored for the needs of everyone, including older adults and their caregivers, so it will be easier to find suitable and helpful forums regarding the aims of this study. Many of these forums are specifically designed for supporting older adults and their caregivers for caregiving purposes. Therefore, Reddit was selected as the primary case study of this research.

| Subreddit Name | Users' Type | Population | Description of the Subreddit |
|-------------------------|---|------------|---|
| Retirement | Everyone | 4200 | This group is where people can discuss retirement issues. |
| AskRedditOver60 | Everyone | 1000 | People can ask questions of over 60 users about their knowledge and experience. |
| Caregiving | Caregivers | 847 | Focused on caregiving for older adults |
| CaregiverSupport | Caregivers | 3500 | Focused on caregiving for older adults |
| Caregivers | Caregivers | 1400 | Focused on caregiving for older adults |
| Ageing | Older adults | 753 | A place for older adults to interact with each other |
| Ageingparents | Caregivers | 4800 | Ideas for dealing with issues regarding caregivers or ageing parents |
| Medical_Advice | Professionals, and people who need medical advice | 8100 | Made by healthcare professionals with the idea of assisting those who may not be able to afford regular healthcare costs by allowing them to ask questions on minor health issues |
| Eldercare | Caregivers | 759 | A support community for people to ask questions and share stories about eldercare |
| Dementia | People who deal with dementia | 7600 | Dedicated to information and support for people dealing with dementia |

3.4.1.2.4 Selection of Subreddits

After frequent observation of the Subreddits and considering the inclusion criteria for selecting Subreddits, seven Subreddits were selected for further analysis, including Ageing, AskRedditOver60, Caregivers, CaregiverSupport, Over60, OverFifty, and Retirement. Each of these subreddits is a place that older adults or their caregivers can join, share their opinions, seek support, and support other users. Also, there is no restriction for people from age groups or categories other than older adults and caregivers for joining these subreddits. However, the dominant members are older adults or their informal caregivers, such as friends and family members. The size of

the selected Subreddits is varied between 753 and 4800 users. The frequency of the interactions between users depends on the number of users in the subreddits. Usually, the more users in a subreddit, the more interaction takes place.

3.4.1.2.5 Selecting Threads

In each subreddit, there are many threads posted by users. Not all posts meet the inclusion criteria in our study because not every single post is representing the aspects of the resilience process. Hence, I was precise about selecting the threads. In each subreddit, I opened all threads with a minimum of one comment on them, posted in the last one year from the date the observation conducted. Then, threads were filtered based on the aims of the study. Threads should be related to the main concepts of resilience, such as the existence of adversity and resilience factors. Hence, only those threads were included in which older adults, or their caregivers, were looking for support due to adversity. Also, I included the threads in which older adults, or their caregivers, shared their experience and knowledge. It was beneficial to investigate if those threads helped to support resilience resources among older adults.

In the selection of the threads, two theoretical perspectives of the value co-creation concept (Vargo & Lusch, 2017), including ecosystems and institutions, were considered. Users participate in OCs for different purposes, and these purposeful activities can result in the development of practices. Also, practices that are accepted and used by many people are referred to as institutions (Vargo & Lusch, 2017). The dyadic interactions and activities in OCs do not take place in isolation, but rather within networks of actors (the ecosystem), of which the dyad is just a part. Besides, the value (benefit) realised by a beneficiary does not occur in isolation, but rather through the integration of the resources from many sources (Vargo & Lusch, 2017). Therefore, threads with a minimum of one comment were included, to explore the process of resource integration and its impact on the resilience protective factors. This is also in line with the framework (Resource sharing within a dynamic ecosystem) suggested by Frow et al. (2016), where within a dynamic ecosystem, actors share resources resulting in development, co-creation, and integration of new resources.

3.4.1.2.6 Thread Extraction and Storage

As mentioned before, I focused on the interactions of older adults and caregivers with other users within the selected subreddits. However, I observed a few instances where professionals (doctors, nurses, etc.) were engaged within the conversations, which could result in the resilience of older adults, so I included those threads as well. Consequently, 91 threads from 10 Subreddits met the inclusion criteria and were selected and extracted for analysis.

Extracting of the threads was carried out by using Python language, and I included the conversations that took place from the 1st of January 2019 until the 29th of February 2020. Accordingly, every selected thread was being extracted and saved automatically by the software in Html format. Then, the content of each Html file was copied into a separate Microsoft Word file to make it readable for the data analysis tool used in the study (NVivo12). Finally, all saved files were stored on a secure virtual location.

3.4.2 Supplementary Interviews

In line with the multimethod sequential design of this research, after the main case study, interviews were conducted as a supplement to the core data collection (Primary Case Study), and to validate the findings of the main case study. This step was necessary, as we aimed to understand IS and service science research priorities that are new and understudied areas. Therefore, interviews contributed to the validation of the findings. In-depth interviewing is a qualitative research method that involves conducting individual interviews with a small number of respondents to explore their perspectives on a particular idea, or situation (Boyce & Neale, 2006). Conducting interviews provides the depth of personal information (Azzara, 2010), so more insights are likely to be collected. In-depth interviewing is a standard and suitable data collection method in qualitative and inductive studies because it allows investigation of participants' experiences and enables them to reveal their experiences in their own word (Charmaz & Belgrave, 2012). This is in line with the constructionist epistemology of this work as it enables better understanding of the phenomenon through interpretation of the participants' experiences.

In this work, in-depth interviews were carried out to supplement the case studies. Through performing the exploratory case study, and the main case study, I noticed some particular situations of individuals (e.g., disruption experiences or perceiving the benefits and values of OCs in relation with resilience) might not be clearly observable within their interactions in OCs. Therefore, in-depth interviews could be helpful and beneficial by providing more detailed information from the experiences of the participants. Further, in-depth interviews have a methodological advantage for this study because interviews tend to repeat daily conversations and interactions, so the power is more equally distributed between the interviewer and the interviewee (Shuy, 2002). This is in line with the constructionism lens, where the researcher and the participant construct the knowledge and set the agenda for the interview together. However, in general, in-depth interviews have some weaknesses, such as lack of appropriate technique to be used by the interviewer, being a time-consuming process, and no generalisability of in-depth interviews if they are the only method of data collection due to the small number of interviewees (Boyce & Neale, 2006).

3.4.2.1 Unit of Analysis and Recruitment Procedure

I aimed to conduct the interviews with either older adults or their caregivers who are participating in Subreddits relevant and dedicated to older adults, their needs, and caregiving issues. Therefore, I looked for Reddit users, either older adults above age 65, or their caregivers at any age. To find interviewees, before the interviews, a recruitment advertisement was posted on specific Subreddits.

As mentioned earlier, Reddit consists of thousands of Subreddits with various topics, goals, and different stakeholders. However, not many of them are created for the participation of older adults, or to address their needs. Further, older adults are less likely to join Reddit compared to younger age groups. Despite these limitations, I tried to find suitable Subreddits in line with the objectives of this research by searching terms such as older adults, older adults, caregivers, and eldercare. Advertisements were posted on the same Subreddits that were selected for the main case study. Subreddit selection was discussed earlier and highlighted in Table 9. During the interviews, some participants introduced to me some Subreddits that I was not familiar with, so it helped me to post ads on new Subreddits that I was unaware of. It also enabled me to increase the chance of finding new participants. Because of this, Table

10 below is more comprehensive than the initial list in Table 9. For instance, a participant informed me that there is Subreddit created for transgenders, and there are many older adults joining that community. Table 10 below is showing the Subreddits that I posted ads on to find participants.

| Subreddit Name | Users' Type | Population | Description |
|-------------------------|---|-------------------|---|
| Retirement | Everyone | 4200 | This group is where people can discuss retirement issues. |
| AskRedditOver60 | Everyone | 1000 | People can ask questions of over 60 users about their knowledge and experience. |
| Caregiving | Informal caregivers | 847 | Focused on caregiving for older adults |
| CaregiverSupport | Informal caregivers | 3500 | Focused on caregiving for older adults |
| Caregivers | Informal caregivers | 1400 | Focused on caregiving for older adults |
| Cancercaregivers | Informal caregivers | 1565 | A place of support and information for people with a family member, spouse, or friend with cancer. |
| Ageing | Older adults | 753 | A place for older adults to interact with each other |
| Ageingparents | Informal caregivers | 4800 | Ideas for dealing with issues regarding caregivers or ageing parents |
| Medical_Advice | Professionals, and people who need medical advice | 8100 | Made by healthcare professionals with the idea of assisting those who may not be able to afford regular healthcare costs by allowing them to ask questions on minor health issues |
| Eldercare | Informal caregivers | 759 | A support community for people to ask questions and share stories about eldercare |
| Dementia | People who deal with dementia | 7600 | Dedicated to information and support for people dealing with dementia |
| 1920s | Everyone | 4700 | People post things about 1920s decade |
| 1940s | Everyone | 1446 | People post things about 1940s decade |

| | | | |
|--------------------------|-----------------------------|-----------|--|
| Over60 | Older adults above 60 | 643 | A community for people above age 60 |
| Overfifty | Older adults above 50 | 3053 | A community for older adults above age 50 to interact and share their experiences. |
| Transgenderau | Transgenders from Australia | 4900 | A support community for Australian transgenders. |
| Oldpeoplefacebook | Everyone | 1 million | A community for older adults |

After posting advertisements on targeted subreddits, interested users contacted me by either sending an email or a private message on Reddit. Then, after I made sure about the eligibility of the applicants in line with the inclusion criteria of the study, I made the arrangement regarding the interview time and also the tool that interviewees were comfortable with for communication such as Skype and Zoom.

3.4.2.2 Interview Procedure

Most interviews took place through Zoom involved video and audio conferencing, and I sent the Zoom link to participants so they could join the online meeting. At the beginning of the interview, I informed participants with key information about the study objectives, consent process, recording the interview audio, confidentiality of the data, the interview procedure, and the nature of open-ended questions.

3.4.2.3 Developing the Interview Protocol

Developing an interview protocol is an important part of conducting interviews for data collection. The interview protocol guides the interview process and ensures all required topic areas are covered and contributes to effective time management during the interview (Marschan-Piekkari & Welch, 2004). The constructionist approach employed in this study allowed flexibility in building the interview protocol, designing and ordering the interview questions. However, as having a logical order is recommended (Dudley, 2010), interview questions were ordered in an organised way. In line with the constructionist approach, qualitative interviews do not always require asking exactly the same questions from every participant. The flexible nature of the constructionist approach and specific circumstance of each interview enabled the modification of the questions during the research. This was in accordance with Dudley

(2010) suggesting that the unique dynamic and specific circumstances of each interview may require different questions and approaches.

The interview protocol for this study shows a list of interview questions in relation to the main research question. Interview questions were framed through the experience achieved from the exploratory case study and the main case study. Later, the questions were modified during the first interviews to ensure simplicity, clarity, and relevance (Yaghmaei, 2003).

To keep the essence of the constructionism approach, I started our interview by asking open-ended questions and developing more precise follow-up questions to understand what they mean by their statements so we could construct the knowledge together. In total, participants were asked 18 questions (See Appendix E). As shown below, the interview questions are categorised into eight sections.

- 1) After welcoming participants and providing them with a brief explanation of the research, the first group of questions (question 1) was introductory to ensure participants met the criteria in line with our research objectives. By answering this question, participants disclosed their name, age, job, and where they were coming from.
- 2) The second group of questions (questions 2, 3, 4) were about the type of Subreddits the participant engages with, level of participation and engagement, reasons for joining, and understanding of the user types in those Subreddits. These questions helped to gain an understanding of which communities they use and their typical role in each. Also, they helped to identify actors and their attributes.
- 3) The third category of the questions (questions 5 to 9) aimed to further the understanding of the potential benefits of participating in Subreddits for participants, and also the benefits and value that participants afford to other users. In addition, these questions helped to better understand what types of resources actors share in Subreddits so I would be able to understand the process of value co-creation. These questions were usually accompanied with follow-up questions.

- 4) The fourth category of the questions (questions 10 to 12), aimed to further the understanding of value co-destruction practices and outcomes in OCs. Therefore, participants were asked questions regarding their negative experiences during their participation in Subreddits, and if these experiences had negative consequences.
- 5) The fifth category of questions (questions 13 to 15) furthered the understanding of the resilience process in OCs by asking questions about sharing of adversities in Subreddits by users, and its consequences. This was also helpful to understand how participants perceive the benefit and value of sharing their problems online and if there is any negative outcome out of it. Overall, these questions helped to improve the understanding of reactive resilience process in OCs.
- 6) The sixth category of questions (question 16) aimed to further the understanding of how the participation of users in OCs can improve proactive resilience of users through making them more prepared for problems and adversities they might face in future. This question was helpful for improving the knowledge by comparing the reactive and proactive resilience process in OCs.
- 7) The seventh category of the questions (question 17) aimed to improve the understanding of how mutual resource sharing of participants can result in resilience.
- 8) Finally, to wrap up, I asked participants if they would like to add any other comment.

3.4.2.4 Sample Size and Participants' Details

In total, 16 interviews were carried out ranging from 16 to 57 minutes with the average length of 28 minutes. Interviews were audio-recorded using a PC's voice recorder, and also a voice recorder on a mobile phone at the same time to increase the reliability of the procedure. It is essential to add that two out of 16 interviews were carried out through a phone call as participants either did not have access to a microphone for the audio connection or just preferred to talk via a phone call. Table 11 below shows participants' profiles.

| # | Name | Age | Gender | Location | Interview Mode | Interview Date |
|----|----------|-----------|---------------|----------------------------------|-------------------|-------------------|
| 1 | L | 56 | Female | Bundaberg, QLD, Australia | Phone Call | 1/03/2020 |
| 2 | G | 62 | Male | London, UK | Zoom | 1/03/2020 |
| 3 | N | 55 | Male | Vietnam | Zoom | 3/03/2020 |
| 4 | G | 66 | Male | Hungary | Zoom | 3/03/2020 |
| 5 | P | 56 | Female | Colorado, US | Zoom | 4/03/2020 |
| 6 | A | 68 | Female | CA, US | Zoom | 26/03/2020 |
| 7 | C | 60 | Female | Houston, US | Skype | 26/03/2020 |
| 8 | B | 55 | Male | Sydney, Australia | Zoom | 22/05/2020 |
| 9 | B | 60 | Male | Sydney, Australia | Zoom | 22/05/2020 |
| 10 | I | 56 | Male | Brisbane, Australia | Zoom | 22/05/2020 |
| 11 | M | 57 | Male | San Francisco, US | Zoom | 23/05/2020 |
| 12 | T | 58 | Male | Arizona, US | Zoom | 21/05/2020 |
| 13 | S | 56 | Male | Brisbane | Zoom | 25/05/2020 |
| 14 | S | 60 | Female | New Mexico | Zoom | 26/05/2020 |
| 15 | R | 58 | Male | US | Zoom | 03/06/2020 |
| 16 | D | 68 | Male | US | Zoom | 10/07/2020 |

3.4.2.5 Storage and Transcription

After conducting the interviews, all audio files were securely stored and became ready for transcription. We used an online service to transcribe the audio file into the text. It was beneficial as enabled the initial and line-by-line coding. Then, the text files were saved in a secure place for analysis.

3.4.2.6 Limitations of Interviews

During the data collection through interviews, there were some challenges with recruitment of participants. First, the number of Subreddits related to older adults and their needs is minimal. Second, these Subreddits are not including a large population. Third, not many people were showing their interest to participate as it was no tangible reward provided. Fourth, some users were making negative comments on the advertisements, and even in some cases, some users were trying to convince other older adults to not participate in research studies.

3.5 DATA ANALYSIS

Data analysis is an important step in any qualitative study. A quality data analysis includes organisation, examination, interpretation, and sense-making of the

data, and reporting the findings in an easy and understandable format (Gorman, Clayton, Shep, & Clayton, 2005). Although there are many data analysis methods, there is no standardised approach for analysing qualitative data. Indeed, there are a variety of data analysis approaches available for a qualitative study based on the research design, problem, and its objectives. Some of these approaches are grounded theory approach (Corbin & Strauss, 2014), thematic analysis (Braun & Clarke, 2006), analytic induction, discourse analysis, and narrative analysis (Becker, Bryman, & Ferguson, 2012; Saunders, Lewis, & Thornhill, 2009). Nevertheless, in practice, the majority of these approaches share common structures such as summarising, categorising, and structuring of meanings (Saunders et al., 2009).

Based on the research design of this study, data collection was performed in different ways, such as capturing the qualitative conversations and communications of OCs users through content analysis, and qualitative interviews. Qualitative thematic qualitative analysis (when data analysis is mainly qualitative) (David & Sutton, 2011; Joffe & Yardley, 2004), is the most common method of qualitative data analysis (Mertens Oishi, 2003), and entails coding concepts and organising data into emerging themes and conceptual categories (Elo & Kyngäs, 2008). Thematic analysis can be applied in almost all qualitative data analysis and mainly aims to identify, group, and report patterns of experience and critical concepts and interpretations in a dataset (Braun & Clarke, 2006). Thematic analysis offers ways to analyse qualitative research material (Burck, 2005) through classifying written or oral material into identified categories of similar meanings. In inductive qualitative thematic analysis, codes, categories, or themes directly draw from the data, and they are not predefined based on the existing literature (Cho & Lee, 2014).

OCs usually allow their users to interact with each other through text and visual messages. OCs include an ample amount of such messages. Accordingly, to address the objectives of this research for understanding the relationship between participation in OCs and resilience of older adults, we need to investigate the texts and visual messages in OCs. Thematic analysis enables us to understand the process and interactions of OC users in a natural environment.

To address the research questions and objectives of this study, using thematic analysis, I inductively analysed the data collected through the exploratory case study (Yellow Squares), the main case study (Reddit), and qualitative interviews.

As mentioned before, in this study there are different sets of data including, the Yellow Square Forum used for the exploratory case study, Reddit dataset used for the main case study, and qualitative interviews. Since all datasets are including qualitative data; therefore, the qualitative thematic analysis is an appropriate and suitable way of analysis and can apply to all of them. However, for each of the datasets, I had different objectives as each dataset was addressing a different step of the study. The analysis of the data was based on an inductive approach to identify themes from the data. For all three datasets, the qualitative thematic analysis of the data was based on the six steps guideline suggested by Braun and Clarke (2006). A summary of the guideline is outlined in Table 12 below.

| Steps | Description |
|-------------------------------|--|
| 1- Familiarisation with data | In this step, the researcher iteratively read the data, noting down initial ideas to become familiarised with the data. |
| 2- Generating initial codes | Coding exciting features of the data in a systematic fashion across the entire data set, collating data relevant to each code. |
| 3- Searching for themes | Collating codes into potential themes, gathering all data relevant to each potential theme. |
| 4- Reviewing themes | Checking if the themes work in relation to the coded extracts and the entire data set, generating a thematic 'map' of the analysis. |
| 5- Defining and naming themes | Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and labels for each theme. |
| 6- Producing the report | The final opportunity for analysis. Selection of vivid, compelling extract examples, the final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis. |

Despite the application of the same data analysis guideline on all datasets, for better understanding of the process by readers, I have separated the illustration of the data analysis process for each of the datasets in the data analysis chapter.

3.6 CREDIBILITY

Rigorous and quality research is associated with great attention to the reliability of findings. Otherwise, the research would be worthless, fiction, and loses its utility (Morse, Barrett, Mayan, Olson, & Spiers, 2002). Although in qualitative studies there are no standardised methods to assess the reliability of the research, there are some strategies recommended to examine the accuracy of findings and interpretations from different aspects such as the participants, the audience, or the researcher (Creswell & Creswell, 2017). There are different strategies suggested to evaluate qualitative research. For instance, Lincoln and Guba (1985) proposed four factors, including credibility, dependability, transferability, and confirmability. Another strategy by Fossey, Harvey, McDermott, and Davidson (2002) suggests that the criteria and requirements to assess the quality of a qualitative study are: First, methodological rigours such as transparency, adequacy, appropriateness, responsiveness to social context, and congruence. Second, interpretive rigour such as interpretations, engagement, the permeability of the researcher’s intentions, typically, reciprocity, coherence, and authenticity. Another strategy recommended by Morse et al. (2002) proposed five criteria; methodological coherence, sampling sufficiency and appropriately, concurrently collecting and analysing data, thinking theoretically, and theory development. Table 13 below shows a summary of most common strategies for trustworthiness of qualitative studies.

| Reference | Criteria |
|--------------------------------|--|
| Lincoln and Guba (1985) | <ul style="list-style-type: none"> • Credibility • Dependability • Transferability • Confirmability |
| Fossey et al. (2002) | Methodological Rigor <ul style="list-style-type: none"> • Congruence • Responsiveness to social context • Appropriateness • Adequacy • Transparency Interpretive Rigor <ul style="list-style-type: none"> • Authenticity • Coherence • Reciprocity |

| | |
|----------------------------|--|
| | <ul style="list-style-type: none"> • Typicality • Permeability of the researcher's intention • Engagement • Interpretations |
| Morse et al. (2002) | <ul style="list-style-type: none"> • Methodological coherence • Sampling sufficiency and appropriately • Concurrently collecting and analysing data • Thinking theoretically • Theory development |

The most common assessment method used for a qualitative study follows Lincoln and Guba (1985) approach. To assess and evaluate the reliability of the methods and findings of this study, we follow the guidelines proposed by Lincoln and Guba (1985). Because in contrast with other approaches, this guideline enables the researcher to perform triangulation to confirm the reliability of the first method. Therefore, based on the sequential multimethod design of this work which consists of more than one qualitative method, this approach is suitable for this study as it enables us to triangulate the findings of the case study by performing interviews. Accordingly, to adopt these guidelines, Table 14 below outlines a list and explanations of the strategies.

| Reliability type | Description | Strategy |
|-------------------------|---|---|
| Credibility: | is the truth value of the data. A researcher should ask him/herself that if the information he/she gets from participants true. | <ul style="list-style-type: none"> • Field experience: Spending enough time in the field of observation that is long and varied enough. By doing this, we can get a complete picture of what is going on. • Triangulation: Combining different ways of data collection such as in-depth interviews and focus groups |
| Transferability: | Is to test that the study is applicable to other people and time periods. | <ul style="list-style-type: none"> • Comparing sample to population demographics: collecting data from different sources and comparing the analysis results. |

| | | |
|-----------------|--|--|
| | | <ul style="list-style-type: none"> • Time Sampling: conducting observations or interviews at multiple points of time. |
| Dependability: | is the consistency of the findings. The researcher should ask him/herself that am I consistent in the way that I am doing the observations and analysis? | <ul style="list-style-type: none"> • Code-recode procedure: coding the same data in different days and comparing the analysis to check the consistency. |
| Confirmability: | is the neutrality of the researcher. The attitudes and beliefs of the researcher should not overshadow the observations. | <ul style="list-style-type: none"> • Confirmability audit: accounting another researcher who is familiar with the topic to tell the researcher about the neutrality of the observations. • Triangulation: gathering data by other methods, rather than the primary method. |

For the trustworthiness of this research, we applied several strategies. First, for the credibility of the findings, we performed triangulation. To do so, we combined different ways of data collection such as qualitative case studies and interviews. Second, for the transferability, we collected our data from different Subreddits, and also by interviewing participants from different locations at multiple points of time. Third, to assure the dependability, we performed the code-recode procedure by coding our dataset on different days and comparing findings for consistency. Fourth, for conformability, we asked other researchers among colleagues and also the supervisory team who were familiar with the topic to check findings through intercoder reliability. Also, as a method of triangulation, we conducted interviews rather than the main case study which was helpful for the credibility of the findings.

3.7 ETHICS

In terms of data collection, ethical clearance is one of the primary purposes of this study. As this study is engaged with human participation, for three parts of data collection, including the content analysis of case studies, and interviews, research ethics approval was provided.

For the exploratory case study, the ethics approval was already obtained by the original research team, so they simply added me to their ethics approval through a variation. In addition, for the aim of the primary case study and qualitative interviews, a single ethics approval was obtained. As this study was engaged with human participation, several ethical considerations were considered. First, participation was completely voluntary at every stage of the study. Second, a consent form was provided to every participant. Third, participants could withdraw from the research at any point in the interviews. Fourth, participants were assured that all information they shared would be confidential, and no identifying information such as names, and addresses would be reported in the study. Fifth, only the researcher would have access to participants' information. Finally, findings would be used only for research purposes.

These considerations were reviewed by the Human Research Ethics Committee of the Queensland University of Technology. Consequently, this research was considered as a Low-Risk study. The ethics approval number for this study is 2000000028.

3.8 CHAPTER SUMMARY

This section outlined the research design of this study. Accordingly, constructionism and interpretivism were justified as the epistemological and theoretical perspectives of the work. Later, the qualitative multimethod sequential design of the study was explained and justified. Then, the three data collection methods of this work were explained including, content analysis of the exploratory case study (Yellow Squares), content analysis of the main case study (Reddit), and supplementary interviews. This was followed by a data analysis plan by justifying the inductive thematic analysis as the analysis method for all datasets of the research. Then, different approaches for the credibility of qualitative studies explained and the trustworthiness strategy of this research was explained and assured. Finally, a brief explanation of the ethical consideration of the research was explained.

Chapter 4: Findings

The previous chapter outlined the epistemological and theoretical perspective, the methodology and research methods carried out in this work, and discussed the data analysis method employed, thematic analysis. This chapter presents findings responding to the objectives of this study. The ultimate goal of the study was to understand how participation of users in OCs can support resilience of older adults. As pictured in the research design (Figure 10), this study consists of three datasets used respectively for the exploratory case study, the main case study, and supplementary interviews. Accordingly, we applied thematic analysis for all datasets using the guideline suggested by Braun and Clarke (2006). A summary of the objective and outcome of each section is highlighted in Table 15. The following sections separately present the findings of each dataset. Hence, in the next section, findings of the exploratory case study (the Yellow Square OC) will be explained.

| Section | Objectives | Outcome |
|------------------------------|---|---|
| 4.1-Exploratory Case Study | <p>A) To identify the potential benefits of OCs for older adults.</p> <p>B) To investigate the value co-creation and co-destruction practices of older adults in OCs.</p> | 1) A journal paper published in the <i>International Journal of Quality and Service Science</i> . |
| 4.2-Main Case Study | <p>A) To identify the stressors that older adults share on OCs as the triggers of the resilience process.</p> <p>B) To investigate the value co-creation and co-destruction practices of older adults in OCs to unpack how resource integration takes place in OCs.</p> <p>C) To identify the resilience outcomes of older adults' practices in OC.</p> | The outcome of this section will be published as a journal paper. |
| 4.3-Supplementary Interviews | <p>A) To complement the findings of the main case study.</p> <p>B) To validate the findings of the main case study.</p> | The outcome of this section will be published as a journal paper. |

4.1 EXPLORATORY CASE STUDY (YELLOW SQUARE OC)

Apart from the first two SLRs, as an exploratory case study, analysing the Yellow Square forum was a preliminary step to inductively generate insights about the role of OCs in the resilience of older adults. Performing a thematic analysis (Braun & Clarke, 2006), a comprehensive open-ended exploration of the phenomenon was carried out, which resulted in identifying core themes and patterns. Findings of the exploratory case study can be divided into two major areas. As outlined in research design (Figure 10), first, the potential benefits of participation in OCs (in this case Yellow Square) for older adults were inductively uncovered. Then, I investigated how older adults interact with each other and what practices they perform in OCs to co-create value. This contributed to this study to better understand how and through what practices older adults are being benefited in OCs. This developed the first constructs of the initial conceptual framework, refined and finalised the research questions, and suggested conceptual perspectives that served as a roadmap for the next steps.

To perform the first part (understanding the potential benefits of participation in OCs for older adults), six steps of the thematic analysis suggested by Braun and Clarke (2006) were followed. Table 16 below shows a summary of the procedure, and the following paragraphs will provide more details.

The exploratory case study revealed that participation of older adults in OCs benefit them through wellbeing improvement, self-empowerment, and accessing social capital. This occurs through four practices including communal coping, happiness creation, social capital generation, and disparaging (See Figure 15). These practices are explained later in section 4.1.4.

| Step | Procedure and Outcome |
|---|--|
| Familiarising yourself with your data. | At this step, users' conversations were read and re-read so I got familiar with the data and consequently, initial ideas about the context emerged. |
| Generating initial codes. | Being more familiar with the data, led us to generate 34 initial codes regarding the potential benefits of OCs for participants. |
| Searching for themes. | At this stage, the initial codes were collated into potential themes so different groups of themes were emerged based on the similarities and differences of the codes. As an outcome, five themes emerged. |
| Reviewing themes. | All five identified themes were compared with each other for similarities and differences and potential overlaps. It was found that there are some overlaps and similarities among some of the themes. Therefore, three of five themes were merged, and this resulted in having three final themes. These themes are explained clearly in the next paragraphs accompanied with relevant examples from the dataset. |
| Defining and naming themes. | The specifics of each theme were analysed and refined, and based on the general story of each theme, a clear definition and names assigned to each theme. Themes names and their definitions are shown later in Table 17. |
| Producing the report. | After finishing the analysis and identification of themes, we reported each theme with analysis and supporting examples. |

However, for the first part of the exploratory case study, as briefly highlighted in Table 16 above, in the first step of the analysis, conversations of the users on Yellow Squares were iteratively read, and I became familiar with the dataset. This resulted in generation of 34 initial codes regarding the potential benefits of participation in the community for older adults. Figure 12 below shows a screenshot of the identified codes and the number of references for each in Nvivo12.

| Codes | | Search Project | | |
|-------|--|----------------|-------|---------|
| | Name | | Files | Referen |
| ⊖ | ○ Self-empowerment of Older Adults | | 0 | 0 |
| | ○ Enabling Independency | | 1 | 1 |
| | ○ Self-acceptance | | 1 | 6 |
| | ○ Self-care | | 1 | 2 |
| | ○ Self-efficacy | | 1 | 14 |
| | ○ Encouragement | | 1 | 9 |
| | ○ Self-esteem | | 1 | 25 |
| | ○ Self-disclosure | | 3 | 6 |
| ⊖ | ○ Social Capital Access | | 0 | 0 |
| ⊕ | ○ Resource Exchange | | 0 | 0 |
| ⊕ | ○ Receiving Social Support | | 0 | 0 |
| ⊖ | ○ Seeking Support | | 0 | 0 |
| | ○ Need for existence of a professional i | | 1 | 1 |
| | ○ Seeking Emotional Support | | 1 | 3 |
| | ○ Seeking Information | | 1 | 3 |
| | ○ Seeking Network Support | | 1 | 3 |
| | ○ Seeking Policy Change | | 1 | 43 |
| | ○ Seeking to Age in Place | | 1 | 4 |
| | ○ Seeking Values Revival | | 1 | 7 |
| ⊖ | ○ Wellbeing Improvement | | 0 | 0 |
| | ○ Depression Reduction | | 1 | 2 |
| | ○ Loneliness Reduction | | 2 | 6 |

Figure 12) *The Identified Initial Codes and the Number of their References saved on and captured from NVivo12.*

After generation of the initial codes, I searched for potential themes through the similarities and differences between the codes. This resulted in identification of five themes; *Wellbeing Improvement of Older Adults*, *Self-empowerment of Older Adults*, *Resource Exchange*, *Receiving Social Support*, and *Seeking for support*. Then all themes were reviewed to check if the themes work in relation to the coded extracts and the entire dataset. Again, all the similarities and differences were assessed, and this resulted in merging three themes and creation of a new theme called *Social Capital*

Access. In this process, the new theme emerged from the combination of three themes including, resource exchange, receiving social support, and seeking for support. Accordingly, at the end of this stage, the final themes are *Wellbeing Improvement of Older Adults*, *Self-empowerment of Older Adults*, and *Social Capital Access*. Appendix F shows the evolutionary process of the analysis from step 2 to 4 of the thematic analysis including detailed examples of the initial codes and how they based the emergence of the first-level themes and final themes.

Then, each theme was assigned with a clear definition (See Table 17 below) that tells the story of the theme. Examples for each theme are highlighted later in the text.

| Theme | Description |
|--|--|
| Wellbeing Improvement of Older Adults | Participation in OCs has the potential to positively impact the wellbeing of older adults by reducing their loneliness and depression. |
| Self-empowerment of Older Adults | Participation in OCs engages older adults in the process of value co-creation assisting them in developing confidence and strength to become a stronger person |
| Social Capital Access | Social capital is defined as resources that are associated with interpersonal relationships (Robison, Schmid, & Siles, 2002), and through interpersonal social relationships in OCs, older adults access social capital. |

User demographics for the exploratory case study is presented in Appendix G. The following sections explain each theme in detail and provide examples of the quotes.

4.1.1 Wellbeing Improvement for Older Adults

The theme *Wellbeing Improvement for Older Adults* emerged from two codes from eight quotes, and it is based on the notion that participation in OCs has the potential to positively impact the wellbeing of older adults by reducing loneliness, stress, and depression. The following is an example of a user who discloses his isolation due to his life circumstances. This example shows how OCs can help older adults to minimise their loneliness.

Being a single dad and a fulltime carer, it is very hard to be a part of the community or groups. I tend to join online groups such as Epilepsy Australia and will do so in the future (said by User 33).

Another example is about a user who lost his dog a few years ago and now he is missing the dog and feeling lonely. However, he feels that he is too old to start over again with a new dog. After sharing this issue with other users, a user replied to him and made a suggestion to have a rescue dog instead. Their conversation is shown below, and it shows how participation in OCs can help older adults to share coping strategies, which can facilitate the reduction of loneliness.

User 15: Our old dog (Staffie) died of cancer 3 years ago at the grand old age of 14.5. Miss him dreadfully but feel we are now too old to start over again with a new pup.

User 7: You might want to look into a rescue dog that is a bit older.

User 15: Interesting thought; hadn't considered that option but sounds like a very good idea; many thanks.

In another instance, a user mentioned how this OC was helpful for her to overcome loneliness through finding friends, and as this OC was running temporarily, the user was sad that after the OC terminated, she would be alone again.

User 59: I have really enjoyed it... I felt as though I had friends, but what do I do when this is over?? I will be alone again!!!

In continued communication, a user replied to this statement and suggested to join another forum to keep the friendship online.

User 57: Maybe we could find someone who will run a forum for all those who would like to join, so we could continue sharing the ups and downs of life?

Later, the same user (User 59) shared her feelings about the OC again and how the OC was helpful to overcome loneliness:

User 59: I am so happy just to be having some contact. I really need some pen-pals to continue writing to.

4.1.2 Self-empowerment of Older Adults

Self-empowerment of older adults is developed from seven codes, and it suggests that participation in OCs can empower older adults through encouragement, promoting their self-acceptance, self-care, self-efficacy, self-esteem, and enabling

disclosing self, and independency. The following is an example of a user expressing how participation in OCs gives him/her a higher level of confidence and self-esteem.

I'm a member of a heap of online forums. I think I'm better behind a computer screen than face to face (said by User 16).

The example above shows that participation in OCs can promote the self-esteem of older adults, a person's evaluation of his/herself (Resnick, 2014), and consequently has the potential to promote their resilience.

Below is another example, showing how users can be empowered through promotion of self-efficacy by experience sharing.

I am looking forward to getting over this menopause thing, and to losing some weight and dreading it at the same time (said by User 7).

Keep up the good work, I found healthy foods and less portion sizes kept me on track (replied by User 12).

Conversation above shows how sharing coping experiences of users empowers older adults through promotion of self-efficacy, the perception of a person's ability to overcome adversity (McClain et al., 2018).

Also, findings revealed that participating in OCs can help users to improve their level of self-acceptance. For instance, User 1 who was 61 years old shared his concerns in life, saying he would not like to live longer.

User 1: Many people wish to continue living until they feel they are ready to go. Personally, I really don't wish to live past 65 years of age.

He received many comments from users who were trying to support him. For example, a user shared her difficult life journey and the difficulties she was facing. Regardless of the difficulties, she stated how she wants to live more:

User 16: OMG, I am 67 and I have no wish to die yet! I had a pituitary tumour removed 12 months ago and consequently have hypothyroidism so have spent the year reading up and finding out natural ways to cope with the problem. Nevertheless, I am concentrating on having a good life regardless of any health problems. I think the trick is eating healthy, being happy in your own skin and keeping relatively active.

In addition, many other users tried to support User 1. These helped User 1 to have a better feeling, self-acceptance, a more positive perspective about life:

User 1: I am now aware I am a spring chicken youngster who luckily enough has not seen/felt some of the difficulties in life that others on here have.

Findings also revealed that interaction of users in OCs can alert users to better take care of themselves. For instance, a user shared how participation in this forum opened his eyes, so he needs to care more about his health:

User 1: I found the forum extremely eye opening. For my future I think I do need to look after my health as priority 1.

Another aspect of the self-empowerment theme is self-disclosure. Some users admitted that their participation in the OC helped them to disclose themselves and share things that they cannot normally do in an anonymous way. For instance, a user said:

User 22: I have made comments here anonymously that I wouldn't put on the web if I had to give my personal details, not that I am afraid or ashamed, just that some of it's very close to home & it's not the sort of thing I want the world to know about.

4.1.3 Social Capital Access

Social Capital Access emerges through merging of three themes including *resource exchange*, *receiving social support*, and *seeking for support*. These subthemes are built based on 25 initial codes, which are earlier shown in Figure 12. Social capital is defined as resources that are associated with interpersonal relationships (Robison et al., 2002). Accordingly, in OCs, interpersonal social relationships such as seeking, giving, and receiving resources such as information, experience, values, and optimism generate a social build-up that forms a capital for older adults. Several examples of sharing such resources were observed within the interactions of the users. Usually, one of the reasons for older adults to join OCs is to seek information (Nimrod, 2013). The following is an example (Figure 13) of a user seeking information about a specific type of dog and another user providing the answer associated with a relevant photo.

“I have not heard of a Tenterfield Terrier before. Can you compare them to other terriers in general and any terrier breed in particular” (asked by User 23)?

Apparently, they are a whippet terrier cross - he has a whippet face, long legs (although he was supposed to be a little dog - oops) and is white with brown splotches. He definitely has the terrier temperament and in his younger days was a real mouser and ratter. Loves to bark at anything that moves (answered by User 16).



Figure 13) *The Photo of a Dog Provided by one of the users to better answer a question*

This kind of resource exchange in OCs can help older adults to access rare resources, which may not be accessible in geographical communities. As discussed in previous chapters, informational support can offer some of the resilience factors among older adults such as “self-care” by providing self-care opportunities, “grit” by promoting the feelings of self-efficacy, and “health status” by reducing health care costs, and overcoming loneliness and stress (Kamalpour et al., 2020).

Social capital access can be also through receiving social support such as emotional, network, and tangible support. Findings show that participation of older adults can result in receiving network support from other users. The following is an example of a user sharing her problems and wishing someone read her words and listened to her. Then, when another user read her post, replied and mentioned that she had a similar problem, the first user felt happy and blessed.

User 8: One of the big things I think that could have been addressed is being a "carer" for someone. It makes a big difference to your life, and you can't really plan for the future. This is important to me because it has changed my life completely. I hope someone does take the time to listen as sometimes the aged are a silent majority.

Good questions to who is listening - is it someone who can make a difference or is it just something that will be put on the shelf?

User 16 replied: I was listening to you - I was in a similar situation to you for a lot of years and to have your own life turned upside down to care for your partner is a huge change. I am glad this forum gave you the chance to let it out. I wish you the very best for the future and I hope that somewhere, somehow, your wish for your husband to be healed can be granted.

User 8 replied to User 16: Thank you for your response, I appreciate your words of compassion - sometimes it gets very lonely - your reply really blessed me.

Below is another example of how some users perceived network support while using the OC.

User 21: It has been great to read the other responses; a lot of people are like me, sick and tired of our very broken political system.

User 8: I see each one as unique and it has been so interesting hearing what they all have to say about age, circumstances they find themselves in etc. I also realise that there are others in the same situation as myself so don't feel so alone in it.

Examples above admit the existence of network support within the OC. These instances are in line with the definition of network support referring to feeling part of a group with common interests and concerns (Loane, 2015) that result from social informal and formal relationships that connects individuals to larger communities (McClain et al., 2018).

4.1.4 Value Co-creation and Co-destruction Practices of Yellow Square's Participants

As outlined earlier, the exploratory case study revealed the potential benefits of participation in OCs for older adults. Also, through an inductive thematic analysis⁴ (the method is explained in Appendix H), findings uncovered that these benefits are emerging through engaging in four distinct practices by users, including, communal coping, happiness creation, social capital generation, and disparaging.

⁴ This is a product of the following paper: "What Older Adults do in Online Communities when they Co-create and Co-destruct Value" published in the International Journal of Quality and Service Science. July 3, 2021

4.1.4.1 Communal Coping

Communal Coping Practices are the collaborative activities of older adults that aim to solve their issues and adversities through seeking and sharing coping strategies. This can be achieved by sharing coping strategies and spreading self-acceptance and coping behaviours. Within the conversations and interactions of users, we observed several examples showing how older adults communally cope with their adversities through the exchange of their knowledge and experience. For instance, regarding sharing coping strategies in a time of difficulty, a user mentioned:

User 13: I attempt to spread myself around between my family members, along with giving a bit back to society through volunteering.

In another instance, a user asked others about the coping strategies they use in the times of difficulty. As a result, he received several suggestions from different users.

User 26: Be realistic in your attitude and try to see the funny side of things.

User 8: I find praying brings a real peace into any situation that arises.

User 1: Medications are the best way for me to cope, as was retiring. Work stress burnt me to a frazzle! My Psych is always there if I ever need them. Volunteering in others' gardens is also a relaxing way for me to cope.

Another example came from a user who shared his problem of air travel due to blood clots and factor 5 gene. The same problem was discussed by a user sharing her experience and coping mechanism:

User 18: Actually I have Factor Leiden V too. I was worried about flying for a long time and missed a trip due to a clot. I have done a lot of flying since August without a problem. All you need to do is take a blood-thinner, wear compression stockings, get an aisle seat and walk around every hour, drink a large amount of water beforehand and during the flight, get a seat in an empty row if possible and lie horizontally, stretch your legs out as much as possible, do leg exercises and break the trip into stages by staying overnight somewhere.

Interactions and activities of older adults in the community demonstrated that older adults share coping strategies through the exchange of different resources, such as information and experience. For example, a user shared her difficulties with high

living costs, and another user replied to her and shared her experience on earning more by completing online surveys:

User 16: Completing surveys gives me a small amount of extra funds, which I use for groceries.

Self-acceptance is a coping factor for older adults. Our analysis revealed that older adults spread behaviours of self-acceptance about ageing among each other. For example, a user stated that he wishes to live no longer than 65 due to ageing problems. He received dozens of replies promoting his level of self-acceptance about ageing and the positive sides of life:

User 9: OMG please, 65 and ready to go? I would like to live as long as I will be reasonably healthy and able to look after myself, even if I am 105.

User 12: We age from the day we are born; we just have to accept it.

The above examples show how older adults try to communally cope with their adversities by providing diverse resources for each other. In line with the literature, as an antecedent to resilience, communal coping as the “pooling of resources and efforts of several individuals (e.g., couples, families, communities) to confront adversity” (Lyons, Mickelson, Sullivan, & Coyne, 1998, p. 580) can underlie the resilience of individuals (Rogerson, 2009).

4.1.4.2 Happiness Creation

Based on our findings, *happiness creation practices* are the activities that make older adults feel happy through increasing one’s perception of their meaning in life, competency, belongingness, the ability of self-expression, and achievement of a positive mood. In line with the literature, this encapsulates two types of happiness: hedonic and eudaimonic wellbeing. Hedonic wellbeing includes positive mood, absence of negative mood, satisfaction with domains of life (e.g., leisure and work), and life satisfaction. Conversely, eudaimonic wellbeing is based on the notion that people feel happy when they sense life is meaningful and has a purpose.

In this OC, older adults engaged in happiness creation activities, such as creating feelings of having a purpose in life and of meaningfulness, expressing themselves, and self-acceptance promotion. We observed several examples of sharing and spreading a positive mood among users that can result in happiness. For instance, a user was

sharing her experiences of how to live happily and purposefully in a retirement village, and another user replied in a very positive way, thus spreading positive mood:

User 15: Sounds good to me; have a long and happy retirement.

Another form of spreading hedonic happiness was through encouraging other users about their desires or goals they have in life. For example, a user was sharing his desire to have long trips to Europe and other new places. In response, another user replied, encouraging him to do what he liked:

User 14: Go for it, never let the ratbags spoil it for you.

We also observed several examples of activities that can result in eudaimonic happiness. For instance, in terms of feeling meaningful and having a purpose in life, in accordance with literature (Pfeil & Zaphiris, 2009), we observed that older adults were receiving joy and sharing a sense of humour because of their participation in the community:

User 22: This forum has been the most enjoyable I've done online in the last 5 years.

User 33: I had a great time doing this; it was fun to read other people's thoughts on all subject matters.

User 14: I have felt very happy with this forum. It gave me the feeling that what we have to say may someday have a positive impact on the future for the older generation.

As mentioned earlier, our analysis shows members engaged in sharing humorous content. Below (Figure 14) is an example of a user who expresses her busy life by sharing a cartoon of a woman with four children and holding many items, followed by her conversation with another user.



Figure 14) *Sharing Humorous Content such as Cartoon*

User 29: Well, imagine the boys 18, girls 16 and 14, woman fatter, older and angrier. I think this is me.

Findings reveal that older adults were also engaged in self-expression and self-disclosure activities in the community. We have observed several examples of users sharing their personal situations. For example, a user expressed her current living and financial situation to others:

User 20: Not sure we are financially able to do too much but we have our home and fairly good health. On a pension sadly but there are others worse off than us.

Users reveal their personal situations to strangers in the community. However, some of them acknowledged that they might not share their private information if they were not anonymous, indicating self-disclosure behaviour in OCs. Following are three examples of self-disclosure admitted by users:

User 22: This forum gave me an opportunity to express ideas & opinions I don't often get to express.

User 8: I think forums are good for expressing things you probably wouldn't say face-to-face but at the same time they make us aware of others who might not think the way we do.

Another aspect of eudaimonic happiness is having a sense of belonging to social networks. Engaging in OCs, users feel they belong to the group. According to literature (Loane, 2015; McClain et al., 2018), this is consistent with the definition of network support, which refers to being a part of a group with common interests and concerns. Our analysis revealed several examples demonstrating the existence of network support among users. For example, a user mentioned that, although she is getting old and her body started to creak, she still feels very young inside. Another user replied to her:

User 5: Hi, I am a lot older than you so there are more creaks, but I also feel young inside.

This example shows that being a member of OCs enables older adults to feel that they are not alone in their own situations, and there are other people with the same interests and concerns as well, which can result in eudaimonic happiness through feelings of belongingness.

4.1.4.3 Social Capital Generation

Social Capital Generation Practices are the social relationships and activities of older adults that result in mutual exchange of diverse resources (e.g., information, experience, and knowledge), and in building external connections, such as creating positive relationships and making new friends. For instance, users were able to share advice, experience, information, support, and have discussions regarding ageing, retirement, healthcare, insurance, housing, caregiving, pets, transportation, technology, voluntary activities, politics, religion, sport, and travel. As an example, regarding pension and political discussions, a user shared his concern about the cutting down of pension by the government and said:

User 10: The pension is already hard enough to live on, although to be honest, I don't have any faith in any of the current crop of politicians.

The analysis also shows that users engaged in health-related discussions by sharing opinions and concerns. For instance, when a user mentioned his mental illness and the help available to him, another user replied to him, indicating the importance of health.

User 12: I have some problems but manage ok so far. Health is more important than money.

Furthermore, we observed that users engaged in discussions about transportation. For example, a user said that methods of transportation need to be more compatible with older adults' needs, and another user replied:

User 30: It would be a bus. That comes and picks you up and help you get to where you have to go and then drop you back home.

Apart from engaging in discussions, some users exchange their experiences in caregiving, health issues, etc. For example, a user expressed her difficulties in raising her granddaughter and her willingness to stay healthy. As a result, she received emotional support from other users:

User 25: I'm trying hard to stay as healthy as possible and also have more money to spoil myself. At the moment I'm raising my 15 year old granddaughter, which is a huge task as she has suffered a lot of trauma. But hopefully soon things will improve and we can really enjoy ourselves.

User 31: She is lucky to have you. I hope things improve for you both.

User 6: That is a big sacrifice but I guess I would do the same if I had to. I hope the future is good to you.

Another form of resource exchange in the OC was through information exchange in the forms of seeking and sharing. We observed several types of information exchanged by users, including topics such as finance, health, and recreation. The following is an example of a user sharing information regarding interest rates in Malaysia:

User 12: In Malaysia they get 7% on savings; we get less than 2%.

As another example, a user asked his peers about a specific type of dog, and another user provided him with information about the dog, attaching a photo of it.

User 16: Apparently, they are a whippet terrier cross – he has a whippet face, long legs and is white with brown splotches.

Our findings show that some users were seeking support in the community. This was mostly through voicing opinions about problems in politics, health, missing values, etc. For example, one participant voiced his concerns about the safety of older adults at home:

User 12: The elderly 70 and 90 y/o's being home invaded and beaten up - something serious needs to be done about this.

Another user showed her concern about the political environment of the world:

User 19: The state of the world bothers me & I feel anxious for my grandchildren's future.

Findings are that social relationships and interactions between older adults also result in building external connections, such as creating positive relationships and making new friends. As an example of establishing positive relationships, a user expressed her wishes in her personal life, and she received very positive comments from other users. Consequently, the user was appreciative of other users:

User 15: Thanks ladies; your comments are much appreciated. May you also find peace and happiness.

4.1.4.4 Disparaging

Disparaging Practices are the practices which can create negative consequences through spreading disappointment, hatred, and generally having negative reactions to other people's posts. Our analysis revealed that older adults engage in activities such as negatively reacting to others' activities, insulting other users, and disappointing other older adults regarding coping with disease and ageing issues. For example, a user negatively reacted to another user's comment

User 20: Some of your comments are absolutely, may I say it? Stupid!

Another example was from the discussion of climate change among the users. A user who did not acknowledge the existence of climate change negatively reacted to a comment of another user:

User 20: No such thing as Climate Change sorry it is a farce brought about by Al Gore. I am sorry this is a ridiculous comment. May I ask your age?

While we saw several examples of sharing positive mood and empowering users by sharing coping strategies, we also observed some cases that could spread disappointment, frustration, and fear about ageing among users. For instance, this is a comment from a user regarding cure and disease:

User 22: Believe me, the cure's worse than the disease.

4.1.5 Summary of the Exploratory Case Study

In summary, findings of the exploratory case study revealed three emerging themes that could be regarded as the potential benefits of OCs for older adults, namely: *Wellbeing Improvement for Older Adults*, *Self-empowerment of Older Adults*, and *Social Capital Access*. As explained earlier, the first two themes were built by combination of several initial codes, and the third theme was constructed by three subthemes that emerged from numerous initial codes. In addition, findings show that participation of older adults in OCs is usually through four practices: *communal coping*, *happiness creation*, *social capital generation*, and *disparaging*. As a result, Figure 15 shows participation of older adults in OCs and their interactions with others takes place through three positive practices, including communal coping, happiness creation, and social capital generation. These practices have the potential to result in three benefits for older adults namely: wellbeing improvement, self-empowerment, and social capital access. As the model shows, in some cases, older adults engage with

disparaging practices. However, our analysis did not reveal any negative consequence as the result of these disparaging practices. Naturally, disparaging practices can result in negative outcomes (Plé & Chumpitaz Cáceres, 2010). However, as the exploratory case study did not reveal anything about this area, we investigate this phenomenon later in the main case study and interviews.

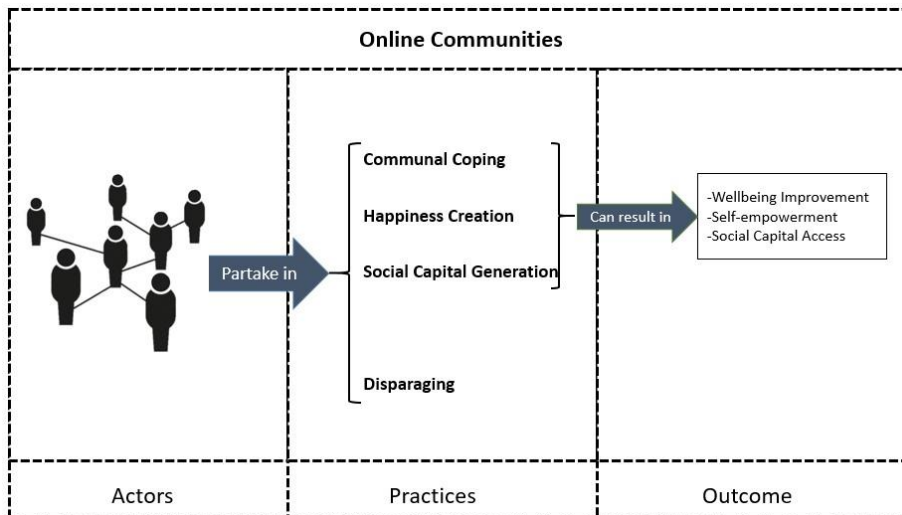


Figure 15) *Practices of Older Adults in OCs and the Potential Benefits of Participants*

In the exploratory case study, the focus was on the practices of participants in OCs and the potential outcomes of their participation. Findings brought light to the fact that practices play an important role in the process of resilience. As Vargo and Lusch (2017) stated, purposeful practices are an important aspect of the value co-creation for the wellbeing of the ecosystem. However, we were not sure how this process happens, and how different practices impact resilience of older adults. In addition, as an early step of the research, the exploratory case study did not explain the resilience reintegration process, and how these practices can impact resilience resources of older adults either positively or negatively. Hence, we focused on the Reddit case study discussed in the next section to address some of the grey areas regarding the phenomenon.

4.2 THE MAIN CASE STUDY (REDDIT)

As a part of the multimethod sequential design of this study, qualitative analysis of the Reddit OC was done to better understand how the resilience process (Richardson, 2002) can take place for older adults in OCs through the lens of value co-

creation. Therefore, based on the inclusion criteria, those threads that were representing the process of resilience for older adults, posted no earlier than a year before the data collection time, and including a minimum one reply were analysed. In total, 43 threads were included. Table 18 below highlights information regarding each thread such as the number of contributors, and the number of posts for each particular thread.

Table 18) Summary of the Included Threads

| Thread ID | Number of contributors | Number of comments |
|------------------|-------------------------------|---------------------------|
| 1 | 3 | 5 |
| 2 | 3 | 3 |
| 3 | 3 | 4 |
| 4 | 3 | 3 |
| 5 | 3 | 3 |
| 6 | 7 | 8 |
| 7 | 7 | 19 |
| 8 | 6 | 20 |
| 9 | 5 | 8 |
| 10 | 6 | 19 |
| 11 | 7 | 9 |
| 12 | 2 | 2 |
| 13 | 9 | 9 |
| 14 | 6 | 10 |
| 15 | 4 | 4 |
| 16 | 11 | 14 |
| 17 | 21 | 26 |
| 18 | 6 | 9 |
| 19 | 4 | 4 |
| 20 | 6 | 15 |
| 21 | 8 | 11 |
| 22 | 2 | 4 |
| 23 | 3 | 4 |
| 24 | 4 | 4 |
| 25 | 13 | 14 |
| 26 | 10 | 33 |
| 27 | 8 | 18 |
| 28 | 5 | 16 |
| 29 | 8 | 14 |
| 30 | 13 | 15 |
| 31 | 11 | 47 |
| 32 | 12 | 19 |
| 33 | 3 | 12 |
| 34 | 11 | 17 |
| 35 | 3 | 7 |
| 36 | 5 | 6 |

| | | |
|-----------|----|----|
| 37 | 9 | 11 |
| 38 | 14 | 20 |
| 39 | 3 | 4 |
| 40 | 14 | 27 |
| 41 | 10 | 15 |
| 42 | 9 | 28 |
| 43 | 12 | 15 |

Further, in the conceptualisation stage, the following points were realised. First, OCs have the potential to support the resilience of older adults, but different aspects of this process were not clear. For instance, how does the reintegration process suggested by Richardson (2002) occur in OCs? Or what is the impact of participation in OCs on resilience resources? Second, in OCs, actors including the Focal Actor (FA) (the person who experiences the stressor) and contributing actors engage in the resource integration and value formation practices. These points will be unfolded in this section. Accordingly, this section describes the stressors shared by the focal actor, practices the focal actor perform to seek for resources, practices in which contributing actors share resources with the focal actor, and finally, four possible outcomes as the result of practices.

4.2.1 Stressors

Stressors are the trigger and integral parts of the resilience process (Richardson, 2002). Thus, any findings regarding the occurrence of resilience can only be considered within the context and existence of specific adversity (Windle, 2011). In line with this logic, this section highlights different examples of stressors for older adults that are being shared by the focal actors on Reddit. In the scope of this study, on Reddit, the focal actor is usually an older adult who shares his/her stressor/s to receive support from contributing actors. However, our analysis indicates that in few cases the focal actor is a caregiver of an older adult. In the latter (where the focal actor is a caregiver), for many reasons (e.g., the older person is unable to use OCs), the caregiver is playing the role of a proxy for older adults. So, the caregiver shares older adults' stressor/s on behalf of the old person in order to get support for the older person from contributing users. This is more observed especially in Subreddits dedicated to caregiving issues. Through an inductive thematic analysis of the posts by 43 focal actors (details of the analysis process are explained in Appendix I), three types of stressors were identified including, *economic deficiency*, *health related* issues, and

social isolation, which are explained in the subsequent paragraphs. Table 19 below highlights a few examples of these stressors.

| Table 19) Different Types of Stressors shared on Reddit. | | | |
|---|--|-------------------------|---|
| Stressor | Description | Number of Quotes | Examples of the Stressor shared by the Focal Actor |
| Economic Deficiency | Stressors related to economic deficiency are the actual and potential problems and concerns that older adults or their caregivers have about their financial status, and retirement process. | 13 | <i>I will need an operation. Well around April 2019, I get a call not to report for work and that I would no longer be working there. I am still hurt, and it is hard to walk. What should I do? I am collecting unemployment and have until the end of October to collect. Should I see a personal injury lawyer or go on disability? I will be 63, soon; I was hoping to wait until 67. Do not know what to do. Can anyone give some advice? (Shared by FoA14)</i> |
| Health Related Issues | Health related stressors are mainly about physical and mental health issues that older adults might face while ageing. | 17 | <i>I am having a rough year. My oldest son tried to commit suicide (failed thankfully). I am in severe burnout at my job. Been here since 1998 and have gotten to a point of having to force myself to go to work and stay all day. I have gained a lot of weight. My SO says my weight doesn't bother him, but it bothers me. I guess I am having the typical over-50 problems. Eyesight getting fuzzier. Tinnitus. High BP. Aching knees. But the depression is the hardest to handle. My mind reels and whirls. How to get past this? Is there any way? Even advice about meds that actually work to fight depression. I tried some about 3 years ago and the side effects bugged me a lot (I was constantly clenching my jaw, until I would get a daily</i> |

| | | | |
|-------------------------|--|----|--|
| | | | <i>headache). But the depression is worse now. Might be worth the head pain. (Shared by FoA72)</i> |
| Social Isolation | Social isolation stressors happen when older adults don't have access to sufficient external connections and social support such as informational, emotional, and network support. | 17 | <i>How does everyone make friends? I'm 56 years old and currently on disability so making friends at work isn't an option. I get along well with my neighbours, but they all have friends and families they hang out with. I have a boyfriend of nearly 5 years but that isn't going very well either. Help? (Shared by FoA64)</i> |

4.2.1.1 Economic Deficiency

One of the stressors that users usually share on Reddit in order to receive support from others is *Economic Deficiency*, which comprises the actual and potential problems and concerns that older adults or their caregivers have about their financial status, and retirement process. This theme emerged based on 13 quotes. Below a few examples of stressors shared by users regarding the economic deficiency are explained. In the following example, a user (FoA14) shared that she had a temporary job and now she has lost it. In the meantime, her disc was herniated so she cannot work anymore and needs to have an operation. Because of this, now she is having some problems with the retirement process:

I will need an operation. Well, around April 2019, I get a call not to report for work and that I would no longer be working there. I am still hurt, and it is hard to walk. What should I do? I am collecting unemployment and have until the end of October to collect. Should I see a personal injury lawyer, or go on disability? I will be 63, soon; I was hoping to wait until 67. Do not know what to do. Can anyone give some advice? (Shared by FoA14).

In the next example, a caregiver of an older adult is looking for a solution to help his/her old dad to retire as he has no money for retirement. This is an example where the focal actor is not an older adult and in some cases like this one, another person such as an informal caregiver can play the role of a proxy for the older adult to access

resources in the OC. However, in this example, the caregiver asks others to share different options of retirement for his/her dad:

I am taking care of my father, who is 80. He gets \$1300 a month in social security, has <100k in the bank, and that's it. Does anyone know of any options besides whatever nursing home Medicare will pay for? Are they as bad as everyone says? It's embarrassing that I don't know this, but I don't know what happens to poor people in this country when they get old 😞 (shared by FoA85).

In another example, a 60-year-old user (FoA52) explained his current employment situation. He also revealed they could not save enough for retirement and that is why he is looking for a better job and asked other users to guide him. In addition, he said that he is not happy with the current job and he needs a more comfortable one with more advancements, so asked other users to advise him:

I want to try something else where I feel more comfortable, but can't afford the drop in pay. Beside, job searching at 60? Really. I have got my eye on the "life is too short" horizon, but feel there is no other option except to ride this to my grave (shared by FoA52).

4.2.1.2 Health Related Issues

Another type of stressor that is usually being shared on Reddit by older adults is about health-related issues. This is often about physical and mental health issues that older adults might face while ageing and they share these problems online in order to receive support or find a solution from peers. The theme *Health Related Issues* was emerged based on 17 quotes, some of which are highlighted in the following paragraphs. In the first example, as per Table 20 above, a focal actor (FoA72) shared how she had a difficult year for several reasons such as family issues, job issues, and health issues, but she was clearly worried about her health status and especially depression. So, she was looking for support from other users in the forum to cope with depression with minimum side effects:

I am having a rough year. My oldest son tried to commit suicide (failed thankfully). I am in severe burnout at my job. Been here since 1998 and have gotten to a point of having to force myself to go to work and stay all day. I have gained a lot of weight. My SO says my weight doesn't bother him, but it bothers me. I guess I am having the typical over 50 problems. Eyesight getting fuzzier. Tinnitus. High BP.

Aching knees. But the depression is the hardest to handle. My mind reels and whirls. How to get past this? Is there any way? Even advice about meds that actually work to fight depression. I tried some about 3 years ago and the side effects bugged me a lot (I was constantly clenching my jaw, until I would get a daily headache). But the depression is worse now. Might be worth the head pain (Shared by FoA72).

As noted earlier, our analysis showed that users share both physical and mental health stressors on Reddit to get support from users. In the next example, the focal actor (FoA21) revealed how he/she suffers from sciatica and looks for coping strategies rather than using painkillers:

How do you deal with pain if you don't take painkillers? I have been diagnosed with sciatica & gentle yoga/stretching exercises daily don't seem to be helping. Are there any natural supplements that I could take, or do I just have to learn to live with it?! Or is it just my age? (Shared by FoA72)

Next example shows a user who suffers from trauma from an incident from many years ago and now still she cannot see anything related to that incident, so she shared her stressors with others in the forum:

I was so traumatised by 9/11. I was living in a small town in Tn. I haven't and don't want to see any of the movies and documentaries. Seeing the people jumping in real time rather than burning is forever a picture I see (Shared by FoA90).

4.2.1.3 Social Isolation

The last type of stressor identified in Reddit analysis was about social isolation issues of the users. Social isolation stressors occur when older adults don't have access to sufficient external connections and social support such as informational, emotional, and network support. Accordingly, the theme Social Isolation has emerged from 17 quotes. One of the prevalent social isolation issues observed was the lack of network support so users were looking for other users with similar issues to see if there are people with similar issues and how they could manage to cope with their problems. For example, a user shared how her old friends started annoying her as she got older, and she is not enjoying their companionship anymore, and if there is anyone on the forum with the same situation:

Has anyone else found themselves not wanting to spend as much time around people? Even people they love? Is this an age thing? Do friendships run their course

and come to an end? That strikes me as incredibly sad and yet that's what seems to be happening to me. I am even finding people I have been close to for 30 to 40 years are so irritating in really petty ways that I no longer care to be around them. Can anyone relate? Or is it just me needing to stop myself turning into a typical crabby old person? (Shared by FoA47).

Another aspect of social isolation issues is loneliness, and this is also prevalently shared by older adults on Reddit. Below is an example of a user who suffered from a very long-term, low-quality relationship and now after 27 years she has got divorced and is feeling very lonely and has no idea what to do:

We are now separated after staying with him for 27 years and I am alone once again. How do I move on? No one else is interested (shared by FoA73).

Below is another example, regarding a caregiver who tries to find friends for his/her 72-years-old dad who has no friends where he lives. So similar to some of the previous examples about caregivers, in this example the caregiver plays the role of a proxy to find useful support for an older adult, so he/she share the older adult's issues on Reddit:

I am helping out my 72-year-old dad, who has chronic pain – he lives alone and is retired and doesn't really have any friends where he lives. He finally becoming aware he needs some friends, which is a good thing for him, but I don't know how I can help him find them. Any advice? (Shared by FoA28).

4.2.2 Practices Actors Engage in Reddit

The previous section highlighted different types of stressors for older adults that are shared on Reddit. Sharing of stressors takes place by focal actors through seeking support by engaging in different types of practices. Consequently, in this process, different types of practices are performed by focal actors and other actors.

Thematic Analysis of conversations of the users in selected threads (details of the analysis process are explained in Appendix J) revealed that actors participate in multiple co-creation (a collaborative process of reciprocal value creation among various actors (Vargo & Lusch, 2017)) and co-destruction practices (an opposing phenomenon to value co-creation (Echeverri & Skålén, 2011; Kokko et al., 2018)) regarding various topics. These practices include the support seeking by the focal actor

and sharing of relevant resources by other users. Findings of this section are complementing the value formation practices that were explored previously through the third systematic literature review and the exploratory case study. Table 20 below shows a summary of these practices. As it is apparent, *Communal Coping* is the most prevalent practice among users. Next, some examples of the quotes for each practice will be highlighted.

| Theme | Description | quotes | Subthemes | Example |
|----------------------------|---|--------|---|--|
| Communal Coping | In OCs, older adults engage in seeking and providing advice, and sharing coping strategies with others to deal with their life difficulties. | 165 | Seeking and providing guidance (89 quotes); Seeking and providing coping strategies (76 quotes) | <i>Look up zerocarb or keto diet. I do it for my epilepsy, but I read some comments on r/keto saying it helps in RA. (Shared by C119)</i> |
| Sharing experience | Older adults and contributing users share their experiences about several topics such as financial management, retirement, caregiving, and health issues. | 33 | ---- | <i>I went to physical therapy and got worse because I was exercising too much. I was ordered to stop all exercise and sat around on ice pads for 3 months (Shared by C53).</i> |
| Sharing information | In OCs, older adults and contributing users share different types of information such as retirement, finance, tax, | 40 | ---- | <i>Here is another article I found which you may find interesting. [link] (https://health-boundaries.com/serrapeptase/) (Shared by C54)</i> |

| | | | | |
|--|---|----|--|--|
| | diet, and health. | | | |
| Providing emotional support | Contributing users emotionally support those users who share their adversities online. | 27 | ---- | <i>Be strong. It's hard, it's frustrating, and it's emotionally draining. But you'll most likely find it, as I did, to be the most rewarding thing you've done. (Shared by C181)</i> |
| Creating hedonic and eudaimonic happiness | Practices of older adults and contributing users in OCs can result in hedonic happiness through creating positive mood, and also can result in eudaimonic happiness through enabling all users to express themselves and participate in altruistic and meaningful activities, and by provision of network and esteem support. | 68 | Self-expression (14 quotes) Meaningfulness activities (5 quotes) Sharing optimism (6 quotes) Doing altruistic activities (5 quotes) Seeking and sharing network support (34 quotes) Esteem support (4 quotes) | <i>Being here and sharing the experience with all of you helped me, helped us, so much. You showed me the power of community. I asked for help; I vented and freely expressed my frustrations and fears (Self-expression by FoA35)</i> |
| Disparaging and misbehaving | Disparaging and misbehaving behaviours are the practices which can create negative consequences through | 6 | ---- | <i>Ok grandpa, we all know you're gonna die extremely soon, probably by losing all your money to some fu...g Nigerian prince, but you don't have to be so fu...g salty (Shared by C28).</i> |

| | | | | |
|--|---------------------------------------|--|--|--|
| | spreading disappointment, and hatred. | | | |
|--|---------------------------------------|--|--|--|

4.2.2.1 Communal Coping

Communal coping strategies emerged from 165 initial codes and include two main subthemes: *Seeking and providing guidance* and *Seeking and providing coping strategies*. Communal coping is based on the notion that in OCs, users engage in seeking advice and look for coping strategies of how to cope with their problems. Also, they help other users to overcome their adversities through providing guidance and sharing coping strategies. Accordingly, users perform communal coping regarding various issues such as caregiving, finance, retirement, ageing, employment, and health. For instance, below is an example of an older adult who seeks advice about taking natural supplements instead of painkillers to deal with a health issue.

How do you deal with pain if you don't take painkillers? I've been diagnosed with sciatica & gentle yoga/stretching exercises daily don't seem to be helping. Are there any natural supplements that I could take, or do I just have to learn to live with it?! Or is it just my age?! (Shared by FoA21)

After the focal actor asked for guidance (example above), a contributing user tried to guide the focal actor in how to cope with the problem by suggesting some solutions and sharing his/her own experience as well:

Find an osteopath. Mine is like a magician! (Shared by C55)

In one case, a focal actor shared her situation by asking people what caregiving services might be available for her old mom who lives alone and 600 miles away from her, and if there is any service for managing her financial affairs. Then, a user replied to this post and shared a few coping strategies to address this issue.

Being 600 miles away doesn't mean that you can't take on the role. With Amazon and Walmart to deliver needed items, and the internet for banking and communication, provided the facility your mother is in is cooperative and communicative, you can do whatever needs to be done from a distance. I know someone who FaceTimes into her mother's medical appointments, and plenty of people who manage their parents' affairs from a distance. It's easy these days (shared by C41).

4.2.2.2 Creating Hedonic and Eudaimonic Happiness

The theme *Creating hedonic and eudaimonic happiness* emerged from 30 codes. In OCs, sometimes users engage in practices that can make users happy through adding more meaning in life, feelings of competency, belongingness, the ability to express self, and achievement of positive mood. In line with the literature (Keyes, Shmotkin, & Ryff, 2002), this encapsulates two aspects of happiness: hedonic and eudaimonic.

Hedonic happiness refers to short-term pleasures and is based on the idea that more pleasure results in more happiness. However, eudaimonic happiness refers to more long-term satisfactions like when a person feels meaningfulness in life (Keyes et al., 2002).

Findings show that in OCs, users engage in practices that cover both aspects of the happiness. For instance, distributing a positive mood can result in hedonic happiness (Keyes et al., 2002). Our findings show that sharing optimism and a positive perspective on life was another practice performed by users on Reddit, which can create positive mood and consequently hedonic happiness. Below is a statement by a user who positively spoke about ageing and the potential changes he might face.

I'm 58 and still working though I'm beginning to slow that down. It's a very hopeful time and I feel fortunate to savour the days while being excited for the coming changes (shared by C160).

In addition, some practices can result in eudaimonic happiness. For example, actors express and disclose their personal situations to others on Reddit, which can result in eudaimonic happiness through personal expressiveness (Keyes et al., 2002). A user shared his difficult situation with others about how his wife was sick. Consequently, many contributing users tried to support him emotionally, and shared coping strategies on how to move forward. After a couple of months, his wife passed away. Then, he posted a new thread to thank all contributing actors who supported him during this time. Finally, the user mentioned how the forum helped him to express his concerns.

Being here and sharing the experience with all of you helped me, helped us, so much. You showed me the power of community. I asked for help; I vented and freely expressed my frustrations and fears (shared by FoA35).

Also, Reddit users participate in activities that can create meaning through seeking ways of having meaning in life, helping other to create meaning, sharing ways for entertainment, and sharing sense of humour. For example, a focal actor shared with others that his old father tried to create meaning in his life but had no idea about how to do it. In response, a contributing user answered the focal actor and shared some solutions for creating meaning in life.

Maybe instead of reading...would he be interested in the two of you writing or filming his biography? Maybe a YouTube channel with short videos on different themes? Not only would the process allow you to spend quality time together, but the process can illuminate the meaning in his life, and give him an opportunity to have his ideas transcend his actual death. As a Redditor over 60, I think that it is our relationships that give our lives meaning, not the books that we've read (shared by C58).

Furthermore, findings show that some users engage in altruistic activities by caring and extending self to others. This can be either because some users want to share their stories with users so others can learn from their experiences or because they were benefited from the community and now, they want to give back to community. Below is a statement by user who had support from the community when his wife was sick, and now, the user wants to give back to the community.

It is my intention to keep coming (eventually) and give back to the community. I want to keep being here for others as others were here for us. Thank you for your kind words. I appreciate them a lot (shared by FoA35).

4.2.2.3 Disparaging and Misbehaving

Findings show that users not always post positive contents or reply to other's posts in a constructive manner, and there are some users who misbehave or share negatives sentences in the community. Indeed, the theme *Disparaging and misbehaving* practices emerged from 7 codes regarding negatively reacting to other user's comments, and devaluing other people's problems. These practices can create negative consequences through spreading disappointment and hatred. In one example, the focal actor (FoA64) asked others how he can make friends as he is alone.

How does everyone make friends? I am currently on disability so making friends at work isn't an option. I get along well with neighbours, but they all have friends and

families they hang out with. I have a boy-friend of nearly 5 years but that isn't going very well either. Help? (Shared by FoA64).

Then a user (C131) tried to support the focal actor by sharing coping strategies, experience sharing, and network support, but, later on, another user (C13) sarcastically disagreed with the comment made by the first contributor (C131) and said:

Pffft, "aloha", advice from some island in the Pacific, disregard it OP (shared by C13).

In another example, the focal actor (FoA90) shared how she was traumatised by 9/11, so even after many years, still she cannot see movies and documentaries about that event.

I was so traumatised by 9/11. I was living in a small town in Tn. I haven't and don't want to see any of the movies and documentaries. Seeing the people jumping in real time rather than burning is forever a picture I see (shared by FoA90).

While most contributing users positively supported the focal actor, a user negatively reacted to this post and said:

Time to learn the difference between an upsetting event you heard of/saw remotely and an actual trauma (shared by C245).

In the last example provided here, a focal actor (FoA65) shared his/her opinion that how he/she envies younger people as they have more chances to communicate with people and get help and advice.

I envy people in their 30s and younger. They can come on Reddit with any issue and get lots of advice from their peers. They will be able to do this throughout their lives, whereas we only have this sub and far fewer peers online (shared by FoA65).

While this post triggered a hot discussion among users and many contributing users shared their opinion, one of the users reacted to the post very negatively and said:

We are going to die whatever way things go. In the US we have long lived and promoted a culture of youth, sunshine, and beauty and you took part in that. So f..k off. If you wanna piss and moan feel free. That's your right. If you want better, do something. However, if you want peers good luck (shared by C131).

4.2.2.4 Providing Emotional Support

Findings show when focal actors reveal the difficulties of older adults, many users emotionally support the focal actor by empathy and saying kind words. In the following example, the focal actor (FoA73) shared about the difficult life she had with her husband and the wrong way her husband was treating her. After she shared her story, other users tried to support her in different ways. For instance, one user stated:

I'm so sorry for the pain you've endured but you've made it out of that awful situation (shared by C131).

In another example, a user (FoA35) shared about his wife who just passed away, so he wanted to say thank you to all other users who supported him online. Then many users emotionally supported him. For instance, a user said:

*Thank you for sharing this with us. I could only hope to have that kind of strength in that scenario. I am at a loss of anything else to say. You are welcome here *forever*, just so you know. Sending hugs* (shared by C82).

Another user also tried to emotionally support the focal actor through empathy, sharing positive words, and good wishes.

I don't know you, but I have love for you and your wife. I hope you will visit this sub from time to time as you work past the next hurdles. Thank you for sharing so much with us (shared by C83).

Next example is about a user (FoA21) who shared his/her experience of suffering from sciatica and was looking for coping strategies. Apart from all solutions he/she received from users, several users tried to emotionally support the thread poster. For instance, a contributing user said:

Dealing with sciatica myself. Huge sympathy (shared by C53).

In reply to the same post, another user emotionally supported the focal actor through good wishes and stated:

I do hope to hear that you have found relief (shared by C54).

4.2.2.5 Sharing Experience

Findings show that the process of interaction between the focal actor and contributing users is usually associated with experience sharing by either the focal actor or the contributor. Findings revealed that the shared experiences are about

various topics such as financial issues, depression, diet, retirement, and exercising. In this process, when focal actors share the stressor, they normally express it with the experience they had regarding the stressor. Also, when other users reply to the focal actor, they share their own experiences regarding similar stressors they had before. For example, regarding the sciatica problem shared by FoA21 earlier, a user shared his/her own experience on how to cope with sciatica.

I really got a bunch of help from a chiropractor. She wasn't sure it was true sciatica or low back. But I let her work on my lower back and the pain eased. Try centering the treatment on the lower back for ice and heat. For me it helps with the pain to the knee (shared by C53).

In another example, the focal actor (FoA72) asked about ways of coping with health issues and also weight loss. Then, contributing users tried to help the focal actor through sharing their own experiences. For example, a user said:

The weight loss regime that works for you will be different to other people, so I am not going to preach. For me simply cutting out biscuits and crisps and not eating after 8pm has started me on a gradual reduction of weight which is gratifyingly easy (shared by C163).

In the next example, users share their entertainment experiences. In this case the focal actor (FoA51) shared with the community that he lives alone and has nothing to do. So, he asked his peers to share their entertainment experiences. The focal actor received many replies from contributing users. For example, a contributing user said:

I smoke a little every night, have since the 90s. Just a few hits to take the edge off after work. When I am out of town without it or run out for a week or two it's not a big deal. I am also a fan of Kratom. I have arthritis and find it's better for pain than any opiate (shared by C126).

4.2.2.6 Sharing Information

Findings revealed that several focal actors engage in seeking and sharing resources like information and knowledge. This can be through sharing different types of information such as health, social services, older adults' activities, finance, drugs, caregiving, weight loss, professional knowledge, and useful links. The following example is about a focal actor (FoA80) that looks for information about the taxation process and his taxable income, so the user provided a background of his issue first,

and then asked other users if they could provide him relevant information about the issue.

Given that the check is addressed to me, how would this be tracked if I were to deposit the check directly to my JPM Brokerage Account and simply invested it that way? How would it be tracked for tax purposes? I clearly intend to roll it directly into my Fidelity IRA, but I am just curious given the assumed rules to complete such a rollover. Would this amount be reflected in my Gross Taxable Income for the year for tax purposes? Would I have to produce documentation confirming that the amount was indeed rolled directly into an eligible retirement account? Thank you all in advance for the help! (Shared by FoA80).

Then, a contributing user provided relevant information to answer the focal actor's question through informational support regarding the issue, and provided some relevant examples and scenarios:

There's no requirement to do a direct rollover. However, any amount not contributed to a rollover within 60 days will be taxed as ordinary income, plus the penalty if under 59 1/2. You should be getting a tax statement from the employer plan showing a (taxable) distribution for the full amount. If you transfer those funds to a rollover, you'll get a statement for that account showing the contribution and simply show that contribution on your tax return (shared by C203).

In another example, the focal actor (FoA3) was looking for information about how to find a specific poem that he read a few years ago. So, he shared some hints about the poem and asked his peers if they have any information regarding how to find it:

Searching for poem about life, ageing and a train – how it's better to be an engine than a caboose. Has anybody heard of this poem or lyrics and if so, can you offer the author's name or know where how I can get a copy? (Asked by FoA3).

Then, a contributing user shared provided informational support and shared a link of the poem with the focal actor and asked the focal actor if the provided information worked.

http://www.ellenbailey.com/poems/ellen_477.htm. *Will this do?* (Shared by C12).

This showed that information can be shared among users through different ways such as text, and links. In the next example, the focal actor was looking for ways of finding friends as she is alone and has no friends.

How does everyone make friends? I am on disability so making friends at work isn't an option. I get along well with my neighbours, but they all have friends and families they hang out with. I have a boyfriend but that isn't going very well either. Help? (Shared by FoA64).

Then many users replied to this post and tried to help the focal actor by sharing relevant information and coping strategies. For instance, a user shared some information including links and websites for voluntary activities or dating sites:

Check out: <https://www.voluntermatch.org>. another thing that worked is a dating website. I used OKCupid, which is free. If you buy a three month membership there is a deal and it really does give you better content (shared by C131).

4.2.3 Resilience Resource Development

Previous sections explained that in OCs, older adults share their stressors on Reddit, and this is through engaging in six different practices, including communal coping, creating hedonic and eudaimonic happiness, disparaging and misbehaving, providing emotional support, sharing experience, and sharing information.

This section explains four possible scenarios as the result of interactions and practices of users in OCs. Based on the resilience model (Richardson, 2002), after the older adult faces stressor/s, depending on the accessibility to resilience resources (protective factors), the process of reintegration takes place and different scenarios might occur. In the context of this work, findings show that engagement of users including the focal actor and contributing users can result in four different scenarios, including *Revitalising and Growing*, *Devitalising and Shrinking*, *Indeterminacy and Ambiguity*, and *Simultaneous Revitalising and Devitalising*. A summary of four scenarios is shown in Table 21 below. Also, details of the analysis process are explained in Appendix K.

- In the first scenario, *revitalising and growing*, the focal actor shares the stressor, and other actors contribute and positively support the focal actor through practices that are aligned with the stressor/s and focal resources. This can result in co-creation of value and development of resilience resources among older adults.
- In the second scenario, *devitalising and shrinking*, practices by contributors are aligned with the stressor/s and focal resources, but in a destructive manner. Therefore, this process results in value co-destruction and decline of resilience resources.
- In the third scenario, *Indeterminacy and Ambiguity*, practices by contributing users are not aligned with stressors, so no evidence of resilience resource integration nor value formation were observed.
- In the fourth scenario, *simultaneous revitalising and devitalising*, practices are aligned with stressor/s and focal resources. In this scenario, resilience resource/s develop and decline simultaneously. For instance, one resilience resource can be developed while another declines at the same time. Thus, value co-creation and value co-destruction take place concurrently.

Table 21) *Different Scenarios for Formation of Value and Resilience Resources*

| Scenarios | Practice Alignment with Stressors | Reintegration of Resources | Resilience Factor Development | Value Formation |
|--|--|-----------------------------------|---|--------------------------------------|
| Scenario 1: Revitalising and Growing | Align | Resource Integration | Resilience Factor/s Development | Value Co-creation |
| Scenario 2: Devitalising and Shrinking | Align | Resource Integration | Resilience Factor/s Decline | Value Co-destruction |
| Scenario 3: Indeterminacy and Ambiguity | Misalign | No Resource Integration | No Change to Resilience Factors | No Evidence of Value Formation |
| Scenario 4: Simultaneous Revitalising and Devitalising | Align | Resource Integration | Simultaneous Development and Decline of Resilience Factor/s | Value Co-creation and Co-destruction |

Analysing threads, in conjunction with the nine resilience resources suggested by Bolton et al. (2016), findings revealed the presence of six resilience resources being integrated as a result of participation of older adults and contributing actors in Reddit: external connection, meaningfulness, positive perspective on life, self-acceptance, self-care, and grit.

4.2.3.1 Scenario 1: Revitalising and Growing

As highlighted earlier, in this scenario, the focal actor shares stressor/s, and other users support the focal actor through different practices, which are aligned with the stressor/s. This process can result in development of one or more resilience resources for the focal actor. For instance, below shows how participation of the focal actor and other actors in a community of older adults on Reddit is resulting in the development of three resilience resources for the focal actor. This example unfolds the stressor, practices that the focal actor engages with when sharing the stressor with others, practices in which contributing actors participate in to support the focal actor, and the resilience resources of the focal actor that have been integrated as the result of this process.

In this example, a user shared two stressors regarding health, and social isolation through three practices of communal coping, sharing experience, and creating hedonic and eudaimonic happiness. The focal actor (FoA72) disclosed the rough year that she experienced because of her son's suicide, and then she expressed that she was not happy with her health status and that she suffered depression a lot. She asked other users how she can get past this and if there is any medicine with low side effects to overcome depression.

I am having a rough year. My oldest son tried to commit suicide (failed thankfully). I am in severe burnout at my job. Been here since 1998 and have gotten to a point of having to force myself to go to work and stay all day. I have gained a lot of weight. My SO says my weight doesn't bother him, but it bothers me. I guess I am having the typical over-50 problems. Eyesight getting fuzzier. Tinnitus. High BP. Aching knees. But the depression is the hardest to handle. My mind reels and whirls. How to get past this? Is there any way? Even advice about meds that actually work to fight depression. I tried some about 3 years ago and the side effects bugged me a lot

(I was constantly clenching my jaw, until I would get a daily headache). But the depression is worse now. Might be worth the head pain (shared by FoA 72).

After sharing the stressors, the focal actor received several responses from contributing users. The first user (C163) tried to emotionally support and advise the focal actor to treat herself better. Then, the user shared useful information about ways to fight depression and tried to encourage the focal actor to visit a doctor. This continued with self-experience sharing about weight loss.

*It does sound like a rough year (Emotional support) and I think you should be kind to yourself (Advice) and acknowledge that one of the reasons you feel shitty is because it's been a shitty year. One of the best non-medical ways to improve depression is to do a bit of exercise; as I'm sure you know, the best way to reduce weight is to eat a bit less. Of course, go to the doctor to discuss your depression (Encouragement), but is there *any* form of exercise you *enjoy*? Walks in the county? Swimming? The weight loss regime that works for you will be different to other people, so I'm not going to preach. For me simply cutting out biscuits and crisps and not eating after 8pm has started me on a gradual reduction of weight which is gratifyingly easy (Experience sharing). A bit less weight will, as you know, help with BP and knees (Informational support). Oh – and have hugs (shared by C163).*

Another user (C165) supported the focal actor through different practices such as sharing information, sharing experience, self-expression, and encouraging (subsets of *creating hedonic and eudaimonic happiness*). Like many other contributors, this contributing user supported the focal actor by expressing that he/she experienced the same problem. Then, the user shared information about the medicines he/she used to cope with depression. And finally shared other types of coping strategies.

I struggled with depression as well (Network Support) - it affected every aspect of my life (Experience sharing, self-disclosure). I tried fluoxetine (Prozac) but found the side effects to be intolerable. I then went a long time thinking antidepressants just weren't for me. But then I asked my doc to try bupropion (Wellbutrin), and it has really worked well for me. I started on the low dose, and then after a couple of months when my system adapted to that, we upped the dose and I am doing quite well on it. When my mind wants to go to a dark place, there's like a wall stopping it when I'm on the bupropion. That's the best way I can describe it. I still get blue every now and then, but its effect on me is much less significant. And I don't have any noticeable side effects

with the bupropion. I also hike a lot, and my time in the woods and the exercise is really good for me (Experience sharing). I'm not a doc and I'm not telling you to try specific meds; I'm just telling you what worked for me. I wish you the best of luck (shared by C 165).

Later, another contributing user (C 159) emotionally supported the focal actor and advised her to visit doctor, or do grief counselling.

Talk to your Dr about an appropriate antidepressant for you. It may help you cope with everything else going on. Grief counselling might help as well. My deepest condolences (shared by C 159).

As a result, the focal actor replied to all comments, appreciated all support, and mentioned she is scheduling her yearly physical.

Thanks for all responses. I am scheduling my yearly physical soon and am going to ask about meds. Trying again (shared by FoA72).

In this example, the focal actor asked other users to advise her about medicines with low side effects to cope with depression. Although other users supported the focal actor by sharing information about different medicines, the focal actor applied the advice by a contributor (C 159) who advised her to visit a doctor. Indeed, the focal actor perceived the value of all supports from all contributors. However, in terms of coping with depression she only applied the resource by C159.

Accordingly, value co-creation took place, and three resilience resources were improved for the focal actor (FoA 72). These resilience resources are self-care, external connection, and grit. The self-care factor is developed as the focal actor scheduled a yearly physical and planned to visit a doctor. Also, grit factor is developed as despite the depression issue and health problems, now the focal actor is more determined to move forward with life. In addition, her external connection factor was improved through the social support she received from network and emotional support (Bolton et al., 2016). This whole process, starting from sharing of the stressor until alteration of the resilience factors is illustrated below in Figure 16. More information regarding the theoretical coding of this step is provided in Appendix I.

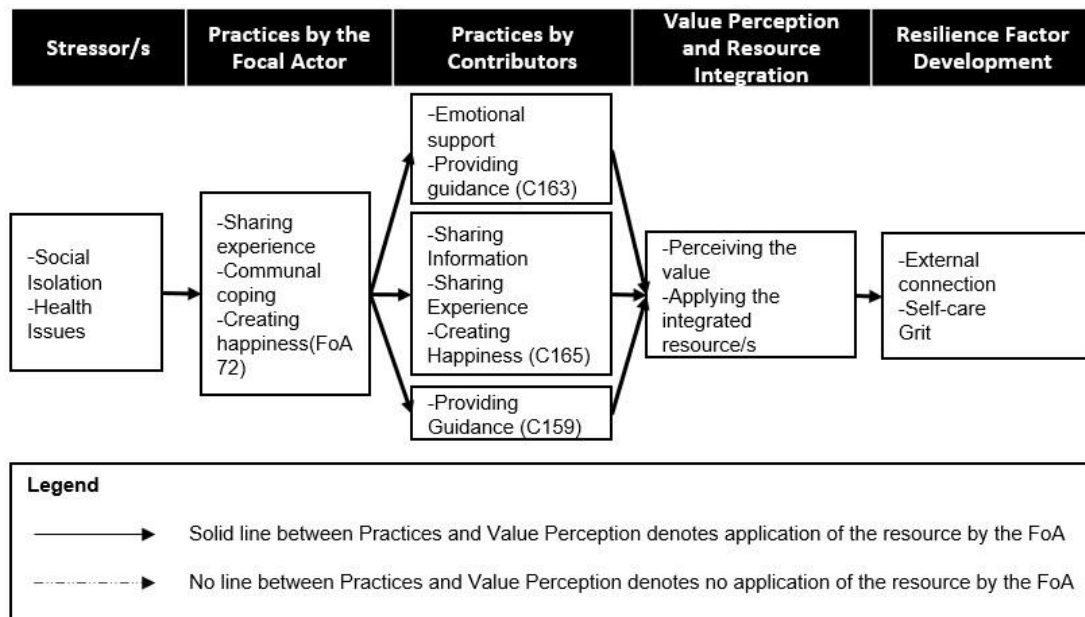


Figure 16) *Integration of Self-care, Grit, and External Connection Factors*

Similar to the previous example, the next instance shows a simultaneous integration of three resilience resources, including self-care, grit, and positive perspective in life. In this instance, the focal actor (FoA21) shares the stressor and asks a question about how to deal with the pain of sciatica using natural supplements. As shown below, this process took place through five different practices by the focal actor including, self-expression (a subset of creating hedonic and eudaimonic happiness), experience sharing, seeking information, seeking guidance, and seeking coping strategies (a subset of communal coping).

How do you deal with pain if you don't take painkillers? I've been diagnosed with sciatica & gentle yoga/stretching exercises daily, which doesn't seem to be helping. Are there any natural supplements that I could take, or do I just have to learn to live with it?! Or is it just my age?!

Then, four contributing users provided different support to the focal actor through different practices. For instance, C53 shared emotional and network support by saying that he/she is dealing with the same problem. This was continued by mentioning personal experiences with of different medicines, and coping strategies about sciatica. As shown below, this user supported the focal actor through four practices of network support, emotional support, self-expression, and experience sharing.

Dealing with sciatica myself. Huge sympathy. I can't take ibuprofen, and I have chronic pain, so heavy pain killers are out. I relied heavily on moist heat followed by icing. I also take 400 mg of turmeric daily as my Dr suggested. And, again for inflammation, I drink homemade ginger teas and fermented ginger ale. BTW, sleep really helps. If the pain is keeping you awake, you might need help getting that restorative rest. (shared by C53).

Later, another contributing user (C54) replied to the post by the focal actor by sharing experience, sharing information, and sharing coping strategies (a subset of communal coping) about the same issue he/she had before.

*Here's another tip. Instead of, or in addition to, the camomile/valerian root tea for sleep and/or relaxation difficulties, I use Valerian Root capsules. They are really the ancient natural equivalent of Valium (a relaxant drug). I've used them to cope with high-stress job anxiety; inability to fall asleep; and even to relax the gastrointestinal tract full of painful gas! I take one or two capsules (and they are quite cheap here in our American Walmart stores), depending on whether I'm only *somewhat* uncomfortable, or really need immediate relief. You will actually feel your body relaxing within 20 minutes. You pop off to sleep like a charm. Sweet dreams! (Shared by C54).*

Some other users replied with very brief answers and suggestions. For instance, C29 advised the focal actor to take CBD oil if that is legal in the area of the focal actor.

Urge you to try CBD oil if its legal where you are. (shared by C29).

Finally, a user advised the focal actor to meet an osteopath and mentioned how his/hers worked well.

Find an osteopath. Mine is like a magician. (shared by C55).

At this stage, the focal actor replied to all and said that he/she booked a chiropractic appointment and felt happy for others' support.

Chiropractic appt booked for end of this week. You guys have given me hope. Truly thank you. (shared by FoA21).

The reply by the focal actor shows that in terms of coping with the sciatica, he/she just applied the resource shared by C55, and not from other contributing users. However, the focal actor applied other types of resources such as emotional and

network support from all contributors. Regarding the main stressor, which was about sciatica (a health-related stressor), all four contributors shared different coping strategies, personal experiences and provided informational support. But, the process of resource integration did not take place between the first three contributors and the focal actor, as the focal actor clearly mentioned about the chiropractic appointment, which is in response to the last contributor who suggested to find an osteopath. So, this example shows three resilience resources including self-care, grit, and positive perspective on life are positively reformed and integrated. Self-care is improved because the person did a self-care activity to overcome the stressor. Also, grit factor is improved as now the person has a head-on approach to challenges (Bolton et al., 2016). Finally, the factor of positive perspective in life is now improved as now there is more hope and optimism (Bolton et al., 2016) in the focal actors' attitude. No evidence of decline in resilience resources was observed for the focal actor in this example. Accordingly, the whole process is shown in Figure 17.

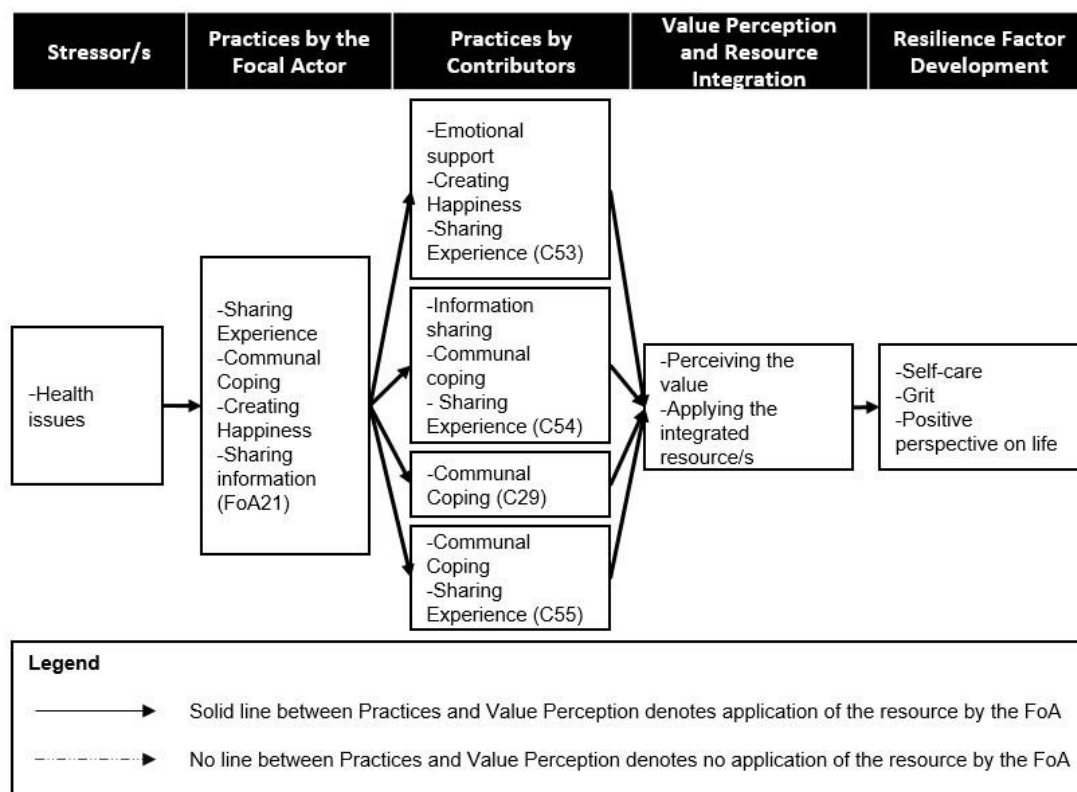


Figure 17) Resilience Resource Formation for Focal Actor 21

4.2.3.2 Scenario 2: Devitalising and Shrinking

Findings show that when the focal actor shares the stressor with others, some users negatively respond to the focal actor. This can result in decline of resilience resources and value co-destruction. In example below, the focal actor (FoA90) shared the experience of 9/11 and how that experience caused an ongoing trauma for him/her.

I was so traumatized by 9/11. I was living in a small town in Tn. I haven't and don't want to see any of the movies and documentaries. Seeing the people jumping in real time rather than burning is forever a picture I see (shared by FoA90).

In this example, many contributing users tried to support the focal actor through emotional support, network support, and sharing coping strategies. However, two users devaluated the trauma the focal actor was experiencing and reacted negatively to the post. For instance, one user said:

That was 20 years ago. It is time to move on. What about Viet Nam, 50,000 + Americans? Your lifetime if you are in this group. Middle East and what America have done with remote killing, going on now (shared by C259).

The focal actor did not like this comment and replied to C259 negatively.

I always assumed trolls were young. After reviewing your posts you are 🙄 (shared by FoA90).

Later, another user replied to the thread, and again devaluated the trauma the focal actor experienced by saying that it was a long time ago and you should not be that traumatised by it.

That was a LONG time ago. Seek professional help. You shouldn't be that traumatised by an event you had no direct contact with (shared by C245).

After, the focal actor responded to this comment and defended his/her opinion.

Sorry but 19 years is not a LONG time ago. That's why I posted here because at our age our perspective is different (shared by FoA90).

The user made another negative comment to the focal actor by devaluating his/her trauma again.

Yes, it is. Especially if one only saw it on TV. Long past due to get over your reaction to it. Time to learn the difference between an upsetting event you heard of/saw remotely and an actual trauma (shared by C245).

Finally, the conversation finished by a sarcastic comment by the focal actor.

Yes sir, on it! (Shared by FoA90).

In this example, initially the focal actor received many positive replies from other actors. However, he/she did not respond to any of them. Therefore, no evidence for resilience resource/s development and value co-creation was observed. But, later when the focal actor received negative responses from two users, he/she engaged into the process of value co-destruction with them. Through this process, not only did these two users not provide network support, but also, they devalued the focal actor's stressor. This is by definition against network support, where the user feels that he/she is not alone and other people are in the same group. Therefore, this process led to decline of the external connection factor through weakening social support and network support. Figure 18 below shows how the process of value co-destruction and decline of external connection resource occurred.

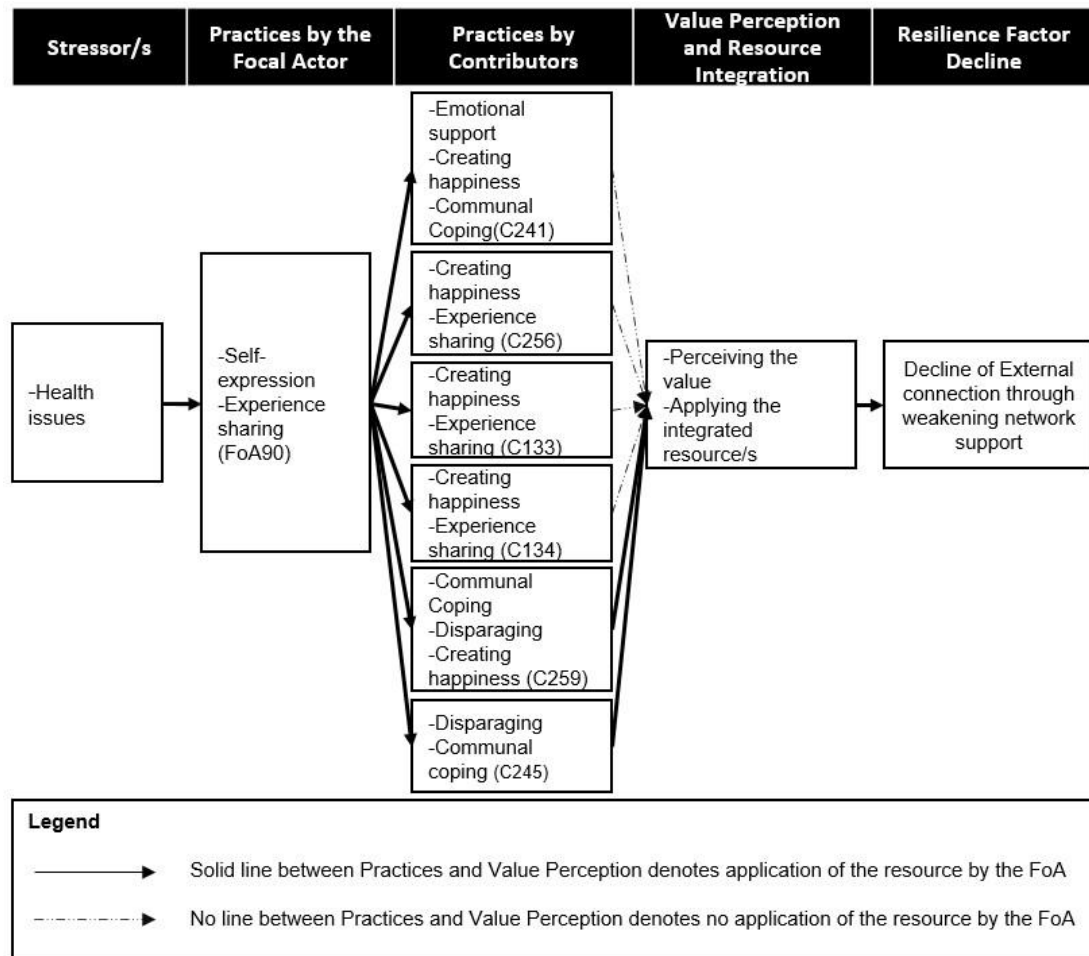


Figure 18) *Devitalising and Shrinking for FoA90*

Below is another example in which a focal actor (FoA65) shares how he/she felt sad about lack of enough older adults in real and online life, and envied young people because they have enough resources available, more than older adults. This shows the lack of self-acceptance and social support for the focal actor.

I envy people in their 30s and younger. They can come on Reddit with any issue and get lots of advice from their peers. They will be able to do this throughout their lives, whereas we only have this sub and far fewer peers online (shared by FoA65).

Then, several contributing users tried to support the focal actor. However, some others stood against this opinion and shared their opinion about the statement. For instance, to support the focal actor, a user shared some useful information about how to find friends and receive advice from older adults and said:

There's also <https://www.reddit.com/r/RedditForGrownups/> another good sub. And don't forget there lots of forums outside of Reddit with older folks. Google a

subject you're interested in with "forums" to find some, and most have "off topic" sections for general chit chat with likeminded folks (shared by C145).

However, the focal actor did not respond to this comment. Later, another user replied to the focal actor impolitely and shared negative words about older adults.

We are going to die whatever way things go. In the US we've long lived and promoted a culture of youth, sunshine, and beauty. You took part in that, as did I. Now as we reach our frail dotage and have earned the wisdom of our years, we shall be cast into the refuse pile we permitted to be built for us. So f..k off. If you wanna p..s and moan feel free. That's your right. If you want better, do something. However, if you want peers, good luck. We old people die. There are fewer of us around to hold your hand, and unfortunately many of the elder living are cranky, obstinate, and awful in general. Seems shitty people just live longer out of spite (shared by C131).

The focal actor replied to this user, expressed that he/she didn't like that comment through self-expression, and again shared the stressor again.

Wow. That was a bit harsh and more than a little presumptuous. Sure we have lots of experience and wisdom learned but every stage in life presents its own challenges. Sounds like you have a lot of pent-up resentment (shared by FoA65).

In this example, the focal actor received very few instructive comments, and more replies from contributing users were either defensive against the focal actor or destructive. Only one positive comment was observed, but the focal actor did not respond to that. To continue and as shown earlier, the focal actor responded to one of the negative comments. Consequently, no evidence was observed to show development of resilience resources and value co-creation. But, the user perceived the negative comment from a user (C131), and that can negatively impact the external connection factor, as he/she not only received no network support but most users were defensive about the issue. As shown in Figure 19 below, this process is resulted in decline of external connection resource and value co-destruction. More information regarding the theoretical coding of this step is provided in Appendix J.

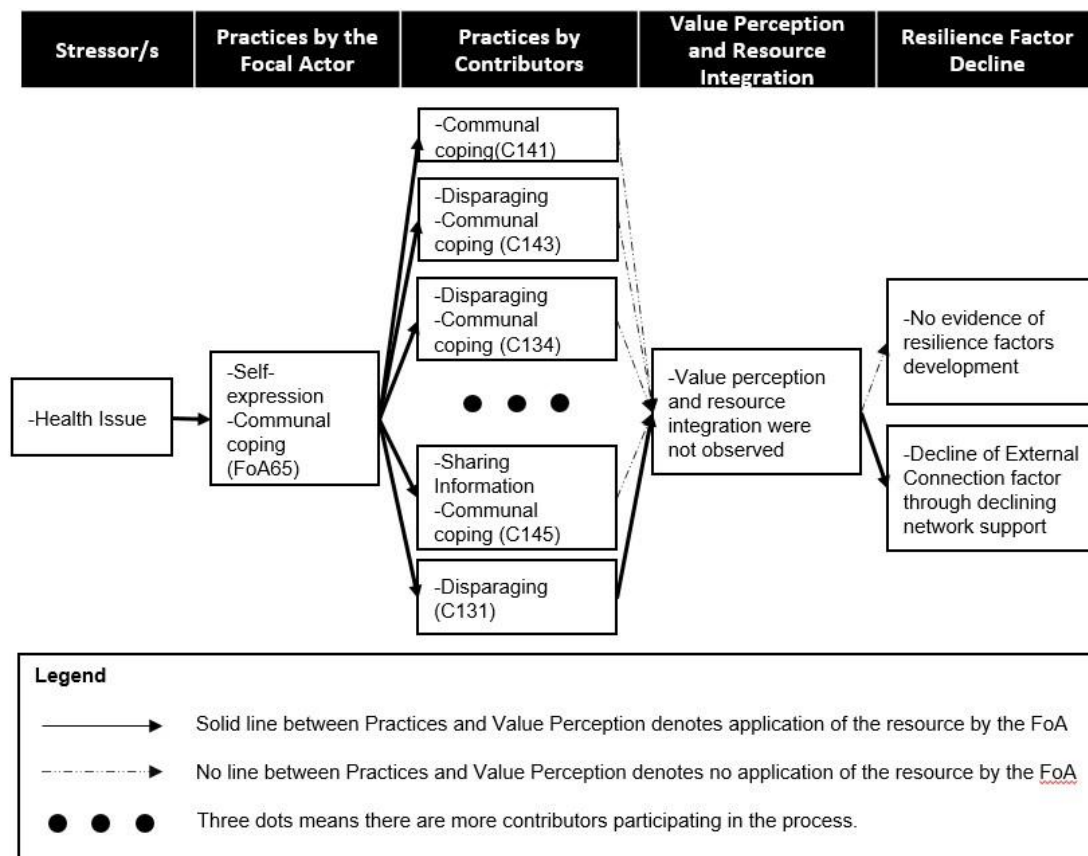


Figure 19) *Devitalising and Shrinking for FoA65*

4.2.3.3 Scenario 3: Indeterminacy and Ambiguity

Findings show that in some cases when the focal actor shares the stressor/s, contributing users support the focal actor through different practices. But the focal actor does not reply to posts made by contributors. This results in indeterminacy and ambiguity as it is not clear if the focal actor applied the resources shared by contributors. Therefore, it would not be clear if any resource integration or value formation took place. Below shows an example of a user who shared stressors through various practices and received support from two contributors. But then the focal actor did not participate in the conversation anymore, so it is unknown whether the focal actor applied the resources he/she received or not, and if value formation occurred.

As it is stated below, the focal actor (FoA6) explains how his/her parents lost a significant amount of money by being scammed. They were also displaying early signs of dementia, so there were some difficulties that emerged.

My elderly parent was victimised by a phone scammer, giving "Apple Tech Support" bank account info. Apparently, a significant amount of money was stolen as

a result. My parent is clearly losing some common sense and I worry what might happen next. How have others dealt with an ageing parent who needs more care and possibly a loss of control of finances, etc...???? (Shared by FoA6).

Then, a user (C18) tried to support the focal actor through advising, sharing coping strategies, and experience sharing.

Hey there, unfortunately these scams are happening more often these days. Have they made a police report? It's never easy when you have a parent that is experiencing possible cognitive decline. The best thing you can do is educate yourself on the resources available for what to do after something happens as well as what prevention methods are out there (Advice). For my grandparents, we were able to get a new phone system installed that announce who is calling. If it's not a family member they don't answer the phone anymore (Experience sharing and sharing coping strategies). But there's always a risk that someone will call and say they need help and get through (shared by C18).

Also, another user (C15) posted a comment and supported the focal actor through sharing coping strategies and experience sharing.

From my experience, whatever can happen next, will. Every situation is different, but you need to sit down and talk to your parent about the event. They are likely embarrassed or confused, depending on their situation. Does your area have a Council on Ageing? These non-profits are great for consulting with supporting children (Sharing coping strategies). I visited with them, and they helped me with my Dad tremendously (Experience sharing). But you need to realise that depending on age and mental condition, you need to tread very softly. Always realise that your parent, no matter how much sense they have, probably still feels like a responsible adult. When this starts to go, they will begin acting like children. With a progressive disease, like Alzheimers, they can also become surly and lash out in anger. Then it's NOT your parent, it's the disease. Good luck (shared by C15).

However, after all, the focal actor did not reply to the posts by contributors, and therefore, as shown in Figure 20 below, it is not clear if these resources are applied by the focal actor or not. Hence, it cannot be concluded that if either resilience resource integration or value formation occurred.

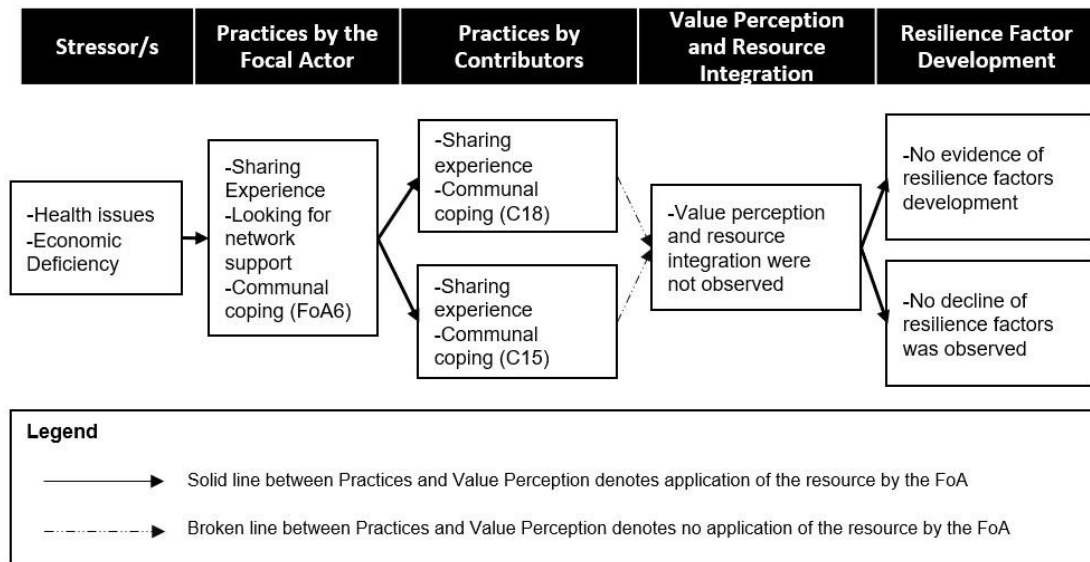


Figure 20) *Indeterminacy and Ambiguity for FoA6*

Below shows another example where the focal actor (FoA64) shared stressor/s, and several users provided support through different practices and sharing various resources. However, the same as the previous example, as the focal actor did not reply to users' comments, so it is ambiguous whether modification of resilience resources and value formation happened or not. In this example, the focal actor (FoA64) shared that due to the disability issue she has, it is hard for her to find friends at work. However, she had some friends in the neighbourhood, but it is not satisfying her.

How does everyone make friends? I'm 56 years old and currently on disability so making friends at work isn't an option. I get along well with my neighbours, but they all have friends and families they hang out with. I have a boyfriend of nearly 5 years but that isn't going very well either. Help? (Shared by FoA64).

After sharing the stressor (social isolation), the focal actor received a variety of supports and a few negative comments from 12 contributing users. Below, some of the quotes from these contributors are shown.

You and I seem to be in similar situations. What has worked for me has been volunteering for an organisation that attracts people with similar interests. Kinda hit or miss but if you feel passionate about anything, there should be volunteer opportunities in your area. Once one or two people find out that you are cool, more social networking opportunities open up. Check out: <https://www.volunteermatch.org/>. One last thing. You mention that you are on

disability so this might be the toughest thing. Take care of yourself. Get yourself as physically active, clean, and attractive as you can, ESPECIALLY if you don't feel like it. Make it a habit. Being a person who feels good about themselves and cares for themselves will make others more inclined to want to hang out with you. Be positive and loving, especially to yourself (shared by C131).

Pffft, "aloha", advice from some island in the Pacific, disregard it OP (shared by C13 in reply to C131).

I'm in the same boat. I just started borrowing my neighbour's dog and going to the dog park. We already have a common interest in that we're dog lovers so I'm expecting the friendships will follow. I've also met some cool people at the library of all places. So, I'm thinking, if you start going to the places that interest you, you might find other people with the same interests? Anyway, I'll be sending good thoughts your way (shared by C132).

Walking my dog (which happens to be a really adorable Shih Tzu) has been my best source of meeting people. It helps that I am outgoing and extremely curious about people (most people). I'm not into the social scene...too much of a loner, so that is not an option for me. I know of many folks who go to a Senior Centre which typically has a variety of programs to participate in. Good luck! (Shared by C118).

There seems to be a lot of us in that boat ! I'm 57, disabled, and live in a rural area with no friends, and no female companions.... "lonely" (shared by C139).

When you're disabled its hard to do much volunteering (shared by C140).

However, after receiving huge support from users and also a few negative messages, the focal actor did not respond to any of the comments from these 12 contributors. Therefore, it is not clear if the focal actor took and applied any of the resources that were provided by contributors. Hence, there is no evidence of resilience resource/s modification and value formation. Figure 21 below shows the process of sharing stressors, support from others, and the outcome. More information about the theoretical coding of this step is provided in Appendix K.

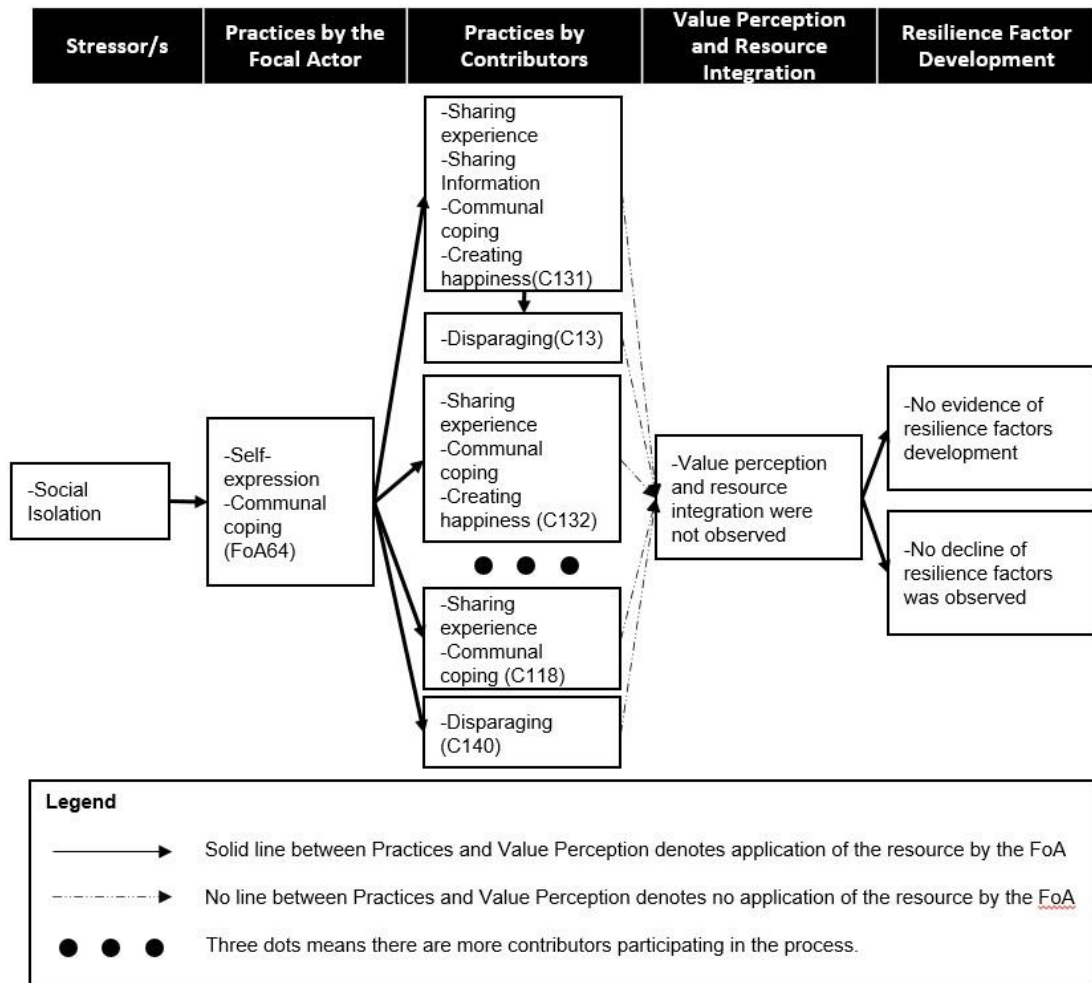


Figure 21) *Indeterminacy and Ambiguity for FoA64*

4.2.3.4 Scenario 4: *Simultaneous Revitalising and Devitalising*

Findings revealed that in some cases, development and decline of resilience resources can take place simultaneously. It means, through interaction of users, some resilience resources can be strengthened and at the same time, some other resilience resources can be declined. The example below is about a focal actor who shared her stressor regarding social isolation and self-acceptance (mental health issue). Then, interacting with other actors resulted in development of the external connection resource through strengthening network support. Simultaneously, interactions also resulted in decline of the external connection resource through weakening social connectedness.

In this example, the focal actor (FoA47) shared her experience how her friends annoy her as she is getting older, and she wondered if other people have similar

experience. Then she tried to relate the issue to her age and mentioned that she might be a typical irritable old person.

Old friends seem to annoy me more as I get older. Has anyone else found themselves not wanting to spend as much time around people? Even people they love? Is this an age thing? Do friendships run their course and come to an end? That strikes me as incredibly sad and yet that's what seems to be happening to me. I'm finding even people I've been close to for 30 and 40 years are so irritating in really petty ways that I no longer care to be around them. Can anyone relate? Or is it just me needing to stop myself turning into a typical crabby old person? (Shared by FoA47).

After posting the thread by the focal actor, other users tried to support her. For instance, a user (C112) made a comment, attempted to help through several practices such as, sharing experience, communal coping (by spreading self-acceptance), and creating hedonic happiness. For instance, the user shared his/her similar experiences and the way he/she overcame the issue.

For me, I had adopted the "stop caring what other people think" attitude in my 50s (shared by C112).

Also, the user attempted to help the focal actor to improve her self-acceptance by saying that many things change while people age. The user continued the statement by sharing optimism and mentioned positive points of ageing.

I believe that our age, people tend to change a lot - almost a second adolescence into senior-hood. They begin to settle and not be as adventurous. Sure, I can't do shots or lift heavy things like I used to, but I can still get on a bike, attend a good concert, make love with my wife and many other things that keep me feeling young (shared by C112).

Despite positive and constructive statements, the contributor shared some kinds of personal experiences that might destabilise focal actor's external connections, such as ending friendships with people.

I have let many more fall by the wayside because I've found them to be supplying "noise" in my life that I don't need. Kind of like "unfriending" on Facebook - but in real life (shared by C112).

Another user (C113) replied to the focal actor through network support and communal coping (by spreading self-acceptance). However, similar to the previous user (C112), some suggestions by the contributor (C113) might destabilise the external connection factor of the focal actor. For instance, the user mentioned how he/she experienced similar problems, which supported the focal actor through network support. But, in continuing, the user shared how he/she stopped his/her friendship with old friends.

I, also like you, ditched all the people that are surplus to requirement and periphery acquaintances etc in my 50s. For example, even with my dearest friends I found I'm putting up with their foibles, like interrupting me when I'm speaking, and I'm not prepared to do that anymore. A couple of other friends also I've turned a blind eye to their selfishness and being dropped and picked up when it suits them and now, I just can't tolerate it – I just don't want to see them (shared by C113).

After, the user tried to spread self-acceptance and shared his/her opinion about how things change through ageing.

I do feel my friends are changing as the 60s kick in; it's a very different decade to anything else you've been through as you prepare for extreme old age and lots of things are in a different perspective thing now (shared by C113).

Later on, a user (C114), replied to the thread and highlighted how old friendships are valuable. The user continued and tried to spread self-acceptance by saying how life can be changed for each person during ageing.

Our lives have gone in different directions, and we probably wouldn't have enough in common to start a friendship at this point in our lives (Shared by C114).

Then, another user (C115) made a new comment and shared how he/she ended old friendships and how the experience was.

Sometimes I have to just say "no more" however, if it crosses a line into an area of blatant disrespect. It's a difficult thing to do, end a 20 or 30-year friendship, but otherwise I become a doormat. No thanks! :-) (Shared by C115).

In continuing, the focal actor replied to the user (C115), applied resources shared by all actors, and mentioned she is going to think again about her friendship with others. This is showing despite the network support the focal actor received; her

external connection factor is gradually declining as she might have less social connectedness with people.

It's certainly a new aspect of life for me have to start considering where I am with these old friendships. I am not happy about it at all. But like you say life's too short to be putting up with crap (shared by FoA47).

Finally, another user (C116) replied to the focal actor and stated his/her opinion about friendship and how it changes during ageing. Then, he/she suggested some strategies about how to overcome the problem and spending less times with friends.

I think we become more "ourselves" as we age. If we've always been negative, we become more negative etc. I'm getting more intolerant of my friend's crap. They're probably getting more intolerant of my crap. I don't have the energy or patience to put up with too much aggravation. I think it's part of ageing. I try to be aware if I'm being too hard on people. I socialise for shorter periods of time. I meet friends for a walk or coffee. No more than 2 hours at a time! (Shared by C116).

Consequently, after all users shared similar experiences they had in life, the focal actor (FoA47) replied to the user (C116), stating she is happy that she is not alone in this situation. This shows she perceived the network support provided by other users. In addition, the focal actor said that she might either continue with the friendship with her friend or accept the isolation. This shows she applied the resources from other users that encouraged her to end her friendship with friends.

*Great to hear that I'm not alone in this though. I think I'll go either way I'll either get over it and just ignore it and carry on with these friendships with these wonderful people who I should be really grateful to have in my life. Or I just think f*** it and see them less and less and cope with the isolation when I come to it* (shared by FoA47).

Also, in response to user C116, the focal actor said that she liked her idea of limiting the time she spends with her friends. Although this suggestion was a little bit softer than other solutions by other users, it can also negatively impact the social connectedness of the focal actor and therefore, her external connection resource.

The suggestion of keeping it short and sweet with longer periods in between is a really good one so thanks for that (shared by FoA47).

To conclude, this example showed how participation of users can result in development of the external connection resource through network support, and also simultaneously declining the external connection resource through weakening social connectedness of users. Accordingly, Figure 22 below shows the process of simultaneous development and decline of resilience resources, and value co-creation and value co-destruction in OCs. More information regarding the theoretical coding of this step is provided in Appendix L.

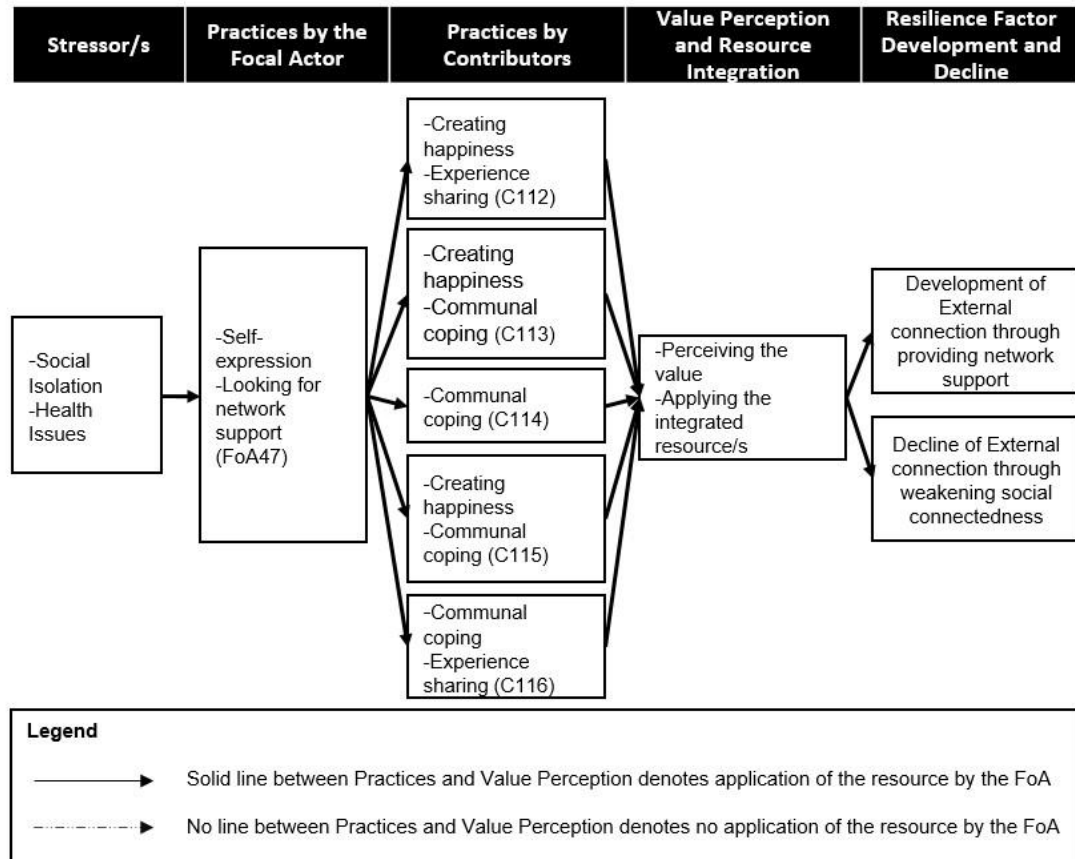


Figure 22) *Simultaneous Revitalising and Devitalising of External Connection Factor*

4.3 INTERVIEWS

The previous section (4.2) explained the findings of the main case study of this research that was informed by threads and conversation of users on Reddit. The findings revealed that the resilience process in OCs involves stressors, value formation practices, and resilience resources.

This section details findings from interview analysis. Indeed, the aim of conducting interviews was twofold. First, to validate the findings of the case study by

triangulation (Lincoln & Guba, 1985), and second, to abductively identify new findings about the role of OCs in the resilience of older adults through lens of value co-creation and value co-destruction, and consequently, refine the conceptual framework.

4.3.1 Stressors

In the analysis of the interviews, the first step was to identify the stressors that older adults share on Reddit. To do so, we looked for the three pre-identified stressors (explained in section 4.2.1) and also searched for new stressors shared by older adults in OCs (More details of the analysis process are explained in Appendix L). Findings showed that not only are the three stressors identified on Reddit consistent with the interview data but also two new types of stressors were found: *societal concerns* and *family dysfunction* (See Table 22 below). Thus, analysing interviews enabled us to validate the findings of the main case study and provide a more comprehensive understanding of the stressors. Consequently, through this abductive analysis of the data, it was revealed that older adults share five types of stressors in OCs regarding *economic deficiency, health-related issues, social isolation, societal concerns, and family dysfunction*.

| Stressor | Description | Number of quotes | Examples of the stressor shared by focal actors |
|------------------------------|---|------------------|---|
| Economic Deficiency | Actual and potential problems and concerns that older adults have about their work, financial status, and retirement process. | 6 | <i>I was looking for somebody to help me with budgeting, because being on a fixed income and having made this move, I wanted someone else's perspective. (I7)</i> |
| Health related issues | Physical and mental health disorders that older adults might face. | 10 | <i>Someone like me, a lot of GPs don't know what to do with people like us. They won't prescribe the treatments or the hormones or anything like that, that we need. So you need information about what GP can you go to. Who will help you out? What doctors will provide what hormone</i> |

| | | | |
|---------------------------------|---|---|---|
| | | | <i>treatments? What doctors will provide medical treatment? (I8)</i> |
| Social Isolation | The lack of actuality that a person is cared for, has available help from others, and feeling of being part of a supportive social group. | 7 | <i>Now I can't travel to visit my friend because of this virus paranoia, it was very helpful for me that I wrote it on a Subreddit. (I4)</i> |
| Societal Concerns (New) | Social conditions and behaviours that negatively impact citizens within a society, such as committing suicide, being raped, or being treated unequally due to gender differences. | 9 | <i>But some people will want to have a go at you. And so you bring that back to the community and say, "Oh my God, the guy at the local news agent just drove me insane and I have to deal with this person on a regular basis. And yet he's really pushing my buttons." (I8)</i> |
| Family Dysfunction (New) | The issues that happened between family members, such as abuse, rape, and drug issues. | 4 | <i>I broke up with my partner two years ago, and I shared that because it was drug-related. He was heavily into drugs. I shared all that and talked to people in a drug forum about the problems I was encountering. (I1).</i> |

The following subsections explain the new identified stressors with a few examples of the quotes from participants.

4.3.1.1 Societal Concerns

Conducting interviews revealed that sometimes older adults share their societal concerns with their peers in OCs. According to our findings, social concerns are social conditions and behaviours that negatively impact citizens within a society, such as committing suicide, being raped, or being treated unequally due to gender differences. So, older adults share these types of stressors in OCs to receive support from other users. This theme was emerged based on nine quotes. Below a few examples of stressors shared by users regarding societal concerns are explained.

In the following example, an interviewee (I8) shared that sometimes he faces some problems regarding how people treat him as a transgender in society and he is

not happy with that. For instance, he went shopping while he was dressed in a feminine way, and the sales person was calling him “Sir” more than usual, so he felt bad that person wanted to have a go at him. After this the interviewee shared this issue in the community and received positive support from peers:

But some people will want to have a go at you. And so you bring back that to the community and say, “Oh my God, the guy at the local news agent just drove me insane and I have to deal with this person on a regular basis. And he is really pushing my buttons.” And so you will get a lot of support from that like emotional support and advice (shared by I8).

Another societal issue that is frequently shared on Reddit is suicide. Many interviewees highlighted that there are lots of other users who share their suicidal feelings. For instance, interviewee 15 (I15) stated:

I talk to hundreds of people that have that feel suicidal (shared by I15).

Another interviewee also said:

In one case, a response post sounded possibly suicidal, and another person offered help if this individual needed someone to talk to (shared by I12).

4.3.1.2 Family Dysfunction

Performing interviews also revealed that some users share stressors related to family dysfunctions, which are the issues that happen between family members, such as abuse, rape, and drug issues. This theme was emerged based on four quotes. So, users share the problems they have within their families on OCs and ask other users for support. For instance, an interviewee shared that she had a drug related problem within her family, so she shared the issue on Reddit to receive support from users:

I broke up with my partner two years ago, and I shared that because it was drug-related. He was heavily into drugs. I shared all that and talked to people in a drug forum about the problems I was encountering (shared by I1).

4.3.2 Practices of Older Adults on Reddit

Earlier in sections 4.1.1 and 4.2.2 we investigated the value co-creation and co-destruction practices of older adults in OCs. Previous findings showed that older adults engage in six different practices including *communal coping, creating hedonic and eudaimonic happiness, disparaging and misbehaving, providing emotional support,*

sharing experience, and *sharing information*. This section aims to validate these practices and also search for new practices by analysing the interview data.

Our analysis resulted in creation of 163 initial codes (details of the analysis process are explained in Appendix M) which affirmed pre-identified practices but also identified a new practice called *sharing instrumental resources* (see Table 23 below). Accordingly, based on new findings, in OCs older adults engage in practices that can result in tangible benefits for themselves or other users. This can be through asking for or providing financial help or selling items. For instance, regarding selling items on Reddit, a user (I6) stated:

I have sold a lot of books through it 😊

Another user (I15) indicated that how some users help other users by giving them money:

I am seeing a lot of examples of things of value between \$10 and \$25 being contributed for one person to another.

| Theme | Description | quotes | Example |
|----------------------------|---|--------|--|
| Communal Coping | In OCs, older adults engage in seeking and providing advice, and sharing coping strategies with others to deal with their life difficulties. | 39 | <i>One of my hives a couple of years back was being attacked by a particular pest and I posted online, "What should I do?" And people gave me strategies as to how to manage that situation. (I13)</i> |
| Sharing experience | Older adults and contributing users share their experiences about several topics such as financial management, retirement, caregiving, and health issues. | 5 | <i>In the 2000s, I joined trans-related boards because I was transitioning, and it was helpful to hear about others' experiences. (I12)</i> |
| Sharing information | In OCs, older adults and contributing users share different types of information such as retirement, finance, tax, diet, and health. | 30 | <i>I think there's lots of genuine people who provide real information, and real meaningful answers to problems, and</i> |

| | | | |
|--|---|----|--|
| | | | <i>questions, and issues that arise. (I9)</i> |
| Providing emotional support | Contributing users emotionally support those users who share their adversities online. | 8 | <i>I can see that there is a benefit to such posters on Reddit of getting some kind of emotional support. It's nice to see. (I3)</i> |
| Creating hedonic and eudaimonic happiness | Practices of older adults and contributing users in OCs can result in hedonic happiness through creating positive mood, and also can result in eudaimonic happiness through enabling all users to express themselves and participate in altruistic and meaningful activities, and by provision of network and esteem support. | 46 | <i>For people who are feeling bad or sad. And so I spend an hour or two each day trying to cheer people up. (I15)</i> |
| Disparaging and misbehaving | Practices which can create negative consequences through spreading disappointment, hatred, inappropriate content, being rude to others, sexual harassment, criticising or mocking others, and sharing non-reliable information. | 26 | <i>I've had people... I've gone in and said something and next thing I'm getting all these private messages, "Send me a photo. Do you do nudes," and all these sorts of things. So, you have to be careful. (I1)</i> |
| Sharing instrumental resources (NEW) | In OCs, older adults engage in practices that can result in tangible benefits for themselves or other users such as selling items, asking for or providing financial help. | 9 | <i>There are many people who say they got a bonus at work and then they want to use the money to help other people on Reddit. So I see acts of charity. (I15)</i> |

4.3.3 Resilience Resource Development

The last step of analysis of interviews was regarding assessing the modification of resilience resources and evaluating the reliability of the four identified scenarios explained earlier in section 4.2.3 (More details of the analysis process are explained in Appendix N). Relying on the nine resilience resources suggested by Bolton et al. (2016) as our guideline, findings of the case study revealed that six resilience resources of older adults can be developed through their participation in Reddit. These resilience

resources were *external connection, meaningfulness, positive perspective on life, self-acceptance, self-care, and grit*. Further, participation of older adults in Reddit can result in decline of the *external connection* resource. These findings were assessed abductively by analysing interviews. As a result, analysing interviews not only validated previous findings but also brought new insights. Accordingly, in addition to the previous findings (See 4.2.3), the *altruism resource* can be developed through participation of older adults in OCs.

In addition, the interview data confirmed the presence of scenarios one and two. However, it neither completely confirmed nor denied the presence of scenario three (Indeterminacy and Ambiguity) and four (Simultaneous Revitalising and Devitalising). These two scenarios were not salient in the dataset. In other words, the interview participants rather focused on examples where they were positively affected or negatively affected, or in some cases they chose not to take any advice onboard. Accordingly, the following sections will explain the examples of four different scenarios emerged from the interview data.

4.3.3.1 Scenario 1: Revitalising and Growing

As highlighted earlier in Table 21 in section 4.2.3, in the first scenario, Revitalising and Growing, the focal actor shares the stressor, and other actors contribute and positively support the focal actor through practices that are aligned with the stressor/s and focal resources. This can result in co-creation of value and development of resilience resources among older adults.

In one example, findings show that participation of the focal actor can result in the development of the *altruism* resilience resource for the focal actor. Usually, the *altruism* resilience resource can be developed through giving in communities, extending ones and being generous to others (Bolton et al., 2016). In line with Scenario 1 *revitalising and growing*, the focal actor shares the stressor/s, and other users support the focal actor through different practices, which are aligned with the stressor/s. This process can result in development of one or more resilience resources for the focal actor or in some cases the contributing user. In one case, an interviewee (I7) mentioned how supporting a user (the focal actor) who was in need of a small amount of money (the economic deficiency stressor) could later result in giving back to the community by the same user (the focal actor).

You see people coming on to the system all the time, not only with their thank you's, but also saying, "Hey, I'm doing better now and it's time for me to give back. I remember when you all gave me the \$15 to go get gas so I could get to work that night, and I've got \$15 now. I'd love to be able to help somebody else who needs 15 bucks (I7).

Hence, as the above example shows, a focal actor earlier shared that he/she was in need of \$15 (economic deficiency) and the community helped him/her with that issue (sharing instrumental resources). Later the same focal actor tried to give back to the community by helping someone else who needs money to buy food. This example shows how the altruism resilience resource can be developed for the focal actor and hence, the participation of the user on Reddit could result in revitalisation and growth.

In addition to this new finding (development of the *altruism* resilience resource), findings of the interview dataset supported the development of several resilience resources through revitalising and growing. For instance, the example below shows how in an OC, a focal actor developed the *positive perspective on life* resilience resource. In this example, the user explained how she faced some difficulties after she got divorced, and how she was unsure about that decision. Eventually, according to the interviewee (I1), she shared the stressor and expressed her sad experience on Reddit, and this resulted in receiving support from contributing users. Her participation, self-expression, and receiving support from others resulted in having a positive perspective on life as she now feels comfortable and positive about the stressor:

The community was helpful actually. It made me realise that I'd made the right decision. After you leave a long term relationship you sometimes have your doubts, especially when you still love the person, but I was reassured I did the right thing based on what was happening with the drugs (I1).

In another example, interview findings supported the first scenario and showed that participation of users can result in revitalising and growing through development of the *external connection* resilience resource. According to Bolton et al. (2016) the *external connection* resilience resource can be developed through positive familial relationships. In line with this, a participant (I8) mentioned how participation in Reddit is helpful for him/her to strengthen his/her familial relationship. The participant mentioned that he/she is a transgender, and due to this fact, he/she was worried how

being a transgender can impact his/her wife (the stressor). Therefore, he/she joined specific Subreddits where spouses or partners of transgender people join and share their ideas and opinions about their relationship with transgenders. So, joining these subreddits could be helpful for the interviewee to better understand his/her wife's needs and to tighten their familial relationship:

I tend to mostly follow that site to gain insight into what potentially my wife is thinking, what struggle she's going through, so that I can help her out, so I can make things easy for them. That's kind of useful because people will say my spouse, who is a transgender person did this, did X, Y, or Z and that really upsets me. And so you think, "Did I do that? Is that something I've done? Maybe I should not do that." So it's a really useful site to gather information from the other side (I8).

4.3.3.2 Scenario 2: Devitalising and Shrinking

The second scenario, devitalising and shrinking shows that when the focal actor shares the stressor with others, some users negatively respond to the focal actor. This can result in decline of resilience resources and value co-destruction. Earlier, findings of Reddit showed that in this scenario, the *external* resilience resource can be declined through value co-destruction practices. Findings of the interviews validate this fact as many interviewees explained how in some cases, participation can negatively affect users. For instance, several users indicated that participation in Reddit is weakening their face-to-face relationships. A user stated:

I mean I wonder how isolated you have to be in the first place that the only recourse you have to a very serious problem is that you go on the internet and talk to strangers about it. That sort of disturbs me, that people are not discussing it with human beings in real life (I2).

Another user mentioned:

Some things should be in person. I think we're turning too much... and myself too. I know I am. I'm too addicted to the internet now and to my computer and the smartphone and... It's a bit scary how it's taken over our lives. It's taking away from human-to-human interaction in a lot of ways. We need that in our lives. We need to be loved. We need to be told we're loved in person (I1).

Findings showed that some Subreddits are specifically designed for people who don't like their families and users can use offensive words to express their anger about

their family members. This can result in decline of the *external connection* resource through weakening relational living. For instance, a user said:

So I could go on RBN, which is Raised By Narcissists, and just say, "You'll never guess what my mother just said to me." And everybody's like, "Oh, I can't believe it. My mother said the same thing. You should say this back." We all just have a bitch about our parents (I2).

4.3.3.3 Scenario 3: Indeterminacy and Ambiguity

Earlier in section 4.2.3.3, findings of the case study suggested that sometimes when the focal actor shares the stressor/s, contributing users support the focal actor through different practices. But the focal actor does not reply to some or all posts made by contributors. This results in indeterminacy and ambiguity as it is not clear if the focal actor applied the resources shared by contributors. Therefore, it would not be clear if any resource integration or value formation took place.

Findings of interviews neither completely supported nor rejected this scenario. However, during interviews, some users mentioned that they pick those answers which are more useful for them. This can somehow support scenario three where the focal actor was not replying to the comments of the contributing users (see models in section 4.2.3.3) and perhaps this is due to the choice of the focal actor to pick or not pick suggested resources.

For instance, one of the interviewees mentioned:

I had two people respond and make suggestions about things to try ... There were several people who responded, but in particular, there were two people who responded that had suggestions that I did try and wound up deciding I could afford the most (I7).

Another user said:

I think Reddit can be good for that because then people are quite confident to chuck out what they don't like (I9).

4.3.3.4 Scenario 4: Simultaneous Revitalising and Devitalising

Simultaneous revitalising and devitalising suggests that development and decline of resilience resources can take place simultaneously. It means, through interaction of users, some resilience resources can be strengthened and at the same time, some other resilience resources can be declined. Findings of the main case study

supported this scenario, but the analysis of interview dataset neither supported nor decline it. This is because the nature of the datasets was different and in the interview dataset there were no specific examples of sharing stressors on Reddit to assess whether the process results in simultaneous value co-creation and co-destruction.

4.4 CHAPTER SUMMARY

This chapter presented findings responding to the objectives of this study to understand how participation of users in OCs can support resilience of older adults. Accordingly, three datasets, including the exploratory case study, the main case study, and supplementary interviews were thematically analysed using the guideline suggested by Braun and Clarke (2006).

The exploratory case study revealed that older adults participate in OCs through four value co-creation and co-destruction practices, including communal coping, happiness creation, social capital generation, and disparaging. These practices can lead to three potential benefits for older adults: wellbeing improvement, self-empowerment, and social capital access.

Then, based on what we learned from the exploratory case study; the main case study was performed. Therefore, as a part of the multimethod sequential design of this study, qualitative analysis of the Reddit OC was done to better understand how the resilience process (Richardson, 2002) can take place for older adults in OCs through the lens of value co-creation. Findings of this step showed that older adults share specific types of stressors online to seek support from their peers. These stressors are related to economic deficiency, health-related issues, and social isolation. In addition, findings revealed that older adults share these stressors by performing six types of practices, including communal coping, creating hedonic and eudaimonic happiness, disparaging and misbehaving, providing emotional support, sharing experience, and sharing information. Consequently, this process can result in four possible scenarios which can either develop or decline the resilience resources among older adults which are: 1) revitalising and growing, 2) devitalising and shrinking, 3) indeterminacy and ambiguity, and 4) Simultaneous revitalising and devitalising.

Finally, this chapter presented the findings of interviews. Interviews analysis confirmed previous findings and also added more insights. Regarding the stressors, analysis of interviews revealed two new stressors, including societal concerns and

family dysfunction. Further, analysis identified that in addition to preidentified practices, older adults engage in sharing instrumental resources. Findings of this step, confirmed all four scenarios that were emerged from the main case study.

Chapter 5: Discussion

To answer the underlying research question, this chapter presents a consolidation of the findings derived from the main case study (Section 4.2) and interviews (Section 4.3). Hence, first, the Digital Resilience Process Model (DRPM) that I created through an analysis of this study’s findings will be discussed. Next, the DRPM will be compared with previous resilience models in order to highlight this study’s contributions. To do so, the stressors as the triggers of the DRPM will be discussed. Second, the reintegration phase of the DRPM will be presented. Third, the outcomes of the DRPM (i.e. *Revitalising and Growing*, *Devitalising and Shrinking*, *Indeterminacy and Ambiguity*, and *Simultaneous Revitalising and Devitalising*) will be compared with previous resilience models.

Subsequently, the elements of the DRPM will be explained using the lens of value co-creation to highlight the contributions of the model to value co-creation research, and also to explain how value co-creation research could contribute to pre-existing resilience models. Accordingly, first, the reintegration phase of the DRPM will be discussed and compared with other points-of-view to better understand how the value co-creation domain could clarify unclear parts of resilience models. This will be followed by discussion of value co-creation and co-destruction practices. Finally, the co-creation and co-destruction outcomes will be discussed. A step-by-step summary of all important parts of this chapter is shown in Figure 23 below.

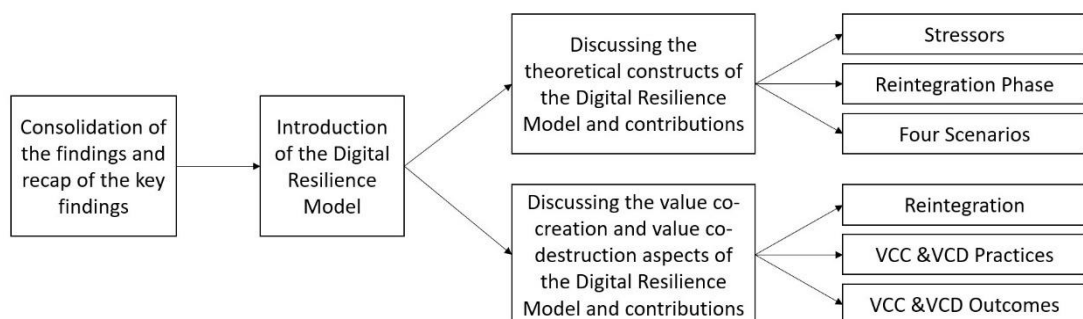


Figure 23) *Structure of the Chapter*

5.1 THEORETICAL FRAMEWORK

Through an interpretivist approach and in line with the explanation types of theory suggested by Gregor (2006), this study developed a theoretical process model referred to as the Digital Resilience Process Model (DRPM) through studying people's perceptions of the reality and deeply understanding the phenomenon (Figure 24). The DRPM is a process model and does not imply causation (Reference). This was through understanding how older adults participate in OCs and how the resilience process emerges in OCs through the interactions of older adults and other users. This section will explain how the DRPM was theorised and built. Therefore, we first briefly highlight how the previous sections contributed to the creation of the model.

The previous section investigated how participation of older adults in Reddit can impact their resilience through value co-creation and value co-destruction practices. To do so, first, the resilience model by Richardson (2002) was adopted as the theoretical lens to investigate the resilience process that emerged in Reddit. The main constructs of the model include the stressor/s that a person might encounter during life, the reintegration process that happens after the individual faces stressors, and the reintegration outcome, which is the result of the resilience process and it is highly depended on the availability of resilience resources for the individual (Richardson, 2002). After identifying the types of stressors, considering the theoretical concepts of value co-creation (Vargo & Lusch, 2017) and practice theory (Bourdieu, 1986), we assessed the interactions of users to unfold the reintegration phase.

Hence, to unfold the reintegration process, we identified the practices that the focal actors and contributing users perform when the focal actor shares his/her stressor/s. Then, we assessed the identified practices to make sure whether these practices are aligned with the stressor or not. Subsequently, we examined if and how these practices resulted in modification of resilience resources for the focal actor. This resulted in identification of four different scenarios (explained in sections 4.2.3 and 4.3.3). Consequently, findings resulted in emergence of a conceptual model (Figure 24), which pictures how participation of older adults in Reddit, and specifically when they share their stressors with other users, can impact their resilience.

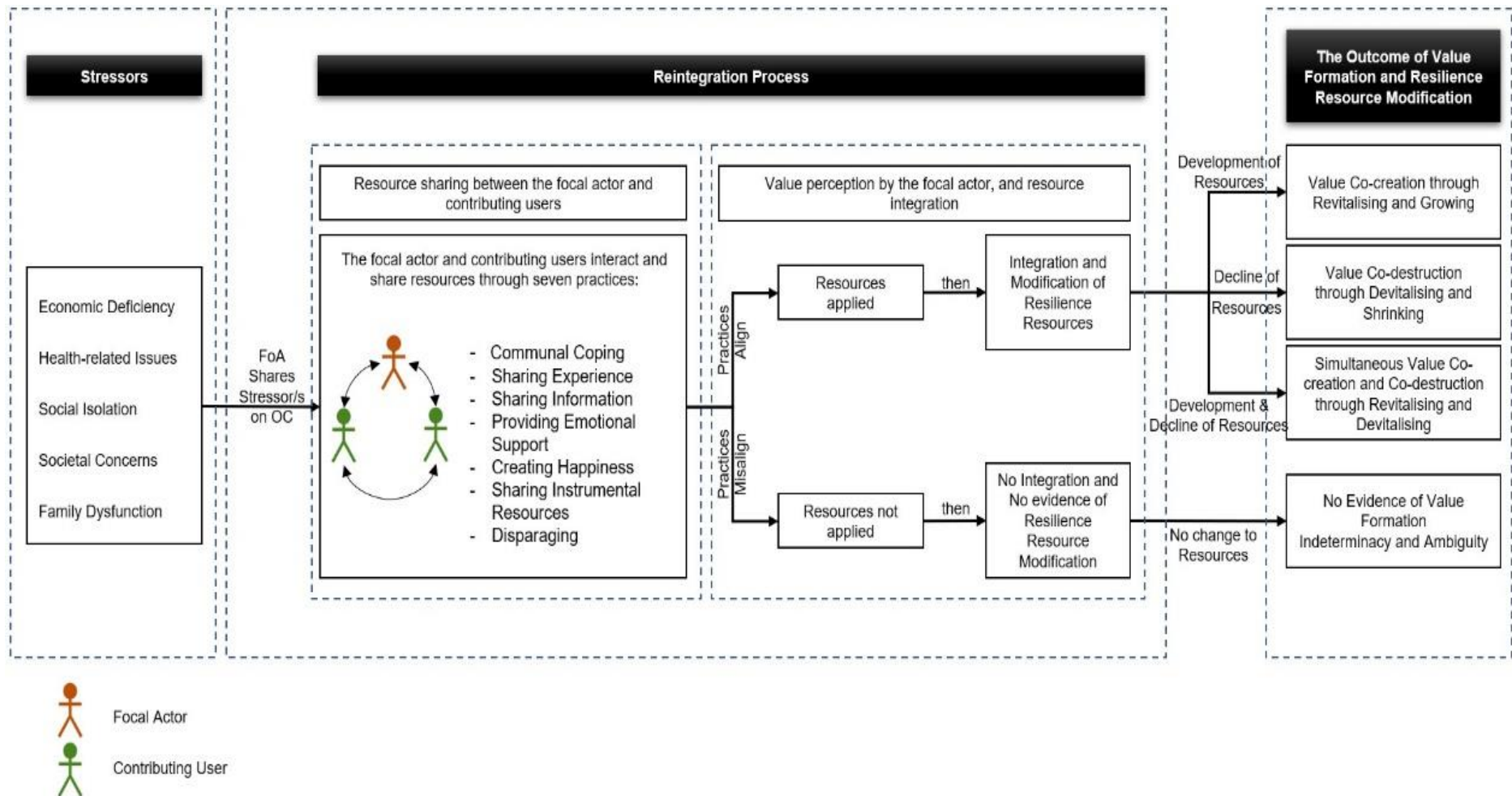


Figure 24) *Digital Resilience Process Model*

As shown in the model, the resilience process is triggered when older adults experience a stressor/s that disrupt them from a homeostasis state. In OCs five stressors are being shared by users with the aim of coping and receiving support from other users. Based on the findings, and as shown in the left-side part of the model, these stressors are related to *economic deficiency, health-related issues, social isolation, societal concerns, and family dysfunction* (See Table 22).

Subsequently, the focal actor shares stressor/s on the OC through several practices and usually engages in communicating with other users regarding the focal stressor. As pictured in the middle section of the DRPM, this happens through the interaction between the focal actor and contributing users through seven different practices, including: *communal coping, sharing experience, sharing information, providing emotional support, creating happiness, sharing instrumental resources, and disparaging*. Through these practices, different types of resources can be shared between the focal actor and contributing users.

Consequently, the performed practice/s and provided resources can be either aligned or misaligned with the stressor. If they are aligned with the stressor, then the focal actor can apply the provided resource/s. Therefore, value is perceived by the focal actor, and integration and modification of resilience resources happen. But if practices and shared resources are not aligned with the stressor, the user might not apply the provided resource/s. Hence, there is no evidence of value perception, resource integration, and resilience resource modification. It shows that practices are not always aligned with the stressor/s, and in some cases, the contributing user shares resources that are not relevant to the stressor, or the shared resource is relevant, but the focal actor does not apply the provided resource.

As mentioned above, exchange of resources by actors has two overarching outcomes: either application or no application of the resources. The right-side part of the model is unpacking these two overarching circumstances and highlighting the possible scenarios that might happen as a result of the resilience process in OCs. Within the reintegration process, when integration and modification of resilience resources happen, three different outcomes have the potential to occur. In the first scenario, the focal actor applies the provided resource, and this application can positively impact one or more resilience resources for the focal actor. Therefore, value

co-creation is happened, and the focal actor can cope with the stressor and grow. The second scenario shows that exchange of resource among users can negatively impact resilience resources of the focal actor, which means value co-destruction happened. The third scenario shows that in some cases exchange of resources can result in simultaneous development and decline of resilience resources for the focal actor. Finally, when practices misalign (scenario 4), and resources are not applied by the focal actor, integration and therefore, value formation are not happening.

Our findings showed that through this process several resilience resources might be developed or declined for the focal actor. When interactions are positive and value co-creation happens, in total, seven resilience resources might be developed including *external connection, meaningfulness, positive perspective on life, self-acceptance, self-care, grit, and altruism*. In contrast, when interactions are negative and result in value co-destruction, one resilience resource can be declined for the focal actor, which is the *external connection* resource. In brief, the model pictures the resilience process in OCs by identifying stressors, unfolding the reintegration process, and uncovering the possible scenarios of reintegration.

5.2 COMPARING THE MODEL WITH PREVIOUS MODELS

This section compares the DRPM generated from this study to seminal resilience models (Richardson, 2002; Wister et al., 2016) to better understand how the DRPM improved previous models. This will be done first through the comparison of the model as a whole, and then, decomposed into the foundational construct of the models, including stressors, reintegration, and resilience outcomes.

Overall, the DRPM proposed by this study aligns with and extends beyond other resilience models. The DRPM identifies that when older adults face stressors they can share them in OCs. Subsequently, the reintegration process can occur through older adults engaging in several practices through sharing of resources. This has the potential to result in applying or not applying the offered resources by the focal actor. Depending on if the resource is applied, four different outcomes are possible.

The high-level process and constructs of the model are consistent with other models. Accordingly, all models, including the DRPM and seminal models, start with the stressor, encompass the reintegration phase, and end with the outcomes. However,

the proposed model extends previous works by addressing the gaps and uncertainties of each construct. The following paragraphs compare the DRPM with seminal models and explain the contributions.

The model by Richardson (2002) is one of the earliest resilience models and according to the authors, the model is applicable to all individuals, families, communities and societies, and is related to any stressor that the older person might face. Regarding the resilience resources (which Richardson refers to as protective factors), the model suggests that when the individual faces stressor/s, relying on resilience resources, the reintegration process happens, and four possible outcomes might happen. However, the model does not clarify the type of resources that a person should access in the process. Also, in the model, the reintegration phase is vague, and it is not explaining how this step happens. This lack of clarity is also admitted by Wister et al. (2016).

The Wister et al. (2016) model follows a similar trajectory as Richardson (2002). Accordingly, this (Wister et al.) model shows that an older adult faces stressor related to illness and disability, and disruption happens. Then, through having energy and motivation, three types of resources (individual, social, environmental) will be activated and help the older person, and this results in coping through emotional regulation, which results in reintegration and recovery. Compared with Richardson's Model, (2002), Wister's model (2016) is mainly focusing on adversities of older adults, which are related to illness and disability only. It means, other forms of stressors which are related to the other aspects of life are neglected. However, regarding the resilience resources, Wister et al. (2016) clarified the categories of resources that can be activated through the process. Activating these resources and through emotional regulation, the individual will be able to reintegrate and recover, suggested by the model. Yet, neither Richardson's (2002) model nor Wister's (2016) model clearly explained how the reintegration phase happens. Indeed, the starting and ending points of the resilience process are highlighted in both models, but nuances of the process are not clear.

The model proposed by this study improves previous models: First, the new model clarifies the types of stressors, which were not identified by previous studies. Second, relying on resilience resources suggested by Bolton et al. (2016), the specific type of resources are elucidated. This is important because now it is clearer that the

resilience process can impact specific resilience resources and how this happens. Third, the vagueness of the reintegration process is addressed by drawing on the theoretical concepts from value co-creation and practice literature. Eventually, the possible outcomes of the reintegration process are further discussed. The following sections will explain each of these in detail.

5.2.1 Stressors

The DRPM provides new insights into the stressors. The DRPM uncovered that usually older adults share five different types of stressors in OCs. These findings were evolved through two phases where in the first phase by conducting the main case study, three stressors were identified (See Table 20), and later, through analysis of interviews two more stressors were found, which resulted in identification of five different stressors that older adults normally share on OCs. These five stressors are highlighted in the DRPM, which clarifies at the individual level, what types of stressors can induct the process of resilience. These stressors are related to economic deficiency, health issues, social isolation, social concern, and family dysfunction.

Indeed, the DRPM is the first resilience model that elucidates the type of stressors. This serves as a contribution to knowledge as it furthers the knowledge about stressor types and improves the theoretical construct of stressors in the resilience process. This is important because stressors are the trigger and an integral element of the resilience process (Richardson, 2002). In fact, several factors need to be considered to decide if an event is traumatic or not, such as intensity, and the duration of the stressor (March, 1993). Early studies such as March (1993) provided a list of possible stressors that individuals and communities might face, such as combat, criminal issues, rape, injury, automobile accident, natural disasters, and severe burns. However, investigating the resilience models (Richardson, 2002; Wister et al., 2016) indicates that in the context of the resilience process, literature has been yet to unpack what those stressors look like, and minimal taxonomy exists. This study addressed this gap by providing the first taxonomy of stressors in the resilience process.

5.2.2 Reintegration Phase

The reintegration phase is an important phase of the resilience process that starts as a defensive mechanism when a person faces a stressor. The DRPM proposed by this study uncovered how the reintegration phase happens when older adults share their

stressors in OCs. The DRPM in illustrating specifically how the reintegration unfolds extends previous models of Wister et al. (2016), and Richardson (2002).

To unfold the reintegration process, this study considered the core theoretical concepts of value co-creation (Vargo & Lusch, 2017) and practice theory (Bourdieu, 1986; Reckwitz, 2002) (discussed further in Section 5.3). The DRPM suggests that in OCs, the reintegration process does not happen in a vacuum. Instead, it occurs by interaction of older adults with other people and through specific purposeful practices performed by people in the process. Usually, these practices are aligned with the stressor that the older adult shared on OCs. When practices are aligned with the stressor, older adults apply the resources that are offered by contributing users and this can usually facilitate the development of the resilience resources for older adults. This results in four different possible outcomes, which are explained in the next section.

Reviewing the literature shows that the reintegration phase of the resilience process as evident in other models (Richardson, 2002; Wister et al., 2016) does not clarify how the reintegration process happens. Those models somehow tried to show that the reintegration process triggers after an individual faces stressor/s and by relying on (Richardson, 2002) or activating (Wister et al., 2016) resilience resources, the reintegration process can happen. Nevertheless, more details were not provided to elucidate the nuances of the process. For instance, it is not clear what the stressors are that trigger the reintegration process, what the resilience resources that a person relies on or activates for reintegration are, and how this happens. The DRPM proposed by this study improved this phase of the model through the lens of value co-creation and practice and identified that this phase happens through several practices by actors, and these practices can modify the resilience resources through provision and application of resources. More details will be provided in Sections 5.2.3 and 5.3.2.

5.2.3 Outcomes of the Resilience Process (Four Scenarios), and the Outcome of Resilience Resource/s Modification

The DRPM suggested by this study indicates that the reintegration process can result in four possible outcomes, which are 1) Revitalising and Growing, 2) Devitalising and Shrinking, 3) Indeterminacy and Ambiguity, and 4) Simultaneous Revitalising and Devitalising. The model has some similarities and differences with previous models of Wister et al. (2016), and Richardson (2002). The first model by Richardson (2002), suggests that the resilience process can end in four different ways.

Depending on the availability of the resilience resources, the person might recover and grow, return to the same situation, recover with loss, or recover with dysfunctionality. While the model distinguishes between scenarios, it is still vague for instance, how can a person recover and grow? How does a person recover with loss? Or what was the exact role of the resilience resources in the process?

The other model by Wister et al. (2016) shows that the resilience process results in wellbeing, recovery, and growth, which are all positive outcomes. It is also important to remember that the model was built in the context of multimorbidity and disability, which is solely health focused. So, the other possible outcomes such as reintegration with loss or dysfunctionality, even at a superficial level as proposed by Richardson (2002), are missing in this model. Indeed, the model implies the fact that every resilience process in the context of multimorbidity and disability results in wellbeing, recovery, and growth.

In terms of the outcomes of the resilience process, the DRPM proposed by this study suggests four clear scenarios and improved previous models from different aspects. First, the outcomes are strongly intertwined with the details and nuances of the reintegration process. Second, the role of the resilience resources is clarified significantly, so it is now clear whether in each scenario the resilience resources play a role or not, and if so, the role is explained visibly.

Accordingly, the DRPM suggests that in the first scenario, participation of the older adult in OCs can result in value co-creation and development of seven different resilience resources for older adults. This scenario is similar to the first scenario of the work by Richardson (2002) and the outcome of the resilience process suggested by Wister et al. (2016), where the process results in recovery and growth. However, the model of this study clarified how this scenario happens through unfolding the reintegration process, practices, and also how and what resilience resources are being modified.

The second scenario suggested by the DRPM, shows that sometimes the resilience process not only results in recovery and growth but ends with negative impacts on older adults by declining their resilience resources. Comparing this scenario with previous models shows that this condition is not highlighted by Wister et al. (2016). In addition, the model by Richardson (2002) shows that in two scenarios the process might result in recovery with loss or dysfunctionality. We assume there are

some overlaps between the second scenario of the model by this study and those two scenarios of the model by Richardson (2002). However, the model of this study provides a deeper understanding through clarifying of the process, by showing in what circumstances this scenario can occur. In addition, in the DRPM, it clarifies just what practices can result in this scenario. For example, as analysis revealed, disparaging practices can negatively impact older adults and decline their resilience resources. In addition, scenario 2 proposed in the DRPM clearly shows through disparaging practices, what resilience factors can be declined. Therefore, now the role of resilience resources is more visible in the process.

The third scenario proposed by this study, “Indeterminacy and Ambiguity” provides completely new insights regarding the resilience process outcomes. This state is never explored before conducting this study as other models did not mention that in some case the resilience process can result in vagueness and ambiguity. In this scenario and in the context of OCs, the model by this study explained that the resilience process does not always result in a positive or a negative outcome, but also can end with indeterminacy and ambiguity.

Finally, in the last scenario, this study suggests that the resilience process can result in simultaneous development and decline of the resilience among older adults. Previous models and specifically the model by Richardson (2002) distinguished between the negative and positive outcomes of the process. This study believes that in addition to the existence of separate negative and positive outcomes, at certain circumstances the resilience process can result in simultaneous development and decline of resilience resources. It means that during the resilience process, a person might grow in some respects but at the same time decline in other respects.

Furthermore, from the aspect of resilience resource reintegration, this study clarified that there are some resilience resources that can be modified through the process of resilience reintegration. Findings showed that seven resilience resources, including external connections, meaningfulness, grit, positive perspective on life, self-care, self-acceptance, and altruism can be reintegrated through the participation of older adults in OCs. Within the context of the resilience of older adults, this study is the first work that delved into the reintegration process by assessing modification of resilience resources among older adults. However, it is important to acknowledge that modification of resilience resources among children has been studied before by Traub

and Boynton-Jarrett (2017), who found that several resilience resources among children are modifiable. For instance, positive perspective on life and optimism can be modified through improving self-esteem, internal locus of control and cognitive flexibility by exercise and therapy.

5.3 VALUE CO-CREATION AND CO-DESTRUCTION

This study identified that in OCs, the resilience process emerges through participation of users and their engagement in resource reintegration. This is happening through several value co-creation and value co-destruction practices. As a result, these practices can either co-create or co-destruct value and impact the resilience of older adults. Therefore, this section discusses the findings of this study from the aspect of resource integration, value co-creation and co-destruction practices, and value co-creation and co-destruction outcomes.

5.3.1 Resource Integration

Findings showed that the process of resilience reintegration is completely tied with reintegration of the resilience resources. In line with literature (Meichenbaum, 2008; Traub & Boynton-Jarrett, 2017), this study showed that resilience resources can be integrated at certain circumstances, therefore, they should be viewed as being fluid overtime as they are dynamic and modifiable. According to the findings, seven resilience resources can be modified or reintegrated through the interaction, sharing, and application of resources in OCs. This is in accordance with the value co-creation literature that suggests reintegration takes place through sharing, and application of resources (Vargo & Lusch, 2017). From the aspect of reintegration, findings of this study can be viewed from two perspectives. The first perspective is the concept of reintegration in the resilience research which is discussed earlier in section 5.2.3, and the second perspective is the concept of reintegration in the value co-creation literature.

From the value co-creation perspective, findings of this study showed that resilience resource can be reintegrated through exchange and application of resources. Hence, resources can be considered as fluctuating attributes because their states can change over time. In terms of resource integration, findings of this study were built based on the knowledge that a resource is anything an actor can draw on for support, including not only static and tangible resources but also intangible and dynamic

functions of human ingenuity and appraisal (Blaschke et al., 2018), and these resources can be integrated by the ability of actors to access, adopt, and integrate them (Kleinaltenkamp et al., 2012; Peters et al., 2014; Vargo & Lusch, 2008). In fact, resilience resources cannot be reintegrated by sharing only. Hence, to reintegrate resources, they need to be shared, combined, and applied by the focal actor in alignment with the stressor.

Findings of this study represent the reintegration of resilience resources as a continuous process which is dynamic and depended on availability and application of internal and external resources by collaborative interaction with the environment and through a series of activities by an actor for the benefit of other actors. Section 4.2.3 presented several examples in which contributing users were sharing resources with the focal actor in a continuous and dynamic process through a set of purposeful activities for the benefit of the focal actor. In many cases, these purposeful practices could result in either development or decline of resilience resources of the focal actor. This is completely in line with literature that suggests that reintegration of resilience factors is a dynamic (Traub & Boynton-Jarrett, 2017), continuous process (Payne et al., 2008).

In this sense, the resource is reintegrated only when it is used for a specific intent (Peters et al., 2014) and we could see lots of examples where some users were picking either none, some, or all of the provided resources. These different approaches of the focal actors resulted in the emergence of the four scenarios that were discussed in the findings section.

In addition, regarding the concept of reintegration, the findings of this study are in line with two of the foundational premises (FPs) of S-D logic (Vargo & Lusch, 2017), which theoretically is intertwined with value co-creation. Accordingly, actors cannot deliver the value but can engage in creation of it (FP7), and the beneficiary is always a part of the value co-creation process (FP6). This is in accordance with our findings where only sharing of the resource is not resulting in resource integration, and the focal actor was a part of the process all the time, and he/she needs to take and apply the offered resources. These facts were the building blocks of the scenarios and visibly we could see in some cases the focal actor was applying the shared resource, so the reintegration process was happening. In contrast, in some cases (e.g. scenario 3:

“Indeterminacy and Ambiguity”) the resource was shared by contributing users, but it was not clear if the resource was used by the beneficiary (the focal actor).

Therefore, in line with many scholars (Kleinaltenkamp et al., 2012; Payne et al., 2008; Peters et al., 2014; Vargo & Lusch, 2017), this study considered both exchange and application of resources as antecedents of the reintegration process. However, investigation of the literature showed that in terms of reintegration point of view, this was not in line with all studies. Indeed, some works suggest that reintegration can happen through exchange of resources only. For instance, Frow et al. (2016) suggests that in an ecosystem (this ecosystem can be an OC) of actors and their resources, actors offer resources to other actors through value co-creation practices, which results in reintegration of resources. In contrast, findings of this study strongly showed that offering resources is not always resulting in reintegration of resources as the focal actor chooses among the offered resources.

5.3.2 Value Co-creation and Value Co-destruction Practices

The process of reintegration and value co-creation happens through purposeful practices (Vargo & Lusch, 2017). As such, findings of the study showed that participation of older adults and contributing users and the process of resource integration in OCs is usually through the engagement of users in several types of practices for the purpose of benefiting the focal actor. As highlighted in the conceptual framework, the process identified that within OCs, participants engage in seven practices: communal coping, sharing experience, sharing information, providing emotional support, creating hedonic and eudaimonic happiness, sharing instrumental resources, and disparaging and misbehaving. As described next, the practices identified in this study are largely consistent with those reported in literature, which provides confidence to the generalisability of the findings. The following sections will discuss each practice in detail.

5.3.2.1 Communal Coping

Findings of this study showed that many older adults join OCs to cope with their adversities by relying on available resources in OCs. This is usually through seeking and providing guidance and coping strategies in the OC. This is consistent with literature suggesting that being able to cope with difficulties is strongly dependent on the availability of resources (Liddell & Ferreira, 2018).

Previous works such as Frow et al. (2016) mentioned coping practices in online health communities with the focus of health adversities. Findings of this study identified that older adults engage in OCs to participate in communal coping practices not only related to health issues but also regarding other issues such as economic deficiency, social isolation, societal concerns, and family dysfunction. Therefore, findings of this section provide more insights regarding the coping activities of older adults in OCs from new aspects.

5.3.2.2 Sharing Experience

Findings show that through participation in OCs, users can share their experiences regarding various topics such as financial management, retirement, caregiving, and health issues. This is completely consistent with other studies that introduced OCs as places where users can share their experiences. However, findings of this study identified a different set of experiences that users share in OCs, as the nature of OCs dedicated to older adults and the motivation of users to join (Nimrod, 2010) differs from other types of OCs (Muniz & O'guinn, 2001). Each type of OCs attracts different groups based upon their motivations to join (Michailidou et al., 2015), and this impacts the type of experience users share. However, regardless of the type of the user, there are some overlaps among different types of OCs and some forms of experiences are shared within different OC types. For example, our findings show that in OCs for older adults, users share their experiences about financial management. This specific kind of experience is not only shared on OCs for older adults as there are some forms of OCs that are specifically designed for financial management (e.g. the “personalfinance” OC on Reddit) and all users regardless of their age can share their experiences regarding finance.

5.3.2.3 Sharing Information

Findings show that in OCs, users share different types of information regarding retirement, finance, tax, diet, and health. In the context of this work, these types of information are often aligned with the stressor, and the focal actor tries to receive information and contributing users try to provide information for the beneficiary (the focal actor) with respect to the stressor.

Similar to “sharing experience”, sharing information is consistent with literature suggesting OCs are places where users can share and receive information (Baker et al., 2018; Leist, 2013; Michailidou et al., 2015). Nevertheless, those types of information

shared in OCs for older adults can also be shared in other types of OCs. For instance, our findings show that older adults might look for information regarding a specific aspect of health. The same type of practice can be performed in an OC, which is designed for exactly the same aspect of health. For example, an older adult can search for information about blood pressure in OCs of older adults, but the same type of information might be shared on an OC that is specifically established for blood pressure, and with no age restriction for people to join, so all age groups can join and share information about blood pressure. This shows that although some types of information are specifically shared on OCs for older adults, there are some other types of information that can be shared on many other OCs.

5.3.2.4 Providing Emotional Support:

Analysis showed that in OCs, when the focal actor shares the stressor, many contributing users emotionally support the focal actor. Our findings are consistent with literature as providing emotional support in OCs, as a common practice is already identified by previous studies (Baker et al., 2018; Leist, 2013; Michailidou et al., 2015; Pan, 2018).

5.3.2.5 Creating Hedonic and Eudaimonic Happiness:

Findings of this study showed that participating in OCs can result in creation of hedonic and eudaimonic happiness. Creating hedonic and eudaimonic happiness as identified in the study corroborate past literature examining happiness, which is considered as an essential part of life characterised by the experience of more positive states than negative ones and includes the perception that life is progressing meaningfully toward vital life goals (Tkach & Lyubomirsky, 2006).

There are two main perspectives of happiness: hedonic and eudaimonic wellbeing. Hedonic wellbeing is found on the idea that more pleasure results in more happiness (Keyes et al., 2002). From the co-creation perspective, activities resulting in pleasure can create hedonic value (Ha, Kim, Libaque-Saenz, Chang, & Park, 2015). Eudaimonic happiness is based on the notion that people feel happy when they sense life is meaningful. This is based on the self-determination theory that suggests happiness is structured on feelings of competence and autonomy. Eudaimonic happiness can be a result of when a person can disclose self, socially contribute and self-accept (Keyes et al., 2002; Ryan & Deci, 2000). Eudaimonic happiness has been viewed from eight perspectives, including the sense of control or autonomy, feeling of

purpose and meaning, personal expressiveness, feelings of belongingness, social contribution, competence, personal growth and self-acceptance.

Our findings as listed in Table 24 identified that the practices that older adults and contributing users perform within OCs align with hedonic and eudaimonic happiness dimensions. For instance, findings show that users can express themselves in OCs. Self-expression is consistent with the eudaimonic aspect of happiness based on the ability for self-disclosure and personal expressiveness. In another example, users can participate in altruistic and meaningful activities, which are consistent with eudaimonic happiness based on the fact that people feel happy if they feel they can engage in social contribution and meaningful activities. Alternatively, creating positive mood is consistent with the hedonic aspect of happiness based on the presence of positive mood.

In the context of co-creation practices in OCs, the concept and perspectives of happiness were not considered by previous studies such as Frow et al. (2016). So, findings of this study regarding happiness practices in OCs are literally adding new knowledge to the OC literature. However, comparing findings of this work and previous works such as Frow et al. (2016) shows that few practices found by the authors can by some means be related to happiness creation practices. For example, Frow et al. (2016) suggested that in OCs, a patient sharing her knowledge with others suffering similar medical issues, endows actors with social capital. According to Frow et al. (2016), this specific practice creates social capital for actors. However, based on the findings of this study, it can also result in eudaimonic happiness through provision of network support as being part of a group with common interests and concerns results in network support for the actor (Loane & Webster, 2014; McClain et al., 2017).

5.3.2.6 Sharing Instrumental Resources:

Our findings show that in addition to intangible resources such as information, knowledge and experience, users also engage in exchange and application of tangible or instrumental resources, which can have tangible benefits for themselves or other users such as selling items, asking for, or providing financial help. Our findings contribute to knowledge as this is an area that is overlooked by literature as our first systematic review revealed that there are very few studies (Berdychevsky & Nimrod, 2015; Ciboh, 2017; Pan, 2018) that have highlighted the role of OCs in provision of instrumental resources. However, these studies did not clearly mention the type of

instrumental support that OCs afford. This study initiated a better understanding of the type of instrumental resources that are shared on OCs for older adults.

5.3.2.7 Disparaging and Misbehaving:

Findings of this study suggest that in OCs, not all practices by older adults result in positive outcomes. In fact, older adults or contributing users sometimes engage in practices that can create negative consequences through spreading disappointment, hatred, inappropriate content, being rude to others, sexual harassment, criticising or mocking others, and sharing non-reliable information. Limited studies (Echeverri & Skálén, 2011; Wang, Wong, Teo, & Yuen, 2019) have examined value co-destructing practices within OCs, with investigations largely confined to the context of online brand communities. For instance, Wilson, Giebelhausen, and Brady (2017) studied the impact of negative online word of mouth on brands. In addition, Frow et al. (2016) focused on co-destructive practices only in the offline health-care ecosystem. This study contributed to literature and highlighted a specific group of negative practices in the context of gerontology.

5.3.3 Value Co-creation and Co-destruction Outcomes

As highlighted in the conceptual framework (Figure 24), the resilience process in OCs can result in either value co-creation or value co-destruction. This aligns with literature, as usually OCs are known as not only value co-creation entities (Chamakiotis & Panteli, 2017) but also as domains for value co-destruction (Daneshvar et al., 2018; Litchman et al., 2018). In line with the recent shift of OCs from places where word of mouth creates or damages the value of brands, to the places for creating peer-to-peer value (Loane & Webster, 2014), this study suggests that OCs are places where users co-create and co-destruct value through exchange and application of resources. According to the findings, OCs are not only value co-creation entities but also places for co-destruction of value, as there are many practices performed by users that can decline the resilience of older adults. In terms of value co-creation and value co-destruction in OCs, this study has some similarities and differences with other works. First, findings introduce OCs as a place for value co-creation practices. There are various points-of-view in the literature regarding value co-creation in OCs. Value co-creation in OCs is mostly studied in the contexts of business and marketing. More recent research focused on value co-creation in the healthcare ecosystem (Frow et al., 2016; McColl-Kennedy, Vargo, Dagger, Sweeney,

& Kasteren, 2012) and most of these works highlighted the informational and emotional value that these communities afford users. So, the focus of each domain is different as values in different contexts vary. For instance, in the business domain, OCs create value in the form of improved efficiency or financial gain. Or, in online education communities, the focus is to co-create knowledge (Booth & Kellogg, 2015). However, the focus of this work is the co-creation of value in the context of gerontology concentrating on the concept of resilience. Therefore, in this work, the types of values are different for users as they mainly look for support regarding their stressor. Because of this, in this context, the value is being co-created if practices are aligned with the stressor and can positively impact resilience resources among older adults.

Form another aspect, findings showed that participation in OCs can result in value co-destruction through disparaging and misbehaving. This might eventuate in decline of resilience resources among older adults. In general, findings of this study are aligned with literature as value co-destruction in OCs is identified by some studies before. However, despite value co-creation and co-destruction both being essential aspects of value formation, in the literature of OCs, the exploration of value co-destruction in OCs is not as prevalent as the investigation of value co-creation. In fact, limited studies have examined value co-destruction in OCs. Usually, these studies are in the context of online brand communities where the negative word of mouth can negatively impact the brand (Wilson et al., 2017). Also there are some studies of online health communities in which the negative impact of value co-destruction on health is examined (Frow et al., 2016). In this study, we focused on a different perspective of value co-destruction in OCs with the focus of gerontology and specifically how value co-destruction can impact the resilience of older adults.

5.4 CHAPTER SUMMARY

This chapter presented a consolidation of the findings derived from the main case study (Section 4.2) and interviews (Section 4.3). Therefore, first, the Digital Resilience Process Model (DRPM) was discussed. Then, the DRPM was compared with salient resilience models to highlight the contributions of the study. To do so, the stressors as the triggers of the DRPM were discussed and compared with previous works. Then, the reintegration phase of the DRPM was discussed. This continued with

the discussion of the resilience outcomes and possible resilience scenarios, and we compared our findings with the resilience outcomes of the salient resilience models.

Further, the elements of the DRPM were discussed from the lens of value co-creation to highlight the contributions of the model to value co-creation research, and also to explain how value co-creation research could contribute to pre-existing resilience models. Thus, first, the reintegration phase of the DRPM was discussed and compared with other points-of-view to understand how the value co-creation domain could clarify unclear parts of resilience models. This was continued by discussing value co-creation and co-destruction practices. Finally, the co-creation and co-destruction outcomes were discussed.

Chapter 6: Conclusions

The introduction chapter of this study highlighted the need for more understanding of how resilience of older adults can emerge in Online Communities (OCs). Chapter 2 presented the literature review, identified that not enough research has been devoted to understanding what impacts the resilience of older adults in OCs, what older adults do in OCs as focal actors to develop resilience, and what the resilience outcomes are for older adults engaging in OCs. Chapter 3 provided a comprehensive research design to address the recognised gaps and suggested a multimethod sequential research design.

Based on the research design, three datasets were analysed including an exploratory case study, the main case study, and interviews. This sequential multimethod design helped to theorise the DRPM, which was introduced and discussed in Chapter 5.

This chapter concludes the research by outlining the findings of the three research questions, followed by examining the theoretical and practical contributions of the study. Subsequently, the chapter outlines the limitations of the research and discusses areas for future research.

6.1 SUMMARY OF RESEARCH FINDINGS

Identifying the gaps in the literature regarding the process of resilience development in OCs, this work attempted to address different aspects of how resilience emerges in OCs. Therefore, this work aimed to answer three research questions: 1) What influences resilience of older adults in OCs? 2) Why do older adults engage in OCs to develop resilience? 3) What are the resilience outcomes for older adults engaging in OCs?

To answer the first research question, several activities were performed. First, a systematic literature review was performed to understand what impacts resilience of older adults in OCs. Findings showed that the benefits of OCs for older adults can support their resilience factors (Kamalpour et al., 2020). OCs have three potential benefits for older adults including self-empowerment, social support, and health improvement. These potential benefits can support several resilience resources,

including external connection, grit, meaningfulness, positive perspective in life, health status, self-care, and independence (See Section 2.2.5). Performing the first systematic literature review helped to obtain more insight regarding the role of OCs in the resilience of older adults and resulted in development of the initial conceptual framework using the resilience theory and value co-creation concepts.

Later, by conducting further literature review, and conceptualising the resilience factors as resilience resources that are dynamic attributes, the importance of practices of users in OCs was noticed and we realised that the reintegration phase of the resilience is very dependent on the type of practices that users exhibit in OCs. Therefore, through analysing the exploratory case study dataset, the main case study, along with another systematic literature review, we answered the first research question to understand what influences the resilience of older adults in OCs. As highlighted in the DRPM (Figure 24), the reintegration phase in OCs happens through a collaborative process of resource sharing between users. Accordingly, when the focal actor faces stressors, he/she shares the issue online with other users and the focal actor and other contributing users engage in several practices including, *communal coping*, *sharing experience*, *sharing information*, *providing emotional support*, *creating happiness*, *sharing instrumental resources*, and *disparaging*. Consequently, if practices are aligned with the stressor, the focal actor perceives the value, and uses the resources shared by contributing users, and if not, the focal actor doesn't apply resources and no integration happens. Findings of the systematic literature reviews, the exploratory case study and the main case study validated each other and also made findings of this section more comprehensive. Also, regarding the happiness creation practices, findings showed that participation of older adults in OC can result in two aspects of happiness, namely hedonic and eudaimonic happiness. Identifying the seven practices helped us to better understand about the nature of interactions among users and more specifically the resource reintegration process in OCs, which is indeed a critical construct of the resilience process.

Regarding the second research question, the aim was to understand why older adults engage as focal actors in OCs to develop resilience. In the context of resilience, usually older adults participate in OCs to overcome their adversities. The first step and the trigger of the resilience process is occurrence of stressors. (Richardson, 2002) and any findings regarding the resilience process can be considered within the context and

existence of specific adversity (Windle, 2011). Hence, in OCs, older adults share their stressors as the first step so they can seek help, and this is how the resilience process starts in OCs. Therefore, identifying the stressors was crucial to theorise the process of resilience in OCs. Accordingly, performing the main case study and supplementary interviews revealed five stressors shared by older adults in OCs, including *economic deficiency*, *health-related issues*, *social isolation*, *societal concerns*, and *family dysfunction*. In fact, these stressors are the triggers of the resilience process in OCs, and they result in the emergence of the reintegration phase.

The purpose of the third research question was to identify what the resilience outcomes for older adults engaging in OCs are. To answer this question, we relied on the resilience model (Richardson, 2002) to frame the pathway of our investigation. Therefore, as the model by Richardson (2002) shows, the reintegration phase results in several outcomes. Similarly, the DRPM proposed by this study shows that the reintegration process in OCs results in four possible scenarios, including revitalising and growing, devitalising and shrinking, indeterminacy and ambiguity, and simultaneous revitalising and devitalising (See section 4.3.3). Accordingly, in the first scenario, revitalising and growing, the focal actor shares the stressor, and then contributing users reply to the focal post. If the focal actor takes the offered resources of contributing users and applies the resources to cope with the stressor, then the resilience process has occurred positively, and the focal actor can cope and grow. The second scenario, devitalising and shrinking happens when the focal actor shares the stressor, but instead of supporting, contributing actors engage with disparaging practices or provide destructive resources to the focal actor, which can result in a decline in the resilience resources of the focal actor so that can negatively impact the resilience of the focal actor. This scenario happens when the focal actor is being negatively impacted by contributing users.

However, our findings showed that in some cases the focal actor doesn't reply to the comments of the contributing users, so it is not clear whether the focal actor's resilience is developed or declined. This circumstance emerged in the third scenario, indeterminacy and ambiguity where the focal actor shares the stressor in the community, and then contributing users support the focal actor through provision of different resources. But the focal actor doesn't reply to contributing users' posts so the ambiguity occurs because we cannot see if provided resources are used by the focal

actor or not. In the last scenario, simultaneous revitalising and devitalising, the focal actor shares the stressor, and this results in receiving both constructive and destructive comments from contributing users. So, applying the offered resources of contributing users, resilience resources of the focal actor can be simultaneously developed and declined. For example, one resilience resource is developed and another one is declined.

In brief, findings showed that as the outcome of these four scenarios, several resilience resources can be developed or declined. More information of the type of the affected resilience resources are highlighted in Figure 17, Figure 18, Figure 19, Figure 20, Figure 21, and Figure 22.

In addition, answering the third research question helped to identify the types of stressors that older adults share in OCs. Findings showed that older adults usually share five types of stressors in OCs. Findings of the main case study revealed three stressors, including economic deficiency, health related issues, and social isolation. Later, findings of the interviews showed that in addition to the aforementioned stressors, older adults also share stressors regarding societal concerns and family dysfunction (See Table 22).

Moreover, findings addressed the vagueness of the resilience reintegration step which was highlighted by previous scholars (Wister et al., 2016). Indeed, previous models (Richardson, 2002; Wister et al., 2016) did not clarify how the process of resilience reintegration occurs. Findings of this study addressed this gap and identified that reintegration process is taking place through purposeful practices that are performed by the focal actor and contributing users. Accordingly, sharing of stressors on OCs is the trigger of the reintegration process as it enables all users including the focal actor and contributing users to engage with the process of sharing resources through several practices. Then, when resources are shared through practices, and the focal actor accesses and uses the offered resources, then the process of reintegration happens. This process can form the outcome of the resilience process and can result in development or decline of resilience resources for the focal actor. This clarifies how the resilience reintegration process happens and can shape resilience outcomes. This is clearly shown in the DRPM (Figure 24).

6.2 CONTRIBUTIONS

Providing insights about how the resilience of older adults emerges in OCs, the findings from this research have significant implications for both theory and practice. The key theoretical contribution of this study is that we produced a conceptual framework which contributes to three bodies of literature, including Information Systems, Service Science, and Gerontology. The proposed framework explained how OCs support resilience resources among older adults, how the process of value co-creation and co-destruction occurs in OCs, and clarified the theoretical link between the literature and the practice of creating happiness in OCs. In addition, the model improved the resource integration model of Frow et al. (2016) by shifting the idea that resource integration occurs not only by accessing and sharing resources but also by application of them. Further, this study improved the literature by identifying the value co-creation and co-destruction practices of older adults in OCs.

Moreover, from IS perspective, this study contributed to the knowledge in different ways. Built on empirical evidence of digital resilience, this work contributed to an emerging IS concept (Digital Resilience) and conceptualised digital resilience in IS by providing a comprehensive digital resilience framework explaining how the process of digital resilience takes place, and how IS can support resilience of those individuals who use OCs. In addition, in line with the definition of digital resilience (Boh et al., 2020), and focusing on individual users of OCs, the framework shows how through a set of practices, older adults as the focal actors adopt OCs, share their stressors online, and interact with other individuals (contributing users) to respond to a specific set of stressors to develop their resilience. Through this, the framework showed the elements of the resilience process that happen in OCs such as sharing of stressors, resources integration phase, users' practices, and resilience outcomes which is one of the important impacts of OCs on older adults. These outcomes clarify the impact of OCs on resilience of older adults by showing how participation in OCs can either develop or decline the resilience of older adults. Further, by examining the individual level, this work provides insights into the most recent call for research to 1) understanding digital resilience Boh et al. (2020) to understand leveraging digital platforms to build resilience across an ecosystem. To do this, our DRPM framework reveals how individual users as the actors of the ecosystem leverage OCs to build their resilience through interactions and specific practices. 2) to further understand

leveraging digital technologies in mobilising community resources and services to respond to stressors. Accordingly, the framework explains how different resources that contributing users shares on OCs can be mobilised by older adults for the purpose of resilience in response to stressors, and how this process can lead to four possible scenarios of resilience development or decline.

From service science research aspect, this work addressed the need to understand users' experiences in ecosystems particularly involving how adopting technologies can shape the well-being or ill-being of individuals (Ostrom et al., 2021). Specially from the perspective of vulnerable groups such as older adults. Hence, this work identified seven different practices older adults do in OCs, including communal coping, sharing experience, sharing information, providing emotional support, creating happiness, sharing instrumental resources, and disparaging. Sharing different resources through these practices can modify and shape their resilience resource. In addition, this work contributes to literature by addressing the need for identifying the value destructive practices that exist in OCs, which ultimately can result in a decline in individuals' wellbeing. From a practical perspective, understanding how leveraging technologies shape wellbeing or ill-being of older adults, and how older adults engage in co-creation and co-destruction practices can enable different stakeholders and service providers such as government or caregivers to engage better in online value co-creation practices in order to facilitate resilience of older adults through provision of important resources.

Finally, from the perspective of the Gerontology field, this research has several theoretical contributions. The "Digital Resilience Process Model" (DRPM) proposed by this study theoretically improved the previous resilience model (Wister et al., 2016) from three aspects: 1) Identifying the type of stressors of older adults that trigger the process of resilience. 2) Unfolding the reintegration phase within the resilience process. 3) Clarifying the outcomes of the resilience process by explaining the four possible scenarios. Also, the model contributed to the identification of the resilience resources that can be developed or declined in OCs. The "DRPM" is the first model that explains the process of resilience among older adults in digital platforms, and identified the stressors, and the impact of each scenario of the resilience process outcome on resilience resources. This contributes to social workers and other professionals who work with older adults so they can understand the stressors, and

resilience resources in helping older adults (Usher & Yang, 2013), especially, the stressors associated with digital communication and, following on from this, understanding potential strategies to consider to foster resilience of older adults.

6.3 LIMITATIONS AND FUTURE RESEARCH

Like any other research, this work also has its own limitations, which are highlighted in the following sentences. First, the scope of this study is limited to the resilience of older adults at the individual level. As Wild et al. (2013) suggests, resilience of older adults as a complex process has different scales, including individual, household, neighbourhood, family, community, and societal resilience. also, these scales are intertwined and can impact each other (See Figure 1). However, this study only focused on the individual level resilience of older adults. Therefore, future studies can investigate how participation of older adults in OCs can impact resilience of older adults in other scales rather than the individual level. This is important as Wild et al. (2013) recommended that there is a need to focus on all resilience scales and not only the individual level.

The resilience theory was used to frame and picture the resilience process in OCs. The theory is in early stages compared with other ageing theories and needs more improvements. This study applied this theory in the Information Systems domain and improved its constructs within this research area, such as clarifying the types of stressors, the reintegration process, and the resilience outcomes. However, there are many research avenues that could help to improve theoretical understanding in this area. For instance, the model can be tested and the outcomes of the digital resilience process in OCs can be quantified through different existing resilience scales. There are several quantitative resilience measurement types such as The Resilience Scale for Adults, The Resilience Appraisal Scale, and Brief Resilience Coping Scale (Highlighted by Resnick (2014)). Hence, using these assessment procedures, future research can test the model before and after participating in OCs to examine how participation of older adults in OCs impacts their resilience.

Another limitation that we faced was through the data collection phase. On Reddit, there are very few communities that have been specifically dedicated to older adults. This made our job difficult to find suitable communities. As a result, finding participants for interviews was also challenging as we were looking for those older

adults who were using Reddit. However, we addressed this issue with the help of our participants as they introduced a number of communities on Reddit to us so we could find more communities and participants.

In addition, conducting the exploratory and main case study, it was revealed that the perception of the value and the outcomes of the resource integration are not clear in all cases as some users did not reply to the posts and resources provided by contributing users. Hence, interviews have been added as a supplementary data collection method to address this issue and also for the validation of the findings. This was challenging as they added to the complexity of the methodology and also analysis. Nevertheless, although interviews contributed to the comprehensiveness and reliability of our analysis, the legitimate outcome of the “no evidence of value formation” scenario for Reddit analysis remained vague. Therefore, additional types of analysis should have been performed to try to contact those people to find out about the outcome.

The DRPM proposed by this study is a preliminary model which is based on one case studies and interviews. The DRPM is a process model that does not imply causation rather than possibility (Burton-Jones, McLean, & Monod, 2015). Also, the model is only in the context of older adults and their participation in OCs. Although the resilience process is similar within different contexts as it is usually triggered by stressors and ends with the resilience outcomes, the model is limited to older adults within the context of OCs. More studies are needed to validate the model in other contexts, among other age groups, and within different ecosystems.

Further, it is important to acknowledge that findings of this study might not be completely generalisable to social media platforms as there is a sharp distinction between social media and OCs. OCs are built on the interaction of people who usually don't know each other while in social media, people often already know each other (Johnson, 2014; Nimrod, 2013). However, the findings of our work can be generalised to the community part of social media, because they have the same set of features and characteristics as usually users don't know each other, and they gather in the community based on their shared interests and needs. Hence, the model can be generalised to the community section of social media but not to a broader level of social media as the type of interactions, features, and affordances differ from OCs.

This study theorised the resilience process in OCs through the lens of value co-creation and furthered the understanding regarding the resource integration phase of the resilience process. However, as it was out of the scope of this study, we did not focus on the types of co-created or co-destroyed values perceived by users. There are some studies that have been done before in other domains, which explored the types of co-created values in OCs (Van Oerle, Lievens, & Mahr, 2018) but not in the context of older adults. So, this is an avenue for future studies to identify the value types being not only co-created but also co-destroyed in OCs dedicated to older adults.

Our findings showed that in OCs, older adults interact not only with older adults but also with other people such as caregivers and professionals. In addition, the second systematic literature review conducted by this study revealed that participation in OCs can also impact the resilience of caregivers. However, as this study was scoped to the resilience of older adults only, this area remained unclear. Therefore, future study should investigate how participation of users in OCs is impacting the resilience of other stakeholders such as caregivers, and professionals like formal caregivers, doctors, etc.

This chapter presented a recap of the research questions, and a summary of the findings. In line with explanation theorising suggested by Gregor (2006), this research developed a theory by explaining the phenomenon of resilience emergence for older adults in OCs and proposed the DRPM, which explored an important research domain of resilience in digital platforms in the context of older adults and online communities. Through the DRPM, this study identified and explained the resilience process for older adults in OCs by improving the theoretical constructs of previous resilience models and clarified the stressor's types, unfolded the reintegration phase of the resilience process, and identified the resilience outcomes as the result of participation of older adults in OCs. The theoretical and practical contributions of the study have been explained, followed by the study limitations and future research avenues. The findings of this study will contribute to both theory and practice, and provide robust foundations for further research in the domain.

Appendices

Appendix A The method section of the first systematic literature review

The method used in this study is divided into three phases (See Figure 1). The goal of the first phase was to investigate the potential benefits of OCs for older adults. Hence to answer this question we conducted a systematic literature review following the recommendations of Webster and Watson (2002) as a guideline to organize the review. To do so, a systematic search strategy was designed to evaluate and interpret the current literature, and to address the research question. We also followed the four-staged guides (see Figure 1) suggested by the PRISMA guidelines (Moher et al., 2015), as used by many studies (Khosravi et al., 2016). Furthermore, analysis of the potentials and benefits of OCs conducted using an inductive process of thematic analysis. Thematic analysis is a method to identify, analyse, and report themes within the data, and inductive thematic analysis is “a process of coding the data without trying to fit it into a pre-existing coding frame” (Braun & Clarke, 2006, p. 83). Using Nvivo12 software, a sample of benefits and potentials of OCs for older adults were coded, and it helped us to conduct the thematic analysis of potentials of OCs for older adults. In the second phase, we adopted the most recent systematic review of resilience factors among older adults by Bolton et al. (2016) as our source to compare with the findings of first phase. The methodological quality of the systematic review by Bolton et al. (2016) was assessed and validated independently by the first two authors using the AMSTAR (assessing methodological quality of systematic reviews) instrument. AMSTAR is a validated tool that calculates the degree to which review methods are unbiased (Shea et al., 2007). The tool showed us that the Bolton et al. (2016) review is a moderate quality review which means that the systematic review has more than one non-critical weakness, but no critical flaws. It may provide an accurate summary of the results of the available studies that were included in the review. Although the review by Bolton et al. (2016) was a quality and comprehensive study of resilience factors, in order to ensure completeness of our work, we reviewed recent relevant literature and noticed that four key resilience factors were not identified by them but are present in extant work. Hence, we added those factors to their findings for next steps of our study. Finally, in the third phase, findings of the first and second phase

were compared to understand what potential benefits of OCs support resilience factors among older adults. The following sections elaborate the process of the systematic review and the thematic analysis.

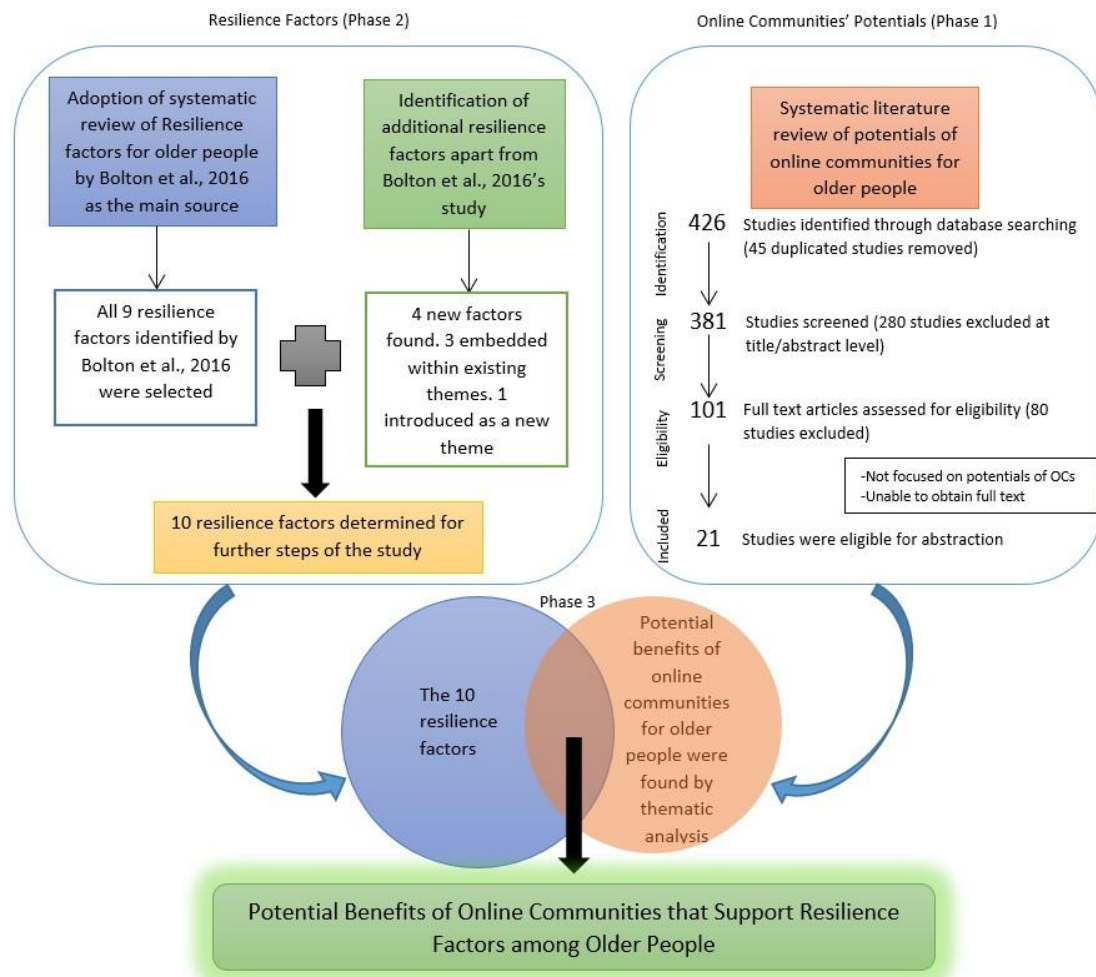


Figure 25) *Research Method*

Sampling and Inclusion Criteria

Data collection was carried out through a precise search and sampling of studies focusing on potentials of OCs for older adults. The search of the literature was undertaken by the first author and verified by the second for accuracy on the first of July 2019 by searching five academic databases including: PubMed, Scopus, Ebsco, AISeL, and Google scholar through the search queries. The selection of search terms were based on the keywords within the research question. However, to ensure that all relevant studies are covered, we widened the search keywords by searching their synonyms as well. We used the following search terms: “online community”, “online communities”, “virtual community”, “virtual communities”, “elderly”, “senior”,

“older adults”, and “older adults”. After initial articles were identified, they were assessed based on the four inclusion criteria as following; 1) Studies written in English were taken into account. This is a common method for systematic reviews to avoid difficulties of translation and the replicability of the study (Voorberg, Bekkers, & Tummers, 2013). 2) In order to maximize the accuracy and comprehensiveness of the findings, all peer-reviewed journals, conference papers, and research in progress studies were included. 3) As our objective was to reflect contemporary views, the time period of the searched studies were between January 2013 and July 2019. 4) We only included studies that focused on the potentials and use of OCs for older adults.

Narrowing the Sample

After the precise search of the relevant literature, the sample narrowed down in a four-step process by following the PRISMA guidelines (See Figure 1). In the identification step, 426 studies were identified through database searching and 45 duplicated items were removed, resulting in 381 studies at the end of this step. In the screening step, 381 studies were screened, and 280 items were excluded at title/abstract level, and 101 studies remained. During the eligibility step, 101 full text articles were assessed and 80 studies were excluded for two reasons; they were not focused on the potential benefits of OCs for older adults, and we were unable to obtain full texts. In the last step, 21 studies were eligible for the abstraction.

Theme Extraction and Analysis

Theme extraction is the first step in the data analysis process (Bolton et al., 2016). To conduct the inductive thematic analysis of the included studies, six steps were carried out following the Braun and Clarke (2006) guidelines. First, we familiarized ourselves with literature by iteratively reading the selected articles to find the initial ideas for coding. This enabled us to identify 64 initial codes across the entire dataset. The iterative process of coding then led to identifying 55 codes (by removing 9 miscellaneous codes) and 7 themes as the result of collating 55 codes based on the similarity and differences of the codes. In the next phase, we iteratively reviewed the themes based on the similarity and differences of their content. This led to: first, merging two of the themes with the other themes (resulting in five themes); and second, merging two of the five themes with the other three themes, resulting in identifying three themes overall. We defined each of the three final themes by creating a clear definition for each of them, and labelled each of themes with a name that

represents its content (outlined in Table 2). Finally, we produced an erudite report of the analysis including analysis of the selected extracts in relation to the research question of the study.

In order to keep the essence of original themes, and to ensure the reliability of the coding (Nili, Tate, & Barros, 2017), we carried out inter-coder reliability checking. Inter-coder reliability is a necessary step, and almost the heart of any content analysis, because if the coding is not reliable, the analysis cannot be trusted (Lombard, Snyder-Duch, & Bracken, 2002). Choosing the inter-coder reliability checking method for a study, requires assessing the method based on its properties and the characteristics of the content analysis of the study. Low risk studies (e.g. where there are no health or significant financial risks) don't require a method that allows analysis of any type of data by more than two coders with lower chance of agreement on codes (Nili et al., 2017). Accordingly, percent agreement method was selected as our approach. The two researchers reviewed a list of original themes and corresponding definitions independently in two sessions. The first percent agreement was 72/7% as coders were in agreement on 40 out of 55 codes, and after the second session, following more discussion, the percent agreement increased to 100%, convincing us about the reliability of the literature review.

Appendix B The method of the second systematic literature review

We conducted a systematic literature review following the recommendations of Webster and Watson (2002) as a guideline to organize the review. A systematic search strategy was designed in accordance with the PRISMA guidelines. The analysis of the activities that older adults do in online communities to co-create and co-destruct value was conducted using an inductive process of thematic analysis and by using NVivo12 software.

Sampling and inclusion criteria

The search of the literature was undertaken by the first author and verified by the second for the accuracy on the 18th of August 2019 by searching five academic databases, including Scopus, EBSCO Academic Search Elite, AISEL, PubMed, and Google Scholar through the search queries outlined in Table 1. To ensure that all relevant studies are covered, we widened the search keywords by searching their synonyms as well (See Table 1). After initial articles were identified, they were assessed based on four inclusion criteria as following; 1) Studies written in English. 2) All peer-reviewed journals and conference proceedings papers were included. 3) time period of the searched studies was between January 2010 and August 2019. 4) We only included studies that focused on the use of online communities for or by older adults. It is essential to indicate that, although many studies classify older adults as those who are above age 65, we have not filtered the studies based on any certain age as there is no consistency in literature about older adults' age.

It should be acknowledged that we have included the term social media in our search query because, first, despite the significant distinction between online communities and social media (Johnson, 2014), we assumed that some articles might not consider this issue. For example, a study by Leist (2013) was titled as only usage of social media by older adults, but within the analysis, the authors included online communities as well. Second, communities may use social media platforms such as Facebook or Google Plus to provide online groups for their members. Hence, we considered the term social media in our search to maximize the comprehensiveness of the analysis.

Narrowing down the sample

A total of 321 studies were identified through database searching, and 85 duplicated items were removed, resulting in 236 studies at the end of this step. These studies were screened, and 169 items were excluded at the title/abstract level, and 67 studies remained. During the eligibility step, 67 full-text articles were assessed, and 44 studies were excluded for two reasons. First, we were unable to obtain the full text, and second, the articles were not highlighting the activities of actors in online communities. Finally, 23 studies were eligible for the abstraction (See Fig. 1 for the steps of narrowing down the sample using PRISMA guidelines, and Table 2 for demographic information on the sample of each of the studies included).

Theme extraction

To conduct the inductive thematic analysis of the included studies, six steps were carried out following the Braun and Clarke (2006) guidelines. First, we familiarized ourselves with literature by iteratively reading the selected articles to find the initial ideas for coding. This enabled us to identify 126 initial codes across the entire dataset. The iterative process of coding then led to identifying 121 codes spanning over five themes of discussion. These themes included practices that result in resource exchange, practices that build or strengthen external connections, communal coping practices, practices resulting in happiness, and value co-destruction practices. In the next phase, we iteratively reviewed the themes based on the similarity and differences of their content. This led to merging two of the themes with each other, resulting in identifying four themes overall. Finally, we produced an erudite report of the analysis, including the analysis of the selected extracts in relation to the research question of the study. In order to keep the essence of original themes, and to ensure the reliability of the coding (Nili et al., 2017), we carried out inter-coder reliability checking. Accordingly, conducting a percent agreement method, the two researchers reviewed a list of original themes and corresponding definitions independently in two sessions. The first percent agreement was 83/47% as coders were in agreement on 101 out of 121 codes, and after the second session, following more discussion, the percent agreement increased to 100%, convincing the authors about the reliability of the literature review.

Appendix C List of Potential OC Platforms

| Name | Size | Stakeholders | Website Address |
|-----------------------------------|-------------|--|---|
| National Seniors Australia | | Older adults (OAs), and Informal Caregivers (ICGs) | https://nationalseniors.com.au |
| Living Well Sane | | OAs | http://livingwellcommunities.com.au |
| | | Individuals, ICGs, Profs | https://sane.org |
| Beyond Blue | | Everyone plus professional | https://www.beyondblue.org.au |
| KinCare | | Professional | https://www.kincare.com.au |
| Palm Lake care | | Aged care | https://mtwarrenpark.palmlakecare.com.au |
| dailystrength | +20000 | OAs, ICGs | https://www.dailystrength.org |
| Life without barriers | | Aged care | https://www.lwb.org.au |
| AgedCare | | Aged care | https://www.agedcare.org.au |
| Aveo | | Aged care | https://www.aveo.com.au |
| Hometown Australia | | Aged care | https://hometownaustralia.com.au |
| Rareconnect | | Individuals, Professionals | https://www.rareconnect.org/en |
| Speechbubble | | Individuals | http://speechbubble-blog.dhs.gov.au |
| Chronic Pain Australia | | Individuals, Professionals | http://chronicpinaustralia.org.au |
| YourLifeChoices | Unknown | OAs or any other individual | https://www.yourlifechoices.com.au |
| Greypath | 16000 | OAs | http://greypath.com.au |
| Agedcare101 | unknown | OAs, ICGs, Professionals | https://www.agedcare101.com.au/forum |
| Seniors Update | 23000 | OAs, ICGs, Government | https://www.facebook.com/seniorsupdate Australian Government Department of Human Services |
| Reddit (This OC was | 330 million | Everyone including | https://www.reddit.com |

| | | | |
|------------------------------------|--|---------------|--|
| selected as our case study) | | OAs, and ICGs | |
|------------------------------------|--|---------------|--|

Appendix D More information about other Potential OC Platforms

YourLifeChoices

The first selected community, “YourLifeChoices”, is an excellent resource for understanding the Age Pension, superannuation, rent assistance, and other information regarding older people and their lives. The website moderators help their users, particularly older adults to understand their rights and options in the process of retirement. All the information is classified in a very user-friendly manner so older people can access the information they need quickly. But an essential feature of the website in the context of this study is the forum that is provided by the website. The forum allows members to interact with each other and share diverse types of information, knowledge, and experience in various topics such as retirement, sports, politic, government, technology, health and wellbeing, travel, hobbies, etc. This could enable us to investigate the resilience of users through the lens of value co-creation.

| | |
|--------------------------------------|--|
| Size | The website has not mentioned the number of members. However, our observation showed that the total number of users of the website was more than 30. Hence this community met this criterion. |
| Members’ type | Both older adults and their caregivers could join this community. |
| Relation to value co-creation | The forum allows members to interact with each other and share diverse types of information, knowledge, and experience in various topics such as retirement, sports, politics, government, technology, health and wellbeing, travel, hobbies, etc. This enabled us to investigate the resilience of users through the lens of value co-creation. |
| Relation to resilience | Users could interact with each other and ask questions about different topics. The resources that they could share with each other might contribute to the resilience of older adults, but this claim needs further investigation. |
| Data access | The forum and its data were open to everyone. However, to extract the forum’s data, we needed to contact the website owners for permission. |
| Language | English was the only language in the community. |

This online community does not mention its number of users but browsing the community showed that the number of users is more than 30, and the language used in

the community was English. Table below highlights the assessment of the platform with our inclusion criteria.

Greypath

The other shortlisted OC, “Greypath”, is a leading website for older adults in Australia with around 16000 users. Users who are mainly older adults are able to communicate within the different forums with various topics such as health, jokes, technology and etc. Each of the forums consists of many sub-forums that can be started by any member in the form of sharing knowledge or seeking information. As users could seek and share different types of resources, this forum is suitable for further investigation. Finally, the language of the community is English; hence, this community met all criteria and was selected as a potential case for this study. The table below highlights the assessment of the Greypath OC with the inclusion criteria for discourse analysis of the study.

| | |
|--------------------------------------|--|
| Size | More than 16000 people are actively participating this community |
| Members’ Type | It seems that only older adults are using this community. We need more investigation to make sure about the existence of other types of users such as caregivers. |
| Relation to value co-creation | As users could seek and share different types of resources, this forum was suitable for the investigation of the resilience of users through the lens of value co-creation. |
| Relation to resilience | Users could interact with each other and ask questions on different topics. The resources that they could share with each other can contribute to their resilience. Hence, we can investigate the potentiality of the community in contributing to resilience. |
| Data access | The forum and its data were open to everyone. However, to extract the forum data, we needed to contact the website owners for permission. |
| Language | English is the only language in the community. |

Agedcare101

The third shortlisted online community, “Agedcare101”, assists the collaboration between the partners who are all experts in the area of aged care, in their different fields such as architecture and built environment, law, aged care financial services, and healthcare. They provide a variety of useful information and advice for older adults. The information provided in agedcare101 has been produced with the

utmost care to ensure it is correct, independent, and able to be updated regularly as changes occur. All website's users can make a new post on the forum to ask their questions for any purpose, and individuals and the experts answer the questions. This forum was very promising to be selected as the case study of this research for two reasons. First, the resilience process can be studied as most users such as older adults, caregivers, and professionals reactively and proactively share their problems and seek support, and second, the resilience process can be investigated from the lens of value co-creation as the forum actively allows users to interact, exchange and integrate resources. Moreover, in terms of community size and language, the forum is consisting of a sufficient number of users who communicate in English. Hence, this forum was suitable as it met all the criteria. The table below highlights the assessment of the Agedcare101 website based on the inclusion criteria for the discourse analysis of the study.

| | |
|--------------------------------------|---|
| Size | The website has not mentioned the number of members. However, our observation showed that there are more than 30 users within the community, so the forum met the size criterion. |
| Members' Type | Older adults, caregivers, and professionals are the users of this online community |
| Relation to value co-creation | All users of the website could make a new post on the forum in order to ask a question for any purpose, and individuals and the experts answer the questions and can share different types of resources. This enabled us to investigate the community through the lens of value co-creation. The resilience process can be investigated from the lens of value co-creation as the forum actively allows users to interact, exchange and integrate resources |
| Relation to resilience | Resilience process can be studied as most users reactively and proactively share their problems and seek support from a different range of users such as older adults, caregivers, and professionals |
| Data access | The forum and its data were open to everyone. However, to extract the forum data, we needed to contact the website owners for permission. |
| Language | English is the only language in the community. |

Seniorsupdate

The fourth community that met the criteria was "Seniorsupdate", a Facebook online community that has been provided by the Australian Government Department of Human Resources (DHS). The aim of the community is to help older adults to stay

up to date with Medicare and Centrelink news and information. They inform users about changes, give useful tips, share news and answer questions. The focus of this community is on Australian older adults, including carers, disabled people, online services, health, rural and regional services, multicultural services, indigenous services, and the Financial Information Service. Older adults and other individuals can join this community and interact with each other. In addition, they can ask questions regarding various topics from the Australian Government Department's experts. This online community was also promising as it enables users to interact, exchange and integrate resources before and after facing adversity. Moreover, in terms of community size and language, the forum is consisting of 23000 users who communicate in English. Hence, the forum met all criteria and seemed suitable to be studied as a case study for the discourse analysis of the study. The table below shows a summary of the relationship between the Seniorsupdate forum and inclusion criteria.

| | |
|--------------------------------------|--|
| Size | There are about 23000 users of this community. |
| Members' Type | All individuals, including older adults and caregivers, are able to join this community. |
| Relation to value co-creation | The forum allows members to interact with each other and share diverse types of information, knowledge, and experience in various topics such as Medicare, Centrelink news, etc. This enables us to investigate the resilience of users through the lens of value co-creation. |
| Relation to resilience | This online community enables users to interact, exchange and integrate resources in times of or before the adversity. Hence, it was suitable as we could investigate the interactions regarding the resilience phenomenon. |
| Data access | The forum and its data were open to everyone. However, to extract the forum data, we will contact the website owners for permission. |
| Language | English is the only language in the community. |

Appendix E Interview Questions

1. Would you please introduce yourself?
2. To what extent are you involved in online communities and how do you use them? (To gain an understanding of which communities they use and their typical role in each)
3. Can you tell me why you joined these communities? (Do you also use Reddit for caregiving affairs?)
4. Who else participates in these communities? Who are they and what do they do? (Identifying actors and their attributes)
5. What value or benefit does this online community afford you or your care recipient? (Do you share the things you don't share offline?) (Does the information accumulated by other users seem useful for you?)
6. What value do you afford the community?
7. What types of participation are most effective at increasing value?
8. Does participation lead to sharing of tangible or intangible assets? Examples?
9. What else is shared? Examples? (Identifying operand resources shared)
10. Has anything ever gone wrong in the online community? How?
11. Do people sometimes misbehave? How?
12. What are the consequences of these negative experiences?
13. Tell me about a time where somebody (yourself or another person) faced adversity and shared their situation / problem in the online community.
14. And was the community helpful? How?
15. Were there any negative effects?
16. Can you tell me how participation in Reddit can empower people to overcome the difficulties they might face? Does it make them more prepared?
17. Can you describe examples of reciprocity that you see online in the community? Ex; communal coping of the users with a problem
18. Is there any other thing you want to add?

**Appendix F The Evolutionary Process of Generating Initial Codes, First-level,
and Final-Level Themes**



| Step 2: Generating Initial codes` | Step 3: Searching for themes resulted in emergence of the first themes | Step 4: Reviewing themes resulted in emergence of final themes |
|--|---|---|
| <ul style="list-style-type: none"> • Depression reduction • Loneliness reduction | Wellbeing Improvement for Older Adults | Wellbeing Improvement for Older Adults |
| <ul style="list-style-type: none"> • Enabling independency • Promoting self-acceptance • Promoting self-care • Promoting self-efficacy • Encouragement • Promoting self-esteem • Enabling self-disclosure | Self-empowerment of Older Adults | Self-empowerment of Older Adults |
| <ul style="list-style-type: none"> • Sharing experience • Sharing information • Sharing photos • Sharing intimacy • Sharing ideas • Sharing sense of humour • Sharing values • Sharing healthy lifestyle • Sharing altruism • Sharing spirituality • Sharing hope • Sharing optimism | Resource Exchange | Social Capital Access |

| | | |
|--|---------------------------------|--|
| <ul style="list-style-type: none"> • Emotional support • Tangible support • Network support • Making friendship • Social connectedness | <p>Receiving Social Support</p> | |
| <ul style="list-style-type: none"> • Seeking emotional support • Seeking information • Seeking network support • Seeking ageing in place • Seeking policy change • Seeking value revival | <p>Seeking for Support</p> | |

Appendix G User Demographics for the Exploratory Case Study

| User number | Name | Age | Gender | Marital Status |
|-------------|------|-----|--------|-------------------------|
| 1 | A C | 61 | Male | Married/Partnered |
| 2 | A A | 50 | Male | Married/Partnered |
| 3 | B J | 80 | Male | Married/Partnered |
| 4 | C P | 54 | Female | Single |
| 5 | C P | 79 | Female | Widowed |
| 6 | D J | 57 | Female | Married/Partnered |
| 7 | D A | 55 | Female | Married/Partnered |
| 8 | E A | 79 | Female | Married/Partnered |
| 9 | E B | 56 | Male | Married/Partnered |
| 10 | G W | 66 | Female | Divorced |
| 11 | G M | 78 | Male | Married/Partnered |
| 12 | G W | 71 | Male | Single |
| 13 | G S | 63 | Male | Married/Partnered |
| 14 | G B | 70 | Male | Married/Partnered |
| 15 | G I | 68 | Male | Married/Partnered |
| 16 | J S | 66 | Female | Widowed |
| 17 | J C | 66 | Female | Married/Partnered |
| 18 | K R | 63 | Male | Never Married/Partnered |
| 19 | M T | 70 | Female | Divorced |
| 20 | M P | 70 | Female | Married/Partnered |
| 21 | P G | 57 | Male | Divorced |
| 22 | P O | 67 | Male | Married/Partnered |
| 23 | R G | 71 | Male | Married/Partnered |
| 24 | R B | 66 | Male | Single |
| 25 | R Y | 60 | Female | Widowed |
| 26 | S P | 64 | Female | Married/Partnered |
| 27 | S G | 80 | Female | Married/Partnered |
| 28 | S N | 53 | Female | Married/Partnered |
| 29 | S P | 51 | Female | Married/Partnered |
| 30 | T H | 57 | Female | Married/Partnered |
| 31 | V S | 72 | Female | Married/Partnered |
| 32 | W J | 70 | Male | Married/Partnered |
| 33 | W S | 53 | Male | Single |
| 34 | A B | 60 | Female | Married/Partnered |
| 35 | A S | 62 | Female | Married/Partnered |
| 36 | A S | 77 | Female | Married/Partnered |
| 37 | A O | 59 | Female | Married/Partnered |
| 38 | B C | 78 | Female | Married/Partnered |
| 39 | B R | 71 | Male | Married/Partnered |
| 40 | B F | 70 | Male | Married/Partnered |
| 41 | B S | 70 | Female | Married/Partnered |
| 42 | C M | 51 | Male | Married/Partnered |
| 43 | C C | 65 | Male | Married/Partnered |
| 44 | C H | 80 | Male | Married/Partnered |
| 45 | E H | 82 | Male | Married/Partnered |

| | | | | |
|----|-------|----|--------|-------------------|
| 46 | F M W | 71 | Female | Divorced |
| 47 | G J | 69 | Male | Married/Partnered |
| 48 | G R | 75 | Male | Married/Partnered |
| 49 | G F | 54 | Male | Married/Partnered |
| 50 | G A | 76 | Male | Divorced |
| 51 | I T | 74 | Female | Married/Partnered |
| 52 | J L | 54 | Male | Married/Partnered |
| 53 | J B | 81 | Female | Divorced |
| 54 | J G | 72 | Female | Married/Partnered |
| 55 | J G | 74 | Male | Married/Partnered |
| 56 | K P | 73 | Male | Married/Partnered |
| 57 | L H | 81 | Female | Married/Partnered |
| 58 | L J | 78 | Female | Married/Partnered |
| 59 | M W | 67 | Female | Widowed |
| 60 | M L | 80 | Female | Widowed |
| 61 | M M | 61 | Male | Divorced |
| 62 | N H | 56 | Male | Single |
| 63 | N C | 54 | Female | Married/Partnered |
| 64 | P J | 58 | Male | Married/Partnered |
| 65 | P B | 82 | Male | Married/Partnered |
| 66 | S D | 54 | Female | Divorced |
| 67 | T L | 54 | Male | Married/Partnered |
| 68 | T J | 57 | Female | Married/Partnered |
| 69 | V H | 56 | Female | Single |
| 70 | A S | 72 | Male | Married/Partnered |
| 71 | A C | 65 | Male | Married/Partnered |
| 72 | A R | 59 | Female | Married/Partnered |
| 73 | B V | 50 | Male | Married/Partnered |
| 74 | D Y | 72 | Female | Married/Partnered |
| 75 | D H | 61 | Male | Single |
| 76 | D T | 92 | Male | Widowed |
| 77 | E M | 81 | Male | Married/Partnered |
| 78 | G I | 55 | Male | Married/Partnered |
| 79 | H B | 58 | Male | Divorced |
| 80 | J T | 73 | Male | Married/Partnered |
| 81 | J C | 56 | Female | Married/Partnered |
| 82 | J P | 60 | Male | Married/Partnered |
| 83 | K M | 72 | Male | Married/Partnered |
| 84 | L H | 87 | Male | Widowed |
| 85 | L K | 65 | Female | Married/Partnered |
| 86 | L Y | 71 | Female | Married/Partnered |
| 87 | M H | 73 | Female | Widowed |
| 88 | M B | 66 | Female | Married/Partnered |
| 89 | P B | 63 | Female | Married/Partnered |
| 90 | P C | 70 | Female | Divorced |
| 91 | P W | 72 | Female | Divorced |
| 92 | P T | 80 | Female | Widowed |
| 93 | P R | 59 | Male | Single |

| | | | | |
|------------|-----|----|--------|-------------------|
| 94 | P S | 66 | Male | Married/Partnered |
| 95 | R A | 57 | Female | Married/Partnered |
| 96 | R M | 67 | Male | Married/Partnered |
| 97 | R M | 59 | Male | Single |
| 98 | S R | 52 | Female | Divorced |
| 99 | S B | 81 | Female | Divorced |
| 100 | V D | 64 | Female | Married/Partnered |

Appendix H Methodology of the second part of the Exploratory Case Study

Using practice theory and core principles of S-D logic such as actors, resources, and ecosystems, we conducted a case study of value co-creation and value co-destruction practices of older adults in OCs. The case investigated an OC that run in mid-March 2017, specifically designed to capture qualitative discussions over four days to understand the future housing needs of mature Australians.

Data Collection

The community was hosted by a private OC contractor, who handled the platform, recruitment, and digital infrastructure. The contractor contacted 132 people aged 50 years and over from their membership database. After reviewing the participant agreement, 103 individuals aged between 50 and 92 with diverse demographics across Australia agreed to engage in a four-day online forum activity. The participants were randomly divided into three groups that ran consecutively over the four days with precisely the same activities. Each day participants were asked to complete a range of activities (e.g. answer questions about senior living) and were able to engage in dialogue with each other around the topics of current activities and future aspirations through sharing text, images, and links in the OC. After finishing the activities, the dataset, including threads of conversations and activities of participants in each group, was saved separately in a Microsoft Word file for analysis.

Data Analysis

We conducted a qualitative thematic analysis of the conversations, interactions, and resource sharing of the older adult participants in the OC. Our goal was to identify practices (habitual activities carried out by participants within the social system (Bourdieu, 1986)) related to co-creation and resource integration (Vargo & Lusch, 2008). Considering the nascent state of literature, we did not have a pre-existing classification framework. Rather, the analysis was inductively performed, following the six-step thematic analysis by Braun and Clarke (2006).

To keep the essence of the original themes, and to ensure the reliability of coding, inter-coder reliability was performed (Lombard et al., 2002) using the percent agreement approach (Hunt, 1986). Two researchers reviewed a list of original themes and corresponding definitions independently. The first percent agreement was 81%

with coders agreeing on 80 out of 98 codes. The percent agreement increased to 100% through ongoing, iterative, discussions. As a result, our thematic analysis developed four main themes, explained in detail in the next section.

| <i>Table 24) Six Steps of Thematic Analysis</i> | |
|---|--|
| Thematic Analysis Steps (Braun & Clarke, 2006) | Application |
| 1- Familiarising yourself with data | We familiarised ourselves with the data by iteratively reading the conversations of the participants in the OC to find initial ideas for coding. |
| 2- Generating initial codes | Upon analysing the conversations, 98 initial codes were identified. |
| 3- Searching for themes | The iterative process of coding, involving constantly comparing codes, led to removing seven miscellaneous codes, resulting in 91 codes. Through further comparison, six themes were identified based on similarities and differences in the coded data. |
| 4- Reviewing themes | We iteratively reviewed themes based on the similarities and differences of their content. This led three themes being combined into a single theme, which resulted in four themes overall. |
| 5- Defining and naming themes | We defined each of the four final themes and labelled each of the themes with a name representative of its content. (Appendix 1) |
| 6- Producing the report | Upon completion, we produced our findings in this paper. |

Appendix I Six-step Analysis for Stressors in the Main Case Study

| Step | Procedure and Outcome |
|---|--|
| Familiarising yourself with your data. | At this step, users' conversations were read and re-read so I got familiar with the data and consequently, initial ideas about the context were emerged. |
| Generating initial codes. | Being more familiar with the data, resulted in generating 15 initial codes regarding the stressors that focal actors shared on Reddit. |
| Searching for themes. | At this stage, the initial codes were collated into potential themes so different groups of themes were emerged based on the similarities and differences of the codes. As an outcome, four themes were emerged, including <i>economic deficiency</i> , <i>mental health issues</i> , <i>physical issues</i> , and <i>social isolation</i> . |
| Reviewing themes. | All four identified themes were compared with each other for similarities and differences and potential overlaps. It was found that there are some overlaps and similarities for the mental health and physical health. Therefore, these two themes were merged and created a new theme called <i>health-related issues</i> , and this resulted in having three final themes, including, <i>economic deficiency</i> , <i>health-related issues</i> , and <i>social isolation</i> . |
| Defining and naming themes. | The specifics of each theme were analysed and refined, and based on the general story of each theme, a clear definition and names assigned to each theme (See Table 19). |
| Producing the report. | After finishing the analysis and identification of themes, we reported each theme with analysis and compelling examples (See Table 19). |

Appendix J Six-step Analysis for Practices in the Main Case Study

| Step | Procedure and Outcome |
|---|--|
| Familiarising yourself with your data. | At this step, users' conversations were read and re-read so I got familiar with the data and consequently, initial ideas about the practices and activities of users On Reddit were emerged. |
| Generating initial codes. | Being more familiar with the data, led us to generate 91 initial codes about practices of users on Reddit. |
| Searching for themes. | At this stage, the initial codes were collated into potential themes so different groups of themes were emerged based on the similarities and differences of the codes. As an outcome, seven themes were emerged, including: <i>Seeking and providing coping strategies</i> , <i>Seeking and providing guidance</i> , <i>Creating happiness</i> , <i>Disparaging</i> , <i>Providing emotional support</i> , <i>Sharing experience</i> , and <i>Sharing information</i> . |
| Reviewing themes. | All seven identified themes were compared with each other for similarities and differences and potential overlaps. It was found that there are some overlaps and similarities among some of the themes. Therefore, we merged two themes, including: <i>Seeking and providing coping strategies</i> , and <i>Seeking and providing Guidance</i> . This resulted in emergence of a new theme called <i>Communal coping</i> . Hence, we had six themes in total, including: <i>Communal coping</i> , <i>Creating happiness</i> , <i>Disparaging</i> , <i>Providing emotional support</i> , <i>Sharing experience</i> , and <i>Sharing information</i> . |
| Defining and naming themes. | The specifics of each theme were analysed and refined, and based on the general story of each theme, a clear definition and names assigned to each theme. Themes names and their definitions are shown in Table 20. |
| Producing the report. | After finishing the analysis and identification of themes, we reported each theme with analysis and compelling examples. |

Appendix K Six-step Analysis for Resilience Outcomes in the Main Case Study

| Step | Procedure and Outcome |
|---|--|
| Familiarising yourself with your data. | At this step, we looked for the examples of resilience resource modification within users' conversations to explore if there were any examples showing that resilience resources are being developed or declined. So, we read all conversations to become more familiar with the data, and some initial ideas about the phenomenon were emerged. |
| Generating initial codes. | Being more familiar with the data, led us to generate 11 initial codes regarding the development or decline of resilience resource among users after participating in conversations on Reddit.. |
| Searching for themes. | At this stage, the initial codes were collated into potential themes so different groups of themes were emerged based on the similarities and differences of the codes. As an outcome, four themes (Scenarios) were emerged, including: <i>Revitalising and growing</i> , <i>Devitalising and Shrinking</i> , <i>Indeterminacy and Ambiguity</i> , <i>Simultaneous Revitalising and Devitalising</i> . |
| Reviewing themes. | All four identified themes were compared with each other for similarities and differences and potential overlaps. No overlaps were found, so all four themes remained the same and no changes were applied to them. |
| Defining and naming themes. | The specifics of each theme were analysed and refined, and based on the general story of each theme, a clear definition and names assigned to each theme. Themes, names, and their definitions are shown in section 4.2.3. |
| Producing the report. | After finishing the analysis and identification of themes, we reported each theme with analysis and compelling examples. |

Appendix L Six-step Analysis for Stressors in Interviews

| Step | Procedure and Outcome |
|---|---|
| Familiarising yourself with your data. | At this step, interviews' transcripts were read and re-read abductively to confirm previous identified stressors and also to identify new types of stressors if there were any. So, I got familiar with interview transcripts and consequently, initial ideas about the context were emerged. |
| Generating initial codes. | Being more familiar with the data, led us to generate 17 initial codes regarding the stressors that focal actors shared on Reddit. |
| Searching for themes. | At this stage, the initial codes were collated into potential themes so different groups of themes were emerged based on the similarities and differences of the codes. As an outcome, five themes were emerged. Out of these five, three of them were already found in the case study analysis, including <i>economic deficiency</i> , <i>health-related issues</i> , and <i>social isolation</i> . However, two new themes were identified, namely <i>societal concerns</i> , and <i>family dysfunction</i> . Hence, at the end of this phase, five themes were identified. |
| Reviewing themes. | All five identified themes were compared with each other for similarities and differences and potential overlaps. No overlaps or issues were found. Therefore, all themes remained the same with no changes. |
| Defining and naming themes. | The specifics of each theme were analysed and refined, and based on the general story of each theme, a clear definition and names assigned to each theme. Themes names and their definitions are shown in Table 22. |
| Producing the report. | After finishing the analysis and identification of themes, we reported each theme with analysis and compelling examples. |

Appendix M Six-step Analysis for Practices in Interviews

| Step | Procedure and Outcome |
|---|---|
| Familiarising yourself with your data. | At this step, interviews' transcripts were read and re-read so I got familiar with the data and consequently, initial ideas about the practices of users in Reddit were emerged. To do this, I analysed the data abductively. Thus, I looked for the six previous identified practices to confirm their reliability, and also, I looked for new practices. |
| Generating initial codes. | Being more familiar with the data, led us to generate 46 initial codes regarding the practices that users perform in Reddit. |
| Searching for themes. | At this stage, the initial codes were collated into potential themes so different groups of themes were emerged based on the similarities and differences of the codes. As an outcome, seven themes were emerged. All six practices identified earlier in the case study analysis were identified again so we could validate them. In addition to those six practices, a new practice also was emerged named: <i>Practices resulting in tangible benefits</i> . Therefore, at the end of this stage, on total seven themes were identified. |
| Reviewing themes. | All seven identified themes were compared with each other for similarities and differences and potential overlaps. It was found that there are no overlaps or issues. Therefore, all seven themes remained the same with no changes applied to them. |
| Defining and naming themes. | The specifics of each theme were analysed and refined, and based on the general story of each theme, a clear definition and names assigned to each theme. Themes names and their definitions are shown later in Table 23. |
| Producing the report. | After finishing the analysis and identification of themes, we reported each theme with analysis and compelling examples. |

Appendix N Six-step Analysis for Resilience Outcomes in Interviews

| Step | Procedure and Outcome |
|---|--|
| Familiarising yourself with your data. | At this step, users' conversations were read and re-read to confirm the four identified scenarios and to look for any other potential findings. So, I got familiar with the data and consequently, initial ideas about the context were emerged. |
| Generating initial codes. | Being more familiar with the data, led us to generate 28 initial codes regarding the outcomes of participating in OCs and its impact on the resilience of older adults in terms of developing or declining the resilience resources among users. |
| Searching for themes. | At this stage, the initial codes were collated into potential themes so different groups of themes were emerged based on the similarities and differences of the codes. As an outcome, four themes were emerged which were exactly the themes (scenarios) that were found in the case study. Hence, this validated the previous findings. In addition, no new theme was emerged. |
| Reviewing themes. | All four identified themes were compared with each other for similarities and differences and potential overlaps. It was found that there are no overlaps and similarities among themes, so no changes applied to them, and they remained the same. |
| Defining and naming themes. | The specifics of each theme were analysed and refined, and based on the general story of each theme, a clear definition and names assigned to each theme. Themes names and their definitions are shown in section 4.3.3. |
| Producing the report. | After finishing the analysis and identification of themes, we reported each theme with analysis and compelling examples. |

Appendix P Theoretical Coding Example for Scenario 1

| A | B | C | D | E | F | |
|---|--------------------------|--|--|---|--|--|
| 1 | Scenarios | Stressor/s | Practices by the Focal Actor | Practices by Contributing Users | Value Perception and Resource | Resilience Factor Development |
| 2 | Revitalising and Growing | Social Isolation Health Issues (Shared by FoA72) | Sharing Experience Communal Coping Creating Happiness (Shared by FoA72) | Emotional Support, Providing guidance (Shared by C163) | Perceiving the Value Applying the | |
| 3 | Quotes | <p><i>I am having a rough year. My oldest son tried to commit suicide (failed thankfully). I am in severe burnout at my job. Been here since 1998 and have gotten to a point of having to force myself to go to work and stay all day. I have gained a lot of weight. My SO says my weight doesn't bother him, but it bothers me I guess I am having the typical over 50 problems. Eyesight getting fuztler Timmitus. high BP. Aching knees. But the depression is the hardest to handle. My mind reels and whirls. How to get past this? (Health Issues). Is there anyway? Even advice about meds that actually work to fight depression (Social isolation through lack of information). I tried some about 3 years ago and the side effects bugged me a lot (I was constantly clenching my jaw, until I would get a daily headache). But the depression is worse now. Might be worth the head pain</i></p> | <p><i>I am having a rough year. My oldest son tried to commit suicide (failed thankfully). I am in severe burnout at my job. Been here since 1998 and have gotten to a point of having to force myself to go to work and stay all day. I have gained a lot of weight (Sharing experience) (Also creating happiness through self-disclosure and self-expression). My SO says my weight doesn't bother him, but it bothers me. I guess I am having the typical over 50 problems. Eyesight getting fuztler. Timmitus. high BP. Aching knees. But the depression is the hardest to handle. My mind reels and whirls. How to get past this? Is there anyway? Even advice about meds that actually work to fight depression (Started the process of communal coping). I tried some about 3 years ago and the side effects bugged me a lot (I was constantly clenching my jaw, until I would get a daily headache). But the depression is worse now. Might be worth the</i></p> | <p><i>It does sound like a rough year (Emotional support) and I think you should be kind to yourself (Advice)</i></p> | | |
| 4 | Quotes | | <p>Sharing Information, Network Support, Sharing Experience, Creating Happiness (Shared by C165)</p> <p><i>I struggled with depression as well (Network Support)-it affected every aspect of my life (Experience sharing, self-disclosure which creates happiness). I tried fluoxetine (Prozac) but found the side effects to be intolerable. I then went a long time thinking antidepressants just weren't for me. But then I asked my doc to try bupropion (Wellbutrin), and it has really worked well for me. I started on the low dose, and then after a couple of months when my system adapted to that we upped the dose and I am doing quite well on it. When my mind wants to go to a dark place, there's like a wall stopping it when I'm on the bupropion. That's the best way I can describe it. I still get blue every now and then, but its effect on me is much less significant. And I don't have any noticeable side effects with the bupropion. I also hike a lot, and my time in the woods and the exercise is really good for me (Experience sharing). I'm not a doc and I'm not telling you to try specific meds; I'm just telling you what worked for me. I wish you the best of luck</i></p> | | <p>Thanks for all responses. I am scheduling my yearly physical soon and am going to ask about meds (Self-care). Trying again (Grit). Also the whole informational support can support the External Connection resource.</p> | External connection Self-care Grit |
| 5 | | | | | | |
| 6 | | | <p>Providing Guidance (Shared by C159)</p> | | | |
| 7 | Quotes | | <p><i>Talk to your Dr about appropriate antidepressant for you. It may help you cope with everything else going on. Grief counselling might help as well. My deepest condolences (Advice and giving guidance)</i></p> | | | |

Appendix Q Theoretical Coding Example for Scenario 2

| 1 | Scenarios | Stressor/s | Practices by the Focal Actor | Practices by Contributing Users | Value Perception and Resource | Resilience Factor Development |
|----|----------------------------|---------------|--|---|--|--|
| 8 | Devitalising and Shrinking | Health issues | Self-expression Sharing Experience (FoA90) | Emotional Support, Creating happiness, Communal coping (C241) | Perceiving the Value Applying the | Decline |
| 9 | Quotes | | <i>I was so traumatized by 9/11. I was living in a small town in TN. I haven't and don't want to see any of the movies and documentaries (Self-expression) . See the people jumping in real time rather than</i> | <i>Addressing some of the comments on here: Trauma you experience through media and living through an event is still real even if you are not at the event. Everyone is different. 9/11 is actually one of the events that brought more attention to the fact</i> | Last conversations show that the focal actor negatively impacted by negative comments of some contributing users | Decline of External Connection through weakening network support |
| 10 | | | | Creating happiness, sharing experience (C256) | | |
| 11 | Quotes | | | Watching those people jump to their death rather than be burned alive will haunt me for the rest of my life. I can still see them in my mind. | | |
| 12 | | | | Creating happiness. Sharing experience (C133) | | |
| 13 | Quotes | | | Yup, still not ready either. I live in the NYC suburbs, had quite a lot of family in NYC that day. | | |
| 14 | | | | None, thank God, in the towers, but some uncomfortably nearby. A few folks in my town and church were more directly affected. Still not ready to go to the museum downtown when that whole time lives in my head rent free | | |
| 15 | Quotes | | | Creating happiness, Sharing experience (C134) | | |
| 16 | | | | I worked there but was lucky to not be in the building when it happened. My coworkers were traumatized for a long long time. 8 of them never came back to work because they could no longer walk into an office building. That said, the past couple of years, the memories have eased up for the survivors I know and they have all moved on from their trauma. I hope this helps you. | | |
| 17 | | | | Communal coping, disparaging, creating happiness (C259) | | |
| 18 | | | | That was 20 years ago. It is time to move on. What about Viet Nam, 50,000 + Americans? Your lifetime if you are in this group. Middle east and what America have done with remote killing, going on now. | | |
| 19 | Quotes | | <i>I always assumed trolls were young. After reviewing your posts you are</i> | Disparaging, communal coping (C245) | | |
| 20 | Quotes | | <i>Sorry but 19 years is not a LONG time ago. That's why I posted here because at our age our perspective is different</i> | <i>That was a LONG time ago. Seek professional help. You shouldn't be that traumatized</i> | | |
| 21 | Quotes | | <i>Yes sir on it!</i> | <i>Yes, it is. Especially if one only saw it on TV. Long past due to get over your reaction to it. Time to learn the difference between an upsetting event you heard of/saw remotely and an actual trauma. (C245).</i> | | |

Appendix R Theoretical Coding Example for Scenario 3

| | A | B | C | D | E | F |
|----|-----------------------------|-----------------------------------|--|---|--|--|
| 1 | Scenarios | Stressor/s | Practices by the Focal Actor | Practices by Contributing Users | Value Perception and Resource | Resilience Factor Development |
| 22 | Indeterminacy and Ambiguity | Health Issues, Economic wellbeing | | Sharing experience, Communal coping (C18) | | |
| 23 | Quotes | | Sharing Experience, Looking for network support, Communal coping (C15) My elderly parent was victimized by a phone scammer, giving "Apple Tech Support" bank account info. Apparently a significant amount of money was stolen as a result. My parent is clearly losing some common sense and I worry what might happen next. How have others dealt with an aging parent who needs more care and possibly a loss of control of finances, etc...???? | Hey there, unfortunately these scams are happening more often these days. Have they made a police report? It's never easy when you have a parent that is experiencing possible cognitive decline. The best thing you can do is educate yourself on the resources available for what to do after something happens as well as what prevention methods are out there (Advice). For my grandparents we were able to get a new phone system installed that will announce who is calling. If it's not a family member they don't answer the phone anymore (Experience sharing and sharing coping strategies). But there's always a risk that someone will | Value perception and resource integration were not observed. | No evidence neither development or decline of resilience resources were observed |
| 24 | | | | Sharing experience, Communal coping (C15) | | |
| 25 | Quotes | | | From my experience, whatever can happen next, will. Every situation is different, but you need to sit down and talk to your parent about the event. They are likely embarrassed or confused, depending on their situation. Does your area have a Council on Aging? These non-profits are great for consulting with supporting children (Sharing coping strategies). I visited with them and they helped me with my Dad tremendously (Experience sharing). But you need to realize that depending on age and mental condition, you need to tread very softly. Always realize that your parent, no matter how much sense they have, probably still feels like a responsible adult. When this starts to go, they will begin acting like children. With | | |
| | Simultaneous | | | | Perceiving the | |

Appendix S Theoretical Coding Example for Scenario 4

| 1 | Scenarios | Stressors | Practices by the Focal Actor | Practices by Contributing Users | Value Perception and Resource | Resilience Factor Development |
|----|--|---------------------------------|--|--|---|-------------------------------|
| 26 | Simultaneous Revitalising and Devitalising | Social Isolation, Health Issues | Self-expression, Looking for network support (FoA47) | Creating happiness, Experience sharing (C112) | Perceiving the Value Applying the integrated | |
| 27 | | | <i>Old friends seem to annoy me more as I get older. Has anyone else found themselves not wanting to spend as much time around people? even people they love? Is this an age thing? Do friendships run their course and come to an end? that strikes me as incredibly sad and yet that's what seems to be happening to me. I'm finding even people I've been close to for 30 and 40 years are so irritating in really petty ways that I no longer care to be around them. Can anyone relate? Or is it just me needing to stop myself turning into a typical crabby old person?</i> | For me, I had adopted the "stop caring what other people think" attitude in my 50s. (Experience sharing) I believe at our age, people tend to change a lot - almost a second adolescence into senior-hood. They begin to settle and not be as adventurous. Sure, I can't do shots or lift heavy things like I used to, but I can still get on a bike, attend a good concert, make love with my wife and many other things that keep me feeling young. (Helping to improve the focal actor's self-acceptance) I have let many more fall by the wayside because I've found them to be supplying "noise" in my life that I don't need. Kind of like "unfriending" on Facebook - but in real life | | |
| 28 | | | | Creating happiness, Communal coping (C113) I also like you ditched all the people that are surplus to requirement and periphery acquaintances etc in my 50s. For example, even with my dearest friends I found I'm putting up their foibles like interrupting me when I'm speaking and I'm not prepared to do that anymore. A couple of other friends also I've turned a blind eye to their selfishness and being dropped and picked up when it suits them and now I just can't tolerate it - I just don't want to see them. I do feel my friends are changing as the 60s kick in it's a very different decade to anything else you've been through as you prepare for extreme old age and lots of things are in a different perspective thing now Communal Coping (C114) Our lives have gone in different directions and we probably wouldn't have enough in common to start a friendship at this point in our lives. Trying to spread self-acceptance Creating happiness, Communal coping (C115) | The focal actor replied to all and seems despite all network supports, her external connection resource is gradually declining as she might have less social connectedness with people. | |
| 29 | | | | Sometimes I have to just say "no more" however, if it crosses a line into an area of blatant disrespect. It's a difficult thing to do, end a 20 or 30-year friendship, but otherwise I become a doormat. No thanks! :-)) through self-expression and sharing experience Communal Coping, Experience sharing (C116) | | |
| 30 | | | | I think we become more "ourselves" as we age. If we've always been negative, we become more negative etc. I'm getting more intolerant of my friend's crap. They're probably getting more intolerant of my crap. I don't have the energy or patience to put up with too much aggravation. I think it's part of aging. I try to be aware if I'm being too hard on people. I socialize for shorter periods of time. I meet friends for a walk or coffee. No more than 2 hours at a time! | | |
| 31 | | | | | | |
| 32 | | | | | | |
| 33 | | | | | | |
| 34 | | | | | | |
| 35 | | | It's certainly a new aspect of life for me have to start considering where I am with these old friendships. I am not happy about it at all. But like you say life's too short to be putting up with crap | | | |
| 36 | | | Great to hear it I'm not alone in this though. I think I'll go either way I'll either get over it and just ignore it and carry on with these friendships with these wonderful people who I should be really grateful to have in my life Or I just think f*** it and see them less and less and cope with the isolation when I come to it. | | Perception of network support by focal actor. She also applied all resources from all users that encouraged her to end her friendship | |
| 37 | | | The suggestion of keeping it short and sweet with longer periods in between is a really good one so thanks for that | | this can negatively impact the social connectedness of the focal actor and therefore her external connection | |

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