

CO-CREATE FINANCIAL PLANNING SERVICES FOR AN AGING POPULATION: DESIGNERS' PERSPECTIVES

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ABSTRACT

The purpose of the study is to understand the design considerations for creating a provocative financial planning toolkit with services to help facilitate more constructive and meaningful conversations to build trust and empathy between financial advisors and senior people. We conducted four rounds of 60-minute co-creation workshops with eight invited participants from various design disciplines to work in pairs to generate four preliminary concepts suggesting design considerations. We used ATLAS.ti to do qualitative research analysis under an NCT (notice, collecting, thinking) model to identify 22 codes synthesized from verbal and behavioral data. The study concluded with three design principles: 1) the concept of financial planning is about people's expectation management, 2) a financial planning toolkit is designed under service systems, and 3) the tailor-made and modular design features can give financial advisors more flexibility to engage with senior people and enable them to share more about their life stories and needs to recommend financial planning packages precisely according to personal preference, health conditions, and financial status.

Keywords: Service design, Design process, Financial planning, Aging, Product-Service Systems (PSS)

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1 INTRODUCTION

By 2030, every Baby Boomer will be 65 or older, according to the US Census Bureau in 2017. This indicates that one out of every five Americans will be of retirement age. People live longer and desire to have a better quality of life (Coughlin, 2017). We need to learn how to manage not only our physiological health, but also our financial health. The term financial planning can be intimidating and overwhelming for most people. How much money do people need to prepare for retirement to cover the cost of healthcare and other living expenses? Who should we ask for help besides financial advisors? What is a typical financial planning process? These financially relevant questions occur across different ages. Indeed, designing financial planning services for an aging population is a complicated and systemic challenge that connects to our daily lives, families, and societies. The research shows that six key factors affect people's financial planning decisions in different life stages: welfare gains, wealth, labor earnings, consumption, labor supply, and leisure time (Kim et al., 2016). Therefore, in the study, we explore the critical design considerations for creating financial planning toolkits with human-centered services in the early stage of product development. The design process and considerations can help financial advisors and senior people have better, respectful, transparent, and meaningful conversations about their lives and financial conditions and thus provide constructive and customized financial suggestions.

2 LITERATURE REVIEWS

2.1 WHAT: Financial planning services for an aging population

Financial planning services include more than strategically planning people's life ahead of time in terms of money needed after retirement with the help of the financial planning service. In addition to the financial aspect, Kolluri and Hutchins also suggest that elderly people consider seven priorities when thinking about life after retirement: health, home, family, work, giving, finances, and leisure (Kolluri and Hutchins, 2017). Their physiological and psychological changes also need to be taken into account, including decreased cognitive performance, hearing and vision loss, increased anxiety, feelings of uncertainty in the future, lowered mobile capacity, and probably a need for families' care and community support (Mitchell et al., 2017). In general, most elderly people are associated with 1) fewer financial capacities, 2) poorer health conditions, and 3) less end-of-life planning.

The experimental study focused on financial planning services from designers' points of view to define financial planning services as a service ecosystem to discuss 1) users' capabilities, 2) design context, and 3) the service toolkit. DaDalt proposed five financial planning actions with support from seniors' families and advisors to address the challenges: 1) assess current assets, 2) review income and insurance, 3) discuss future care preferences, 4) manage daily expenses, and 5) plan care management (DaDalt and Coughlin, 2016; DeLiema and Deevy, 2016). Inspired by the five financial planning actions, we conducted the research from the viewpoints of service providers (e.g., financial advisors) and service recipients (e.g., senior people) to envision future financial planning services and toolkits to empower financial advisors to understand senior people's desires, make their conversation more transparent, interactive, and meaningful to build empathy and trust, and ultimately provide customized financial planning products, services, and experiences to increase financial literacy education.

2.2 HOW: Co-creation workshops under qualitative (ethnographic) approaches

Financial planning services and toolkits are associated with the field of service design (Penin, 2017; Mager, 2009; Tomiyama et al., 2004; Shostack, 1984) and the service system (Rodrigues et al., 2021; Furrer et al., 2016; Holmlid and Evenson, 2008). Service design creates value collectively for stakeholders, either contributing to economic value or generating the flow of value (Lee, 2022a; Goldstein et al., 2002). In the study, we defined four co-creation workshops as ethnographic fields (Emerson et al., 2011) to observe participants' verbal data (e.g., video transcription and pre-workshop survey results) and non-verbal data (e.g., prototyping behavior and interaction) to increase service design value by a participatory design methodology (Lee, 2022; Trischler et al., 2019). A co-creation workshop is a more interactive format to engage participants and researchers and make their voices heard (Merkel and Kucharski, 2019; Millen et al., 2015; Office of Financial Empowerment (OFE) et al., 2014; Demirbilek and Demirkan, 2000).

We applied notice-collecting-thinking (NCT) model to conduct qualitative research analyzing four co-creation workshop video recordings with transcriptions by ATLAS.ti software (Sormani et al., 2017; Friese, 2014; Muhr, 1993). There are two levels of NCT model analysis: descriptive level and conceptual level. A descriptive level analysis is an early-stage exploration of data from workshop video recordings to find patterns to code by identifying keywords from the transcriptions and participants' quotes, and capturing some interesting design concepts. The second phase, conceptual level analysis, is to review these codes and make connections with initial research questions from various angles by applying analytic tools. In the study, we followed the modified conversation-analytic talk-in-interaction research approach—applied video ethnography (Higginbotham and Engelke, 2013; Enfield and Levinson, 2006; Pink, 2004) to 1) capture eight participants' discussions and behaviors, 2) transcribe four video recordings, 3) analyze the content and non-verbal interactions, and 4) represent the insights. Thus, we organized 22 codes to generate one co-occurrence table and visualize these data in two Sankey diagrams from service providers and service recipients to discuss three key design considerations in the conclusion.

3 RESEARCH APPROACH

It took six months to design and develop the content and structure of the co-creation workshop based on the literature review, industry experience, and design expertise. We conducted four one-hour co-creation workshops in two weeks with eight senior designers (with three to five years working experiences) recruited from personal connections and across different design disciplines. We viewed a co-creation workshop as a study field to analyze and synthesize participants' verbal and behavioral data. Before the eight participants joined the co-creation workshops, they were required to take a 3-minute pre-workshop survey designed and shared by Qualtrics a day ahead to help us understand their knowledge around service design in general and financial planning for the aging population. The structure and purpose were designed to encourage the participants to make tangible prototypes through collaborating and role-playing. Figure 1 shows the overall research flow with three phases and nine actions.

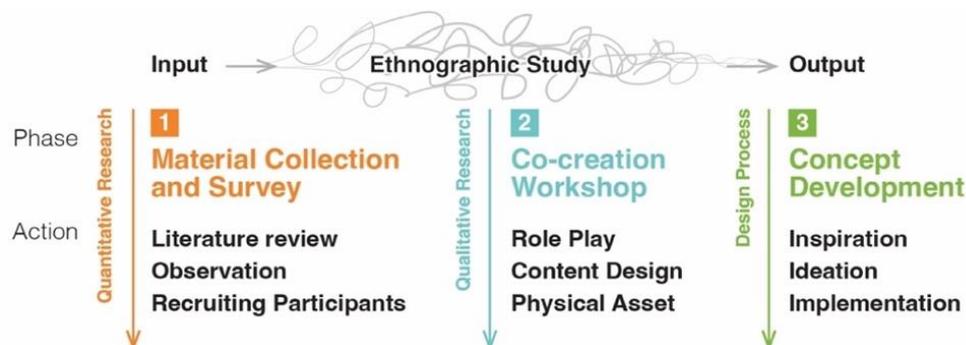


Figure 1. Research with three phases and nine actions (illustrated by Sheng-Hung Lee)

3.1 Co-creation workshop design overview and objectives

Four 60-minute co-creation workshops were conducted with eight participants (four aged 21 to 30 and four aged 31 to 40). These workshops were centered around brainstorming the financial planning toolkits and services for an aging population and financial advisors. Each co-creation workshop consisted of a group of two designers from different disciplines: industrial/product, branding, interaction, business, design strategy, and graphic design to solve the following two how-might-we questions from both service providers' and service recipients' perspectives:

- How might we envision a future financial planning toolkit and services to empower financial advisors with suitable a set of skills and mindset to understand patrons' desires precisely, build empathy and trust with them, and provide them with tailor-made financial service products?
- How might we envision a future financial planning toolkit and services for an aging population to help the conversation be more transparent, enable senior people to more explicitly express their needs to address their pain points, and build friendship and trust with financial advisors?

The four co-creation workshops were guided by these two major how-might-we questions to help the research team and participants follow the Design Thinking method, such as brainstorming ideas and

prototyping concepts (Brown and Katz, 2019; Kelley and Kelley, 2015; IDEO, 2011; Kelley and Littman, 2001).

3.2 Co-creation workshop tools and environment setup and process

We designed a suitable environment by providing accessible co-creation tools: letter-size paper, Post-its, Sharpies, tape, scissors, and templates to make people want to co-create with their partners. We not only focused on the co-creation tools, but also thought of the location, size (approximate 323 square feet) and view (with sunlight and two windows) of the space. For a two-person co-creation workshop, the space could not be too huge with echoes, but it needed to have a big enough table for prototyping and installing recording devices (e.g., one 360 GoPro, one iPhone, one MacBookPro used for Zoom recording, and one Sony camera) for observation. Choosing a room with natural sunlight was also critical, so participants wouldn't feel stuck in the space to generate design concepts. Besides the hardware part of the co-creation workshop, we also designed the software part of the workshop, including challenging briefing material, co-creation guidance, and selected reference frameworks that the participants could easily follow to facilitate an approximately 60-minute co-creation session. "I think the three briefing videos before the co-creation workshop starts have helped a lot," mentioned one participant. "Honestly, it helps us quickly get into the right mindset. I like the three different perspectives (from videos) in the financial planning space. It was a great prompt."



Figure 2. Photos of co-creation workshops with designers from different backgrounds

3.3 Qualitative research analysis, observation, and codes identification

We used ATLAS.ti to conduct a qualitative analysis of participants' conversations by refining video transcription and applying it as input sources. Based on four co-creation workshop video transcriptions, survey result, fieldwork observation, and team discussion, we identify six theme codes: 1) service provider, 2) service recipient, 3) caregiver, 4) design features, 5) service system, and 6) technology and 16 other subtheme codes to help us analyze the co-creation content. A brief definition of each code is shown in Table 1. The counts of each code item represent the relevant quotes, relative concepts, or similar keywords from the video transcriptions.

Table 1. Code explanation and its number of counts from co-creation workshop videos

Code item	#	Explanation
1. Service provider	142	Role and responsibilities of financial advisors
1.1. Efficiency	7	The efficiency to solve the problems
1.2. Financial advisor	72	Financial advisors' interactions with clients
1.3. Service toolkit format	69	Design outcome, instruction, and concepts
1.4. Trust	26	Concept of building trust and relationship
2. Service recipient	173	Senior people's life, decision making, and desires
2.1. Family	71	Family, home environment, and relationships
2.2. Financial condition	20	Saving, investment, retirement plan
2.3. Life and health	79	Life situation, health condition and medical history
2.4. Mobility	46	Transportation, assistance to work, move, or relocate
2.5. Needs and pain points	66	Senior people's desires, long-term or short-term goals
3. Caregiver	23	People's needs and job requirements of caregivers

4. Design features	179	The characteristics of products and services
4.1. Financial planning decision	51	Money-relevant conversation, suggestions, and ideas
4.2. Life relevant question	90	Life rituals, behaviours, feelings, and hobbies
4.3. Modularity	18	Modular ideas, solutions, and example e.g., LEGO
4.4. Tailor-made	6	Providing customized services and tools
4.5. Tangibility	44	The physical aspects of design solutions
5. Service system	68	Holistic views to discuss services and design concepts
5.1. Community	8	Neighbourhoods, their local culture and relationships
5.2. Service platform	63	System-level aspects to scale design solutions
6. Technology	14	Applications of technology on product or service design

In addition to defining 22 codes, we also experimentally explored the connections between codes by applying the Network function of ATLAS.ti to help us better understand the code in the context of the co-creation workshop (Figure 3). For example, we considered the six theme codes: 1) service provider, 2) service recipient, 3) caregiver, 4) design features, 5) service system, and 6) technology as all part of the service system code. The trust code is associated not only with service providers, but also with service recipients. The analysis result helps us better identify the connection between their body language, teamwork communication, design outcome, prototyping process, and behavior. Synthesizing verbal and non-verbal data can help us better capture and distill the comprehensive design considerations and insights to inform better human-centered financial planning toolkits and service design.

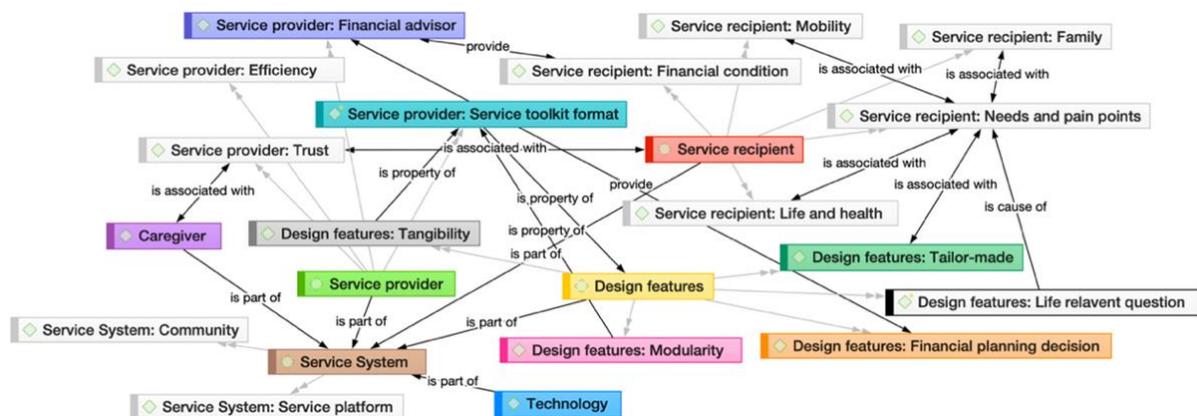


Figure 3. Screenshot of the connections between 6 theme codes and 16 subtheme codes

4 RESEARCH RESULTS

4.1 The perception and understanding of the term "service design"

The result shows that 25% of participants had a wealth of knowledge about service design: most (63%) felt that they were close to the expert level and 13% stayed neutral. Most (75%) thought service design was important to their work and life experience. We are interested in how the participants describe the idea of service design with keywords. The most talked-about service design is about the experience, interaction, system design, system thinking, and the ecosystem. They defined service design through a system-level lens: "Designing a system and whole user experience to enhance people's life by addressing user needs or problems." They further discussed service experience within the system: "The design of an experience that includes human and technological interactions." and "Improve the experience of everyone involved in the service journey."

Some mentioned keywords around the people side of service design, such as human-centered design, stakeholders, customer journey, empathy maps, relationship, and communication, which resonated with the two responses: "Understanding the companies' customers well and designing an experience that is personalized and enjoyable when interacting with the company in any way." and "Identifying experience touchpoints across the stakeholder chain to create a service as a product outcome that involves higher levels of interaction." Others discussed the service operation, e.g., delivery, system optimization, convenience, and reliability. It echoed the following two survey responses: "The way a

product or service is presented to a user or the way an existing service is optimized or delivered to a user in a speckless manner." and "Creating unique experiential solutions to problems that are recurring, reliable and convenient for the humans receiving the service." We are curious about the participants' expectations on the effectiveness of applying service design to seven types of projects (Figure 4). The result showed that 22% thought it would be effective to apply to the systematic and complicated challenges and 19% voted for design for social impact projects. Interestingly, 33% thought socio-technological challenges, concept designs, and organizational transformational projects had low effectiveness, and 38% felt that product-design-related challenges were neutral.

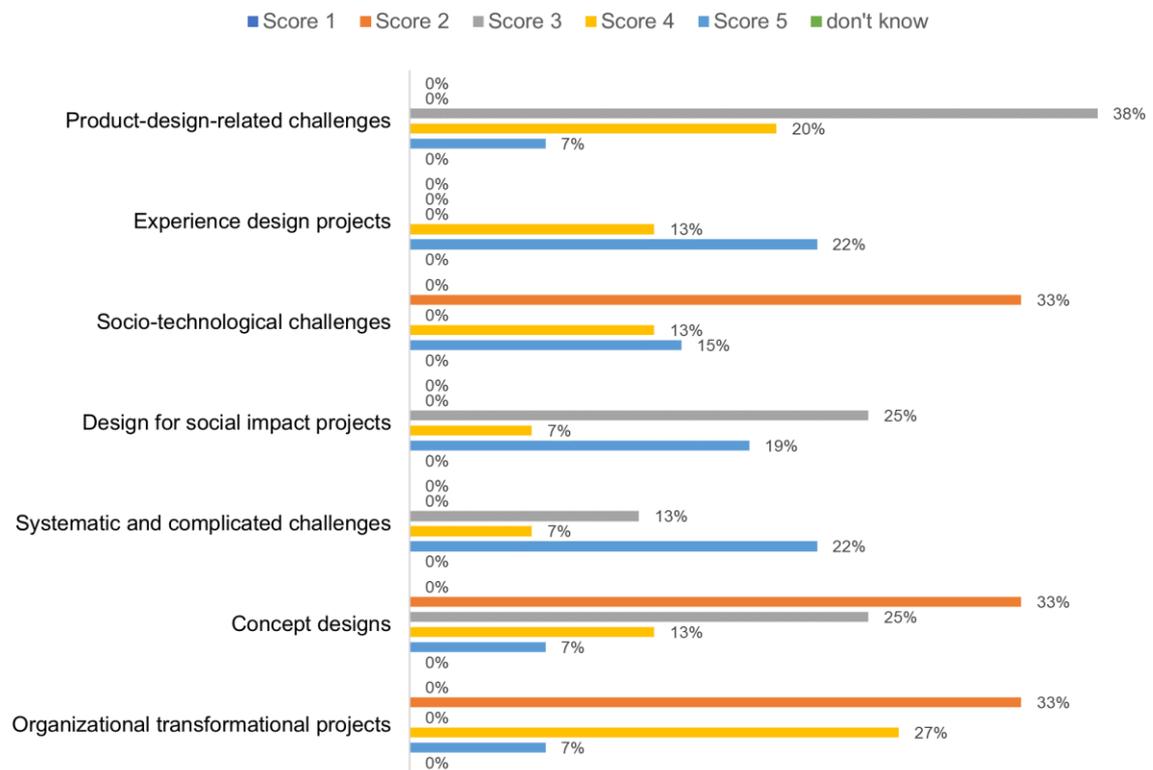


Figure 4. Rank the projects based on the effectiveness of applying service design methodologies, frameworks, and tools to solve them (1: low effective, 5: very effective).

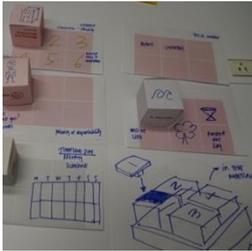
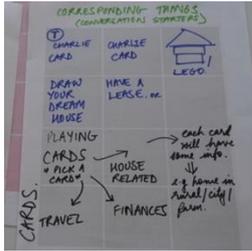
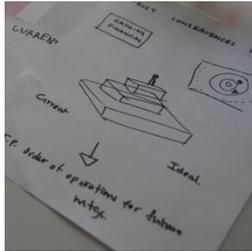
4.2 The perception and understanding of the term "financial planning service"

From the outcome of participants choosing three keywords to describe financial planning service, we categorized them into three sections: 1) money: income, savings, debt, insurance, investment, and rainy-day funds; 2) future: forecasting, future security, navigation, retirement, longevity, vacation planning, and 3) desire: needs, goal, actions, supportive, meticulous, accuracy, security, and pleasant present. Surprisingly, none of the participants showed a wealth of knowledge of financial planning: 38% felt that they had close expert level of knowledge, and 50% stayed neutral and were not sure whether they understood the term. From the keywords that participants selected and their responses, they tend to consider the concept of financial planning as tools, services, and even systems that can provide tailor-made plans and useful information. One participant described it as "A tool that gives me actionable plans to meet my goals and needs." Another one thought of it as "A service that helps me organize my finances and plan for a better and less stressful future, while making sure there are enough rainy-day funds and short-term and long-term future security." Another described it as "A system of expert individuals and digital tools to plan for my long-term financial health."

4.3 Co-creation workshop outcome and preliminary design concepts

During the four co-creation workshops, we captured not only participants' behavior, interaction with people, and other non-verbal data, but also their invaluable design concepts and personal reflections. We summarized four preliminary concepts presented with paper prototype photos in Table 2.

Table 2. Four financial planning toolkit concepts descriptions and paper prototypes photos

Concept 1	Concept 2	Concept 3	Concept 4
 <p>The design intention originating from the Russian doll concept is to help seniors peel off financial questions layer by layer to make questions start from broader perspectives (e.g., lifestyle and personal interest) to more specific to financial questions.</p>	 <p>The stamp concepts of the financial toolkit are to tailor the services catering to different needs of senior people. Financial advisors can change and update the content of the stamp, so they can apply it to most scenarios.</p>	 <p>The concept is based on the card sorting exercise that financial advisors can do with customers. The design intention is to put the essential financial planning information on the cards so that the key information is portable and can serve as an educational toolkit.</p>	 <p>The idea was inspired by the Monopoly game to view financial planning as a journey for senior people and the financial advisor guiding them by providing a suitable set of tools and constructive suggestions.</p>

5 DISCUSSION AND CONCLUSION

To ideate and evaluate the design considerations, we compared four theme codes: caregiver, design feature, service system, and technology with service provider code and service recipient code to gain more quantitative results and insights (Table 3). We summed the number of 1) quotes, 2) keywords, and 3) concepts from video transcriptions to document the counts to calculate the coefficient, which represents the strength of the relation between two defined codes (ATLAS.ti, 2022). The value of 0 means two codes do not co-occur, whereas the value of 1 means two codes co-occur wherever they are applied. For example, if we define n_{12} as the c value for code n_1 and n_2 , we can calculate c as the following formula (1).

$$c = n_{12} / (n_1 + n_2 - n_{12}) \quad (1)$$

The calculation of c is referenced from the quantitative content analysis, and we documented all the values of c in Table 3, which indicated that the code service provider and the code service platform have the strongest bonding ($c=0.64$). The code service recipient and the code life relevant question show the second strongest bonding ($c=0.60$).

Table 3. Code co-occurrence table (Note: the numbers in parentheses mean the counts of quotes, concepts, or keywords mentioned in the four co-creation workshops.)

Compared codes		Service provider (142)		Service recipient (173)	
Code item		# Count	Coefficient (c)	# Count	Coefficient (c)
Caregiver (23)		9	0.06	27	0.16
Design features	Financial planning decision (51)	57	0.42	34	0.18
	Life relevant question (90)	38	0.20	99	0.60
	Modularity (18)	22	0.16	10	0.06
	Tailor-made (6)	5	0.03	4	0.02
	Tangibility (44)	69	0.59	12	0.06
Service system	Community (8)	0	0.00	10	0.06
	Service platform (63)	80	0.64	32	0.16
Technology (14)		13	0.09	15	0.09

5.1 Design considerations from service providers and service recipients

For the service provider (Figure 5), we can obviously see the participants were interested in the design concepts focusing more on providing life-relevant questions ($c=0.60$) and considering the design solutions around the service platform ($c=0.16$). The financial planning services and toolkits also need to involve the perspectives of caregivers ($c=0.16$). We found that three code items, modularity, tangibility, and community, are equally important ($c=0.06$).



Figure 5. Sankey diagram of service provider from code co-occurrence table

For the service recipient (Figure 6), the participants wanted financial services or toolkits that could help the senior people better make financial decisions ($c=0.42$) and share their life rituals, behaviors, and hobbies through these pre-designed life-relevant questions ($c=0.20$). The participants also thought the tangibility ($c=0.59$) and modularity ($c=0.16$) of design solutions were critical in connecting with the systemic concept of the service platform ($c=0.64$). The coefficient of the technology code ($c=0.09$) is the same for both service providers and recipients.



Figure 6. Sankey diagram of service recipient from code co-occurrence table

5.2 Co-creation workshop with financial advisors, senior people, and designers

In further studies, we can modify this model by inviting financial advisors or senior people paired with service designers to co-create the ideas and to integrate other service designers' ideas with financial advisors' needs and senior people's pain points. The next step, co-creation workshops recruitment of participants', can invite people who are over 50 who might be closer in terms of their life stage and experience to our target audience. We can also include other existing financial services providers, such as Fidelity Investments, Merrill Lynch Wealth Management, and Edward Jones, to join the co-creation session.

5.3 Conclusion

5.3.1 Financial planning is more than money, but rather encapsulates people's life

One participant said, "The concept of financial planning is about managing expectations in terms of what you imagine your elderly life is going to be like." When participants role-played as financial

advisors and senior people, the results show that service recipients cared about being asked life-relevant questions ($c=0.60$) over financial planning questions ($c=0.18$). It echoes one participant's comment, "They (senior people) are the ones who are giving a lot more information than the financial advisors coming up and saying." When envisioning solutions, we don't need to limit ourselves to thinking about explaining the financial service; instead, we're interested creating provocative tools for financial advisors to spend more time with senior people to understand their stories and lives, rather than viewing them as business cases.

5.3.2 Financial planning products are part of service systems

The result of co-creation workshops indicates that service providers ($c=0.64$) and recipients ($c=0.16$) both considered financial planning services based upon service platforms, which can be interpreted as financial service systems to help understand and realize senior people's financial goals and provide general information about their financial status to build tailor-made plans in the future. Participants also mentioned that the financial planning service system can be driven by emerging technologies also considering design features like modularity and tangibility.

5.3.3 Design considerations for financial planning services and toolkits

Synthesized from the four design concepts, Sankey diagram, and survey results, three suggestions of the financial planning toolkit design are considered: 1) financial advisors should effectively facilitate constructive discussions with senior people and enable them to share more about their life stories, potential needs, and current pain points through tangible and provocative and interactive design assets, 2) the tailor-made and modular design features should give financial advisors more options and flexibility to engage with senior people according to personal preference, health conditions, and financial status, and 3) senior people's relationship with families should be connected to their mobile capability e.g., transportation needs, assistance to work, move, or relocate. Thus, we can predict their mobility and safety through the connections with their families for evaluations and integrate the information into financial planning toolkits.

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