

# A New Employment Model for the Older Population

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## **Abstract**

The purpose of this thesis is to conceptually develop a Socio-Economic Smart Employment Model (SESEM) that could help older adults (aged 50 and above) who wish to remain socially active and share their knowledge and expertise.

The development of the SESEM builds on two steps: first, a comprehensive literature review was conducted to better understand older adults' work and life experiences, theories and applications of the sharing economy, and related concepts including social entrepreneurship, social innovation, collaborative spaces, open sources, information and communication technologies (ICTs), history of work, and social housing. The second step relied on an inductive approach and action research strategy to conceptually develop SESEM, which integrates three foundational pillars: sharing principles, social assets, and innovative technologies.

The model is explored through three case studies: Case 1 applies the model in the self-employment domain; Case 2 applies it to task-based employment (gig work); and Case 3 shows how SESEM could apply in a mega-project venture – the Smart Social Housing Ecosystem (SSHE) – that involves society as a whole as well as the private and public sectors, which could be a nucleus for smart social village megaprojects and smart cities.

The argument in this thesis is that this model is designed to simplify the process of engaging older adults in later life, keep them socially active and productive, and benefit the economy by maximizing the utilization of human and natural resources without compromising the environment.

From a sociological and economic perspective, the SESEM could help reduce the barriers from discriminatory attitudes and behaviours that older adults often face in the labour market.

**Keywords:** older workers; SESEM; sharing economy; social entrepreneurship; social innovation; smart employment; task-based work; social housing.

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# Chapter 1: Introduction

## 1.1 Background and Rationale

The aging of the population is a world-wide phenomenon. As stated by the WHO (World Health Organization, 2021), in 2020, people aged 60 years and older had already outnumbered children younger than five years old. In high-income countries, such as Canada, the pace of population aging is faster than in the past. These major demographic transformations are sometimes dealt with by discarding older adults because of negative age-based stereotypes and attitudes. This is especially the case when it comes to older workers who face major obstacles throughout their professional paths in terms of recruitment, participation and retention (World Health Organization, 2021). On the other hand, as pensioners now outnumber new employees entering the workforce, governments often contemplate the possibility of increasing the age of retirement and-or reduce pension benefits (Palomäki 2019; Platman, 2004). In other words, older workers are often caught in a double bind: often perceived by employers as outdated, at the same time, they are encouraged to leave; however, when the workforce is scarce, they are forced to remain in their organization.

The financial crisis of 2008 has highlighted this paradoxical situation in three ways:

1. The pension funds incurred severe losses due to the collapse of the stock market putting millions of pensioners at risk of losing their pensions.
2. Many older adults lost their savings due to the collapse of the stock market, especially those who had sold most of their hard-earned assets and small businesses during their working lives and invested all the proceeds into stocks, hoping for higher returns on investment.

3. In all financial and economic crises, older workers are often first in line to be laid off and more so, to be blamed for the economic downturn due to their relatively higher accumulated salaries, pension costs but also as a result of age-based discriminatory attitudes.

Along the same line, Neumark, Burn & Button (2019), show that workers over 50 face significant challenges in finding full-time or part-time employment, even if they are highly qualified and have many years of experience... As a result, many older adults who wish to remain in the workforce have turned to self-employment or started small businesses, despite the associated risks and high requirements for financing, hard work, and dedication.(Halvorsen & Morrow-Howell, 2016; Kenny & Rossiter, 2018; Ramnath et al., 2021; Schuetze, 2015).

At the same time, large corporations have outsourced their operations and business units, such as call centres, sales, and technical support, to overseas contractors to avoid the burden of domestic full-time employment (Ladou, 1991). However, these jobs and opportunities could be repatriated if new business models were introduced that address the cost concerns of those private companies.

To address these challenges, this thesis proposes a new socio-economic model, referred to as the Socio-Economic Smart Employment Model - SESEM that integrates principles and concepts from the sharing economy, social entrepreneurship, social innovation, Information and Communication Technologies (ICTs), and collaborative spaces, all of which are detailed in the literature review in Chapter 2. This model offers a flexible alternative to traditional employment models, including the Standard Employment Relationship (SER), also known as full-time employment, gig work, and existing self-employment frameworks such as the small businesses model and the franchise model. Unlike these previous models which are designed to fit the needs of the employers, SESEM is

designed to be human-centred, flexible, sustainable and resilient to economic and financial crises. It can accommodate various types of employment, including task-based work, self-employment, and social projects, all of which will be explored in the case studies presented in Chapters 5, 6, and 7.

Traditional employment models are largely designed for the majority of the workforce and do not offer the flexibility or support systems that older workers, particularly those with physical or mental health challenges, require. These models lack the capacity to accommodate the specific needs of older individuals, such as allowing them to choose suitable types of work or to adjust their working hours. As a result, older workers who wish to remain employed may face significant risks to their physical and psychological well-being if they continue working under these rigid frameworks. SESEM addresses these gaps by providing a more adaptable and supportive structure, which ensures that older workers can remain active in the workforce without compromising their health.

## **1.2 Key Terms and Definitions:**

**Socio-Economic Smart Employment Model (SESEM):** a socio-economic employment model designed, in this thesis for the older adults to keep them active and productive in later life.

The SESEM is subdivided into three sub models:

**Smart-self-employment sub model (SSE),** which addresses the self-employment among the older population.

**Smart Task Hub (STH)** is a smarter version of the platform/GIG works short-term tasks employment model. In addition to the gig works characteristics, it encompasses employment insurance, job security, and training and mentoring.

**Smart Social Housing Ecosystem (SSHE):** A new housing model and ecosystem addressing the growing needs of older adults for mobility, healthcare, social activities, in addition to creating comfortable working environment for the older adults to stay productive.

The word “**smart**” in this context, is used to distinguish this model and its sub models from the conventional employment models, since it adopts innovative technologies, sharing principles, social entrepreneurs and social innovators.

**Older adults, and older population,** refer to individuals who are 50 years and older in age.

**Standard Employment Relationship (SER)** refers to the standard Employer/employee contract with wages and benefits employment model.

### **1.3 Contribution:**

This thesis presents a novel conceptual framework – the Socio-Economic Smart Employment Model (SESEM) – that synthesizes the principles of the sharing economy and social entrepreneurship and innovation, integrated with innovative information technologies to create a theoretical design for a socio-economic system for providing flexible and sustainable employment opportunities for older adults. The conceptual development and exploration of three interconnected case studies show how this model could address the employment barriers faced by an aging population and offer a practical solution to a pressing demographic and economic challenge.

In particular, this thesis:

1. Provides a thorough assessment of the difficulties faced by older adults when trying to stay active in later life, including a critical analysis of the existing employment models that fail to address the needs of this population.
2. Articulates a feasible, flexible, and convenient socio-economic model of employment that, when implemented, would contribute to the empowerment, well-being and economic independence of the older population. When implemented in concrete settings, this model could also enable the capitalizing on the accumulated work and life experiences of older adults and thus contribute to the Gross Domestic Product (GDP), by keeping the older adults active and productive.
3. Proposes and explores new housing model for older adults that provides the foundation for the employment framework and enables the older population to remain socially active, connected and mutually supportive.

#### **1.4 Organization of the Thesis**

The thesis is organized as follows:

Chapter 2: reviews the literature related to the concepts under study, such as older adults in the context of employment, sharing economy, social innovation, social entrepreneurship, ICT, and collaborative spaces.

Chapter 3 – Methodology and Research Plan Describes the Research Process, states the problem, the research questions, describes the methodology, and data collection.

Chapter 4 details the conceptual development of SESEM, its components, ecosystem, and how it works. Chapters 5 presents case study 1 (Smart Self-Employment), the self-employment sub model of SESEM.

Chapter 6 presents case study 2 (the smart Tasks Hub, STH) which implement the SESEM in the context of short-term, task-based employment—an improved version of gig work.

Chapter 7 discusses the third case, Smart Social Housing (SSH), exploring how SESEM could allow coordinating large-scale social projects involving the private and public sectors, as well as broader community resources. Social housing is chosen for its significance to various population groups, particularly older adults, as well as its impact on the building industry and the economy.

Chapter 8 provides an evaluation of the SESEM and the three submodels and does comparative analysis of them against the major existing models in 10 major criteria.

Chapter 9 is the conclusion of the thesis including its limitations. It lists some potential areas for future research.

Appendices:

Appendix 1: Important Definitions - briefly defines the main terms used in the thesis

Appendix 2: Data Collection Package, composed of:

2.1 General Survey

2.2 Specific Interviews

2.3 Shorter version of the General survey

## 2.4 Certificate of Ethics Approval

### Appendix 3: Social Business Model Canvases:

#### 3.1 Socio-Economic Smart Employment Model SBMC

#### 3.2 Smart Vehicles Maintenance Centre SBMC

#### 3.3 Smart Tasks Hub's SBMC

#### 3.4 Smart Social Housing Ecosystem SBMC

## Chapter 2: Literature Review

The literature review focuses on the following:

- Older adults in the context of work (including the challenges they are facing);
- The concepts underlying the proposed model: sharing economy; social Assets (social Entrepreneurs and Social Innovators), collaborative spaces; model building; and innovative technologies used.
- The literature related to the history of work systems
- Finally, the literature review will explore concepts of social housing as well as housing models suitable for older adults.

### 2.1 Older Adults and Work in later life

Canada's population is changing profoundly and rapidly: according to Statistics Canada (2022a), nearly 1 in 5 Canadians is aged 65-year-old or more and these figures are projected to increase as the population continues to age. The median age of the Canadian population increased from approximately 37.6 years in 2001 (Statistics Canada, 2002) to just over 41 years in 2021 (Statistics Canada, 2022a). On the other hand, there are shortages in the workforce supply in major sectors of the economy: for example, the healthcare sector faces a projected shortage of 117,600 nurses by 2030 (Canadian Institute for Health Information [CIHI], 2025). The education, transportation, and construction sectors have faced similar shortages in the past decade (Conference Board of Canada, 2025).

One of the short to medium-term solutions to address these shortages is to retain, recruit and engage older workers. Studies (e.g. (Taneva et al. 2016); (Wikström, et al., 2023)) indicate that

older workers bring invaluable experience, stability, and mentorship capabilities to the workplace (Taneva et al. (2016), Wikström, et al. (2023)). Research has shown that working in later life can positively affect older adults' well-being.

A survey by the Canadian Centre for Policy Alternatives found that many older adults wish to keep working (Block et al., 2021). Furthermore, employment is linked to improved mental health and higher self-esteem among older adults (Chia & Hartanto, 2021). However, older workers face many barriers in terms of recruitment, participation and retention; studies suggest that such barriers may be linked to personal factors, such as health but also, societal factors, such as ageism (Employment and Social Development Canada, 2018, 2021).

### **Aging and Ageism**

The term "ageism" was first coined by Robert Butler in 1968, (Butler, 2005) to describe the negative age-based attitudes and discriminatory practices faced by older adults.

Ageism extends beyond employment, as many perceive businesses that are owned and/or run by older individuals as inferior or of lower quality (Ainsworth & Hardy, 2008). In my synthesis of the literature following Butler, expressions of ageism can range from subtle avoidance **to** overt disdain, rejection, and social isolation, and may occur at individual as well as organizational/institutional levels (World Health Organization, 2021). Older adults face discrimination not only in employment but also in housing (Fenelon, 2020) and services (Daniali et al., 2021).

Entrepreneurship among older adults has been shown to positively impact their societal well-being and economic stability (Halvorsen & Marrow-Howell, 2016).

More so, studies suggest that enabling older people to continue working offers many benefits compared to those who are not working, such as positive physical and psychological effects (Calvo, 2006; Bonsang, Adam, & Perelman, 2012; Bingley & Martinello, 2013; Szinovacz & Davey, 2004).

Since self-employment often requires engagement in various productive, cognitive, and social activities, it provides regular exercise for both the brain and the body and offers older workers a sense of purpose and continued desire to participate actively in life (Calvo, 2006).

### **Older adult Entrepreneurship and self-employment**

As ageist attitudes and behaviors may make it difficult for older individuals to continue working in organizations, more and more of them are considering self-employment (Schramm & Figueiredo, 2025). However, many barriers exist that prevent older people from becoming self-employed (Ratten, 2019). Squire (2020), lists the following as barriers to older entrepreneurs: human capital (education and experience), social capital (family and social networks), Access to finance, age discrimination, physical and mental health. He also considers the lack of new skills such as digital and ICT competency as a barrier to older entrepreneurs.

Martin and Welsch (2019) discuss Marlier and Atkinson's concept of social exclusion, defined as "... the involuntary exclusion of individuals and groups from political, economic, and social processes, preventing their full participation in the society in which they live" (as cited in Martin & Welsch, 2019). Martin and Welsch further characterize these barriers as involving "limited access to the programmes dedicated to entrepreneurs by society and government, inadequate networks, prejudice towards older adults... and a dearth of research on senior entrepreneurs."

Based on action research conducted with 132 older unemployed individuals from six countries to identify the programs and supports needed to start their businesses, and to highlight the barriers to becoming self-employed, Kenny & Rossiter, (2018) identified finance, confidence, risk, and information as principal barriers.

## **2.2 Literature related to the proposed model**

This part of the literature reviews the three pillars that are used to conceptually develop the proposed model:

1) **Sharing Principles** which are the basic socio-economic principles upon which the proposed model is built upon. They include the Sharing Economy, Collaborative Spaces, Shared/social Manufacturing, and Corporate Shared Value.

2) **Social Human Resources** which are the human driving forces that seek out the available resources and opportunities and coordinate and integrate their utilization. They are composed of Social Entrepreneurs and Social Innovators.

3) **Information and Communication Technologies**, these are the innovative technologies that make the conceptual model's development possible. They are composed of the Internet of Things, IoT, Blockchain Technology, BCT, and Smart Contract.

### **2.2.1 Sharing Principles**

#### **2.2.1.1 Sharing Economy**

In an interview with Kane (2016), Arun Sundararajan described the sharing economy as “an alternative business model” that has the following characteristics:

- a) **Market-based**, where there is a digitally driven market that enables the exchange of goods and services.
- b) **The increase of the Capital impact**, that maximizes the use and utilization of the physical assets as well as the time and resources of individuals.
- c) **The emergence of crowd-based decentralized networks** that compete with centralized institutions and corporations.
- d) **Reducing the distinction between personal and professional services**. Many individuals, previously considered peers, can now offer services that were once professional, through sharing platforms as independent contractors.
- e) **Blurring the lines between the fully employed workforce and casual labor** - “what used to be a full-time job is now supplanted partially by contract work”.

**Collaborative consumption**, one of the early terms associated with the sharing economy, was first introduced by Marcus Felson and Joe L. Spaeth (Felson & Spaeth, 1978). The term **sharing economy (SE)** was first mentioned in 2008, denoting collaborative consumption through sharing resources rather than owning them (Lessig, 2008).

According to Yin et al. (2018), the three driving forces that shape and control the Sharing Economy are:

- 1) **Sharing Power** represented by the crowd-based Social and environmental forces.
- 2) **Economic Power** that is influenced by profit and market forces.
- 3) **ICT Power** which is the major driving force of the sharing economy.

The sharing economy is the backbone of the proposed model for the elderly population. It optimizes the participation and collaboration among all members of society, ensuring a fair distribution of resources, as well as its flexibility and ability to adjust and accommodate the new ICT and innovations.

#### **2.2.1.2 Collaborative spaces: Makerspace, Coworkers' space, open sources**

Viriyasitavat et al., (2019) define Makerspace as a “community-led common spaces where individuals share resources and meet on regular basis to collaboratively, engage in creative commons-oriented projects usually utilizing open-source software and hardware technologies”.

There are many other terms that are associated with makerspaces such as fab labs and media labs. There are, in addition, related concepts such as common-based peer production (CBPP), prosumers (simultaneous producers and consumers), and value co-creators.

Makerspaces and other collaborative spaces, in general, will be used into the proposed model as an alternative to permanent premises, production equipment, and utilities typically required for the production of the goods and/or services offered by self-employment startups, (Langley et al., 2017; Browder et al., 2019; Sutherland & Jarrahi, 2018; Niaros et al., 2017; C. J. Martin et al., 2015.

#### **2.2.1.3 Shared/Social Manufacturing**

The social sharing principles are reaching almost everywhere (Martin et al., 2015; Sutherland & Jarrahi, 2018), including the exclusive heavily capitalized manufacturing industry. As a result, the concept of social or shared manufacturing (shared mfg.) is introduced: “Shared manufacturing is a peer-to-peer-based resource sharing paradigm boosted by the widespread of the sharing economy” (Yu et al., 2020a).

Shared mfg. has caused a shift in the manufacturing industry from being firm-centric to becoming individual-centric and created new models of collaboration between firms and individuals aligned with the sharing economy principles. According to (Hamalainen & Karjalainen, 2017) these models include :

- I. **Social Cloud Manufacturing**, where firms outsource some of the manufacturing tasks to individuals.
- II. **Social Platform Manufacturing**, where firms provide manufacturing services to individual entrepreneurs.

These new collaboration models open huge opportunities for individual innovators and entrepreneurs to go beyond design, and prototype, to on-demand production for both private business and social purposes (Hamalainen & Karjalainen, 2017; Yu et al., 2020b)

This shared manufacturing is utilized in this project in both, case study 1 (Smart Self-Employment) as shown in Chapter 4, and in Smart Social Housing Ecosystem as shown in Chapter 7.

On the other hand, these new models within the sharing economy paradigm, should have created lifesaving opportunities for those manufacturing firms, particularly during economic downturns, when the demand for their originally designed products is low (Leng et al., 2021). The implementation of IoT technology in factories—by equipping each machine on the assembly line with sensors, actuators, and micro-processing units, making them fully accessible and programmable over the internet from anywhere—should enable these factories to become part of the global sharing economy network (Huckle et al., 2016; Christidis & Devetsikiotis, 2016; Rahman et al., 2019). This creates substantial opportunities for other companies and individuals

to utilize these machines for tasks beyond their original design. This concept will be further explored in our second Social Objective realization model, as mentioned previously.

Shared/social manufacturing offers unique opportunities for individuals and small businesses to benefit from its manufacturing capabilities. Older well-experienced individuals who have worked in production and manufacturing could benefit from these golden opportunities to remain active, creative, and generate a good income (Kaine & Josserand, 2019; Sutherland et al., 2020; Santana &Cobo, 2020).

#### **2.2.1.4 Corporate Shared Value**

The highly competitive and profit-maximizing approach of the private sector is blamed for many social and environmental problems, such as pollution, natural resources abuse, and the migration of jobs from developed countries to low wages countries (Porter & Kramer, 2019).

Michael Porter (Porter & Kramer, 2019), attributes this negative public opinion to the private sector's focus on short-term financial performance, its overlooking the larger picture of the well-being of their customers, the societies they are in, and the environment that provides them with the basic resources for their existence and long-term sustainability.

In response to these criticisms, the private sector has adopted what Milton Friedman calls the "social responsibility" mindset, whereby they allocate some funds from their budgets to social projects via NGOs or directly to societal organizations. Although these contributions help, their impact is not as significant as when the private sector is directly involved as a value partner. By using its considerable resources, expertise, technologies, and, most importantly, its ability to manage projects efficiently, the private sector can contribute much more significantly to the

construction and sustainable operation of these projects. This is what Porter refers to as “shared value,” where both the private sector and society collaborate to create and share value without any trade-off (Porter & Kramer, 2019; Driver, 2017; Cag, 2016). This breaks the old business myth that companies should focus solely on competition and short-term profit maximization.

“The concept of shared value can be defined as policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates”, (Porter & Kramer, 2019).

In my view, Corporate social responsibility (CSR) focuses on corporate acts of philanthropy, such as donating funds to charities or NGOs, whereas the shared value model functions more like a joint venture between the private sector and society. The key here is value creation, not just benefits (Driver, 2017). In addition to providing direct benefits to society from the projects, the shared value model encourages social leaders and innovators to think about value creation, delivery, and capture and how to be efficient and innovative in the process.

In my judgement, while the shared value model is considered an ideal means of taking advantage of the private sector’s considerable resources and expertise, it works best when the value is shared between society as a whole and one or a few allied companies. However, societies often require large, diverse projects that may involve multiple companies with conflicting agendas and interests.

## **2.2.2 Social Assets**

### **2.2.2.1 Social Entrepreneurship**

Richter et al. (2017) use a definition of entrepreneurship based on the characteristics and traits of an entrepreneur: “occupying niches” (Wiklund, 1998), “monetizing business opportunities” (Zott,

Amit, & Massa, 2011), as well as being innovative (Gartner, 1990), radical (Lassen, Gertsen, & Riis, 2006), and risk-taking (Palich & Bagby, 1995).

Dees (1998) defines social entrepreneurship by emphasizing discipline and accountability in “value creation from innovation and change agents” (Schumpeter), the “pursuit of opportunity” (Drucker), and “resourcefulness” (Stevenson). In brief, the definition can be summarized as follows:

- Adopting a mission to create and sustain social value (not just private value),
- Recognizing and relentlessly pursuing new opportunities to serve that mission,
- Engaging in a process of continuous innovation, adaptation, and learning,
- Acting boldly without being limited by the resources currently at hand, and
- Exhibiting a heightened sense of accountability to the constituencies served and for the outcomes created (Dees, 1998).

Social entrepreneurship plays an important role in the conceptual development of the proposed model. It helps optimize the utilization of available resources, ensures their fair distribution, and maintains social and environmental balance (Richter et al., 2017; Dees, 1998).

#### **2.2.2.2 Social Innovators (SI)**

“Social Innovations are new approaches to addressing social needs through engaging beneficiaries and supporting actors in the development of solutions” (Dinant et al., 2017). The social innovation movement first started in Europe and recently reached North America and Canada (European Commission, 2011; Moolaert et al. 2013; Westley & Antadze, 2010). It offers innovative solutions through dedicated SI organizations that engage volunteers and/or students and involve the

beneficiaries in developing and implementing these solutions (Murray et al., 2010; Dinant et al.,2017).

In their study of two social innovators in Europe, Dinant, Floch, Vilarinho, & Oliveira, (2017) found that the development of a digital collaboration platform could provide significant advantages to the social innovation process (SIP):

1. Enable the involvement of as many participants, particularly experts, as needed, without concern for their physical locations.
2. Optimize the coordination and control of development and implementation.
3. Maintain records of gained experience and methodological guidelines for future use in similar cases by other social innovators anywhere in the world.

In addition to offering precise solutions to the specific problems faced by older populations, social innovator organizations could also benefit from the accumulated and diverse experiences of seniors in developing these solutions (Murray et al.,2010; Dinant et al.,2017).

The role of social innovators in the proposed model is vital. While social entrepreneurs focus on the proper utilization of opportunities and resources, social innovators focus on the coordination and utilization of human resources. They help solve problems related to the workforce and the liaison among the various human resources including expertise, training, mentoring and allocation of resources (European Commission, 2011; Murray et al., 2010).

### **2.2.3 Information and Communication Technologies (ICTs)**

As mentioned in Section 2.2.1.1, Information and Communication Technologies, ICT is a major driving force of the sharing economy.

### **2.2.3.1 Internet of Things (IoT)**

Kevin Ashton, who coined the term "Internet of Things" (IoT) in 1999, realized that although the internet relies on people, people also have a limited capacity to handle the voluminous quantities of data required for us to operate in our daily lives. On the other hand, societies also depend on "things" to function. Hence, Ashton predicted, the next generation of the internet would be the "Internet of Things" (Huckle et al., 2016). These "things", he thought, would use the internet to communicate among themselves, exchange data, make decisions and take action accordingly. I believe this will reduce human interference (considered an impedance) and reduce the cost of operations and production.

IOT is a powerful enabling technology. In my opinion, combining it with blockchain technology, they open up considerable opportunities for individuals to perform tasks and control resources that traditionally required a sophisticated infrastructure available only to large corporations (Huckle et al., 2016; Christidis & Devetsikiotis, 2016; Rahman et al., 2019). Using IoT, users of the proposed model could share equipment, facilities, and resources to accomplish tasks, contracts, and projects.

### **2.2.3.2 Blockchain Technology**

The Blockchain is a distributed database that records transactions and shares them among participating parties (Zhao, Fan, & Yan, 2016). Alternatively, it can be seen as a type of database for recording transactions that is copied to all computers in participating networks (Deloitte, 2016; Christidis & Devetsikiotis, 2016). It was introduced by Nakamoto (2008), who also developed the cryptocurrency Bitcoin, which relies on blockchain technology.

Since its introduction with Bitcoin in 2008, there have been three generations of blockchain technology: the first for digital money (Bitcoin), the second for digital finance, and the third for the digital society (Zhao et al., 2016; Sun, Yan. & Zhang, 2016).

Blockchain technology will be used to enable the proposed model in the following ways:

1. Eliminate the need for third-party intermediaries in transactions, such as large corporations and/or financial institutions.
2. Distribute control of operations and decision-making equally among the involved parties, creating an independent, democratic system free from the dominance of large corporations and governments (Viriyasitavat et al., 2019).
3. Ensuring that records are distributed among all participants/users and cannot be forged or erased without the consent of all parties (Leng et al., 2021; Zhao et al., 2016).

The conceptual development of the proposed business model relies on these characteristics of blockchain technology to host smart contracts, keep the model independently controlled by users, reduce costs, and ensure a digital infrastructure.

### **2.2.3.3 Smart Contract**

“The smart contract is an event-driven, state-based code contract and algorithm contract, which has been widely concerned and studied with the deep development of blockchain technology..., that has the characteristics of decentralization, autonomy, observability, verifiability, and information sharing. It can also be effectively applied to build programmable finance and programmable society, which has been widely used in digital payment, financial asset disposal,

multi-signature contract, cloud computing, Internet of things, sharing economy, and other fields” (Haiwu et al., 2018, p. 2452).

The functions of the smart contract are to:

- I. Store information
- II. Process inputs
- III. Write outputs
- IV. Be accessible only if certain conditions are met (Bogner et al., 2016).

Fedosov et al., (2018), in their sharing physical objects application, JSI, use two types of smart contracts:

- I. **Transaction Smart Contract (TSC)**, which is created for each transaction. It starts with the approval of the lender and ends when the lent item is returned, and payment is received.
- II. **Rating Smart Contract (RSC)**, which is considered as the control centre and the blueprint of the proposed model, where all the terms and conditions of the transaction / contract are digitally recorded / stored, and all the actions and requirements for completing the transactions are recorded and followed-up (He et al., 2018; Bogner et al., 2016).

### **2.3 Conceptual Framework**

Table 2-1 below, classify and summarize the literature review relevant to the proposed model conceptual development into the three pillars mentioned-above, explaining the purpose of each topic relevant to the model conceptual development process, and giving an example for further demonstration.

Table 2-1 How concepts and principles are used in the conceptual development of the Socio-Economic Smart Employment Model, SESEM

| SN | Literature Topic  |                             | How it is used in the model conceptual development   | Example/Demo  |
|----|---|-----------------------------|--|---|
| 1  | S<br>H<br>A<br>R<br>I<br>N<br>G<br>P<br>R<br>I<br>N<br>C<br>I<br>P<br>L<br>E<br>S | Sharing Economy             | The principles of the sharing economy are the backbone of the model, where the “users” share the resources, equipment ... instead of buying them. They also share the responsibilities and distribute the efforts.           | For example, if an older adult wishes to establish a vehicle repair workshop as an independent entrepreneur, but cannot afford to invest in the location, equipment, and labor, then a group of independent entrepreneurs could share all these requirements in a makerspace like a workshop as will be further explained in raw 7 the “Makerspace”.                                |
| 2  |   | Makerspace                  | Makerspaces could provide the practical implementation of the sharing principles in the proposed model, where it encompasses the required tools, equipment, space, and utilities for the users to be active and productive.  | In the VMC, the workshop(s) work as the makerspace but rather for registered members who use these common utilities in the workshop to do certain contracted tasks. Hence those smart contractors do not need to invest in buying equipment and spaces. They book these common utilities for certain time slots whenever they have a contract/task and pay rent for that time slot. |
| 3  |   | Shared/Social manufacturing | this could be considered as an extrapolation for the makerspace, as the makerspace cannot accommodate all the needed equipment for some specialized tasks, where this equipment is very expensive, and its use factor is low | In the VMC case, some customers may need some special and/or sophisticated upgrade to their vehicles that need specialized equipment that only exist in factories or agencies' workshops. The VMC could make arrangements with such factories and agencies on “pay as you go” terms.  |
| 4  |   | Corporate Shared Value      | Here the private sector acts as an active partner in the socio-economic projects, and not as a traditional   | In case study 3: the smart social housing, the project is utilizing the experience and capabilities of the private  |

|   |                            |                         |  |   |
|---|----------------------------|-------------------------|--|---|
|   | I<br>P<br>L<br>E<br>S      |                         | philanthropist. Where the private sector replaces the high profit with a moderate profit accompanied by society appreciation.  | sector in all the phases of the project from the design, the construction, and the operations.  |
| 5 | S<br>O<br>C                | Social Entrepreneurship | Social Entrepreneurs are individuals who possess the entrepreneurial traits socially polished to encourage collaboration, as opposed to competition, among partners. | In the vehicle's maintenance project, the social entrepreneurs take the lead and act as the nucleolus in the whole project and every operation/task. They also provide new innovative methods in the operations |
| 6 | I<br>A<br>L<br>A<br>S<br>S | Social Innovators       | Social innovators could work as consultants, advisors, and trainers to old micro contractors. They could be volunteers and/or partners in the contracted task.       | They work as an excellent alternative to the expensive franchisors' support in the Franchising System.  |

|   |                       |                             |   |   |
|---|-----------------------|-----------------------------|---|---|
|   | E<br>T<br>S           |                             |   |   |
| 7 | I<br>N<br>N           | ICT:Internet of Things, IoT | Enables the communication and control among the equipment and users that may be geographically spread to optimize the utilization and sharing of that equipment by many users through the internet and the AI   | In the vehicle’s maintenance project, the makerspace-like setup of the equipment and the automated registration and booking by the “micro contractors/users, will need such technology to book the required equipment in the makerspace to execute their contracted task.   |
| 8 | O<br>V<br>A<br>T<br>I | ICT: Blockchain Technology  | Blockchain database enables the proposed model platform to be autonomous and manageable by the members in a democratic majority vote process, independent from dominant third-party influence, namely in the transactions and financial process, and properly secured. All at low expenses. | In the VMC operations, all the registrations, booking, operations, accounting, and feedback are managed by the operating software residing in the blockchain database. The smart contract (see #6) which utilizes the blockchain will control and follow up on operations and accounting.   |
| 9 | V<br>E<br>T<br>E      | ICT: Smart Contract         | The smart contract, besides acting as an electronic version of the traditional business contract, is a control and follow-up system of the contracted task/project. As mentioned in #5, it is based on the blockchain database characteristics.   | In the VMC, when a customer and a smart micro contractor reach an agreement on the scope of work, price, payment... a smart contract is issued automatically storing all terms and conditions agreed upon and equipped with follow-up and control electronic tools to ensure the completion of the task and the satisfaction of both parties. It is also equipped with corrective means for violators such as |

|  |                                      |  |  |  |
|--|--------------------------------------|--|--|--|
|  | C<br>H<br>N<br>O<br>L<br>O<br>G<br>Y |  |  | funds hold, mutual feedback,<br>and score for each member and<br>customer. |
|--|--------------------------------------|--|--|--|

Figure 2-1 illustrates the conceptual framework of the proposed model. It is composed of the three pillars: Sharing Principles, Social Assets, and Technology, that are the foundation of the conceptual development process of the proposed model using the methodologies detailed in Chapter 3 and the process detailed in Chapter 4.

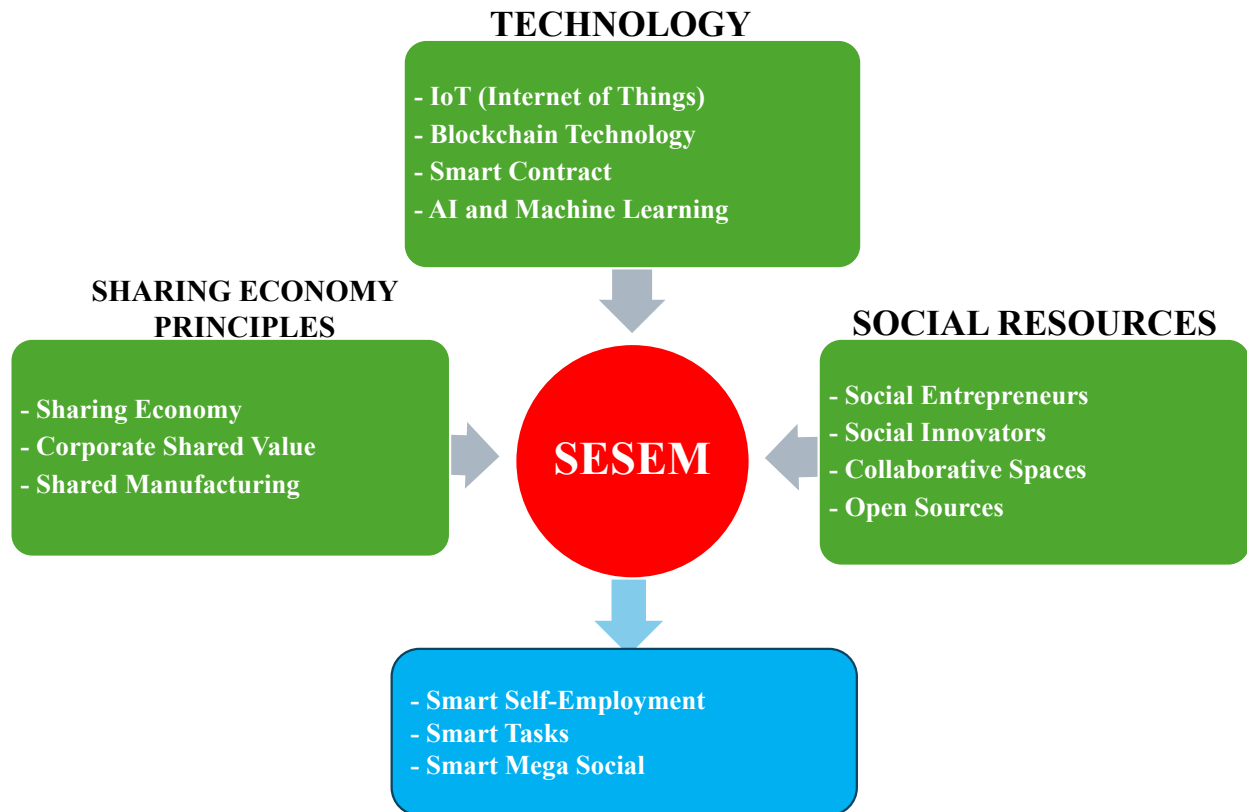


Figure 2-1 Conceptual Framework Diagram

## 2.4 Conceptualizing Work through different systems lens

This section reviews the history of work from the perspective of different systems lens. According to Stanford (2017) the earliest work system, common among merchants in Europe, and which preceded the modern Standard Employment Relationship (SER), was the ‘putting-out’ system. This system treated each required task as a separate, one-time contract between the producer (worker) and the merchant capitalist, wherein the producer would perform the contracted work at home, using their own tools and equipment, and would be paid upon completion of the goods or services, as specified in the terms of the contract. In another type of putting-out work, payment was based on time spent working, similar to the idea of time labor (Stanford, 2017).

From a historical perspective, labour contracting, and subcontracting practices were the predominant form of paid work in capitalism until the late 19<sup>th</sup> century (Deakin, 2000; Steinfeld, 2001), even in heavy industries (Zmolek, 2013).

Another type of work system, known as piecework, can be traced back to the 19<sup>th</sup> century. Piecework refers to the decomposition of complex contracted tasks into a sequence of smaller, simpler tasks that can be performed by ordinary workers with minimal training (Alkhatib et al., 2017; Stanford, 2017). The practice was conceived by George Airy, who developed a system to break down a complex mathematical process into smaller subtasks, distributing them among students to solve in parallel, thus taking advantage of the crowd to handle complex assignments by decomposing the task into smaller subtasks.

Piecework was further developed by engineers and entrepreneurs to handle complex processes requiring specialized skills and experience by decomposing these complex processes into smaller and simpler tasks. Fordism (assembly line production) and Taylorism (attributed to the mechanical engineer Frederick Taylor) subsequently formalized the decomposition, tracking, and management of tasks (Alkhatib et al., 2017).

According to Stanford (2017), the Standard Employment Relationship (SER) emerged after the second world war after reconstruction efforts peaked, and economies of scale and scope emerged. The heavy investment in large factories and the growing demand for products required increased productivity which created a need for a stable, long-term workforce, making the SER the preferred work system for large companies to ensure stable, uninterrupted production. (Alkhatib et al., 2017; Deakin, 2000; Steinfeld, 2001)

The SER reshaped tasks into jobs, where each job position was associated with a specific set of tasks to be executed daily within a certain period of time. In return, workers (aka “employees”) would be rewarded with a regular salary, paid monthly or annually, along with benefits such as a healthcare plan and annual leave.

The SER developed primarily to satisfy the demands and needs of large corporations (employers). To justify the employer's exclusive exploitation of the workers' time and skills, employers provided the premises, tools, and equipment needed to do the work, unlike in the putting-out and piecework systems, where workers were responsible for providing their own place and tools of production. These terms and conditions were codified in what became known as legally binding employment agreements or contracts, which obligated the worker's to perform labour only for the employer.

Despite recent technological, economic, and political developments worldwide, I believe that the SER remains the most sought-after work system, since it provides the employee not only with benefits but also with career development and training. For many, it offered a stable career, especially during prosperous times when employers were able achieve their economic targets.

The SER was designed to address economic, social, and political challenges and continues to be one of the major indicators of economic health, where the number of new jobs created serves as a measure of economic health. Job creation is also a central talking point for politicians during elections.

However, during economic downturns, employers often turn to what is widely known as on-demand precarious gig workers as an alternative to SER employees. By replacing full-time

employees with on-demand gig workers, employers can exploit legal loopholes to bypass employment agreements, particularly affecting vulnerable groups, including older workers (Alkhatib et al., 2017; Stanford, 2017).

Gig work, which goes by many other names such as freelance, on-demand, online, and digital platform work, is a technologically advanced version of piecework and 'putting-out' systems mentioned above. Gig work is best defined by its five principal characteristics Stanford (2017):

The work is performed on an on-demand basis. There is no guarantee that workers, also known as producers, will be given additional work from the same end-user (employer).

Compensation is calculated on a piecework basis. Workers are paid for the pieces they complete rather than the time spent working or for unfinished tasks.

Unlike in the SER, workers are responsible for providing the tools, equipment, and workspace needed for production.

The platform that mediates between the gig worker and the end user (the equivalent of the employer) are separate entities, which creates a triangular relationship between the gig worker, the end user or company requiring the work, and the mediating platform. This triangulation "... allows employers to inhabit a legal 'grey zone,' where it is unclear whether producers are workers, contractors, or self-employed" (Johnson et al., 2008; Stanford, 2017). As a result, gig worker often evades the legal obligations typically associated with SER, such as minimum wage and employment insurance. Employers refer to gig workers as independent contractors or producers for legal reasons, to avoid obligations such as minimum wage and employment insurance.

While most mediating platforms only connect workers with the end-user or consumer of work, some platforms offer more comprehensive services, including supervision of execution, delivery, and payment.

The major mediating platforms for gig work include Amazon's Mechanical Turk (AMT) and TaskRabbit for general types of work and tasks. On the other hand, the famous digital platform Uber specializes in gig work for drivers and transportation services.

Gig workers (also known as contingent workers) have recently become a major source of human capital. A 2024 Deloitte Global Human Capital Trends report (Cantrell et al., 2024) confirms that the workforce is now considered "boundaryless," meaning that many workers are no longer traditional employees. The report says that organizations must adopt human sustainability strategies that explicitly include the well-being and development of this contingent workforce. Gig work platforms, which are easily accessible by millions, along with their powerful search engines and artificial intelligence systems, have enabled both large companies and smaller entrepreneurs to access "talents in the cloud" (Burbano, 2021).

Several observations can be made from the above brief history:

In the past, specifically, before the influence of the big corporations, producers and end-user merchants were treated as equal parties who negotiated fair, win-win deals.

The SER was specifically developed to address the needs of emerging factories and companies after the second world war. Although it created an apparently fair deal for workers – by incorporating principles such as minimum wage, maximum working hours, and employment insurance – the employer, who is the strong and controlling party, could still terminate employees

or groups of employees because of the many clauses in the employment agreements that permitted it.

Employers, as the controlling party, have many alternatives to the SER work system when national regulations or market conditions favor workers. They can relocate their entire business, or parts of it, to countries offering a cheaper labor force or more favorable tax conditions to reduce operating expenses and maintain high profit margins, even if this could lead to economic and social problems in the country in which they started and grew their business.

Some employers may negotiate with local governments and powerful political parties to alter tax regulations or reduce employment rights and benefits in their favor, particularly when governments prioritize job creation, which is a political imperative during elections. In some cases, employers can go further and generously fund the campaigns of candidates they believe will protect their interests.

The emerging mediating platforms are mostly developed by entrepreneurs as business ventures aimed at achieving high profits and growth. Uber is a well-known example. However, Uber classifies its drivers as self-employed producers rather than employees, even though it sets the fares, collects the payments, and gives drivers a share of the collected payments (Johnson et al. 2008). Even when a platform merely mediates between producers/workers and end-users (employers), in addition to charging a commission or user fee for each transaction, the accumulated goodwill and brand value are capitalized by the platform's developers and can surpass the cash collected from user fees. For example, if the platform owners issue shares on the stock exchange, the value of those shares will gradually increase as the platform expands. Such an expansion of

online platform (“dot com” companies) is easily achievable, thanks to digital marketing and search engines that turn these platforms into big corporations.

It is worth noting that these new platform businesses focus primarily on attracting large corporations, even though the bulk of their customer base are workers. They believe that big corporations’ customers will, in turn, attract more workers. That is, in my opinion, the main reason why these platforms are biased in favour of the big corporations’ rights and interests. They believe that workers will follow along with whatever work is available, as they are a large non-organized, non-unionized labour force! Also, In the early days of the sharing economy, many scholars considered it as another business model for large corporations to conduct business using some of the sharing principles (Burbano, 2021).

In my opinion, it is inconceivable that these platforms will advocate in favour of workers’ rights or provide them with basic services to help them wisely use this type of employment unless these services boost the platform’s membership numbers and increase corporate profit.

The development of a not-for-profit intermediating platform managed by social innovators and social entrepreneurs, as will be explained in Chapter 6, could serve as a short-term solution that address workers’ rights. However, unless this platform is supplemented by a complete system infrastructure that educates workers about their rights, trains and retrains them in new technologies and skills, and helps them unite to create a fairer and more sustainable work system, such a platform will struggle to compete with well-funded and technologically advanced private intermediating platforms.

## 2.4 Social Housing and older adults

This brief literature review on social housing in Canada (Ontario in particular) lays the groundwork for case study 3: the implementation of the proposed SESEM model in mega social projects. In this context, social housing is treated as a mega social project.

Canada offers a variety of housing models suitable for diverse populations, including older adults. Figure 2-2 presents the Affordable Housing Continuum, sourced from Ontario’s Ministry of Municipal Affairs and Housing (2011).

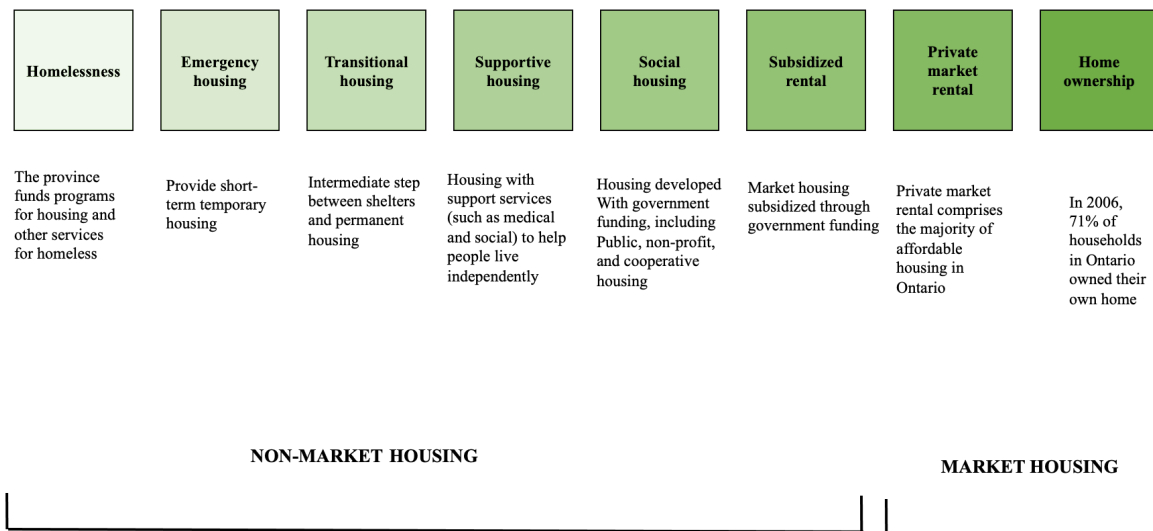


Figure 2-2 Ontario Housing Continuum – redrawn from Ministry of Municipal Affairs and Housing (2011)

Older people use all housing models within the Affordable Housing Continuum. However, there is a notable concentration on non-market housing models, specifically the Supportive Housing and Social Housing models. While 92 percent of seniors aged 65 and older live in private homes, there is a significant wait time for vacant units in senior residential communities (Statistics Canada

2015a; Canadian Association of Retired Persons 2014). This may indicate a growing preference among older adults for collective living arrangements (Dong, 2018).

The three main types of collective dwellings are:

***Retirement Homes*** which provide supportive care and services to elderly residents who are in relatively good health but need assistance with activities of daily living (ADL) and instrumental activities of daily living (IADL) (Ministry of Long-Term Care, 2023; Dong, 2018).

***Supportive Housing*** which is designed for older adults who wish to live independently in their neighborhoods but do not require the 24-hour nursing supervision offered in long-term care facilities (Banerjee 2007). This model accommodates the increasing demand for health and community services for seniors who prefer to age in place.

***Long-Term Care Facilities*** which provide extensive 24-hour medical care to residents along in addition to other services such as meals, entertainment and recreational activities.

The collective dwelling models encompass a mix of social and private housing some of which fall under the Social Housing model, while others are privately owned and operated. For social housing, the waiting list is extremely long, and the wait times can reach up to ten years (Banerjee 2007; Dong 2018).

The Social Housing model is the larger umbrella which provides affordable housing for low- and no-income individuals and families, including older people.

“The federal public housing program was introduced in 1949 after a precedent-setting urban renewal scheme in Toronto (Rose, 1958)” (Skelton, 1996). The state’s public housing program

initially handled all aspects of social housing, from conception and construction to the management of housing units. While it was widely accepted at first, “its sweet prospect soured very quickly (Rose, 1974, p.ii)” (Skelton, 1996). Public housing became associated with over-centralization in decision-making process, poor quality of residences, and the ghettoization of low-income individuals, among other problems (Dennis & Fish, 1972; Patterson, 1993).

The centralized public housing system proved ineffective, as the federal government could not efficiently manage all aspects of social housing, from assessing the demand for social housing to urban planning, financing, construction, distribution, in addition to addressing the needs of populations in geographically diverse regions and municipalities.

In response, the National Housing Act was amended in 1973 to fund three types of third-sector organizations:

1. Municipal non-profit
2. Private non-profit
3. Co-operative non-profit housing corporations.

Funding was also allocated to establish community-based resource groups to provide the necessary resources and expertise to assist these housing corporations with building projects.

In 1992, the federal government terminated social housing funding and transferred its responsibilities to provincial governments. Ontario, like other provinces and territories, replaced the centralized public housing model with the third-sector housing model as the main supplier of social housing (Lenk & Andrew, 1995; Skelton, 1996).

During the recession in the 1990s, Ontario's third-sector program was positioned within a work creation program - the 'Jobs Ontario' – that integrated two major social goals: social housing and job creation. This integration proved to be an effective economic tool for stimulating the economy. The dual objectives of job creation and housing deserves further study and development. The proposed Smart Social Housing case study, detailed in Chapter 7, builds on the integration of these two objectives, among other principles and objectives.

The third sector is referred to by various names, including tertiary, voluntary, independent, civic, and the service sector. It operates through non-profit agencies, which may be co-operatives or public or private corporations (Skelton, 1996).

The main characteristics of the third sector are:

1. It is organizationally decentralized, unlike the heavily centralized public sector.
2. It operates through sponsors distributed across the communities where it is needed. This decentralized structure allows for geographic spread and local autonomy.
3. Unlike the centralized public agency, which serves the entire country, third-sector sponsors focus on meeting the specific social housing needs of their local communities.
4. It is inhabitant-oriented, in contrast to the environment-oriented approach of the public housing sector.

Due to the relative effectiveness of third-sector models, particularly the co-operative social housing model, many public housing units tried to convert to that model. There is one famous case study of such a successful conversion: the conversion in 2003 of the Alexandra Park public housing project in central Toronto into a hybrid social housing (not fully converted into a co-

operative) (Sousa & Quarter, 2005).. While this conversion faced significant obstacles and took a long time, it represented a significant step toward improving public housing both in terms of management efficiency and the tenants' quality of life.

The expansion of such conversion from the public social housing model to the co-operative social housing model requires some residents to be prepared for and train in property management skills, social relations, and collaboration. Many non-profit organizations and institutions could provide this management skills training, if properly funded. Another type of on-the-job training could involve including younger residents on boards of directors to learn from more experienced board members.

I believe that the benefits of these conversions justify the efforts. The savings in the operating costs that are realised when the residents manage the property outweigh the conversion expenses. There are many other economic and social benefits of involving the residents in the property management process as well. The participation of the residents in the decision-making and supervision of all activities optimizes the quality and cost-effectiveness of routine maintenance services and projects. It also, helps the residents to share the social responsibilities in their community, such as protecting it against crime, drugs, and other social problems, especially as the population of these communities are low-income families and unemployed individuals.

# **Chapter 3: Research Methodology**

## **3.1 Introduction**

This chapter describes the methodology used to conceptually develop and explore the feasibility of the Socio-Economic Smart Employment Model (SESEM) described in Chapter 4. As outlined in Chapter 1, current employment models often present significant barriers for older adults seeking to remain economically active and productive and the objective of this research is to conceptually develop a socio-economic model that is based on sharing principles, social assets, and innovative technologies, that serves the needs of this population.

The research involves two phases: (1) the conceptual development of this model, informed by iterative feedback from stakeholders, and (2) an exploratory examination of the model's potential application scenarios through three conceptual case studies. Note that this work does not attempt to provide an empirical validation of an implemented model but rather develops its theoretical framework and explores its feasibility and conceptual applicability.

This chapter is organized as follows: Section 3.2 presents the research philosophy and approach. Section 3.3 states the problem and research questions. Section 3.4 describes the overall research design, including both phases of the methodology. Sections 3.5 explains the data collection and analysis methods and Section 3.6 discusses the ethical considerations and the methodological limitations.

## **3.2 Research Philosophy and Methodological Approach**

Following the layers of Saunders et al.'s (2009) "Research Onion" (Figure 3-1), the foundation of this research rests upon a philosophical (functionalist) position and methodological (inductive) approach supported by the strategies of action research and case studies.

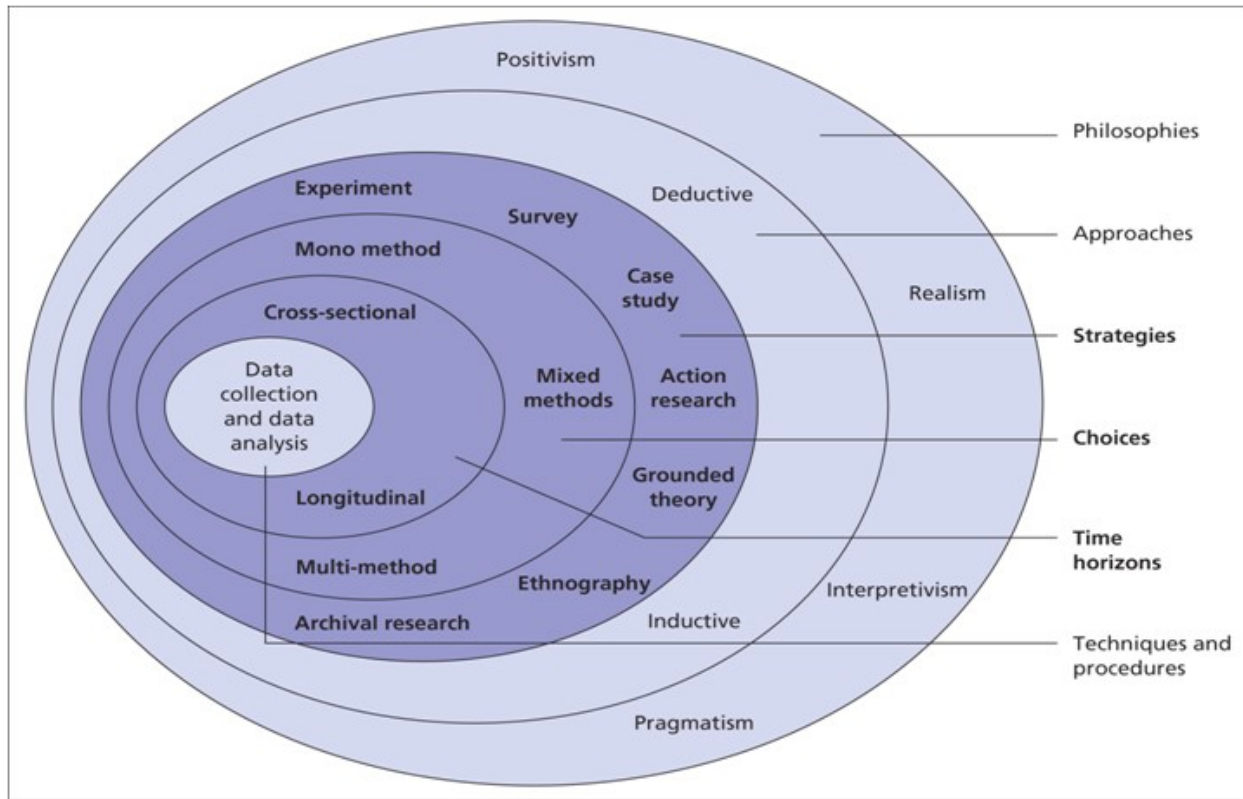


Figure 3-1 Research 'Onion' Source: Saunders et al. (2009)

### Research Philosophy

The philosophy adopted for this research is functionalism. As depicted in Figure 3-2 (adapted from Burrell and Morgan, 1979), functionalism resides within a paradigm characterized by a social order ontology (which seeks regulation and stability rather than radical change) and an objectivist epistemology (striving for observable and measurable social realities).

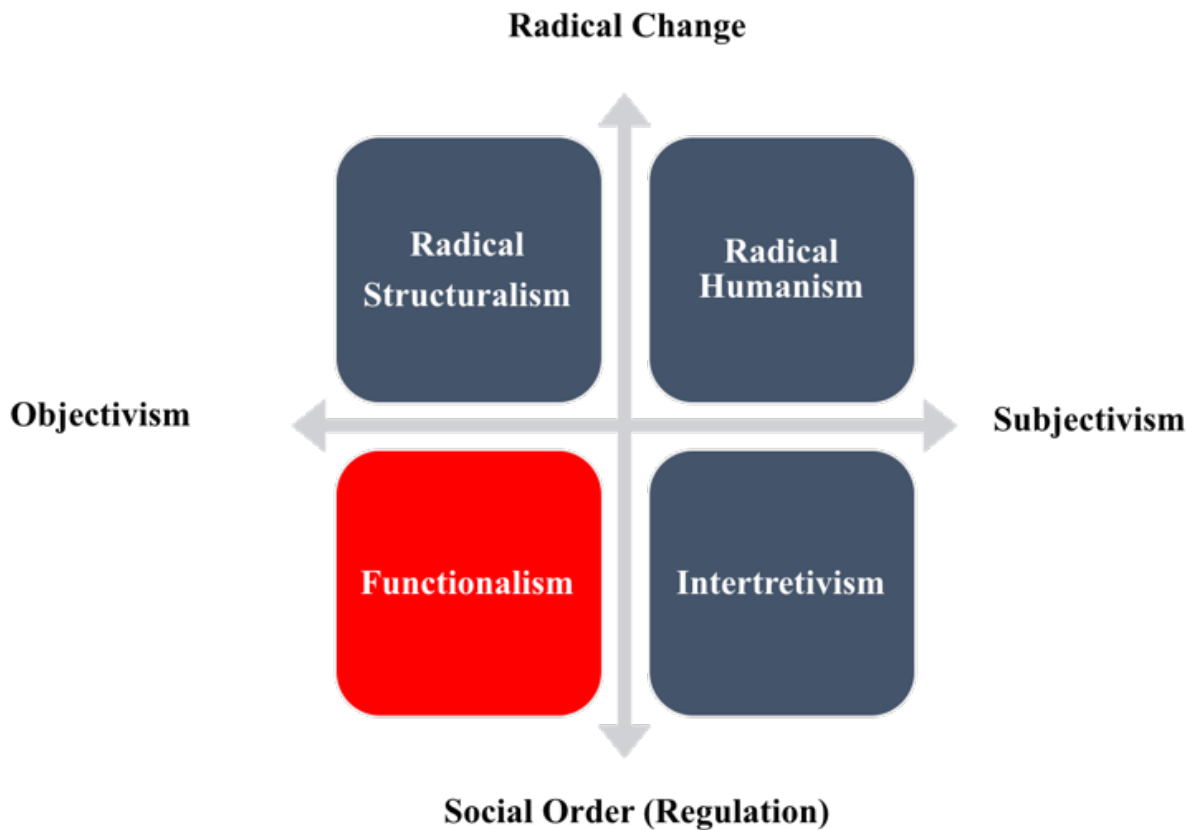


Figure 3- 2: Four Paradigms for Social Science Research  
(Functionalism highlighted in Red) (Source: Burrell and Morgan, 1979)

This philosophy aligns well with the research objectives of this thesis because the proposed SESEM model is designed to function within existing socio-economic structures and to enhance opportunities for marginalized populations rather than proposing a radical overhaul of systems of employment or an upending of the current social and economic order. Rather, it assumes that the mechanisms of the free markets and economic systems that currently exist will remain in place and that the private and public sectors together each have a role to play.

However, since this research is specifically focused on the capabilities and the needs of older adults an objectivist epistemology is used as much as feasible so that the proposed model could also be

applicable to other population segments that face similar employment challenges, such as new immigrants, refugees, and minority groups.

An objectivist perspective assumes that employment structures, market mechanisms, technological capabilities, and demographic characteristics exist as objective features of the social world that can be documented, analyzed, and modified. For instance, the barriers facing older adults in traditional employment—age discrimination, physical demands, inflexible schedules—are treated as observable patterns that recur across contexts regardless of individual interpretation and that these barriers can be overcome by creating the right conditions.

In particular, an objectivist approach assumes that if the SESEM model can address these structural barriers through concrete mechanisms (shared resources, technology platforms, flexible engagement), such solutions should produce similar outcomes when applied to comparable populations. This assumption underpins the claim that insights from studying older adults may transfer to other marginalized groups facing analogous employment challenges.

The research approach involves a combination of inductive and deductive reasoning. An *inductive approach* was used during the initial model development phase (Bhattacharjee et al., 2012). This involved synthesizing concepts from the literature review (Chapter 2) -- specifically sharing principles, social assets, and ICTs -- to build the conceptual framework and the initial SESEM prototype.

Subsequently, a primarily *deductive approach* was used during the exploration phase, where the developed SESEM framework was applied conceptually to specific contexts (the case studies) and refined based on feedback gathered from potential users and stakeholders.

### **3.3 Problem Statement and Research Questions**

#### **3.3.1 Problem Statement**

Current employment models, both self-employment and the standard employment relationship, SER (full/part-time employment), have made it more difficult for older people to benefit from being employed. The SER is designed for the employer's benefits and profit. Employers prefer younger employees to fill jobs (full and part-time jobs) because younger employees are cheaper. In addition, the current self-employment models require financial resources, extensive hard work, training, and dedication, as well as the ability to shoulder a high risk of failure.

This is the main motivation to develop a new business model framework that provides convenient and flexible employment options suitable for older people as well as other population groups who experience similar difficulties.

#### **3.3.2 Research Questions**

This research is guided by the following primary research question:

RQ1: How can a socio-economic employment model be developed that addresses the structural barriers facing older adults in standard employment relationships and traditional self-employment, through the integration of sharing principles, social assets, and innovative technologies?

The secondary research question

RQ2: In what ways can such a model provide more suitable and sustainable employment alternatives for older adults compared to existing employment structures?

has three elements:

RQ2a: How does the model improve upon standard employment relationships in terms of flexibility, accessibility, and sustainability for older adults?

RQ2b: How does the model address the barriers and risks inherent in traditional self-employment for older adults?

RQ2c: How can the model facilitate the integration of private sector, public sector, and community resources in large-scale social projects that benefit older adults?

These research questions guide a two-phase process: first, the conceptual development of the SESEM through a synthesis of the literature and iterative feedback from stakeholders (Phase 1); second, an exploratory examination of the SESEM's potential application across three illustrative contexts (Phase 2).

### **3.4 Overall Research Design**

This study's multi-phase qualitative research design led to the following research plan, depicted in Figure 3-3.

**STRATEGIES**

**PROCESS**

**TOOLS**

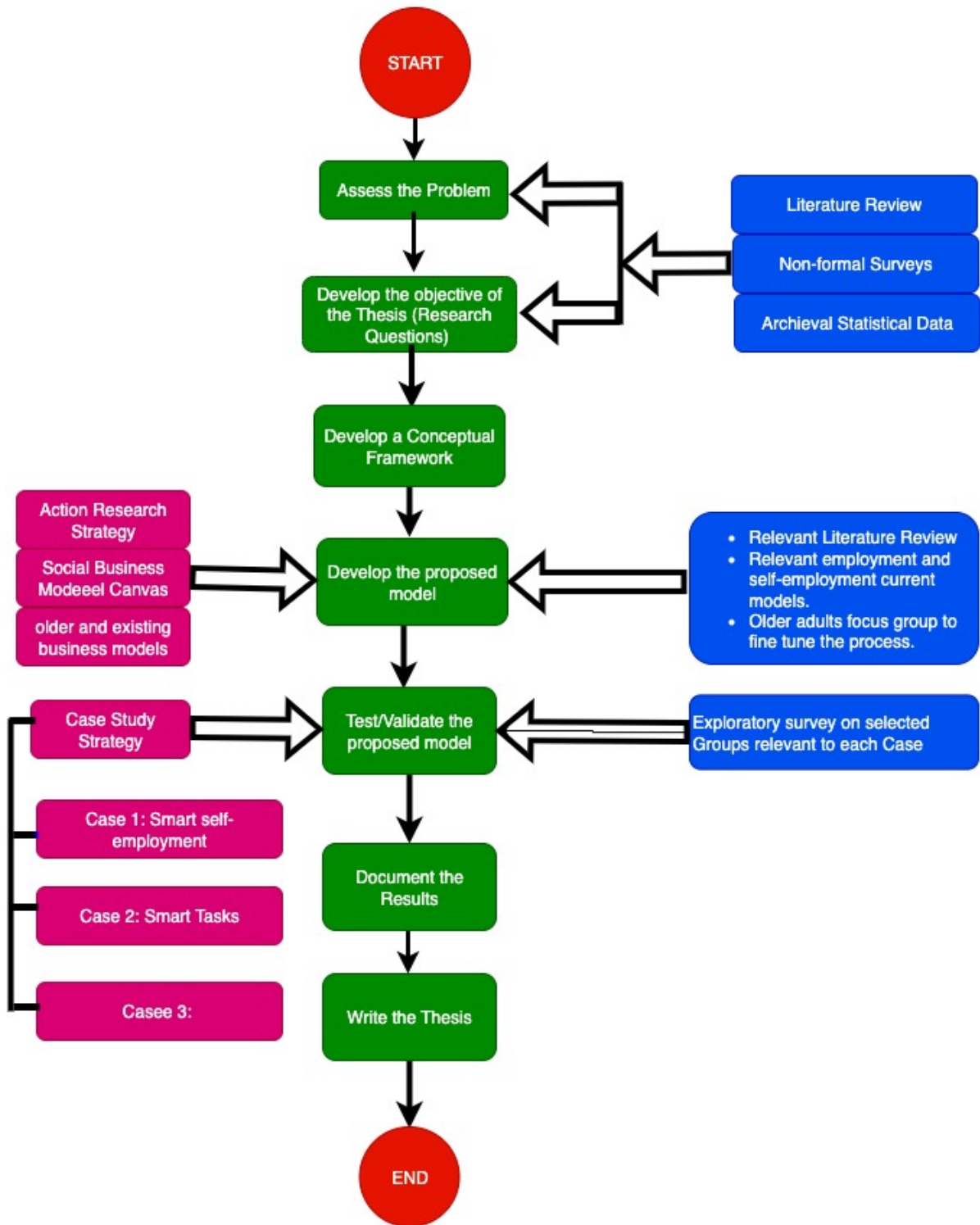


Figure 3-3: Research Plan

The steps in this plan include:

1. An assessment of the problem via a general literature review on the topics relevant to work in later life, senior self-employment, entrepreneurship, the sharing economy, and social innovation. This included examining some archival statistics, in Canada, the USA, and other countries.
2. The next step was to state the goals and objectives of the research, and to formulate the research questions.
3. Next, as explained in Section 2.3 of Chapter 2 and illustrated in Figure 2-1, a conceptual framework was established
4. Starting with the conceptual framework, and using the Action Research Strategy, a preliminary prototype conceptual model was developed based on existing (both classical and franchised) models and using the Social Business Model Canvas pivoting process (Figure 3-2). A pilot cohort of 4-6 selected older adults who had adequate experience in one or more of the tasks/operations in the chosen pilot model (the vehicle maintenance and repair field) was used in the pivoting process.
5. The feasibility of conceptual model was then established using a case study strategy augmented with the social business model canvas and a pivoting process customized to the conceptual model. Unlike the pilot group (step 5), which was composed of older adults, this group of stakeholders included a mix of experienced technicians and potential customers
6. The model was then further compared with the existing models: the classic workshops, and the franchised workshops.

7. Steps 4 to 6 will be repeated on all the three cases (smart employment, smart tasks and smart social housing).
8. The results were documented, and the thesis was written

### **3.4.1 Phase 1: Model Development Methodology**

The methodology for conceptual model development must result in a new employment model constructed from three pillars:

Sharing Principles:

- Sharing Economy
- Collaborative Spaces
- Shared Manufacturing
- Corporate Shared Values

Social/Human Resources:

- Social Entrepreneurship
- Social Innovation

Innovative Technologies:

- Internet of Things (IoT)
- Blockchain Technology and Smart Contract
- Artificial Intelligence and Machine Learning

The conceptual development of the SESEM followed an iterative process:

**1. Literature Synthesis and Conceptual Framework:** Building upon the initial problem assessment (literature review, archival statistics), a conceptual framework integrating the three core pillars was established, as detailed in Chapter 2.

**2. Initial Prototype Development:** A preliminary SESEM prototype was designed based on the conceptual framework and analysis of existing employment models (e.g., classical small business, franchise models). The structure of the Social Business Model Canvas (SBMC) (Figure 3-4) provided a template for outlining the main components.

**3. Iterative Refinement with Pilot Group Feedback:** The initial prototype was then discussed and iteratively refined based on feedback gathered through a pivoting process involving a pilot group. This approach shares characteristics with action research but is more accurately described as feedback-informed iterative design.

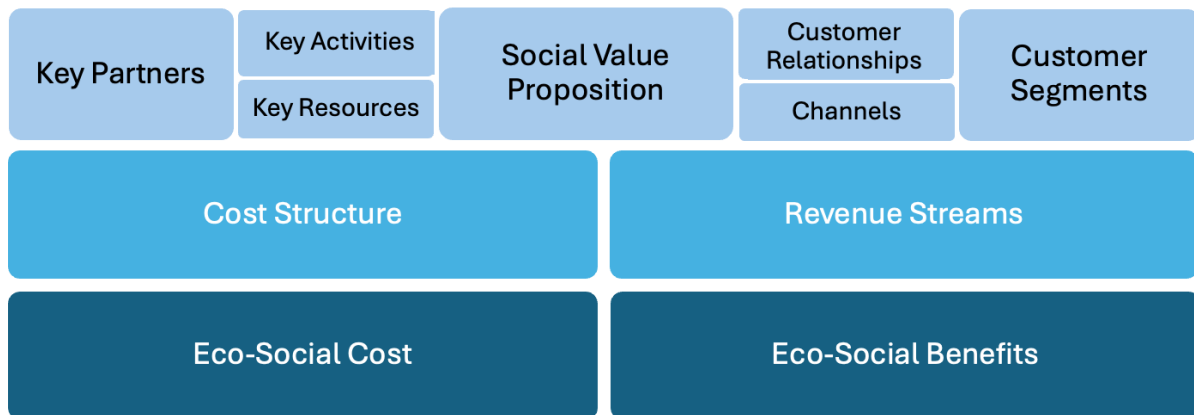


Figure 3-4 Social Business Model Canvas Template adapted from:  
[www.businessmodelgeneration.com](http://www.businessmodelgeneration.com)

**Feedback-Informed Iterative Design Approach**

Action Research was first used by Lewin in 1946. It has four themes: 1) the purpose as research in action that focuses on a resolution to a problem (Coghlan and Brannick 2005). The second theme

is "related to the involvement of practitioners in the research and, in particular, a collaborative democratic partnership between practitioners and researchers, be they academics, other practitioners or internal or external consultants" (Saunders et al. 2009, n.d. p.147). The third theme emphasizes the iterative nature of the process of diagnosing, planning, taking action, and evaluating. The fourth theme is the implication beyond the immediate results of the research (Saunders et al. 2009. p147-148).

This research incorporates elements of action research -- particularly practitioner involvement and iterative refinement. A pilot group of older adults with relevant professional experience actively participated in conceptual model development from the feedback and revisions aimed at addressing real employment challenges that face older adults. The process focused on the conceptual refinement of the model.

The conceptual model development approach was augmented by the Social Business Model Canvas Pivoting process (Sparviero, 2019) which is used to develop and refine social business models using the 11 components of the social business model canvas (see Figure 3-4) customized for the conceptual framework explained in Chapter 2, and the older adults' needs.

This was done with the help of a pilot group of 4-6 participants who were selected as detailed in Section 3.5. The SBMC's 11 components provided a systematic framework for presenting model elements and soliciting targeted feedback. In iterative sessions, specific components were presented to the pilot group (e.g., key resources, key activities, value proposition) and refined based on their input regarding feasibility, potential challenges, and improvement opportunities.

Example: Iterative Development Process

To explain how this combination of conceptual framework and iterative feedback process worked, I will use one of the major iterations in the conceptual development process of the proposed model: the sharing of one of the equipment, the two-post lift, that is used in many tasks in the workshop, such as visual inspection of underneath of a vehicle, brakes replacement, etc.

From the conceptual framework we needed to develop and refine a sharing process (sharing pillar), of the subject equipment using the senior social innovators and entrepreneurs (social assets pillar), where a group of 4-6 technicians and innovators were used as practitioners to help me (as the researcher) according to the feedback-informed iterative design approach. The Social Business Model Canvas Pivoting process was used to iterate on three blocks: *key partners*, *key activities*, *key resources* (Figure 3-4).

Among the issues raised in these iterations: how to setup the sharing schedule, regulations, and keep the equipment well-maintained, clean, and ready. One of the discussed possible solutions was to install a monitor and control system composed of cameras to watch the operations and interfere with emergency stop in case of malfunction before further damage. This monitor and control system could be operated by an older expert technician from home as part of the tasks required for the operations.

So, in this iteration, the three pillars of the conceptual framework and the social business model canvas pivoting process were used, keeping in mind that the output should be customized to the needs of the older adults, represented here by both the researcher and the practitioners. This same approach/process was used to address all the challenges in the conceptual model development process.

### **3.4.2 Phase 2: Model Exploration and Illustration Methodology**

Following conceptual model development, an exploratory multiple case study approach was employed to illustrate how the SESEM framework could be conceptually applied across different employment contexts.

Robson (2025, p.178) defines a case study as "a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real-life context using multiple sources of evidence". Unlike the experimental strategy, where the experiment settings are controlled, and the Survey Strategy, where the number of variables is limited, in the case study strategy, there are no boundaries between the phenomenon studied and the context surrounding the Case being studied (Yin, 2003).

The case study strategy is used in explanatory and exploratory research. The data collection techniques may include interviews, observations, documentary analysis, and questionnaires (Saunders et al. 2009, p146).

Note, however, that the case studies in this research are best thought of as conceptual instantiations that are informed by insights from stakeholders, rather than empirical implementations of the SESEM framework. An actual instantiation requires human and financial resources that go way beyond the boundaries of this thesis.

Nevertheless, the case studies (detailed in Chapters 5, 6, and 7) serve an exploratory and illustrative function. Each case study demonstrates how SESEM principles and components could be configured for specific contexts and what the implications are of such configurations. These conceptual applications were informed by:

- Interviews with stakeholders in relevant sectors
- An analysis of existing models and practices
- Feedback from older adults and potential users
- Observations about the contextual constraints and opportunities in each scenario

This exploratory approach serves the main goal of this thesis: to conceptually develop a novel employment model and demonstrate its potential applications. As Yin (2003) notes, exploratory case studies are valuable for investigating phenomena where boundaries between the phenomenon and context are not clearly evident -- precisely the situation with SESEM, which integrates multiple domains (sharing economy, social innovation, ICTs) in a novel configuration.

#### Case Selection

Three conceptual case studies were purposefully selected to explore and illustrate the potential application of SESEM across different scales and types of employment relevant to older adults:

**Case Study 1 (Chapter 5): Smart Vehicle Maintenance Centre (SVC)** - Illustrates SESEM applied to SSE in a specific, skill-based domain. The vehicle maintenance field was chosen for its diversity, prevalence of older workers, mix of task complexities, standardization, and accessibility for observation. This case also served as the context for the pilot feedback during conceptual model development.

**Case Study 2 (Chapter 6): Smart Task Hub (STH)** - Explores SESEM applied to task-based (gig-like) work, which is an advanced social version of the gig works, aiming to enhance security and support compared to existing platforms.

**Case Study 3 (Chapter 7): Smart Social Housing Ecosystem (SSHE)** - Explores SESEM's application to large-scale social projects (mega social projects) integrating work and living, involving partnerships between society, private, and public sectors. This goes beyond employment to cover all aspects of living: work, housing, food, and other social requirements.

### Methodological Role of Case Studies

It must be emphasized that these case studies do not constitute empirical validation of the SESEM.

True validation would require:

- Implementation of the model in real-world settings
- Longitudinal data collection on outcomes
- Controlled comparison with existing employment models
- Measurement of impact on older adult employment outcomes

Such validation is identified as critical future research (see Chapter 9). The current research establishes the conceptual foundation and explores potential applicability -- essential precursors to future empirical validation studies.

## **3.5 Data Collection**

### Data Types, Purpose, and Selection Criteria

This research used three types of data to serve four distinct purposes in the conceptual development and exploration of the SESEM model.

Table 3-5 presents an overview of the data collection framework, organized by: the four purposes for which data were collected (column 1), the types of data used (column 2), the collection methods

employed (column 3), the selection criteria applied (column 4), and the intended use of outcomes (column 5).

These data primarily served to corroborate the statistical information obtained from the literature review and from Statistics Canada. For conceptual model development specifically, the data was obtained from iterative feedback gathered from selected participants through the action research process, complemented by the social business model canvas pivoting approach described in Section 3.3.

Age was the primary selection criterion across all data types, requiring participants to be 50 years or older. The sole exception occurred during the final model exploration phase, where the feedback from the survey group included participants of all ages, reflecting the proposed model's potential to serve customers regardless of age.

During the conceptual development phase, an additional selection criterion for the pilot development group required candidates to possess substantial experience and expertise in the relevant field—in this instance, vehicle maintenance, repairs, and services. This pilot group consisted of 4-6 members with demonstrated proficiency ranging from good to commanding levels of experience.

Table 3-5 Data Collection Summary

| <b>Purpose</b>             | <b>Type of data</b>                       | <b>Collection method</b>   | <b>Selection Criteria</b>   | <b>How to be used</b>   |
|----------------------------|---|----------------------------|---|---|
| Explore/assess the problem | Qualitative, both specific and open-ended | Via survey, and interviews | All participants => 50 years.<br>Fair distribution among the older adults segments (m/f, age group, | Assess the problem, explore into difficulties deeper, identify qualified candidates for the |

|  |   |   |  |   |
|--|---|---|--|---|
|  |   |   | field of study/work)   | focus groups used in model conceptual development and testing.  |
| Explore the housing issues             | Qualitative, both specific and open-ended                           | Interviews  | All participants $\geq$ 50 years.<br>Live in one of the following housing models:<br>Living alone, city of Ottawa aging-in place social housing, retirement homes, long term care. | Qualitative responses are used to evaluate the current housing models, what they lack to address the needs of older adults as they grow older, also addressing other requirements in the proposed housing model, for healthcare, social activities and stay productive. |
| Model Building                         | Pivoting iterative feedback based on the 11 blocks of the SBMC      | Pivoting group for the main model building (Smart Vehicle maintenance | 1) All participants $\geq$ 50 years.<br>2) should have strong knowledge and work experience on the specific fields (minimum 5 years' experience                                    | Based on the prototype employment model initially developed using the social business model canvas SMBC, the selected focus group is used to pivot, refine and improve the model. The process is interactive, iterative, and dynamic.                                   |
| Model investigation with cases studies | Pivoting with iterative feedback based on the 11 blocks of the SBMC | Focus group for the three cases.                                      | 1)All participants $\geq$ 50 years.<br>2) should have adequate knowledge and work experience   |   |

|  |  |  |                         |  |
|--|--|--|-------------------------|--|
|  |  |  | on the specific fields. |  |
|--|--|--|-------------------------|--|

The data collection process proceeded through three distinct stages:

**Stage 1: Assessment of Employment Difficulties Among the Older Population**

The initial questionnaire was comprehensive and designed to explore the attitudes of older adults toward work in later life. The target sample for the survey was individuals aged 50 and older who were unemployed, underemployed, or retired (see Part I of the Data Collection Package in Appendix 3).

However, given the questionnaire's length and the fact that some older adults are reluctant to complete lengthy surveys or participate in interviews exceeding 30 minutes -- particularly under COVID-19 restrictions then in effect -- the comprehensive questionnaire was restructured to enable shorter, focused sessions. This approach enabled participants to address specific topics with fewer questions per session. For example, one session examined the difficulties in searching for employment in general, while another specifically addressed the challenges of self-employment. This approach ensured the research remained responsive to the needs of the broader older population.

Appendix 2.3 provides a summary of the data handling procedures not directly related to conceptual model development and exploration, with detailed processes explained in Section 3.3. Selection criteria for all data types are summarized in Table 3-5 and detailed later in this section.

The survey results (see Appendix 2-3) varied according to two primary factors: participants' age range and the level of their understanding of the questions. From among respondents over 65, 58% initially expressed preference for complete retirement... However, when they learned about a new type of employment that is flexible and based on social values, over 30% changed their mind, reducing the adjusted percentage who preferred inactivity to 41%.

From among those aged 50-65 who were unemployed or underemployed, fewer than 20% expressed were not interested to return to work as full-time employees. When asked about self-employment, approximately 73% of individuals aged 50 and above (n>25) expressed an interest in the proposed risk-free, capital-free, smart self-employment concept, as proposed in the model. Over half of the 27% who were not interested in this concept had negative perceptions about the conditions of any form of self-employment.

## **Stage 2: SESEM Model Development**

During the SESEM conceptual model development, shorter interview sessions explored several areas:

- 1) What are older people looking for in a job? What are the job's most important qualities?
- 2) Participants' familiarity with the concepts in SESEM including makerspaces, social innovation, sharing economy, and smart contracts
- 3) During the self-employment part of the conceptual model's development, I identified the most popular areas of self-employment that could be used to explore the model's application. Based on the survey results of those working in these fields as well as field visits to some work locations, the vehicle repair and services field was chosen as detailed

in Chapter 5, Table 5-1 Comparison among the smart self-employment fields for case study 1.

During the conceptual model development in the vehicle repair and services domain, I used several participant workers in three places (two workshops and one car dealer) to conceptually develop and test the proposed model using the following strategies and concepts:

- The conceptual framework
- The action research strategy
- The social business model canvas.

This is explained further in the Section 3.3.

Examples of the iteration/pivoting processes that were explored include:

- Exploring the sharing of equipment and tools required to perform repairs and maintenance,
- Using smart contracts to initiate, monitor, complete, and account for each transaction,
- Encouraging collaboration among members to share workspace effectively, maintain cleanliness and safety, and integrate complementary skills for complex projects.

### **Stage 3: Model Exploration and Refinement**

This stage comprised three substages:

#### **Substage 1: Participant Feedback on Case Studies**

Selected older workers were interviewed about the three model components: smart self-employment, smart tasks, and social housing. COVID-19 restrictions necessitated interviewing the same participants about multiple case studies, which proved feasible given the interchangeable nature of the cases—participants could transition between smart tasks and smart self-employment given both models' characteristic ease of entry and exit. The primary selection criterion remained age 50 or older.

25 older adults participated in interviews, with some interviewed multiple times on different topics (e.g., employment in one session, housing in another). These responses informed the evaluation, refinement, and elaboration of all three cases.

For case study 3 (Smart Social Housing Ecosystem), research was conducted at an Ottawa Social Housing "Aging-in-Place" facility accommodating over 150 older adults. COVID-19 restrictions necessitated a group meeting format arranged by housing management, with volunteer assistance for participant engagement and question clarification. This focus group setting encouraged open discussion about residents' challenges regarding mobility, health, socialization, and online employment opportunities.

### **Substage 2: Government and Institutional Perspectives**

Interviews were scheduled with government officials from agencies overseeing employment, housing, and social benefits to assess governmental response to the proposed model and explore regulatory support opportunities. Multiple visits to an Ontario Employment Centre in Ottawa yielded limited user interaction, likely due to COVID-19 concerns.

However, an extensive interview was conducted at the Garry J. Armstrong Long-Term Care Home with a management and legal advisor, followed by facility tours and staff meetings. This visit examined housing, healthcare, and social needs across a range of mental and physical capabilities, and produced the following points:

- Family proximity needs can be addressed by having adjacent retirement home facilities for family members
- The 24/7 monitoring requirements create human resource challenges and suggest that there may be opportunities in the future for robot assistance that could be tailored to the needs of individual residents.
- It is important to maintain the residents' skills and interests with specialized equipment (e.g., adapted drawing tables developed through makerspaces)
- There are ongoing needs for volunteer recruitment needs in various disciplines both for enhancing facilities and to improve intergenerational engagement
- There is a commitment by management to the international exchange of knowledge regarding innovations in long-term care

### **Substage 3: Private Sector Engagement**

Private sector representatives were interviewed to explore partnerships based on corporate shared values and shared manufacturing opportunities. The initial attempts at interviews with two private sector officers were curtailed by the requirements of the consent form that needed approval from superiors. Consequently, the interviews proceeded with small business owners (two vehicle repair workshops and one car dealership), even though responses were often guarded due to their perceived concerns about the disclosure of their business practices. However, despite these

limitations, the interviews provided valuable data for the conceptual development of the SESEM and the subsequent case-based explorations.

### **Data Retention and Documentation**

All data collection activities were conducted under University of Ottawa Ethics Review Board approval (Certificate included in Appendix 2). Data was initially collected and stored in multiple formats including handwritten notes and the Notability iPad application. Summary statistics were compiled during the active research period and are presented in Appendix 2.

In accordance with ethics guidelines and given the conceptual nature of this research, the emphasis was placed on extracting qualitative insights and patterns rather than maintaining extensive quantitative datasets. The summary data presented represents the distillation of insights from over 200 initial contacts, resulting in substantive engagement with approximately 35 participants, with 25 providing data used in the final analysis.

The iterative nature of the action research methodology meant that insights were continuously incorporated into model development rather than held for post-hoc analysis. This approach, while limiting traditional reproducibility, was appropriate given the exploratory and conceptual nature of the SESEM framework development.

### **3.5.3 General Observations on Data Collection and Analysis**

The data collection process began with an exploration of various methods including SurveyMonkey, email questionnaires, phone interviews, and direct contact. This exploration phase also refined the question design to improve clarity and the quality of expected responses.

Undertaking this process lead to the following:

1. While using SurveyMonkey offers a broad range potential participants, targeting specific age populations was challenging. Many respondents avoided age-related questions, and this method had to be abandoned.
2. To produce an optimal questionnaire design required three iterations which led, among other improvements, to the adjustment of the order of questions.
3. The sampling strategy prioritized data quality over sample size, resulting in the participation of only 25 respondents. This approach put the priority on the collection of complete and accurate data over larger samples that had a higher risk of inconsistent responses. Participants who provided contradictory responses were disqualified.
4. The pandemic significantly affected all phases of data collection, particularly interviews, resulting in multiple rescheduling, often resulting in phone interviews. Interviewing participants over 70 years old proved especially challenging, frequently requiring external assistance.
5. Case Study 3 interviews were particularly challenging due to the variety of social housing types and the residents' occasional uncertainty about which their specific housing model applied to them. This complicated even the initiation of interviews.

### **3.6 Methodological Limitations**

There are several limitations to this methodology that must be acknowledged:

- The final analyzed sample of 25+ participants, while sufficient for exploratory qualitative research and concept development, limits the generalizability of the results.

- The emphasis on the iterative development of the model over the empirical validation of the model means that the raw data is no longer fully available for independent reanalysis. Summary statistics compiled during the research period are provided in Appendix 2.
- The restrictions during the Pandemic significantly affected data collection methods, which required dynamic adaptations to the questionnaires and survey methods that may have had an influence on the participant responses and engagement.
- Data collection was primarily limited to the Ottawa region, which may not fully represent the diversity of older adult employment experiences across Canada.

However, these limitations are mitigated by the fact the purpose of this data was primarily for the theoretical development of the model rather than its empirical validation.

## Conclusion

The methodology used to conceptually develop the SESEM follows a Functionalist Action Research approach, while the elaboration of the model through case studies adopts a Functionalist case study strategy. The data collection and analysis served three purposes: 1) to assess the employment challenges facing the older population, 2) to inform the conceptual development of SESEM through Action Research, and 3) to help explore and refine the SESEM through three illustrative case studies.

## **Chapter 4: The Socio-Economic Smart Employment Model, SESEM**

In this Chapter, I provide the conceptual designed of a Socio-Economic Smart Employment Model, SESEM, whose principal function is to simplify the process of obtaining self-employment and short-term employment, in a manner that is similar to gig work and freelancing but is particularly well-tailored to the needs of older workers rather than focused on the benefits to gig companies.

Although the SESEM is conceptually designed for self-employment, I will explore its potential application in other employment-generating systems, such as short-term tasks similar to freelancing and gig work, as demonstrated in the case study for SESEM in Chapter 6. We will, as well, explore how the SESEM could be implemented in coordinating mega projects that involve the private and the public sectors as partners, not as donors or philanthropists.

### **4.1 Background**

In this section, some basic Business Concepts that are necessary for the conceptual development of the socio-economic smart employment model, SESEM, is briefly explained in the context of the development process. This includes the theory of Business, the Business Model, the Business Model Canvas, BMC and its social version the Social Business Model Canvas, SBMC.

Although trading and doing business have existed for centuries, it is only in 1994 that Peter Drucker introduced the Theory of Business in an article in the Harvard Business Review (Drucker, 1994). According to Drucker, the Theory of Business has three parts. First, there are assumptions about the environment of the organization of the business. This includes society and its components, the market, the customers, and the technology. The second part is the assumptions about the mission of the business. The mission of a business is a short statement that states its main

objective, why it is created, and what goals it aims to achieve. The third part is the set of assumptions about the core competencies needed to accomplish its mission. For example, in a social business, the core competencies include uniting members of society to work together and combining the efforts of society's social entrepreneurs and social innovators. Drucker described these assumptions as shaping an organization's behavior, dictating its decisions about what to do and what not to do, and defining what the organization considers to be meaningful results (Drucker, 1994).

Based on Drucker's theory, Joan Magretta introduced the term 'Business Model' in 2002 as a shift from studying a business from the point of view of a Business Plan to analyzing it through a Business Model. Though scholars "do not agree [readily] on what the business model is" (Zott et al., 2011), the business model could be defined as "the rationale of how an organization creates, deliver and capture value" (Osterwalder and Pigneur, 2010).

Zott and Amit (2010) conceptualize a business model as a system of interdependent activities that transcends the focal firm and spans its boundaries (Zott & Amit, 2010). Other scholars built their definition of the business model based on the objective of profit generation, and yet others focused on process and activities (Gassmann, Frankenberger and Sauer, 2016).

Teece, 2010 defines the business model as "... the design or architecture of the value creation, delivery and capture mechanisms employed. The essence of a business model is that it crystallizes customer needs and ability to pay, defines the manner by which the business enterprise responds to and deliver value to customers, entice customers to pay for value, and convert those payment to profit through the proper design and operation of the various elements of the value chain" (Teece, 2010).

A social business model is a business model with the following characteristics ((Jbara & Darnton, 2019; Yunus et al., 2010b):

- It has a social goal that serves society and protects the environment.
- It is managed in the same manner as profit-driven business models. However, its revenues are used to cover the operating expenses and pay back the partners'/shareholders' invested capital. Unlike the for-profit business models, where profits are distributed as dividends to shareholders, the net profit of a social business is reinvested in projects that maximize social benefits. Thus, the shareholders in the social business model are called stakeholders.
- It is sustainable and, unlike non-profit and non-governmental organizations (NGOs,) it generates revenues that cover all its expenses and pays back any debts or invested capital by partners/shareholders.

#### Comparing SESEM to the Not-For-Profit Enterprise Model

In the traditional not-for-profit business model, all revenues that are collected – whether from operations, donations, or grants – are typically spent to fulfill the organization's mission. In general, no profits are carried forward, re-invested for capital growth, or distributed among stakeholders. For founders and employees, the work structure in the not-for-profit model which often mirrors the Standard Employment Relationship (SER), and the organization's survival and sustainability frequently depends on continuous external support, particularly government grants.

In contrast, the SESEM is a socio-economic business model designed to create socio-entrepreneurial employment for older adults and other underprivileged groups and creates both business value and social value. While the SESEM may require 'kick-start' support during its

launch phase, it is designed to survive, sustain, and grow as an independent and autonomous entity. The revenues of SESEM are generated through value-creation operations (goods and services) and memberships and surpluses are not just expensed but are reinvested to maintain the SESEM's autonomy, fund its expansion, and ensure the prosperity of its members and society.

Business Model Canvas.

In 2005, Alexander Osterwalder and Yves Pigneur invented the Business Model Canvas, BMC, as the nine building blocks of any business model: Customer Segments, Value Propositions, Channels, Customer Relationships, Revenue Streams, Key Resources, Key Activities, Key Partnerships & Cost Structure (Osterwalder, A., & Pigneur, Y. 2010).

The Social Business Model Canvas has the following changes to the traditional Business Model Canvas:

- The Value Proposition in the Business Model Canvas is replaced by: Social Value Proposition or Shared Value Proposition. In other literature, it is referred to as Social Innovation (Social Enterprise Institute).
- Surplus (Revenues minus Expenses): How this surplus will be reinvested in social and environmental projects and activities.

In Appendix 3 I show the social business model canvas of SESEM and the three case studies.

However, as SESEM is a dynamic interactive model that works as a template that could generate tailor-made models that may address specific needs, I used different approach to synthesize and describe SESEM. This is detailed in Sections 4.3 to 4.7 below.

Table 4-1 (source: *Seizing the White Space* (Johnson, 2010),” see original table in Appendix 4) lists the most popular business models (Ovans, 2015). In addition to the models listed in the original table, two generic models are added as they are the major business models: The Traditional/classical small business model and the franchise business model. Also, a new column is added to show and compare each model's major characteristics.

All these models require long-term commitment, significant efforts, especially during the start-up, and many require financing for startups, acquiring of equipment, and other business infrastructures.

Most of the listed models in Table 4.1 have virtually low value-added to the customers and society. Most of them are designed as marketing tools to increase the sales/market share of a certain product or a service provided by big corporations.

Table 4-1 Major Business Models  
(source: *Seizing the White Space* Johnson (2010))

| <b>Business Model</b>       | <b>How does it work?</b>  | <b>Example</b>   | <b>Model’s Main Characteristics</b>  |
|-----------------------------|---|--|--|
| <b>Affinity club</b>        | “Pays royalties to some large organizations for the right to sell your product exclusively to their customers.” | <ul style="list-style-type: none"> <li>• MBNA</li> </ul>   | Exclusive marketing channel.<br>Based on monopoly.<br>No value-addition or innovative product/service. |
| <b>Brokerage (platform)</b> | “Bring together sellers and buyers.”  | <ul style="list-style-type: none"> <li>• Century 21</li> <li>• Orbitz</li> </ul>                               | Convenient and economic mediating digital platform.<br>Innovative but limited scope.                   |
| <b>Bundling</b>             | “Package related goods and services together.”  | <ul style="list-style-type: none"> <li>• Fast food,</li> <li>• value meals</li> <li>• iPod / iTunes</li> </ul> | Good marketing tool: “more value for money”<br>Limited scope. No real value added.                     |

|                                 |   |  |   |
|---------------------------------|---|--|---|
| <b>Cell phone</b>               | “Charge different rates for discrete levels of a service.”  | <ul style="list-style-type: none"> <li>• Sprint</li> <li>• Better Place</li> </ul> | Good marketing tool<br>Limited scope, no value added  |
| <b>Crowdsourcing</b>            | “Get a large group of people to content for free in exchange for access to other people’s content.” | <ul style="list-style-type: none"> <li>• Wikipedia</li> <li>• YouTube</li> </ul>   | Innovative value-adding model based on crowd collaboration.<br>Has some of the proposed model’s principles.<br>Requires strong IT infrastructure. |
| <b>Disintermediation</b>        | “Sell direct, sidestepping traditional middlemen”   | <ul style="list-style-type: none"> <li>• Dell</li> <li>• WebMD</li> </ul>          | Good marketing tool<br>Limited scope, no value added.   |
| <b>Fractionalization</b>        | “Sell partial use of something.”  | <ul style="list-style-type: none"> <li>• NetJets</li> <li>• Time-shares</li> </ul> | Excellent marketing tool to optimize usage/<br>Utilization.<br>Has some of the proposed model’s principles.                                       |
| <b>Freemium</b>                 | “Offers basic services for free, charge for premium services.”                                      | <ul style="list-style-type: none"> <li>• LinkedIn</li> </ul>                       | A good marketing tool.<br>Limited scope.  |
| <b>Leasing</b>                  | “Rent rather than sell, high-margin, high-priced products”.   | <ul style="list-style-type: none"> <li>• Cars</li> <li>• Machinery Link</li> </ul> | Excellent marketing tool to optimize usage, similar to fractionalization.<br>Has some of the proposed model’s principles.                         |
| <b>Low touch</b>                | “Lower prices by decreasing services.”  | <ul style="list-style-type: none"> <li>• Walmart</li> <li>• IKEA</li> </ul>        | A good marketing tool.<br>Widen access to products and services.  |
| <b>Negative operating cycle</b> | “Lower price by receiving payment before delivering the offering.”                                  | <ul style="list-style-type: none"> <li>• Amazon</li> </ul>                         | Marketing tool/tactic<br>Limited scope.   |
| <b>Pay as you go</b>            | “Charge for actual, metered usage.”   | <ul style="list-style-type: none"> <li>• Electric Companies</li> </ul>             | An excellent marketing tool.<br>Encourages rational usage.  |
| <b>Razor/blades</b>             | “Offers the high-margin razor below cost to increase volume   | <ul style="list-style-type: none"> <li>• Printers and ink</li> </ul>               | Marketing tool.<br>Limited Scope.   |

|                                   |   |  |   |
|-----------------------------------|---|--|---|
|                                   | sales of the low-margin razor blades.”  |  |   |
| <b>Reverse razor/blades</b>       | “Offers the low-margin item below cost to encourage sales of the high-margin companion product”       | <ul style="list-style-type: none"> <li>• Kindle</li> <li>• iPod/iTunes</li> </ul>  | A marketing tool that provides bait to customers to buy high-margin items, via offering its consumables at very low prices.<br>Limited scope.                           |
| <b>Reverse auction</b>            | “Set ceiling price and have participants bid as the price drops.”                                     | <ul style="list-style-type: none"> <li>• Elance.com</li> </ul>   | Marketing tool.<br>Limited scope.   |
| <b>Product to service</b>         | ‘Rather than sell a product, sell the service the product performs.’                                  | <ul style="list-style-type: none"> <li>• Zipcar</li> </ul>   | An innovative marketing model intended to make the product’s service more accessible and maximize utilization of the product. Close to the proposed model’s principles. |
| <b>Standardization</b>            | “Standardize a previously personal service to lower cost.”  | <ul style="list-style-type: none"> <li>• Minutes clinic</li> </ul>   | An excellent model to address the accessibility and cost of critical services.  |
| <b>subscription</b>               | “Charge subscription fee to gain access to a service”.  | <ul style="list-style-type: none"> <li>• Netflix</li> </ul>  | A marketing tool in highly competitive markets. It may encourage excessive usage of the service.  |
| <b>User communities</b>           | “Grand members access to a network, charging both membership fee and advertising.”                    | <ul style="list-style-type: none"> <li>• Angie’s List</li> </ul>   | Crowd-sourcing community services.<br>While it could provide valuable information, it might be misleading and/or abused.  |
| <b>Traditional small business</b> | The default business models historically available, such as family business, professional services... | <ul style="list-style-type: none"> <li>• Family Business</li> <li>• Professional services</li> <li>• Traditional trading services</li> </ul> | Traditionally offer important services to the community and boosts the economy.<br>Risky, especially in bad economic times.   |
| <b>Franchising</b>                | A safer version of the traditional model, where the franchisor offers                                 | <ul style="list-style-type: none"> <li>• McDonald</li> <li>• Re-max</li> <li>• Shell</li> </ul>  | While offering group brand quality control and marketing, it charges a big  |

|  |   |  |   |
|--|---|--|---|
|  | training, marketing, and ongoing support for a big fee. |  | entry franchise fee, annual ads, and royalty fee. They may also restrict franchisees from buying supplies from them.<br><br>Convenient and economic mediating digital platform. Innovative but limited scope. |
|--|---|--|---|

The model I want to propose, (SESEM) can be considered a type of Social Business Model.

The social values to be created and delivered are:

1. The conceptual development of special employment systems addressing the older population; however, it could also address other underprivileged populations.
2. The integration of society's components both horizontally, among the various population types, and vertically among the various generations.
3. Optimize the use of society's social assets, material assets, and resources.
4. Ensure that all the activities and projects are environmentally friendly and encourage upcycling and recycling.

The main motivation behind developing SESEM is to create a suitable and convenient means to keep old people productive in later life by providing two main options:

Option 1: providing innovative self-employment that is easy to start up, operate, and wrap-up, and does not require the classic requirements such as seed funds/initial investment, recruiting labor, location, etc.... as all of these will be socially shared by many of the potential self-employed in

this model and be operated, maintained, and regularly upgraded by the collaborative management team.

Option 2: providing a smart alternative to traditional full-time employment, as will be demonstrated in Section 4.7 (How it works), and later in Chapter 6: (Smart tasks).

The SESEM's options have the following characteristics:

- Simple: Option 1 is designed to eliminate the need for the start-up capital, operating cost, purchase of means of production (equipment and tools), and the need for full-time or part-time labor, as all these production requirements are to be shared among the potential proposed model users which is the team composed of the: micro contractors, social entrepreneurs, and social innovators, where those users will pay rental or user fee for the equipment and facilities used only, based on “Pay-as-you-go”.
- Flexible: Users/members in both options can change from one field to another as frequently as they wish without worries of any penalty, loss, or pain, provided they complete their previous task/project successfully.
- Collaborative and sharing teamwork: Users/members can benefit from a wide range of expertise and experiences from among colleague members/partners. They can, also, easily team up with strangers to execute a certain task or project and share with them the rewards and income according to the agreed-upon terms as digitally written in the smart contract, see Section 2.2.4.3 in Chapter 2.
- Simplifies the identification, classification, and utilization of the accumulated experience of older people.

- The proposed model when it is coupled with an artificial intelligence capability may help users choose the most suitable field of work and type of tasks/projects for them. Even if users do not have work experience, he/she can still team up with an experienced partner as a partner, not as a subordinate/employee, and learn from him/her, while helping.
- Wide range of tasks and projects that range from simple one-hour task to sophisticated project that involves design, prototyping, and manufacturing.
- Allow the users to employ state-of-the-art technologies to achieve their objectives through collaborative spaces, social innovators, and social entrepreneurs. These expensive technologies and expertise would not have been possible for the individual user.

One of the major advantages of the SESEM will be the strong harmony between the human factor (micro contractor, social entrepreneur, social innovator) and the workplace (collaborative spaces). Where, all users/members are considered colleagues and partners, and the premises (collaborative spaces, equipment, and facilities) are considered common properties whose well-being is the responsibility of all members/users

#### **4.2 Older people and the SESEM**

As discussed in the literature review Section 2.1, there are many barriers for old people to find a job, keep their current job, or return to work in later life. Many of these barriers are due to misconceptions, related to older people's physical and mental health and capabilities.

The only apparent venue left for those old people who want to stay active in later life, with barriers that are manageable, is self-employment (Section 2.1.4).

However, self-employment, in general, has many significant challenges, such as the risk of failure, and the need for a financial source for the start-up capital. In addition to the significant efforts and long-term commitment required to break-even and stay successful in self-employment.

The most challenging barriers, for many of those seeking to stay active, innovative, and independently employed are:

- Finding Start-up/seed capital,
- The risk of failure and its financial, economic, and psychological effects and consequences,
- The huge effort required, especially during the start-up period.
- The long-term commitment toward self-employment, to pass the break-even point and start making a profit and repaying debts.
- Basic Small business management knowledge of cost accounting, marketing, and operations.

However, as seen in Section 2.1.4 of Chapter 2: Literature Review, despite these barriers, the older self-employed and senior entrepreneurs have a higher success rate than their younger counterparts. This is due to the accumulated skills and knowledge that older people gained during their work life.

These skills and knowledge are considered a strategic resource, which, if properly used, could be a national competitive advantage are:

- Long experience in certain fields related to management, operations, and marketing.

- The knowledge of the economic and market business cycles and how to predict the business cycle of each product/market.
- Tendency to be more patient during tough economic times
- In my opinion, older people tend to be more collaborative and less competitive when working in a team or with a group of colleagues, partners, and competitors. This tendency enables them to foster cohesion and act as facilitators of collaboration within the group.
- Their feeling of loneliness (which increases as they grow older) motivates their need to be more social and accommodating to social norms and needs.

### **4.3 SESEM's Components (Building Blocks): See Figure 4-1**

There are three principle building blocks in the SESEM: Sharing principles, Social Assets, and Innovative Technologies.

#### **4.3.1 The Sharing Principles**

##### **4.3.1.1 Sharing Economy**

The sharing economy is considered the backbone of this proposed model, where the principles of sharing assets and resources to optimize their utilization, as opposed to owning them, will enable many potential SESEM users to use the same tools, equipment, and other facilities only when needed, without the need to buy and own them. For using these facilities, the SESEM member pays a subscription and/or rental fee when using them for doing a contracted task.

The sharing principles enable the SESEM to achieve the following:

1. the sharing of assets, as described above.

2. the sharing of benefits, where the potential members and social entrepreneurs collaborate on a certain venture, rather than competing under the 'winner takes all' principle. By collaborating they share the benefits from that venture/project.
3. the sharing principles enable crowd-based actions, such as crowd-sourcing the skills, and resources that are required to execute and complete a task or project, regardless of its complexity.
4. the fair distribution of the benefits and responsibilities among the crowd that empower more members of society and enhance the collaboration culture in the community.
5. the sharing platforms could be used to enable effective communications among the SESEM players (see Figure 4-11) and coordinate the efforts of members and players to complete the task.
6. the Corporate Shared Value principles (CSV), as described in Section 2.2.6, could enable the SESEM to benefit from the huge resources and expertise of the private sector to develop joint-venture projects between society and the private sector based on partnerships and shared values.

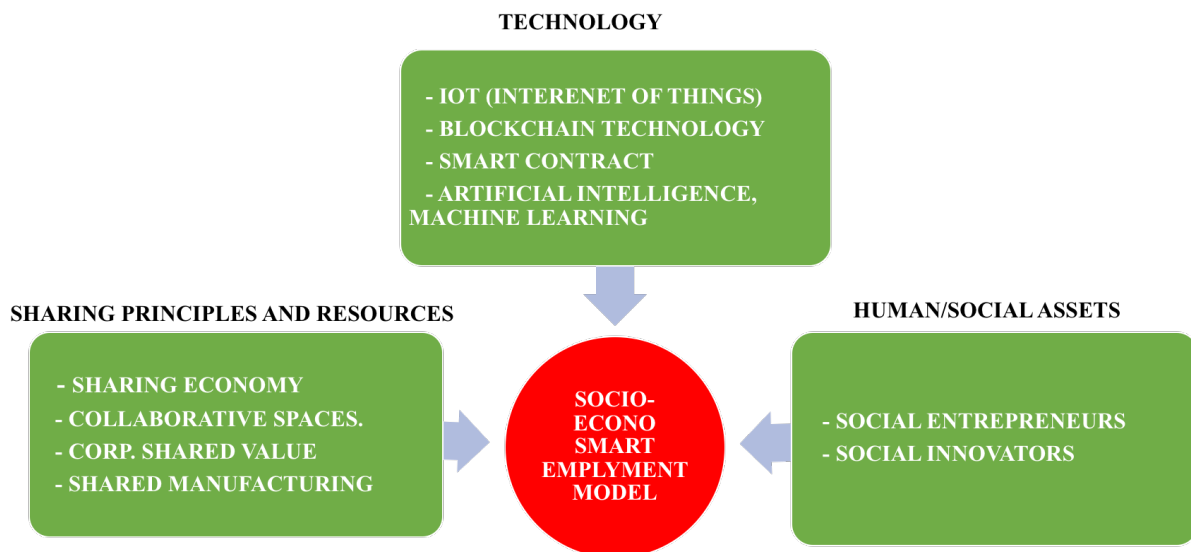


Figure 4-1 Illustrates SESEM's Major conceptual components (Building Blocks).

#### 4.3.1.2 Collaborative Spaces

As shown in Section 2.2.5, collaborative spaces, such as makerspaces serve the hobbyists and prototype developers.

In the SESEM, the counterpart to makerspaces, which I call “Sharing spaces”, play a key role as the workstations where the smart employment contractors (the potential users of the SESEM) use the space, the tools, equipment, and utilities to execute their contracted tasks. Social entrepreneurs use them to develop new processes, services, and products.

Table 4-2 provides a brief comparison between the traditional makerspace and the proposed model's makerspace or sharing space. The criteria for comparison are:

- Purpose: who are the users?
- Range: compare the range of activities that are served in space.
- Management: whether management is just to monitor the use of the equipment, tools, and other assets of the space and maintain cleanness and tidiness of the space, or professional/semi-professional, where stricter supervision and monitoring of the space operations, maintenance, repairs, and upgrade of the obsolete equipment to ensure maximum availability of each piece of equipment.
- Equipment type: whether it is commercial for average use or heavy-duty industrial quality.
- Pricing system: how much the user should pay to use the facilities
- Training and Mentoring: Compare how the members/users obtain the required training and mentoring.



|  |  |  |
|--|--|--|
|  | is only done when donors and/or special occasions are found. | micro contractors for doing market-demanded tasks, upgradeability is more necessary. |
|--|--|--|

**Collaboration among the sharing spaces, makerspaces, participating local workshops, and shared manufacturing facilities**

As the proposed model’s sharing space is a specialized version of the common makerspace, there will be many similar tools, equipment, and other open resources that can be used by members of each space.

For example, when there is a shortage of CNC laser cutters in a sharing space, the operating software may consider coordinating with a neighboring makerspace who have a CNC laser machine to arrange use during its available time slots. On the other hand, the makerspace coordinator may arrange to let some of its members benefit from a machine needed by one of its members that is only available in a sharing space. This exchange will be governed by a set of rules and regulations to ensure smooth collaboration without any disturbance to the original objectives of each. The rules will also regulate any accounting and/or financial issues.

Many neighborhood workshops have similar facilities that could join a collaboration space network especially workshops that have underutilized capacity. If proper arrangements are negotiated that address the security concerns with letting unknown users access their facilities and financial rewards are offered to incentivise sharing, these facilities could be integrated into the network.

I surveyed a few busy workshops in Ottawa regions, as part of the data collection process for my research, on the possibility of joining the makerspace, and sharing spaces. Their response depended on how the sharing package is presented. For example, my first attempt was to ask if

they would allow an experienced old person to use their facility based on a pre-arrangement and pay-as-you-go principle. The initial answer was negative. In my second attempt, I presented the package with more attractive terms. I changed the “old, experienced contractor” to “an organization that may use their facilities on mutually agreed appointments” and postulated that, in return, the owner would get paid an agreed rate per hour in exchange for the organization to use facilities that she/he does not currently have. The response to this proposal was positive. Other responses I received were a counteroffer by the owner for the (claimed organization) to enter a long-term partnership and/or agreement.

So, an agreement can be reached for sharing workspaces if there is a real need for extra equipment in certain fields, such as car maintenance and repairs.

Figure 4-2 demonstrates the potential relationship among the model’s sharing spaces, the makerspaces, and the neighboring participating workshops. It shows the possible available networked spaces whose facilities and resources could be shared by the potential members/users. This includes the network of the traditional workshops, the network of the makerspaces in the neighborhood, the network of the sharing spaces of any potential individuals and/or enterprise, and the network of the shared manufacturing facilities of the participating manufacturers.

Another potential avenue that needs to be explored to enhance the capabilities that the proposed model could have, is to link the sharing space network with the Shared manufacturing concept, as explained in the next section.

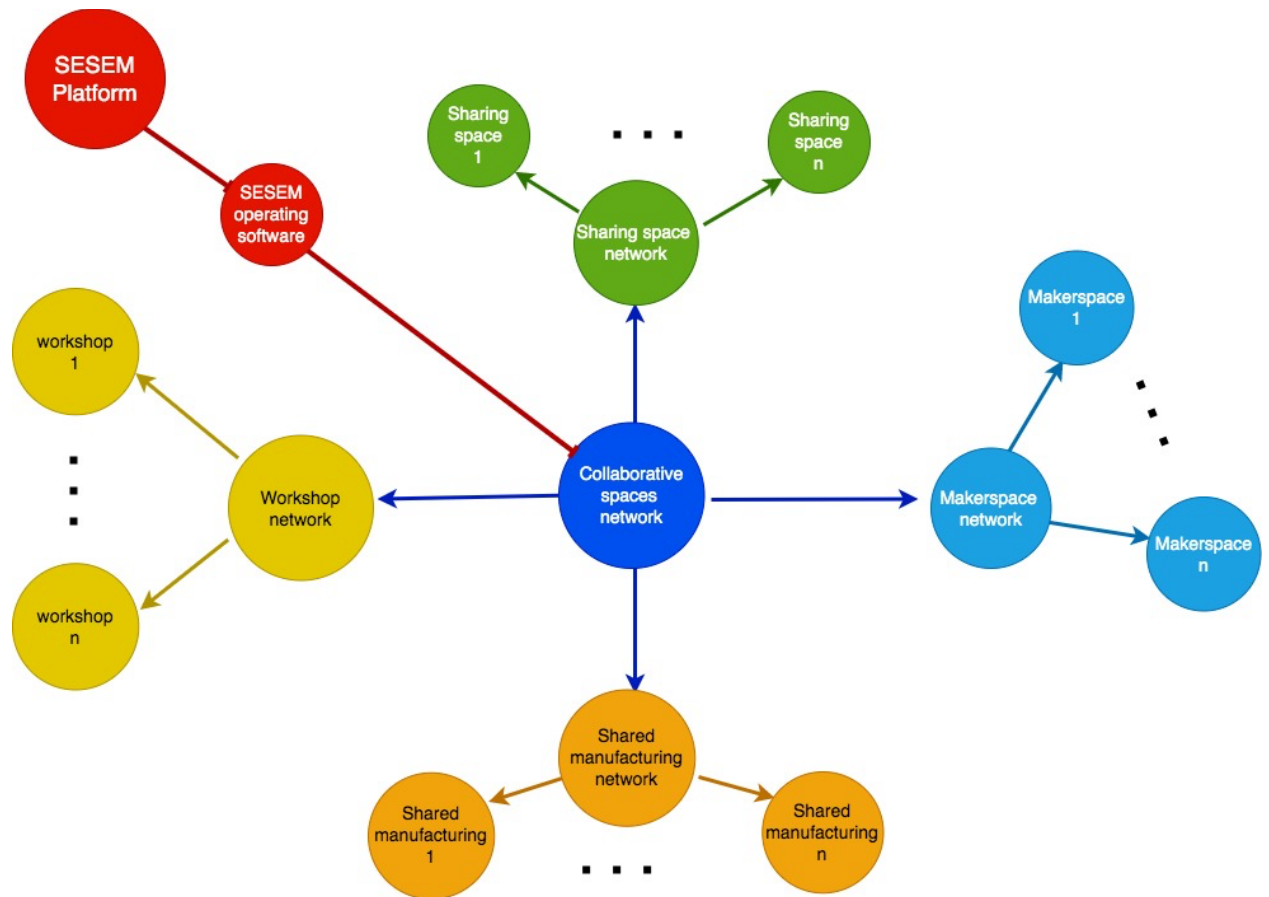


Figure 4-2 Depicts the conceptual collaborative spaces network in the SESEM

#### 4.3.1.3 Corporate Shared Value (CSV)

The corporate shared value (CSV) sharing principle plays a significant role in the SESEM.

With the CSV, the SESEM tries to involve the private sector as a partner in social projects in a win-win scenario. Though the private sector's financial profits from such a partnership are low in the short term, the gains achieved in publicity and social endorsement to those private sector partners are significant.

On the other hand, the benefits that society gains from a such partnership are also significant. These gains are characterized by the private sector's competitive advantages, which if properly

utilized will not only ensure the success of the project but will enable its expansion and sustainability.

The private sector's main characteristics are:

- Its huge resources, not only financial but also other assets and logistics
- Technological expertise: equipment, methods, and programs.
- Human expertise, where the private sector recruits the best candidates in the market and invests in their development.
- Efficient management which can optimize the execution and operations of social projects.

The real challenge is how to encourage and convince private sector companies that they need to join. This may require the experience and wisdom of the older population.

As I will show in my analysis of Case 3 – Smart Social Housing Ecosystem, in Chapter 7, the SESEM can utilize the private sector's corporate shared values to develop a smart social housing model.

#### **4.3.1.4 Shared Manufacturing:**

The application of the sharing principles in the manufacturing field had opened up huge opportunities to individual entrepreneurs and innovators, in addition to the fact that shared manufacturing will optimize the use of the manufacturing facilities and reduce the cost of their amortization.

The proposed model could benefit from both types of shared manufacturing:

Social cloud manufacturing

In Social Cloud Manufacturing, the member micro-contractor could be subcontracted by big manufacturing firms to perform specific tasks such as designing/redesigning, improving/upgrading, or testing a component or a part of a product. This is more efficient and economical for the manufacturing firm than using their own staff, who are on the payroll, however, this may not by itself be a sufficient motivation and incentive to excel at this task.

The fact that the proposed model's micro-contractors and social entrepreneurs use makerspaces and open sources of knowledge, would significantly decrease the development costs of products and services. This will not only reflect on the manufacturing firms, but also on the macroeconomy and public/society in general.

#### Social Platform

In the other type of shared manufacturing, the Social Platform, the member contractor could subcontract the manufacturing facilities (or part of it) of the manufacturing firm to execute the manufacturing part of a contracted task that includes fabrication.

Shared manufacturing is one of the most significant leaps in the field of manufacturing.

It opens huge opportunities for social entrepreneurs, social innovators, and micro contractors to enter the manufacturing field without the need for any investment.

Table 4-3 conceptually compares shared manufacturing under the proposed model with traditional manufacturing processes across several key manufacturing criteria:

- **Economy of scale:** In traditional manufacturing, production systems are designed for large batch outputs to minimize overhead costs. However, when market demand declines, the

cost per unit rises, reducing competitiveness. In contrast, shared manufacturing is designed for flexible production of limited quantities developed through sharing principles, social assets, and ICT integration.

- **Cost of production per unit:** Traditional manufacturing achieves lower unit costs due to high production volumes. The opposite applies in shared manufacturing, where smaller batch sizes lead to relatively higher unit costs.
- **Cost of product development:** This refers to the expense of designing and preparing a product for production. In traditional manufacturing, the high production volume distributes this cost across many units, resulting in a lower per-unit development cost. In shared manufacturing, products are developed in smaller quantities using sharing-based design and production approaches, which may yield lower or negligible costs relative to the social value created.
- **Product quality (quality control):** Traditional manufacturing emphasizes strict quality control to ensure competitiveness. In shared manufacturing, production runs are typically smaller and shorter in duration, so quality control processes may be less stringent while still meeting functional and social objectives.
- **Flexibility:** Flexibility refers to the ability of a production facility to shift from one product to another. Shared manufacturing offers high flexibility due to its variable and externally driven demand structure.
- **Product range:** Following the same logic as flexibility, shared manufacturing systems tend to accommodate a wider range of products and production settings.

- **Readiness/response to emergencies:** Similar to flexibility, shared manufacturing facilities can quickly adapt to produce new products in a short time frame, offering strong responsiveness in emergency situations.

Table 4-3 Conceptual Comparison between the Traditional Manufacturing and SESEM’s Shared Manufacturing

| <b>Comparison Criteria</b>               | <b>Traditional Manufacturing</b>   | <b>Shared Manufacturing</b>  |
|--|--|--|
| <b>Economy of scale</b>                  | Large quantities are manufactured per batch  | Low, normally very small quantities are expected   |
| <b>Cost of production</b>                | Relatively low, as the setup cost and fixed overheads are distributed among a big quantity of the product in each production batch | High, as the setup and overhead costs are distributed among small quantities of the production batch             |
| <b>Cost of product development</b>       | High as the company incurs all development costs   | Low, as development occurs in the makerspaces using open sources packages and free equipment                     |
| <b>Product Quality</b>                   | High, due to accumulated development/experience of producing the same product  | Standard due to the one or few times production batches  |
| <b>Flexibility</b>                       | Low, normally few products are manufactured per manufacturing cycle  | High, where the low product development cost makes the development and production of new products more frequent. |
| <b>Products Range</b>                    | Limited to the company’s policy, business plan, and model  | Wide and comes from many sources   |
| <b>Readiness/Response to emergencies</b> | Normal   | Fast   |

### 4.3.2 The Social Assets

#### 4.3.2.1 Social Innovators (SI)

The Social Innovators, in the proposed model, could be considered as a pool of experts that offer vital services to the micro contractors. They could be volunteers who work for free and/or participants who expect to have their share of the benefits and rewards. They could also work as

micro contractors and engage in executing some tasks by themselves and/or with the help of other micro contractors and social entrepreneurs.

The main roles of the SI in the proposed model are:

1. To train the micro contractors on how to use the available facilities such as the makerspace tools and equipment, the Model Operating Software, the pool of Social Innovators' expertise...
2. To help the micro contractor allocate the required tools, equipment, and facilities to do the contracted task.
3. To work as a liaison to coordinate the efforts and resources among the proposed model's players to keep the existing facilities available to the micro contractors and expand the makerspaces capabilities by adding new required equipment, new techniques, and databases, to allow more micro contractors from other fields to benefit from the proposed model structure to keep productive.
4. Coordinate the donations and the efforts of the players to properly target the needs of the current and potential micro contractors to maximize their utilization and avoid redundancy.
5. The Social Innovators could also coordinate the efforts of the micro contractors in big projects and complex tasks.

#### **4.3.2.2 The Social Entrepreneurs**

Entrepreneurship is normally associated with innovation, the development of new innovative solutions, and the adoption and optimization of new technologies. Entrepreneurs are ambitious and compete to maximize their market share and profits. Social entrepreneurs are still innovative;

however, they enjoy working collaboratively as a team and sharing the rewards and profits. They tend to collaborate rather than compete.

Social entrepreneurs play a vital role in the proposed model. While the social innovator works as the advisor and coordinator, the social entrepreneur is the generator and the prime mover of complex projects. For example, the social entrepreneur may develop a simple face mask that could be made from recycled fabrics. The social innovator could help in brainstorming, testing, and sourcing the required raw materials and fabrication process of the newly developed face mask.

Typically, the micro contractor may start as an assistant/laborer to a social entrepreneur he/she chooses from the hub of the proposed model. During several assisting roles, the micro contractor will learn how to execute the project/task that was used to be executed by the social entrepreneur. He/she may need some help from that social entrepreneur, who will act as a social innovator in guiding the micro contractor, who will take the role of the social entrepreneur.

The roles of the social innovator, the social entrepreneur, and the micro contractor (also known as smart self-employed) could be interchangeable, as will be illustrated in Chapter 4.5 and Figure 4-8. The principles of sharing and collaboration, and the open-source nature which characterizes the proposed model, make this collaboration and interchangeability work well.

### **4.3.3 The Information and Communication Technologies (ICT)**

For the SESEM to work effectively and economically, it requires ICT technologies in all components and functions. These technologies enable the SESEM to:

1. Optimize the Sharing of the sharing/makerspace equipment and facilities.

2. Provide effective, low-cost, and powerful computing and data storage capabilities, and reliable fast communication channels among all devices and components via the internet.
3. Be autonomous and independent of the influences of the third-party big corporations, whether in the operations and control process (hosting the proposed model platform and operating system) and/or handling the financial activities (transactions accounting, and payment).
4. Be secure and safe: The Distributed Ledger Technology/Blockchain enables the proposed model operations and accounting to:
5. Have an independent, immutable, and autonomous database,
6. Permit the authentication by the proposed model's users without the need for an expensive third-party contractor to do this.
7. The internet of things, IoT, simplifies the identification, intercommunication and data exchange among the devices, equipment, and players. It also enables the search, setup, connection, and control of the required devices from anywhere at any time. Case study 1: Vehicle maintenance centre will demonstrate how the IoT is useful in optimizing the utilization of the available equipment and resources scattered among many locations. Where the IoT allows connecting program and control them by the authorized users.
8. The abundance of unused/underused equipment and resources requires an advanced program/package, not only to identify and classify the equipment according to its usage but also to present them to potential entrepreneurs who need them to do certain tasks/projects. For example, when a smart self-employed has a project related to fabricating COVID-19 protective face masks, an AI-driven program will collect all the data related to the mask fabrication process. Then will (suggest) dividing the process into phases. At each

phase, it will list the data related to that phase. With time and use, the program will improve and fine-tune the phases' division, and data search. It will, also, help in the Digital Marketing of the proposed model operations, and enable the proper matching between the private corporations' Smart Tasks and the Smart employees, according to the corporations' requirements and the smart employees' profiles (smart CVs) as will be demonstrated in case study 2.

The ICT simplifies the utilization of the open sources sharing from as many parties as needed from around the world to develop complex programs and projects such as those needed to store, classify, and match the equipment, resources, smart tasks employers, smart employees, smart self-employed, ... that would require huge efforts and budget that are only available in big corporations.

Figure 4-3 shows the major components of ICT with a brief list of the functions of each. Figure 4-4 demonstrates how the ICT enables the proposed model to achieve its objectives and helps to expand its capabilities and resources to reach the idle machines and equipment that are registered and not being used in its database via the shared manufacturing and virtual collaborative spaces. The smart self-employed, SSE, after signing a smart contract with a customer or employer, as shown on the left side of Figure 4-4, will use the ICT operations capabilities to search for the available and optimum tools, equipment and resources in the local workshops, sharing spaces, and participating shared manufacturing network, and will negotiate the conditions and price and book them as part of the smart contract terms and conditions. All these search and booking is done digitally via the SESEM's operating system, which is the backbone of the SESEM.

One of the essential tools that ICT made available is the Smart Contract, which was defined in Section 2.2.4.3 in Chapter 2. The Smart Contract plays a vital role in the proposed model:

1. Digitally compiles and records all the agreed-upon terms and conditions between the micro contractor and the customer.
2. Does all the booking and reservations of equipment, facilities, and materials that are required to execute the contracted task.
3. Arranges payments and does all accounting activities that are related to the contracted task.
4. Controls all the operations till the completion of the task.
5. Keeps all the records for future use, evaluation, and studies/research.
6. Ensures that both parties report their reactions/feedback in the proposed model's Operating System, SESEM-OS's feedback section.

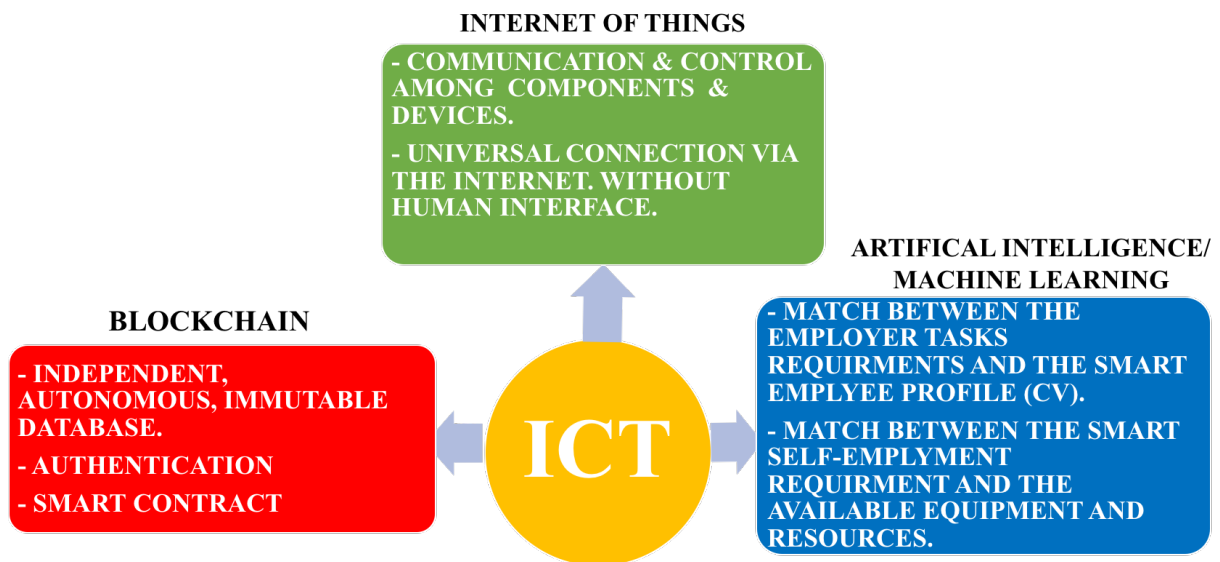


Figure 4-3 Presents ICT's main conceptual components

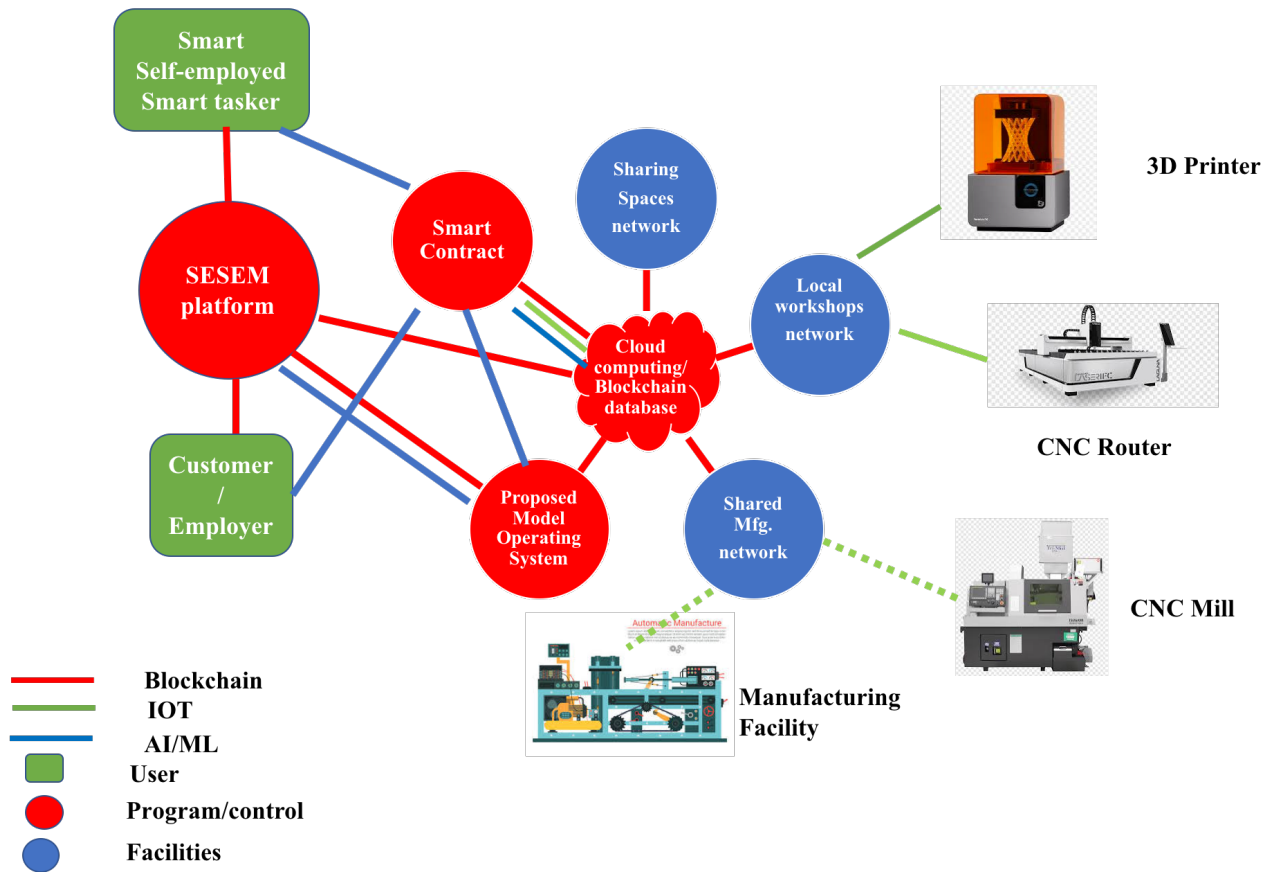


Figure 4-4 Illustrates how the ICT is conceptually utilized in the SESEM

Figure 4-2 Shows how the sharing spaces could be used by many members and social entrepreneurs. They do not have to invest in having their own production/service facilities, as they do in the traditional and franchise model (Figure 4-10 as compared to Figure 4-9). This would eliminate the need for start-up capital and the trouble of financing it. In addition, this protects the environment and saves a lot of space. Table 4-4 conceptually compares the use of own facilities to share the same facilities in a sharing space.

Table 4-4 Conceptual comparison between using one’s own facility versus a Sharing space facility

| <b>Comparison Criteria</b>          | <b>Own Facility</b>  | <b>Sharing space Facility</b>  |
|-------------------------------------|--|--|
| <b>Cost of the facility to user</b> | Very high and requires long-term financing.  | Only pay the user's fee "pay as you go"  |
| <b>Availability</b>                 | 100% available   | Requires booking, planning ahead and flexibility in case of overbooking  |
| <b>Use Factor</b>                   | Normally low: depends on the market conditions and operations timing of the owner.   | Normally high as the facility could work 24/7  |
| <b>Maintenance cost</b>             | Expensive as the user pays all the expenses  | Covered in the user's fee and is distributed among the users according to their use time.  |
| <b>Facility upgrading</b>           | Very expensive and hard to achieve   | Achievable as the upgrading cost is distributed among the users.   |
| <b>Quality of Service</b>           | Can be controlled and maintained   | Since users have no full control of the facility, keeping good quality is challenging.   |
| <b>Cost to customers</b>            | High as all the equipment's depreciation costs will be allocated to the single owner   | Lower than in own facility as the equipment depreciation cost will be distributed among all the users                                    |
| <b>Impact on the Economy</b>        | In challenging economic conditions, the single owner may fail to pay the installments to the financier and may declare bankruptcy, which may cause negative consequences for the economy | The use of the sharing space facility will optimize equipment utilization and decrease the production cost, which will boost the economy |
| <b>Impact on the environment</b>    | The use of its own facility will increase the waste in space and facilities.   | The sharing of space will save space and minimize waste  |
| <b>Collaboration</b>                | Based on market competition  | The users enjoy the opportunity to collaborate, and exchange information and advice.   |

**4.4 SESEM's Smart Employment Types:**

The most common types of employment models for older people are the Standard Employment relationship (SER), also known as full-time employment, and the self-employment models. The two mainly differ in the control level between the employee and the employer. Figure 4-5 demonstrates this relation.

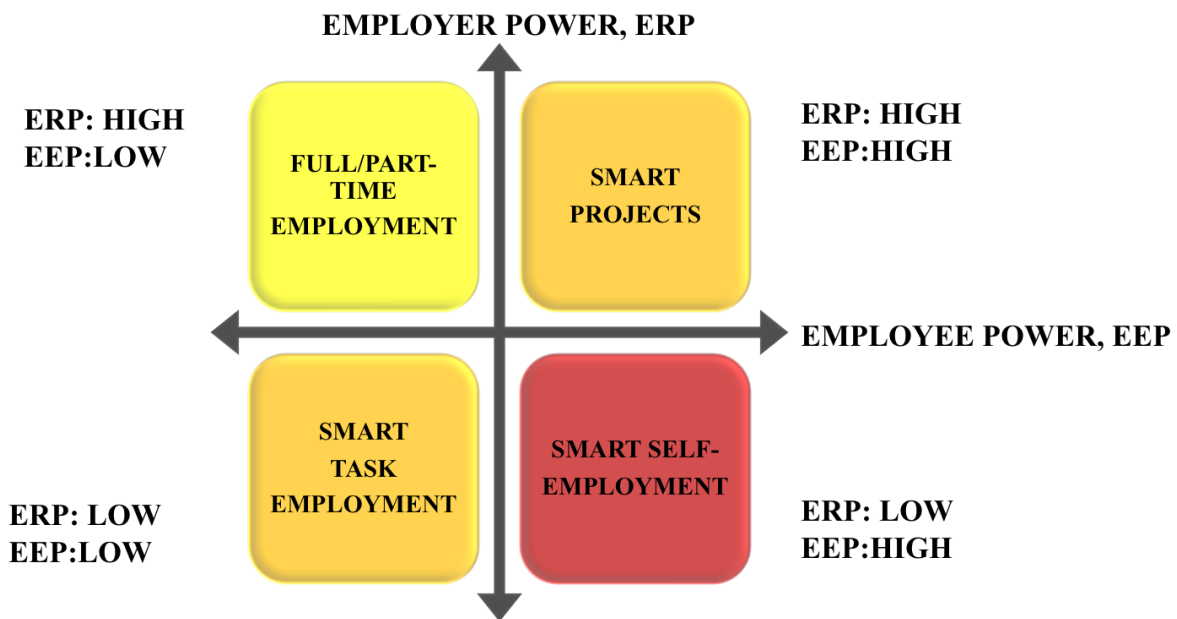


Figure 4-5 Employer/employee Power level comparison among the various employment models.

In Figure 4-5, the vertical axis represents the employer (ER) power level, ERP, while the horizontal axis represents the employee (EE), power level, EEP. These power levels are indicators of the relative power and influence of the employer versus the employee in the subject employment system in which they both exist. For example, in the top left quarter of Figure 4-5, the employer power is high, and the employee power is low. Thus, this quarter represents the domination of the employers over the employees.

The employment models are distributed in the four quarters of the graph. The standard employment relationship is put in the upper-left quarter where the employer power ERP is HIGH, and the employee power EEP is LOW, which means that in this model, the employer is the dominant party. On the lower-right quarter is the smart self-employment model where the employer power EER is LOW and the employee power EER is HIGH, which means that, in this model, the self-employed

is the dominant party as he/she employs him/herself. On the lower left quarter is the Smart Task model (which will be explained here under) where both the employer power ERP and the employee power EEP are LOW.

On the top-right quarter is the ‘Smart Projects’ employment model, where both the employer and the employee have high power. This means that the employees who offer human labor and expertise and act as a collaborative syndicate represented by social innovators leadership, could work in big, shared projects with the private sector investors as equal partners.

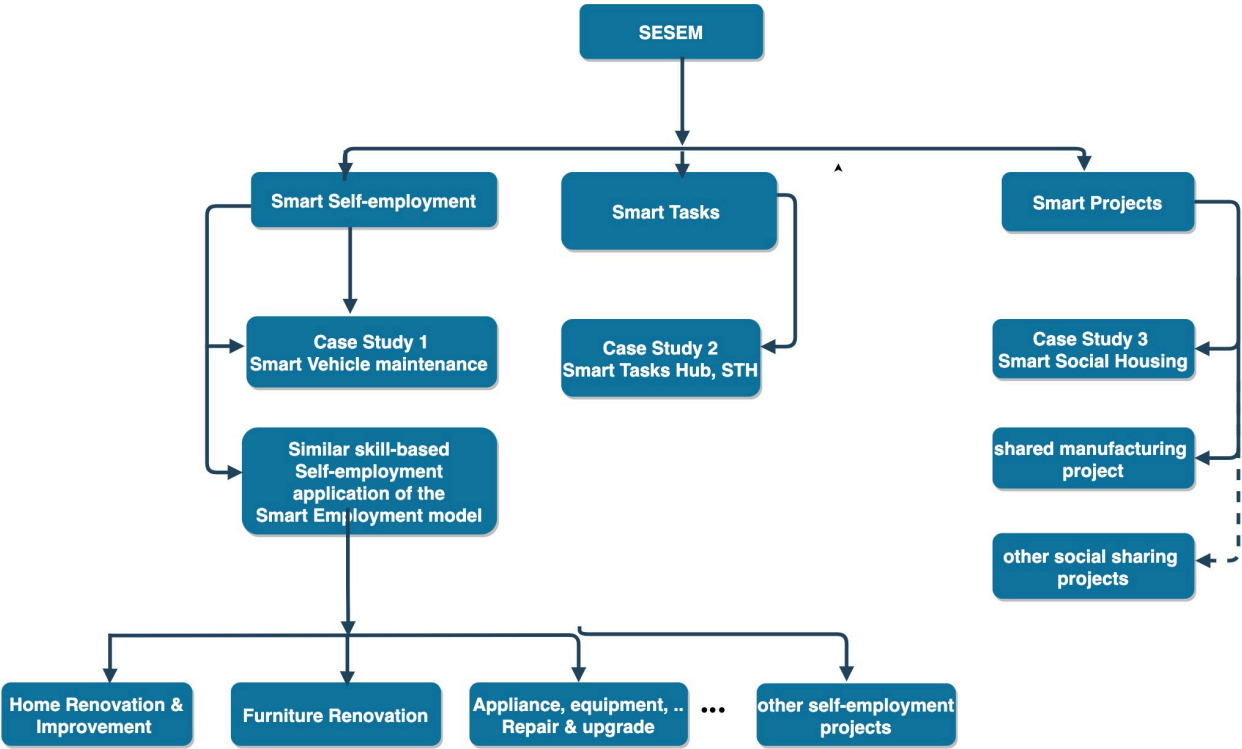


Figure 4-6 Smart Employment Organization chart

Figure 4-6 depicts the conceptual types of “smart employment” opportunities SESEM offers and examples of where to find them in the context of the thesis’ case studies:

**1) The Smart Self-Employment, SSE:** As the first implementation of the SESEM, the smart self-employment model is a simple and convenient self-employment model for the older population. Table 4-5 conceptually compares the SSE with the classical small business and the Franchising models. As shown in Table 4-5, SSE has conceptually unique features, where, compared with the classical small business and franchising models, the SSE does not require start-up capital, investment in location, equipment, marketing, and in labor. It, also, does not require an allocation of operating budget, where it depends on the sharing of facilities, resources, and the collaboration of other active society members. On the other hand, the revenue/reward from the SSE is relatively low compared to the other self-employment models. However, it is adequate, sufficient, and has other merits.

Case study 1 – shows, in detail, how the SESEM’s SSE could be implemented in Vehicle Maintenance and services field.

Table 4-5 Conceptual comparison between the Classical small business, the Franchise, and the SESEM

| Comparing Criteria              | Typical Entrepreneurial Small Business | Franchising  | SESEM’s Smart Self-Employment, SSE |
|---------------------------------|--|--|------------------------------------|
| Risk                            | High                                   | Medium-low   | Very Low                           |
| Capital requirement             | High                                   | High   | Low to none                        |
| Start-up period                 | Three years avg.                       | Less than a year                                     | Not required/needed                |
| Labor costs long and short term | High                                   | High   | Short-term partnership             |
| Training & Retraining           | Life-long trial and error              | Initial start-up and when adding new service- costly | Basic knowledge                    |
| Profit margin                   | High                                   | Medium   | Low                                |
| Model’s life                    | Medium                                 | Medium   | Very short                         |

|  |           |      |                                      |
|--|-----------|------|--------------------------------------|
| <b>Technology adaptation &amp; upgrade</b>         | Hard      | Hard | Easy -just change to newer equipment |
| <b>Competition</b>                                 | Very high | High | Low                                  |
| <b>Maneuvering &amp; Survival in a bad economy</b> | Low       | Low  | High                                 |

The next section (Section 4.5) compares the SESEM's SSE with the Franchise business model to show how the SESEM significantly removes the main obstacles facing new potential starters.

**2)** The Smart Task is the SESEM's version of the emerging gig works. It is the shortest and easiest smart employment version, where a certain full-time job, such as salesclerk is dismantled and divided into a set of individual tasks, such as initiation of phone calls/emails to customers, responding to their inquiry phone calls, and/or emails, issuing of invoice, etc.. . Each of these Tasks is treated as an independent contractual unit. These independent Task units are offered online via a platform to potential unemployed workers.

The smart task characteristics make it easy for both the potential employee and employer to use it without any obligations and virtually no risk. Where there is no contractual agreement between the two parties: the employer and the smart tasker. Hence, the smart tasker could discontinue anytime without notice, and the employer could remove the subject task from the database at any time.

Chapter 6 provides more details on these smart tasks and their antecedents: the standard employment relationship, and the gig work.

Table 4-6 provides brief conceptually comparative information on the SESEM's smart tasks and its antecedents.

Table 4-6 Conceptual comparison between The Standard Employment Relationship, the Gig Work, and the SESEM’s Smart Tasks

| <b>Criteria</b>  | <b>Standard Employment Relationship</b>  | <b>Gig /freelance works</b>   | <b>SESEM’s Smart Task</b>   |
|--|--|---|---|
| <b>Legal arrangement</b>                               | Medium to long-term binding legal contract/agreement   | Pay-as-you-go agreement   | Pay-as-you-go agreement   |
| <b>Relationship power</b>                              | Power rests in the employer’s hand, where the employer makes the rules following the work laws and regulations             | Work’s end-user (employer) makes the work’s rules. There is still a lack of laws and regulations governing the gig works. | Though the work’s end user makes the rules about the tasks, the STH can provide workers with vital legal and technical advice.  |
| <b>Means and place of work/production requirements</b> | Employers supply the place, tools, equipment, and administrative logistics for work, which requires a big operating budget | Workers supply the place and equipment for the work.  | Place and equipment are provided in a special arrangement where the costs and benefits are shared by the workers, as part of the SESEM’s smart tasks hub arrangement. |
| <b>Flexibility &amp; convenience</b>                   | Not flexible for both the employer and employee due to the medium to long term contractual agreement                       | Flexible for both the employer and employee due to the very short contractual agreement                                   | Flexible for both the employer and employee due to the very short contractual agreement   |
| <b>Stability</b>                                       | Relatively stable for both employer and employee due to medium to long contractual agreement                               | No stability due to a very short contractual agreement.   | No stability due to a very short contractual agreement  |
| <b>Payment/rewards and expenses accounting.</b>        | Paid monthly or as per the agreement for the time spent. Taxes, insurance, and other charges are deducted by payroll.      | Paid directly to the worker after the contracted task is completed and accepted. Platform user’s fee is directly deducted | Payment is paid to the worker after deduction of subscription and insurance fees  |
| <b>Work Security for the workers</b>                   | employment insurance and pension plans are prepared and deducted   | none  | Workers must subscribe to the hub that provides the   |

|  |   |   |   |
|--|---|---|---|
|  | from the workers' salaries as part of the employment agreement/contract.  |   | required work facilities, and insurance fees are deducted from each task done.  |
| <b>Long-term accumulated value build-up in the project</b> | All go to the employers' company name; however, employees gain experience, career development, and reputation/prestige of the employer, in the process. | The long-term accumulated value is captured by the mediating platform and is reflected in the gradual increase in its net worth and stock share value. There are no arrangements for career development/accumulated experience records. | The long-term value is gone to the smart task hub which socially belongs to the workers, and the benefits indirectly go to the workers and the society. |
| <b>Skills requirements &amp; selection process</b>         | Many skills and experience are required for the job post. Selection is done via a complicated process   | Only skills and experience for the subject task. The selection process is easy  | Same as in the freelance/gig works.   |
| <b>How work is done, controlled, and assessed</b>          | The employer is responsible for providing the training, production requirements, supervision, and evaluation.   | Works/tasks are developed by the end users (employers). Control and assessment is automated and online.   | Same as in the freelance/gig works.   |
| <b>Impact on old people</b>                                | Employers prefer younger employees. They may use their power to reduce the number of older people, especially during economic crises.                   | Old workers find gig works convenient and flexible, despite their lack of protection of basic workers' rights such as minimum wage, and employment insurance, ...   | As this platform is developed and managed by workers, it protects their rights and offers old people legal, technical, economic, and financial advice.  |

### 3) The Smart Projects

Unlike Smart self-Employment and Smart Tasks, smart projects are a combination of extrapolation from Figure 4-5 and the corporate shared value (CSV) principle introduced by Michel Porter

(Porter & Kramer, 2019), where the employees are represented by their collaborative society and the employers represented by the private sector, are equal partners in a potential social joint-venture. As will be explained in more detail in Chapter 7, which discusses Case 3: Smart Social Housing, we explore the possibility to developing synergies by combining the competitive advantages of the private sector and society's social entrepreneurs and innovators, to build environmentally and societally friendly sustainable projects. Though the profit margin from such social mega projects would be relatively low compared to pure entrepreneurial ventures, the gains in reputation and social endorsement could compensate for this difference.

In Case 3 -Smart Social Housing model, I will show how the combination of the accumulated experience and wisdom of the older population with the resources and expertise of the private sector could develop a special housing model that is equipped with the necessary facilities, equipment, and technology to help the older population:

- Age in place rather than in long-term homes
- Stay socially active to prevent what is known as Senior social isolation
- Stay active and productive in later life

#### **4.5 Comparison between the SESEM's SSE and the franchise model**

The franchise model was developed to simplify the start-up of small business and reduce the risks of failure, which is common in new small businesses start-ups. However, the franchise model still requires a considerable amount of start-up capital that include the franchise fee and the monthly royalty and marketing fee. Though reduced, the risks still exist.

The SESEM is conceptually developed to eliminate the start-up capital, franchise and other related fees, and to further minimize the risks, as will be demonstrated in the comparisons below.

Scholars and practitioners disagree on how to define franchising due to its wide spectrum of applications and use. For example, it could be used by big corporations to expand geographically using a network of retailers or franchisees (Bates, 1998; Lafontaine & Shaw, 1998). It could also be used to expand social values via what is known as social franchising (Giudici et al., 2020)

Curran and Stanworth (1983) cite Caves and Murphy II's definition of franchise agreement as:

....an agreement with a definite or indefinite period between the owner of the protected trade-mark grants to another person or firm, for some consideration, the right to operate under this trade-mark for the purpose of producing or distributing a product or service" (Curran & Stanworth, 1983).

Many potential small investors consider the franchise model as a safer way to own their own business, as the franchises have used a proven business concept and are supported by a big corporation (franchisor).

However, there are some reasonable doubts that franchising is a safer model than the classical small business model.

"...there is an overall perception that franchising success statistics have long been over-reported (Piling, 1991). Inaccurate, incomplete data have long plagued the franchise industry (Cross, 1998). The franchise industry has suffered from being more protective and secretive than other industries, so data are limited, especially data over time that would prove or disprove whether franchising leads to higher success rates (Hoy, 1994)", (Welsh et al., 2011).

Here, I compare SESEM's SSE (Smart Self-Employment) with the franchise business model to show how SESEM simplifies the start-up and operations of small businesses. As I will show in case 1, the SESEM utilizes a wide range of social entrepreneurs and social innovators, both local and around the world, for the development of any business idea, concept, or method.

Besides their integrative, complementary, and supportive roles as described above, the social innovator, social entrepreneur, and the member could be role-interchangeable, i.e. each of the three could take the role of the other. For example, a certain member may develop a faster and more convenient means to change the engine oil of vehicles on the spot (as a business concept). So, during the development and prototyping of this method, this person takes the role of the social entrepreneur. Then, when testing this process, he/she takes the role of a smart self-employed member. After perfecting this method, the same person (social entrepreneur, and ex-member) could take the role of the social innovator to train other members on how to use the new process/method and become a smart self-employed person.

This support and interchangeability are made possible due to the principles of sharing, social innovation, and social entrepreneurship. The corresponding support in purely commercial models is offered via the Franchise Business Model, by the Franchisor. Where the Franchisor starts in a certain field as a small business owner. While doing this, he/she may develop and/or improve that service, product, or process, as an entrepreneur. After perfecting it, he/she may then consider becoming a Franchisor, offering this service/product/process under his/her own brand name to potential seekers of a proven and safer self-employment opportunity. Where the franchisor offers a complete package that includes the following:

1. Market tested brand name product/service.

2. Comprehensive training in all small business management: operations, cost accounting, recruitment, sales, and marketing.
3. Site/ location selection, furnishing, and Grand opening.
4. On-going technical and marketing support.
5. Regular inspection visits to ensure quality control of the franchise brand.

However, this does not come for free. The franchisor collects the following fees, depending on the franchise agreement:

1. A hefty initial franchise fee that could range from as little as a couple of thousands of dollars, for just a few hours of one-time training and using the brand name of the franchisor, to over one million dollars for a complete package as listed above.
2. A monthly fee called royalty (or management) fee which is a percentage of the gross monthly revenue of the franchisee, that typically ranges from 7%- to 12%.
3. Some franchisors also collect an advertising fee which is around 1-4% of each franchisee's gross annual revenue, (Dant & Berger, 1996).

Figure 4-7 Illustrates the relation between the small business owner/franchisee, the entrepreneur, and the franchisor, while Figure 4-8 depicts the equivalent conceptual relationship between the SESEM's SSE member also known as micro contractor), the social entrepreneur, and the social innovator.

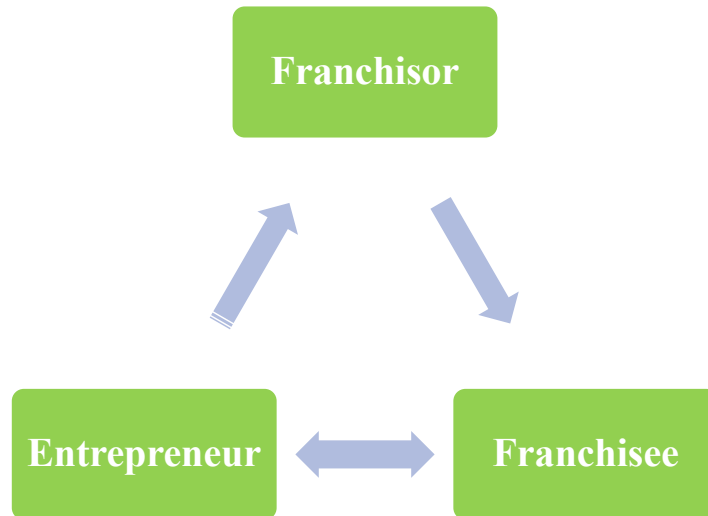


Figure 4-7 Relationship between the Entrepreneur, franchisor, and franchisee in the Franchise model

When an entrepreneur starts a small business offering a specific product or service, the entrepreneur may develop a better product and/or a more convenient service that provides higher value at a lower price to the customers than the previous one.

When the entrepreneur establishes a good brand name in the market for his/her product/service, he/she may then, with the help of some franchise experts, consider building a franchise model from his/her brand name. Where he/she will offer a complete franchise package as mentioned above. Franchise models are available in virtually all fields of business such as food/cuisine, specialized services, tutoring/training, ... to name just a few.

Most of these franchises offer generic products/services that are packaged in an attractive marketable manner, accompanied by an intensive marketing campaign locally and nationally. In addition to collective marketing, the franchisors also offer collective sourcing for the supplies needed for the franchise unit operations.

All this comes at a big cost to the franchisees that most of them cannot afford. And even those who can afford to be a franchisee in the franchise model may discover that the franchisor is taking advantage of them, by offering them very generic training that they could obtain for free from open sources. They are also restricted by the franchise agreement to pay annual/monthly royalty for many years, even if they do not reach the break-even point (where their revenues barely cover their expenses). They still must pay the royalty which is a percentage of the gross revenue or a fixed lumpsum that is payable even if they are not making any profit. Also, according to the franchise agreement, the franchisee is obliged to buy the supplies and consumables for operations from the franchisor and/or an appointed supplier, which is normally not as low as the franchisor may claim.

In contrast, the SESEM is able to provide all the services that the franchisor offers, and more, using sharing principles, social assets, and innovative technologies.

Figure 4-10 presents the SESEM equivalent of the franchisor-franchisee relation drawn in

Figure 4-9.

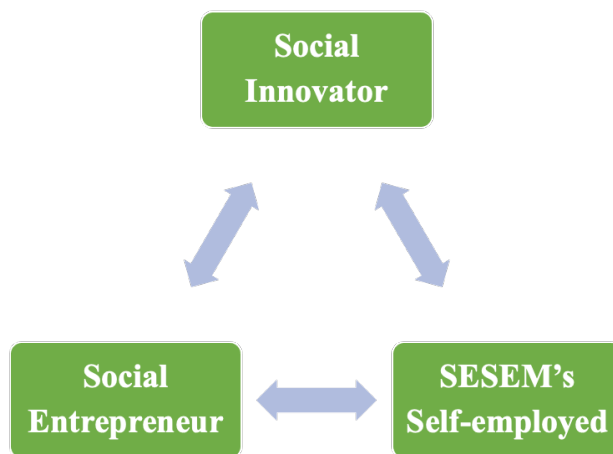


Figure 4-8 Conceptual relationship among SESEM member, social entrepreneur, and social innovator in the SESEM

In SESEM, the social entrepreneur starts offering a generic product/service process in the social context with the main objective of serving society and the economy in addition to earning a reasonable income. During this process, the social entrepreneur may train other potentially interested micro contractors. They will get their share of the reward while obtaining free on-the-job training. Social entrepreneurs play two roles. Performing the task as an entrepreneur and being a social innovator by training the assistant to become a micro contractor in future tasks.

When an SESEM's Smart Self-Employed, (SSE) gets adequate training, they may take on similar tasks alone, after the social entrepreneur/innovator gives him/her the green light to do so.

If an SESEM's SSE faces an obstacle at the beginning, they could consult the social innovator/entrepreneur. The social innovator/entrepreneur may expect a share of the reward for their efforts.

These sharing terms are negotiated and recorded in the smart contract of the subject task, as will be shown in Section 4.7.

After executing several tasks, the micro contractor could become a social innovator and help other new micro contractors, in addition to executing the same task themselves.

Note that the main difference between Figure 4-9 and 4-10 is the interchangeability characteristic of the proposed model. This characteristic is one of the main pillars of the proposed model, which replaces the franchising support with the sharing and exchanging of knowledge, expertise, and experience among the members in a costless collaboration. However, the trainees may share some of their profit/reward with their social entrepreneur/innovator as mentioned above.

This interchangeability, besides reducing the cost of the products and services to the public, will help many potential micro contractors to be trained and get qualified to be self-employed faster, without worrying about any cost and fees.

Table 4-5 conceptually compares the classical small business, franchise, and proposed models against the critical issues to establish and sustain a small business, regardless of its type: risk, capital requirement, start-up period (until it becomes self-sustainable), and the other requirements for the establishment and operations of the subject business such as labor, training, technology, etc.

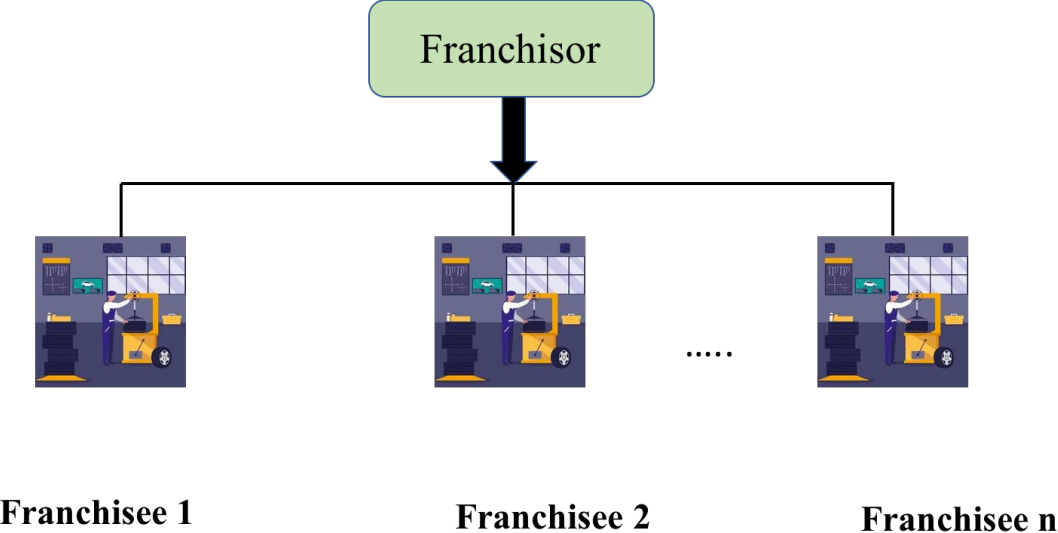


Figure 4-9 Facilities Configuration in the Franchise model

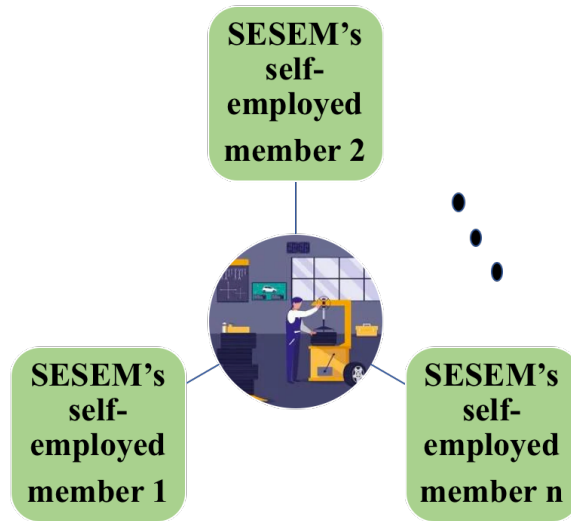


Figure 4-10 Conceptual facilities configuration in the SESEM model

#### 4.6 Major Players in SESEM

The major players in SESEM, including the social innovator and the social entrepreneur, are shown in Figure 4-11. These are two of the most important elements of the overall set of social assets which are one of the major pillars of the SESEM.

The other players are also described below:

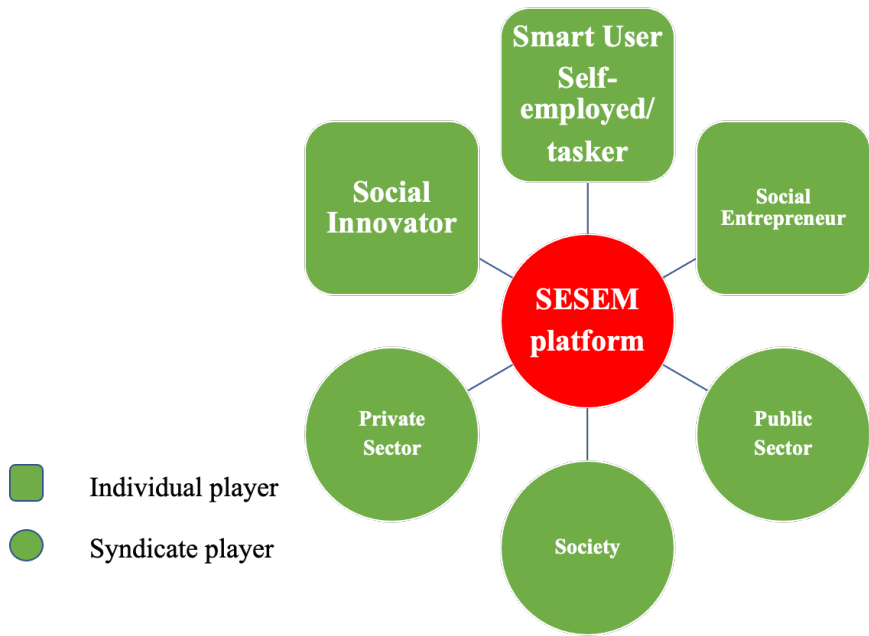


Figure 4-11 SESEM's Players (participants)

#### 4.6.1 The Private sector:

Private sector companies play a significant role in the SESEM:

1) as a user/employer of older people via the SESEM's smart task hub (case 2)

2) as a supplier of equipment, and parts, or as a partner with self-employed Materials, utilities, and service providers to the micro contractors. Examples are materials and consumables supplying warehouses, transportation and utility providers, ...

3) as subcontractors. For example, in social/shared manufacturing, where the underutilized parts of the private sector's production facilities could be used in some social projects. Also, in the emergency project of producing masks and sanitizers, the social entrepreneur leader may source any available manufacturing facility that could be used in the production plan. It is a win-win case,

where the private sector gains extra income from an idle facility, and some individuals earn some income in a project that helps society to be safer.

4) As a partner in social projects as it will be illustrated in case 3.

#### **4.6.2 Society**

Society refers to the dynamic social environment in which SESEM lives, which is fundamentally a social business model that depends on social entrepreneurs and social innovators. Unlike the other members of society, the proposed model and its constituents must be positive and supportive of the society's values and goals and protect the environment they live in.

#### **4.6.3 The Public Sector**

“In general terms, the public sector consists of governments, and all publicly controlled or publicly funded agencies, enterprises, and other entities that deliver public programs, goods, or services. It is not, however, always clear whether any particular organization should be included under that umbrella. Therefore, it is necessary to identify specific criteria to help define the boundaries.”, (Pang 2011).

The public sector plays a vital role in the SESEM through:

1. The relevant (federal, provincial, and municipal) agencies dealing with work, social seniors, and employment services that can help in the start-up and operations of the various versions of the SESEM. This help could be in the form of a direct contribution, for example putting some of the spaces in federal and/or provincial government employment centres to be used as sharing spaces in the self-employment and/or smart employment versions of the

SESEM. Also, in encouraging older people via the public social servants and community centre to inform and educate the older population about how to benefit from the SESEM.

2. The government could use its purchasing power and capabilities to help the various smart employment versions by using them and setting quotas for their use. It could also encourage the private sector to benefit from the smart employment versions. These may be needed in the critical start-up period. Case 3- Smart social housing depends on the active participation of the public and private sectors in addition to the other SESEM players to develop this mega project.
3. The relevant government agencies could help regulate the employment processes that take place via the SESEM. For example, they could issue regulations to protect the rights of task workers, devise an employment insurance system for all SESEM users, and devise an income tax system suitable for SESEM users, where, for example the user would be taxed on a per task or transaction payment, similar to the “tax as you go” system. This could also, be applicable as a relatively more effective ‘alternative’ to pension funds and employment insurance funds. While the funds from pensions and employment insurance are collected and disbursed by the various government levels, the ‘tax as you go’ from these funds would be collected automatically and proportionately to the transactions and work activities by a system that is directly controlled by the users, who would decide how to use these funds that belong to them, either to distribute, reinvest in new social projects or both.

#### **4.6.4 The Smart employment user**

The smart employment users (or simply “users” for short), are those who may benefit from the various employment types of the SESEM, to pick a task, a self-employment venture, or participate in a big social project, to execute according to the set-up, structure, and conditions in the proposed

model. The regulations may require that the user should be a member of the specific SESEM's platform that controls that type of employment, or at least to register and provide basic information about the user, such as their education, qualifications, previous work experience, interests, and place of residence, to properly address their employment needs. The user may start as an assistant to an experienced colleague for a certain period till they feel comfortable executing specific tasks and/or as a smart self-employed person. Every member/user should be well-known and pass minimum qualification and credibility requirements before being allowed to fully use employment services.

#### **4.6.5 Customer**

Customers here range from those ordinary individuals who are searching for goods and/or services offered on the SESEM platform, to big corporations who are searching for short-term workers/smart taskers.

#### **4.7 How the SESEM Works**

This section provides a detailed description of how the SESEM works. It also includes the various employment versions (smart task, self-employment, and social projects). The impact of the SESEM major components (the sharing principles, the social assets, and the technology as detailed in Section 4.3), on the five basic operating building blocks of any business model: management & administration, operations, marketing, accounting, and financing, as shown in Figure 4-12 below; will be explained on each element separately to show how the SESEM could achieve its objectives.

Although there are many types of smart employment and under each type, a large number of implementations, the description of how the SESEM works will be a general description for all these types. In the next Chapters (5,6, and 7), each type will be specifically explained: the smart



2. All actions and operations are managed democratically by the registered members based on a voting system (Figure 4-13), which could be made available using the ICT (blockchain, IoT, and AI/ML) that are used in the SESEM's Operating System. For example, after the completion of a smart contract, both parties (the SESEM member and the customer) will be asked to quickly send feedback on certain issues, such as their overall satisfaction with the process or a mutual evaluation of each party on the other. This response (similar to an on-line review) will be saved and displayed under each party profile as well as some statistics, such as the number of successful transactions completed by the member, and the percentage of satisfied customers.
3. A project, whether it is a small smart task or a mega social project, could be initiated by any member or externally imposed by changes in the economy, market, society, and/or environment. It will be reviewed and studied by the SESEM's R&D and social innovators advisory committees and submitted for further review and modifications by expert members and volunteers. Before it is adopted, the potential project is put to a vote among the members. If it passes the voting test, according to the set by-laws, it then goes for adoption and implementation.
4. After the adoption of a new project/sub model, its major business plan, policies, and bylaws are prepared and approved in the same process, a special operating system for the new project will be developed by expert members and social innovators for follow-up and for control of the operations, accounting, marketing, and financing of the new projects. This operating system will be connected to SESEM's master operating system for coordination and resource optimization.

5. If there is a need for new regulations and bylaws, the social innovators will arrange to prepare a draft law/regulation and will arrange to democratically review and approve it, according to policies and bylaws.
6. The feedback system (see Figure 4-13) works as a fair democratic evaluation tool for the two opposite parties of any transaction: the service provider and the customer. It can help to deter bad/low-quality products and services from the product/service provider side, and fraud from both sides, and ensure a fair trade and value exchange (money or other types of agreed rewards for goods/services).
7. Other anti-fraud measures could be adopted and implemented in the SESEM and its sub-models, based on the needs, experience, and learning curve of the sub-model's members and participants/players, and the new relevant technologies.
8. Insurance and Arbitration: to attract more customers and gain the confidence of society, other customer protection measures will be adopted such as a crowd-based sharing insurance policy that insures all goods and services offered via the SESEM's platforms, in addition to a mixed arbitration system that combines the Artificial Intelligence/machine learning techniques and human expertise in the arbitration to detect any violations of the contract/agreement, will be adopted. The goal is to maximize customer's satisfaction and minimize the legal expenses to keep the goods and services prices as low as possible.

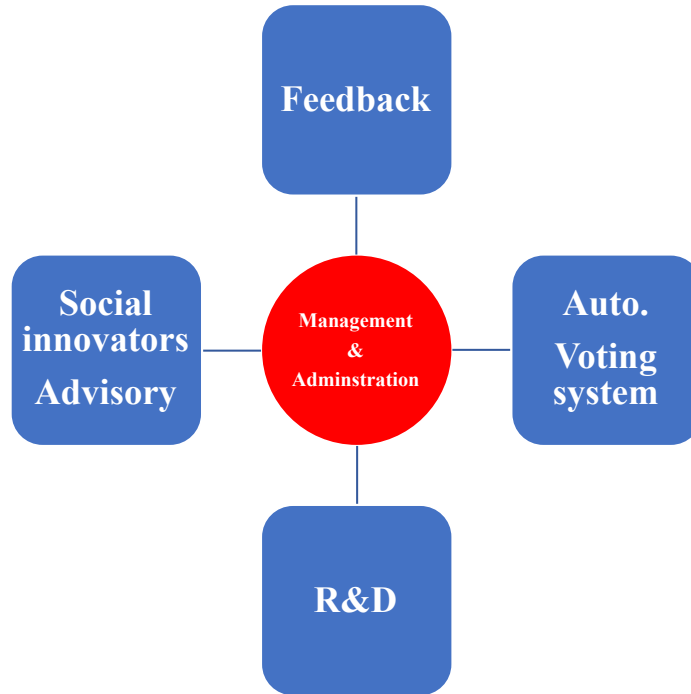


Figure 4-13 Conceptual Management Tools

#### 4.7.2 Marketing

The marketing processes of the SESEM and all its sub-model types will address the following segments:

- Seekers of all types of employment.
- Private sector companies searching for short-term tasks (gig work).
- Customers for the goods and services offered by the SESEM smart self-employment.

Marketing will depend on the most cost-effective marketing strategies, such as Digital Marketing, social networking, and word of mouth among the users and customers.

The digital marketing plan depends, mainly, on internet advertising, social media, website links, and search engine techniques such as search engine optimization, SEO.

The plan ought to include:

1. Creating a central website equipped with its own search engine dedicated to the search operations in all SESEM's contents and projects. The website may contain all the required digital marketing functions and facilities, such as:
  - a) An interactive detailed list of the goods, services, and facilities the SESEM and its sub-models provide
  - b) Interactive links to connect the website with the most powerful social media networks, trade, and public websites, and other high-traffic sites.
  - c) An internal interactive search engine that simplifies the search for a particular good, service, or function from the available on the website. For example, if someone wants a plumber, he/she could search on the website under plumber or home services. An unemployed person could search for a certain task post, and the search engine will guide him/her to the available tasks and the tasks website(s).
  
2. Search Techniques: Two levels of the search techniques are used in the Marketing facilities of the SESEM:
  - a) Internal search within the SESEM's operations software, SESEM-OS, where the potential customers approach the SESEM site when they need a certain good or service. The internal search engine is provided with AI based on machine learning capabilities to be interactive, and intuitive to learn how customers behave, think, and want. For example, if a customer needs to repair a leaking faucet, the SESEM-OS search engine will walk the customer through consecutive menu selection steps, to

gradually pinpoint what he/she needs. The SESEM-OS will also take the customer's contact details: name, address, and mobile number; and will post an ad on the SESEM-OS's Bulletin Board so that the relevant members can see it as a potential task/employment opportunity. Based on a similar technique as in Uber -first sees-first gets, the first relevant SESEM member who sees the ads will respond and start negotiating with the advertiser customer. During the negotiation period, the ads will be temporarily hidden from the board. If the negotiating member reaches an agreement with the customer, the ads will be permanently removed. If no agreement is reached, the ads will re-appear on the board.

- b) To attract traffic from the internet to the SESEM's websites, the Search Engine Optimization techniques, SEO will be used to direct the relevant traffic from the search processes of the search engines to SESEM's sites.

3. Links from the high traffic websites and the relevant trades websites, where potential customers normally visit.

To achieve this marketing plan, volunteer social innovators who are experts in the digital marketing field will help in preparing the plan, implementing it, and following it up.

In return, a tiny royalty percentage may be deducted from the value of the transactions. This royalty will be divided among all participating social innovators, entrepreneurs, and others who contribute to the conceptual development and ongoing operations of the SESEM's projects. The percentage might be trivial at first, however, as the SESEM expands, and the number of users increases, this trivial percentage will generate an attractive income.

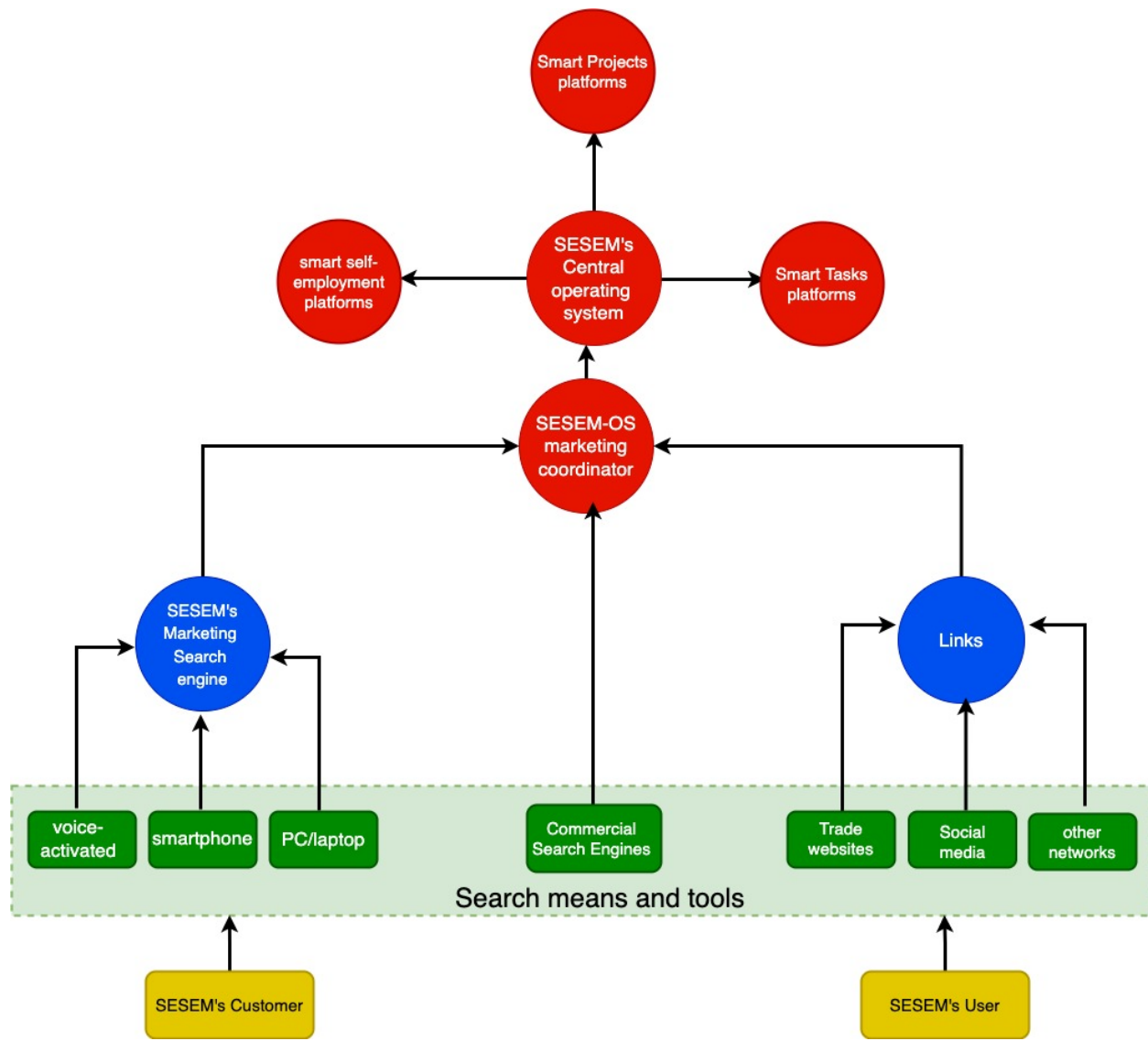


Figure 4-14 Digital Marketing in SESEM

Figure 4-14 depicts conceptually the various digital techniques used in the SESEM. The SESEM's marketing coordinator in the middle receives all inquiries about the various employment projects and provides the searcher with the answer or a set of possible answers, along with some details and instructions on how to access and use the service.

### 4.7.3 Operations

The SESEM's operations are based on the following:

1. Collaborative spaces where members share and optimize the use of the available equipment, tools, and other required facilities. This, as described earlier, eliminates the need for seed capital and simplifies the upgrade and change from one task or self-employment to another.
2. Social assets of the social entrepreneurs and social innovators who provide free coaching, consultation, training, and support.
3. Smart contracts that simplify the recording, control, accounting, and legal requirements of the tasks, ventures and projects, and minimize the need for administrative staff.
4. Internet search engines and other applications that simplify the finding and use of the available services.

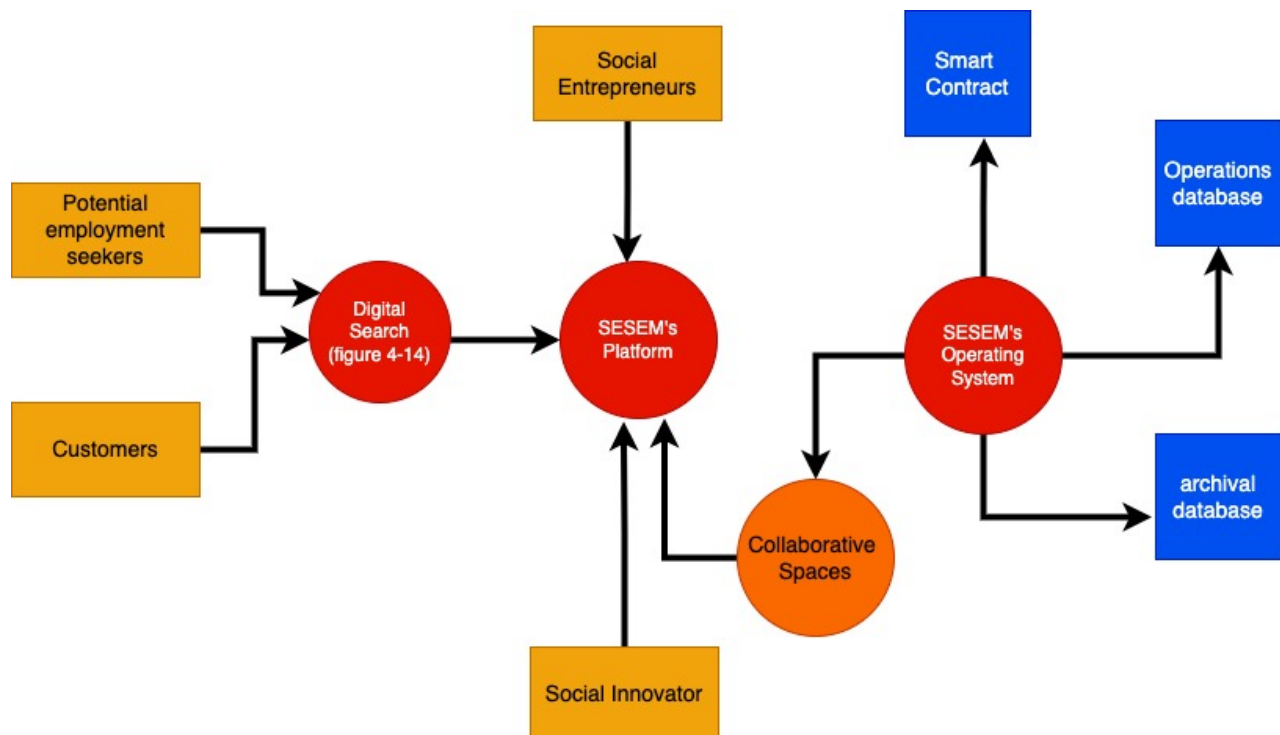


Figure 4-15 SESEM's conceptual Operations Layout

The operations start with the search process detailed in Section 4.7.2, see Figure 4-15, where the search is used by the two opposite players:

- The potential employment seekers (smart tasks, smart self-employment, and smart project), where they search for the available/possible opportunities.
- The potential customers who range from potential employers seeking smart taskers for short-term assignments, to ordinary customers who seek personal goods and services.

This search function could be accessed via many input devices, such as smartphones, pc/laptops, iPads, etc.

Figure 4-16 depicts the conceptual search road map of the SESEM's operations for all the potential users. The letters A, B, C, D, and E are used to organize the search as follows: letter A leads to the first type of SESEM, smart self-employment (SSE), which is further illustrated, conceptually, in Figure 4-17. Letter B leads to the second type of SESEM, the smart tasks, illustrated in Figure 4-18. Letter C leads to the third type of SESEM, the social projects, conceptually illustrated in Figure 4-19. Letter D, in the figure, denotes the normal customers who are searching for goods and/or services. While E denotes the private sector's employers who search for tasks workers.

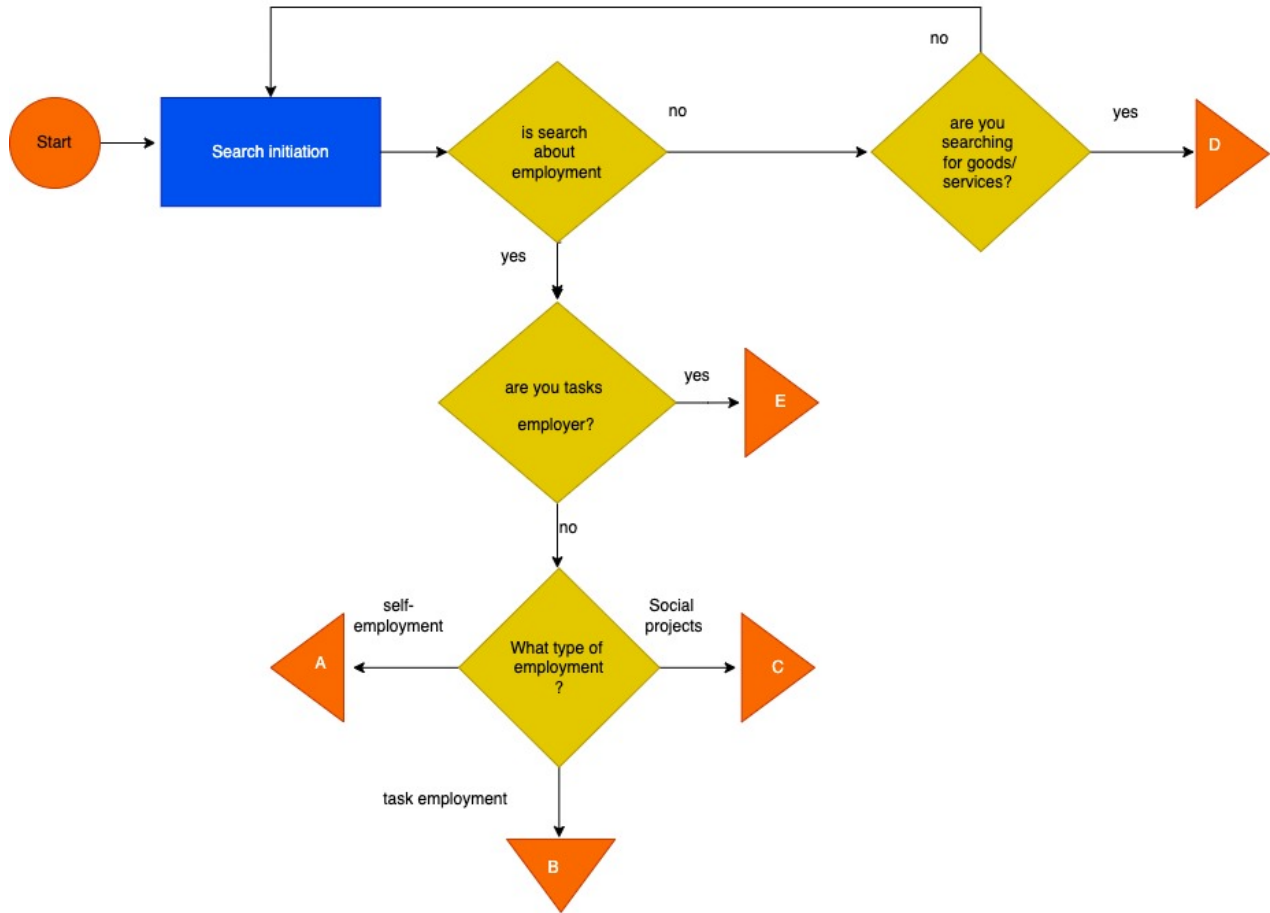


Figure 4-16 Conceptual operations' search roadmap

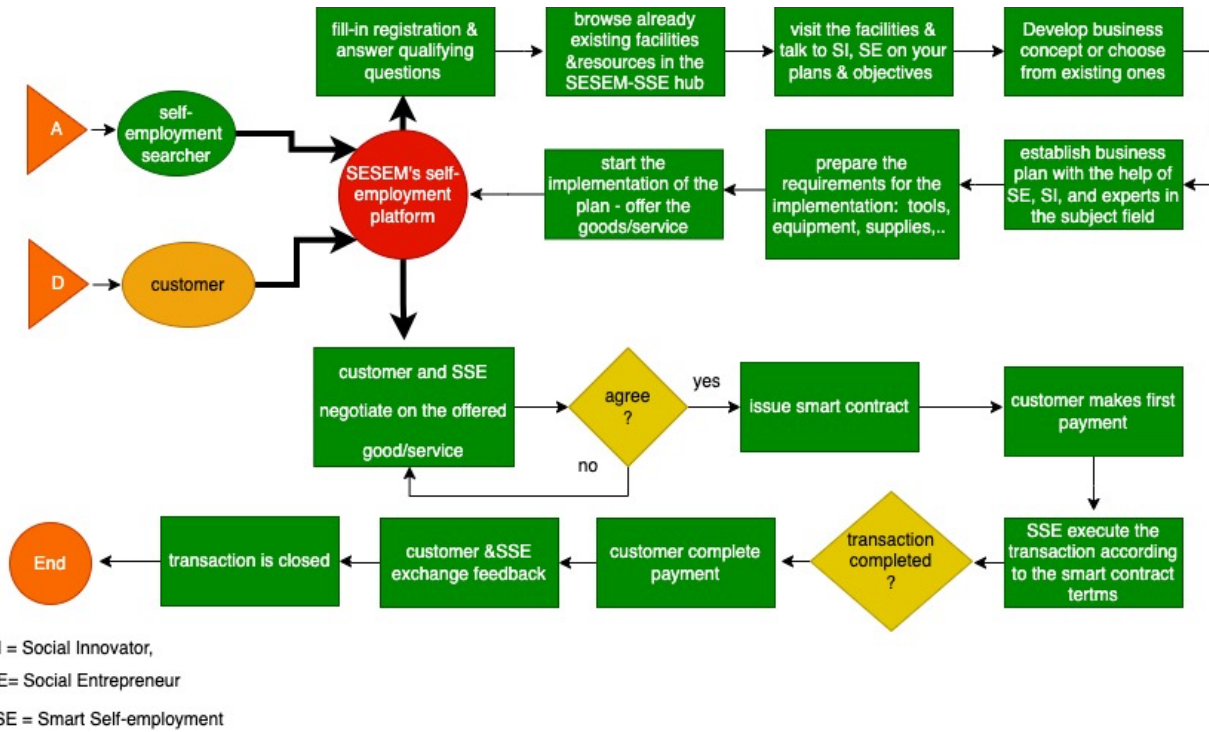


Figure 4-17 SESEM's conceptual smart self-employment operations flow diagram

The upper part of Figure 4-17 conceptually illustrates what the potential self-employment seeker should do before using the SESEM. They must register and answer the questions about his/her qualifications and experience. Then they explore the available equipment, tools, and facilities in the registered collaborative spaces. They should know those registered social innovators and entrepreneurs in their field, who will help them to prepare the required business plan to start a business as a smart self-employed. There will be social innovators online and in the collaborative spaces to help newcomers.

The lower part illustrates how smart self-employment is done. It shows how the SSE and the customer negotiate the business deal, and how to issue a smart contract that digitally records the terms of the deal, including price, payment terms, and any specific requirements/conditions.

Chapter 5 provides a detailed illustration of how to implement smart self-employment in the vehicle's maintenance services.

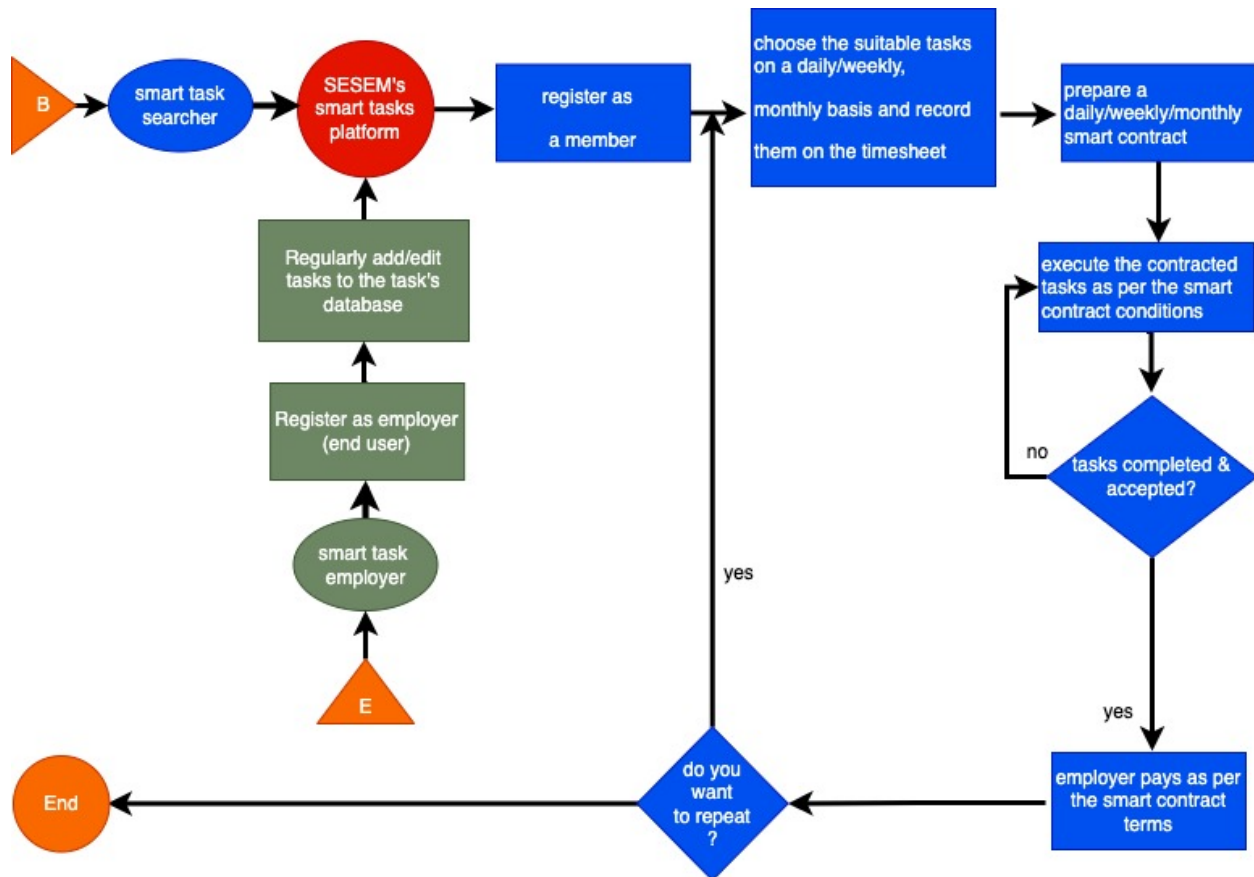


Figure 4-18 SESEM's conceptual smart task employment operations flowchart

Figure 4-18 illustrates how the conceptual smart task type works. Both the smart tasks searcher and the employers register with the smart tasks' platform. The objective of registration of the smart task searcher is to find out about all work-related information such as qualifications, experience, and the types of work of interest. It offers resume-like details. These data are stored on the platform and can be updated anytime by the user. The original data and all updates are verified and validated. So, there is no need for resumes for tasks application. The tasks user (employer) provides the required qualifying information on its organization to ensure its compliance with the relevant

laws and regulations of the SESEM's Smart task Platform. The tasks user must also provide financial insurance to fulfill its obligations, namely paying the workers. The SESEM's smart task platform is equipped with an artificial intelligent system that, through machine learning, will ensure that the smart task worker is only allowed to pick the tasks that fit his/her qualification and work experience. For example, only workers with relevant technical experience can pick up a technical task. If a worker wants to try something new, there is a special arrangement to avoid any harm to the employer.

As the SESEM matures and as illustrated in Section 4.7.4 Accounting, the use of "share-pay" may enable the SESEM to accept any individual to act as an employer. After registration, the potential tasks searcher could log in, browse the listed tasks, choose from them and fill his/her timesheet on a daily, weekly, or monthly basis. A smart contract is generated upon the agreement of the two parties (tasker and task's requestor) on the terms of the tasks. The tasker gets paid as soon as they complete the contracted tasks that are accepted by the requester.

Chapter 6 provides a case study illustrating how to implement the SESEM's smart task.

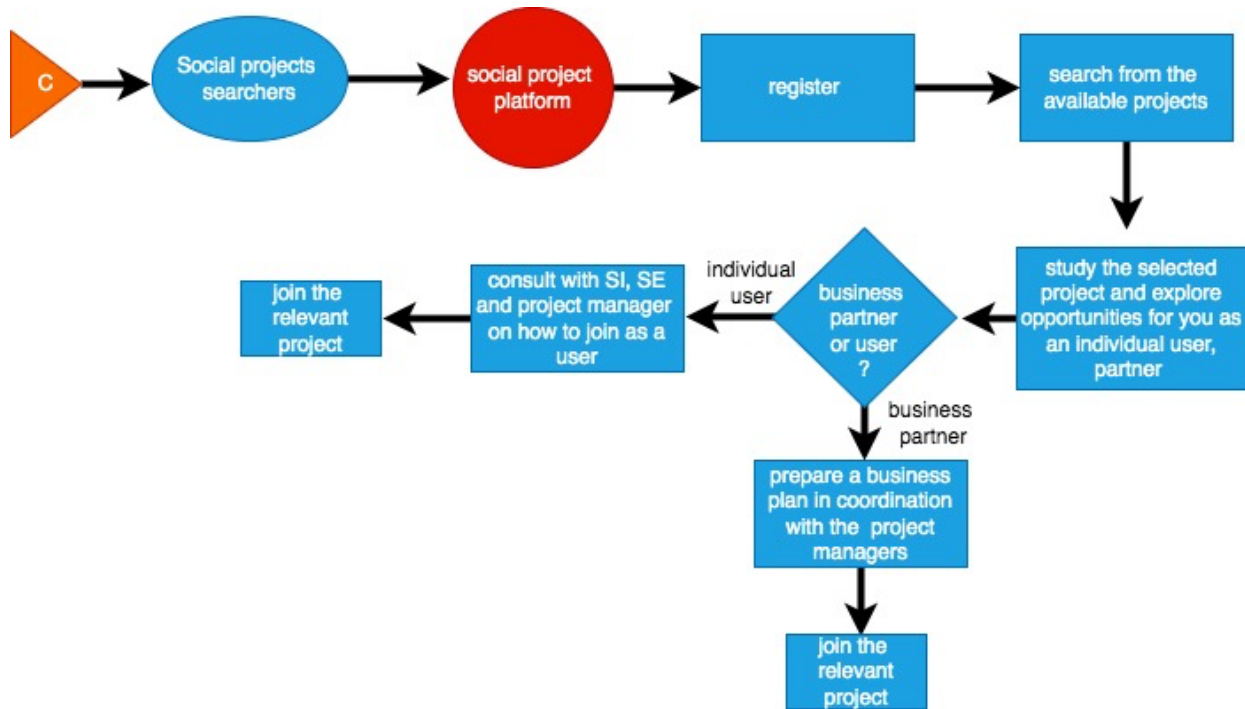


Figure 4-19 SESEM’s conceptual social projects operations flowchart.

Figure 4-19 conceptually illustrates the third type of SESEM, smart social projects. During the construction period of a certain social project, the types of employment needed are those older people who have good experience in urban planning, construction, and operations design and management. From the private side, the interested companies in the social project could be approached for possible partnership and/or social joint venture.

Chapter 7, Smart social housing, illustrates how to implement social projects in the social housing field.

#### 4.7.4 Accounting:

As in all other components of the SESEM, the accounting system relies on innovative technologies and the sharing principles to enable:

- Autonomy: being operated and controlled by members without the need of an external accountant, bookkeeper, and auditor.
- Expandability: to accommodate the expansion of the SESEM's operations, and its members database.
- Minimize expenses,
- Optimize efficiency.

All accounting operations will be done and recorded digitally via the SESEM accounting package, which will be developed by expert social innovators in accounting and digital transformation. Those accounting social innovators experts, like all other social innovators in the other fields, could be rewarded by allocating a tiny percentage of each transaction executed as a royalty. The royalty will be distributed among all participating social innovators, entrepreneurs, and all other participating parties.

This royalty might be trivial at the beginning, however, as the SESEM grows and expands, it will increase significantly.

The SESEM accounting system is divided into two levels of accounting: the macro accounting subsystem, Figure 4-20, which takes care of the accounting of the whole SESEM: the components, the members, customers, and projects. For example, the macro accounting subsystem will take care of receiving all the revenues (accounts receivables) from the various sources, deduct the various members' fees, rental fees from members who use collaborative spaces equipment, royalties, and taxes via the smart contracts in the micro accounting system conceptually described below in Figure 4-21. The macro accounting system will segregate and accumulate the deducted amounts under certain accounts to be used to pay SESEM's accounts payable, such as bills,

purchases, and taxes. It will also distribute the earned income into each member’s account. All these will be in accordance with SESEM’s general policy and each smart contract’s terms and conditions.

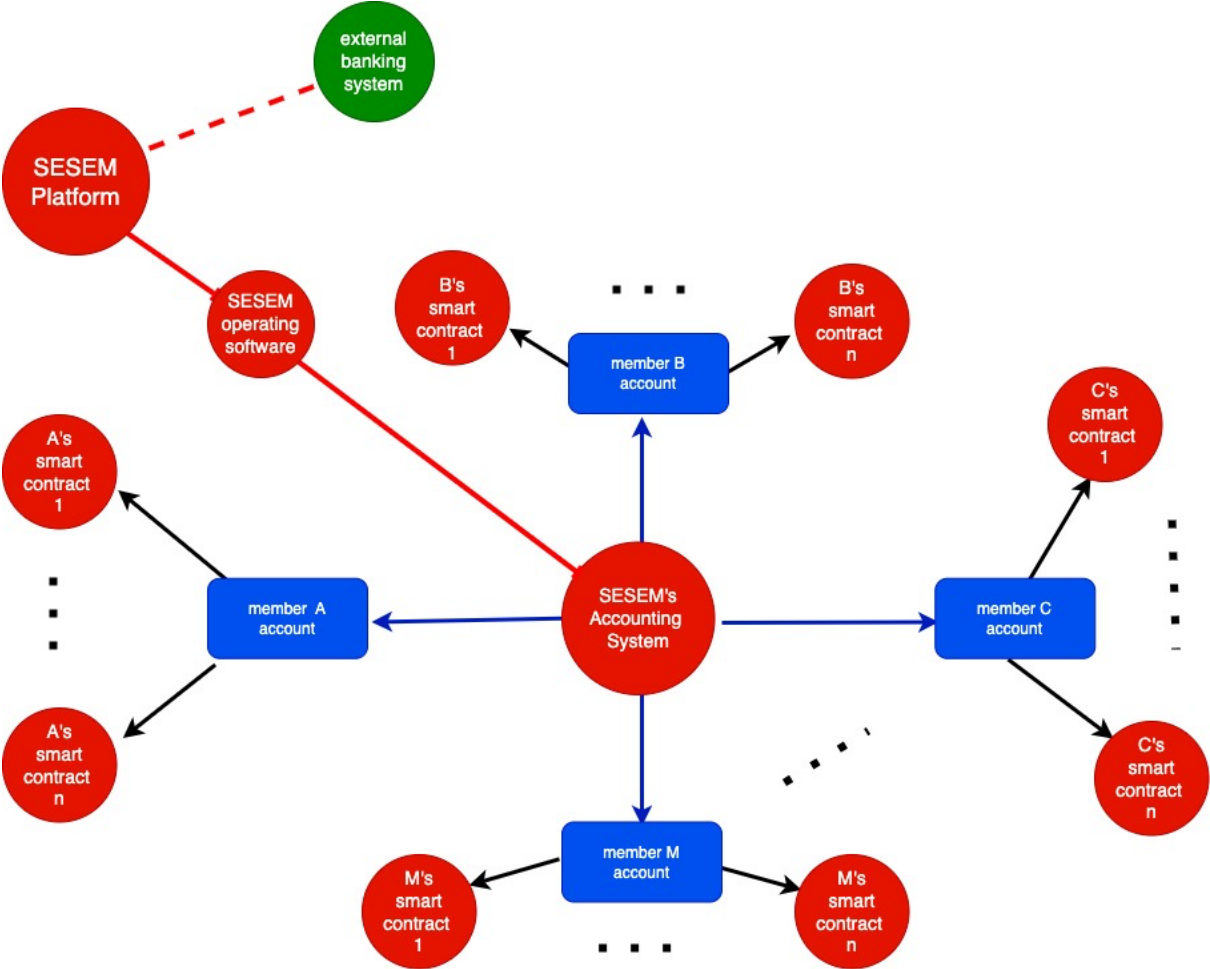


Figure 4-20 SESEM’s conceptual macro accounting subsystem

Smart contracts should be used for all three SESEM employment types, each with its own particular settings. For example, in the self-employment type, each transaction will have a separate smart contract, while in the smart task, each member may have a standing smart contract that remains open and regularly settle the balance of the subject member to its account in the central macro accounting system. The frequency with which balances are settled could be daily, monthly,

or whenever that member uses the service. The settings of the member's standing smart contract could be updated whenever needed.

Since these accounting data are stored in a blockchain database, they are open and accessible by anyone, yet immutable. The system's crowd-based approach to recording and auditing accounting data reduces external bookkeeping costs.

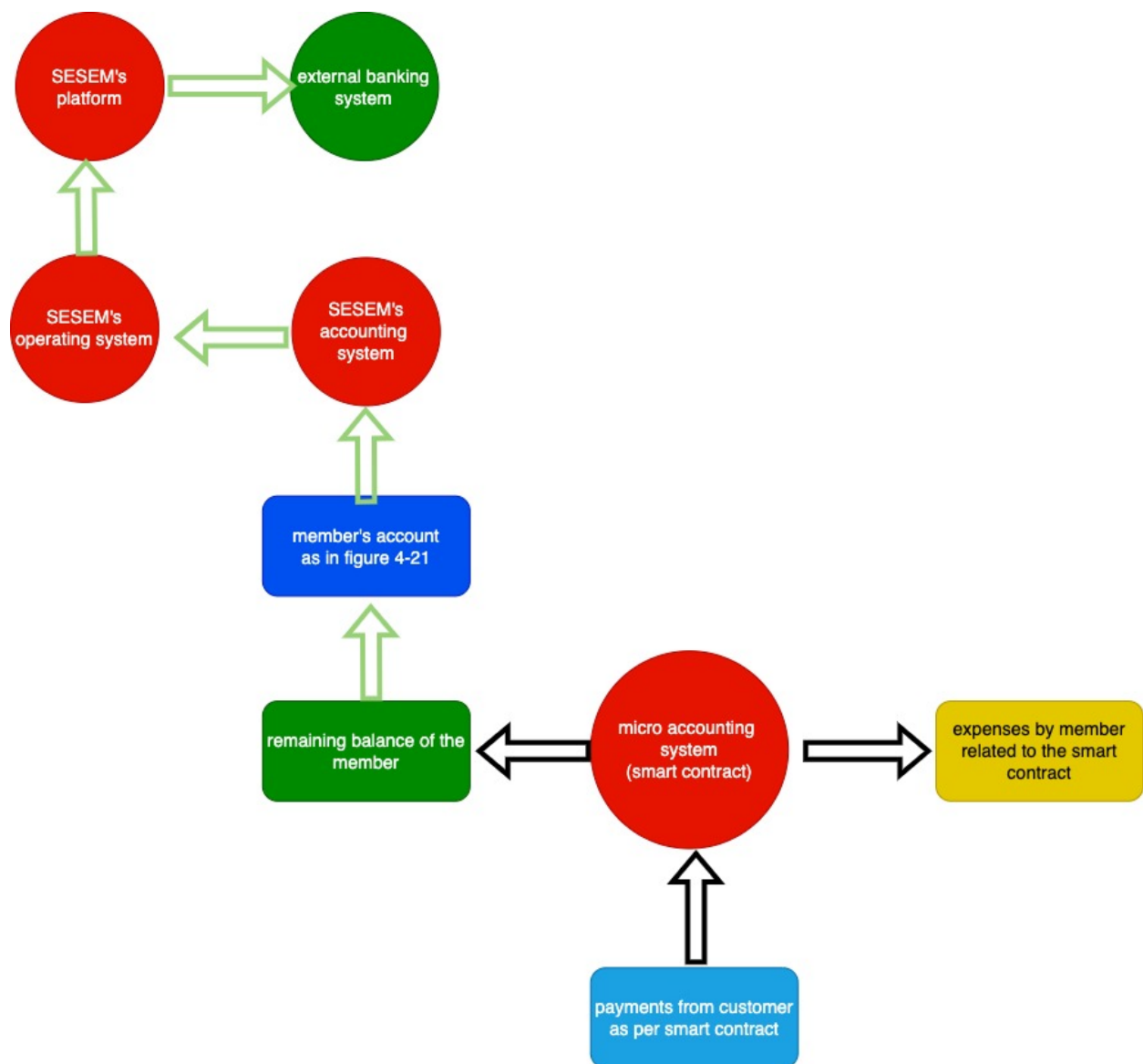


Figure 4-21 SESEM's smart contract conceptual micro accounting subsystem

Figure 4-21 conceptually illustrates how the smart contract does the accounting for a certain transaction in the self-employment type. It receives the incoming payment from the customer, in accordance with the terms of the smart contract, disburses the expenses relevant to that transaction, and carries the remaining balance into the member's account in the macro accounting system, which could then be transferred into the external banking system.

As mentioned earlier, the next three chapters demonstrate how accounting and other operations work across the three SESEM case studies.

### **Sharing Payment System**

Since one of the major objectives of the SESEM is to benefit from the sharing of all assets and efforts, mainly those underused, unused, and idle; a sharing valuation and accounting method might be needed to encourage and simplify the use of these assets and efforts. This valuation and accounting system will enable those who are willing to use the SESEM as customers, however, they don't have enough cash or credit to complete a transaction.

Those customers may have some under-used or unused tangible assets that have some value, however, it takes a lot of effort to sell them. On the other hand, some customers do not have cash but are willing to perform certain tasks that are needed by others in return for getting the items they want.

This is a very old dilemma. While merchants may accept deferred payment, they do not accept or even consider any form of bartering or external guarantor than the banks and/or items of a value greater than the requested goods/service, even in times of a bad economy. Companies prefer to write off merchandise and/or donate it to charities than barter it.

The reason, in my opinion, is the difficulty in accounting for such bartering in strict economic models. However, in the social economic models, such as the SESEM, and due to the available distributed ledger technology/blockchain, this difficulty could be dismantled.

In the social economic models, profit and economic value are not the main objectives, but the social values are. So, if there are some items that are over or undervalued, it is not a problem. A correction action could be initiated later to compensate for the balance difference. Or the discrepancy between the estimated value and the current market value could be compensated for from the donations and/or reserve. The accuracy of the accounting process is not as important as achieving social and environmental objectives. Overlooking these discrepancies, with certain controls and limitations, for the sake of promoting social economic activities is well justified and worthy. In the long-term, the social and even the economic values gained from increasing the socio-economic activities will outweigh the discrepancy loss. This does not mean that proper and accurate accounting practices will not be exercised.

The use of this bartering is not intended to only salvage the value of unused assets, but rather to encourage the sharing process.

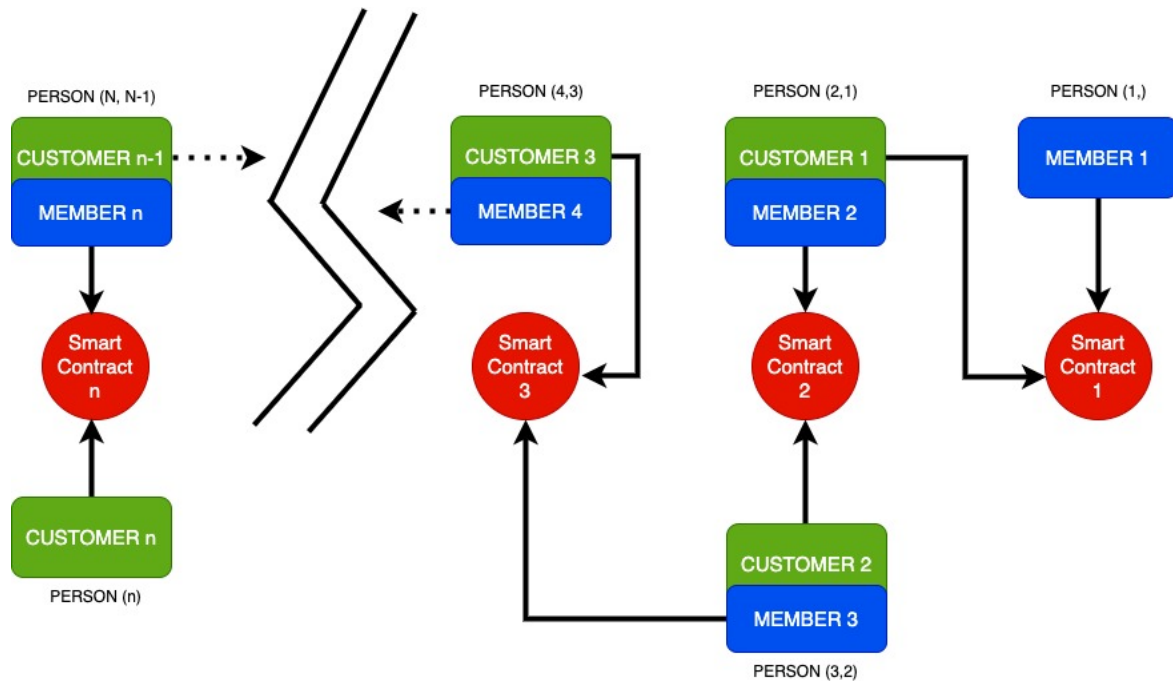


Figure 4-22 Conceptual sharing payment system

Figure 4-22 conceptually illustrates how the Sharing payment system works. Notice that “member” here refers to the self-employed service provider. For example, Customer 1 wants a good/service that Member 1 could provide at a certain price. However, Customer 1 cannot pay the price in cash or credit but can offer services to other customer(s) at an equivalent value to the amount demanded by Member 1. So, Customer 1 and Member 1 agree to issue Smart Contract 1 with the agreed upon terms and conditions, including that the payment will be given by providing services equivalent in value to, say, Customer 2. So, Customer 1 will take the role of Member 2 and will sign a Smart Contract 2 with Customer 2 with the terms and conditions that include that Member 2 (who was originally Customer 1) will do the contracted work (as per Smart Contract 2) to Customer 2, and the payment of Smart Contract 2 will go as the outstanding payment of Customer 1-Member 2 from Smart Contract 1.

The above-mentioned process could go on among many parties (members and customers). Each party could act as a customer in one transaction/smart contract, and as a member in another.

The clearing of accounts among all participants, in accordance with all issued smart contracts, would be done electronically. So even if the value to be paid for Smart Contract 1 is not equal to the value to be paid for Smart Contract 2, in the above example, an outstanding balance of the difference will be carried against the debiting party and will be accounted for and kept as a debit in its account that needs to be cleared in the next transactions by that party.

Along with the development of a Sharing Payment system, there might be a need to establish a Sharing Bank, where every member will have an account in it to simplify the accounting process of the smart contract's transactions among the members and users. This sharing bank could start as a software package under the SESEM's accounting system with a specific mandate that is restricted to the sharing and social activities related to the SESEM. Thus, it may be literally called a bank similar to a food bank and a blood bank and is not required to follow the traditional bank Regulations.

In my opinion, this proposed sharing payment system will simplify the utilization of SESEM and help grow the number of users. It will also increase the recycling and upcycling of used items and thus, save the environment.

It will also encourage all the hidden talents, who are unable to participate due to the shortage of the basic requirements, to be utilized from. For example, a talented chef who has lot of ideas, but has no cash to buy the basic tools and components for cooking, can apply for a sharing payment system to get the required credit. In return they will commit to return the equivalent value borrowed

to another member who may need their cooking services. This idea was illustrated in the movie “pay it forward” but here would be implemented with some regulations.

#### **4.7.5 Financing**

The SESEM could start small with existing makerspaces and the sharing of the community spaces and efforts. It will need the classical financing means to finance its growth, before it develops its own shared or crowd financing.

As it grows and expands, its revenues and expenses would grow correspondingly. Figure 4-23 conceptually illustrates the structure of SESEM’s finance system or what is classically known as the cashflow cycle.

The revenues will come from two sources:

1. internal sources that come from the internal activities and operations:
  - Transaction fees, where a very small percentage of every transaction will be deducted as a transaction fee to participate in the operations and development expenses
  - Equipment rental: this applies to those members who use the existing tools, equipment, and facilities in the makerspaces and other collaborative spaces, to cover its maintenance, repairs, upgrades, and replacement.
  - Service fee: this includes other services the SESEM offer. For example, consulting fees by its members to other entities, ads on its websites, and any other services.
  - Other internal revenues: a general term covering any future new internal activities among members.

2. external sources, mainly from:

- Grants from the various levels of government as part of their contributions towards employment and social activities.
- Revenue from the private sector as their share in the corporate shared projects.
- Any other external revenues

All these revenues will be accumulated into the master SESEM account, then will be distributed to the subaccounts, in accordance with the accounting system, to monitor and report the various activities, expenses, and projects.

The expenditure is divided into two parts:

Operations-related expenditure:

- Rentals of the utilities used in operations and administration.
- Utilities and subscriptions such as electricity, communication, etc.
- Consumables and spare parts that are used for the operations by the members.
- Any other internal expenses such as compensation for errors not covered by insurance.

Capital-related expenditure:

- New capital projects
- Expansion of existing projects
- Purchase of new assets and equipment
- Joint-venture social projects with public and/or private sectors



The components of the SESEM (sharing principles, social assets, and the ICT) were described in detail. I used some comparative tables to contrast these components against their current traditional equivalent.

The types of employments that SESEM conceptually developed (smart self-employment, smart tasks, and smart social project) were listed, explained, and classified with some examples that will be further discussed in greater details in the next three chapters.

In Section 4.5, I compared the SESEM with the most popular and widely used business model, the Franchise model.

In Section 4.6, the major players in SESEM were listed: the private sector, Society, the public sector, the SESEM's users, and the customers.

In Section 4.7, I provide a description of how the SESEM works. The management, marketing, operations, accounting, and financing were explained in detail. A sharing payment system is proposed as a means to simplify the exchange of goods and service without the need for cash/traditional credit instruments.

## **Case Studies: Overview of Chapters 5, 6 and 7**

The next the Chapters (5, 6 and 7) describe three case studies that were undertaken to explore the conceptual application of the SESEM.

Case Study 1 (Chapter 5): was chosen to build and explore the potential application of SESEM. The vehicle maintenance, repair and services field were used to help the researcher study the current process and explore the implementation of the SESEM in this specific area for self-employment type of work. The word 'centre' in Vehicle's maintenance centre (SVC) is used as the exploration and conceptual development was confined to this specific industry and services.

Case Study 2 (Chapter 6) explore the potential application of the SESEM in creating smart tasks, which is an advanced social version of gig work. The word 'hub' is used in the Smart Tasks Hub, STH, as the hub connects virtually all industries and services that require smart tasks in their operations. It has a much wider scope than the scope of case study 1.

Case Study 3 (Chapter 7): explores the potential application of the SESEM in conceptually developing mega social projects that go beyond employment to cover all aspects of living: work, housing, food, and other social requirements. The word 'ecosystem' is used in the Smart Social Housing Ecosystem, SSHE to reflect this wider scope.

# Chapter 5: Case Study 1: Smart Vehicle's Maintenance Centre

## 5.1 Introduction.

SESEM is conceptually developed to simplify work for the older population and other population groups. It supports time-based tasks, self-employment, project work and other forms of work.

This chapter explores how the SESEM could be conceptually applied to create a smart self-employment type of work in the field of vehicle maintenance, which was chosen from among a number of alternatives:

- Food industries, which include food retail, food processing, restaurants, ...
- Home services: repairs, renovations, inspections...
- Vehicles services: repairs, maintenance, sales, and other services.
- Business-to-business services such as business consulting, accounting, advertising, signs-making, etc....
- Business education and Training for small businesses such as coaching,

I chose the vehicle services sector by using a comparative qualifying technique and tabulated the results in Table 5.1, where the qualifying criteria are listed in the first column, and the fields to be compared are listed in columns 2 to 6. A score on a scale of 0 to 10 is given on each field-criteria cell based on my assessment and experience during the qualifying/selection period that extended between September 2019 and July 2020.

For this case study, I began exploring the food services sector, including restaurant operations, catering, and simple food processing. However, I encountered difficulties in obtaining first-hand

experience of the operations and securing enough reliable workers to survey and interview. Similar challenges arose in the home repairs and renovation field, where workers frequently change physical locations, making it difficult to conduct the necessary recurring interviews and questionnaires required by the research. Appendix lists the questions I asked in various phases of the process. Note that the number and order of questions I asked varied depending on the situation and the responsiveness of the subject.

I selected the vehicle services sector primarily due to its accessibility, which allowed me to readily observe operations and obtain feedback from workers during SESEM's conceptual development. While this sector served as my first exploratory case, SESEM's smart self-employment model could be implemented in any of the fields listed in Table 5.1, which compares various potential self-employment sectors that were considered at the outset of the project.

Table 5- 1 comparison among the possible smart self-employment fields for case study 1

| <b>Criteria</b>  | <b>Food industry</b> | <b>Home repairs &amp; renovation</b> | <b>Vehicles maintenance and services</b> | <b>Business-to-business service</b> | <b>Training and education services</b> |
|--|----------------------|--------------------------------------|--|-------------------------------------|--|
| <b>Presence of elder people</b>  | 8                    | 8                                    | 7  | 9                                   | 9                                      |
| <b>Geographical spread- ease of access for study and investigation</b> | 9                    | 7                                    | 8  | 6                                   | 5                                      |
| <b>Access to relevant people</b>                                       | 5                    | 7                                    | 7  | 7                                   | 7                                      |
| <b>Access &amp; monitoring the operations</b>                          | 5                    | 6                                    | 8  | 5                                   | 5                                      |
| <b>The difficulty of starting own business</b>                         | 6                    | 8                                    | 8  | 6                                   | 5                                      |



1. Sharing of the assets, tools, equipment, space, and other resources that are needed to execute the SVC contracted tasks by the SVC members and users. This is a better alternative, in all aspects than owning those assets, equipment, and facilities.
2. Sharing the efforts (intellectual and physical) of the complex tasks that require sophisticated expertise and experience. For example, if the repair of an old model vehicle requires a spare part that is no longer available (obsolete). The sharing and collaborative efforts could come up with a way to reproduce a replica of that part. This collaborative effort may not be economically viable in a privately-owned workshop since the cost exceeds the financial benefit. However, in the proposed SVC, which operates on the sharing principles, such collaboration may have significant moral value by promoting community cooperation and environmental sustainability through the upcycling the old items in general.
3. It will ensure the fair distribution of the benefits in accordance with the agreement as recorded in the smart contract.

#### **5.2.1.2 Collaborative spaces**

In the SVC, the collaborative spaces or the sharing spaces refer to the network of the various maintenance, repair, and services workshops and their related facilities. These spaces, both physically adjacent and virtually connected enable collaboration for the execution of tasks, knowledge and experience exchange, and the sharing of expensive equipment and facilities for vehicles services.

The collaborative spaces could be composed of the following:

- Smart vehicle services centres, which is the subject of this proposed self-employment type of the SESEM and will be explained in detail in the next sections
- Neighboring traditional vehicle repairs workshops, both privately-owned and franchised, that accept to join the sharing network.
- Makerspaces in the neighborhood that accept to participate in sharing their equipment and talents.
- Shared manufacturing facilities: these facilities are not frequently required, however, knowing about their availability could open the door for innovative solutions to traditional problems.
- Access to relevant open sources of information and expertise about new car models, and, for older models, the development of special software and systems to enable workers to use new technologies on their old models, such as adding Bluetooth, GPS, ... to older vehicles.
- Access to external international online relevant organizations. This will expand the collaboration to cross borders and benefit from all possible resources and break any monopoly, and over pricing.

Figure 5-2 below depicts the layout of the SVC's conceptual collaborative spaces.

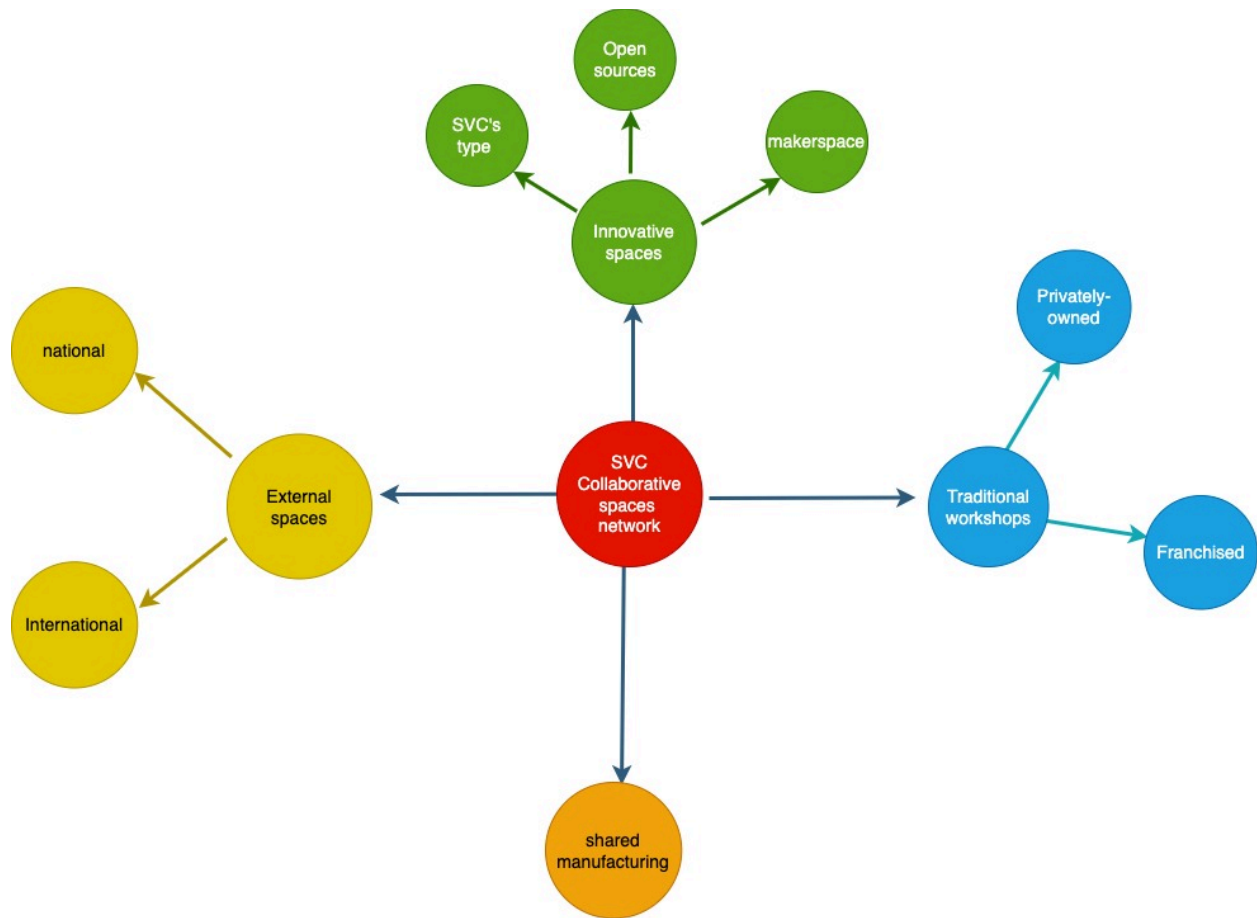


Figure 5-2 SVC's conceptual collaborative spaces network

### 5.2.1.3 Shared manufacturing

As discussed in the section on collaborative spaces (5.2.1.2), shared manufacturing facilities, though infrequently used, can foster creativity and innovation among SVC users. When specific parts become unavailable or obsolete, users can use open-source designs and shared manufacturing facilities to construct the components they need for their tasks.

### 5.2.1.4 Corporate shared value, CSV:

As mentioned in Section 4.3.1.3 of Chapter 4, the CSV's sharing principle could play significant role in the SVC to collaborate with business partners rather than owners, franchisors, or sponsors.

For example, the SVCs could partner with a manufacturer (i.e. be subcontracted) to field test certain features in one of their vehicle's models.

### **5.2.2 Social Assets**

The social assets are vital ingredients of the SESEM's structure. They are composed of the social innovators, the social entrepreneurs, and of the SVC's members/users. These three components are also the major players in the operations of the SVC, as illustrated in Section 5.4 and Figure 5-3.

#### **5.2.2.1 Social Innovators**

Social innovators, who are the most important social human asset in the SESEM model, are a pool of experts that could provide the following essential services to SVC users:

- Train the users on the skills needed to perform the SVC's tasks and services.
- Help users in selecting, booking, and operating the proper tools, equipment, and facilities for the contracted task/service
- Work as coordinators and liaisons to accomplish complex tasks that require many users, skills, and equipment. They help in forming the right team, preparing the action plan, and executing it to completion.
- Allocate and coordinate the available external resources and the internal demand of the SVC.

#### **5.2.2.2 Social entrepreneurs**

Social entrepreneurship in the SVC is associated with leadership, the search and development of new innovative concepts and solutions, and the adoption of new technologies to improve existing

processes and optimize the available resources. In complex tasks and projects within the SVC, social entrepreneurs could marshal and optimize the available resources to complete that task.

### **5.2.2.3 Users**

Also called micro contractors, or micro-entrepreneurs, these are the potential smart self-employed who have experience in the vehicles' repairs, maintenance, and services, and are willing to try the smart self-employment that SVC offers. Before using the SVC, they must register for membership. After obtaining membership, a social innovator may be required to verify their qualifications and experience and, if qualified, take on-job training on how to use the SVC, as will be explained in Section 5.5. If not, the new member will be allowed to start as an assistant to qualified members to be mentored and acquire the minimum required experience and skills to work independently.

### **5.2.3 Information and Communication Technologies, ICTs: also referred to as innovative technologies.**

As demonstrated in Sections 2.2.3 of Chapter 2, and 4.3.3 of Chapter 4, ICTs are among the driving forces of the sharing economy and the third pillar of SESEM. The sharing principles demonstrate the economic and social benefits of sharing assets and resources rather than owning them, while ICT provides the tools to implement this sharing effectively. Although only the Internet of Things, IoT, Blockchain Technology, BCT, Artificial Intelligence, (AI / Machine Learning), are mentioned here with some examples, the impact of the technology goes beyond just those ones. Other technological components include:

*Automation and smart operations:* as will be seen in Section 5.5 “How SVC works”, all operations depend on ICTs, starting with 1) the search capabilities used by both the customers, (for a solution to their problems) and by members/users seeking smart employment opportunities; 2) the

organization and management of the collaborative space operations such as booking the required machines, and accounting for their rental, coordinating the resources and collaboration among members, social entrepreneurs, and social innovators and 3) performing the control, follow-up, and accounting of the various associated operations to accomplish a given task via the smart contract, and 4) obtaining feedback from customers and users to increase their satisfaction.

*Efficiency and cost optimization:* the use of technology simplifies the control of operations which in turn optimizes efficiency and saves on costs. The extent to which the machines and facilities in the collaborative space are optimized depends on their being monitored and properly maintained, by the IoT capabilities that are connected to the SVC operating system. Users of these machines and facilities will also be monitored online by designated experienced members who supervise operations via CCTV (closed circuit television) cameras. In the case of abuse or danger, the supervisor could take over the control and/or switch the machine off to avoid/minimize the damage and losses. The online supervisor would be rewarded based on the time they spend and the degree of sophistication of the machine/operations. All of these would be accounted for in the smart contract, which is considered the focal control and processing unit of the SVC. The smart contract, which is stored on the blockchain, is an important element of the regulation and oversight of the SVC.

*Autonomy:* the blockchain technology and its database enable the SVC to be managed democratically by its members and constituents, without the influence of a third-party, be it in the private or public sector.

The Artificial Intelligence and Machine Learning technologies will be used to help with:

- Building members' databases that contain all the information required to make the SVC function reliably and efficiently. With the use of AI/ML, the data filled in by the members could be verified.
- The selection of tasks could also be verified by AI/ML. for example, if a customer needs some repairs that require specific skills and experience. The AI/ML will exclude those members who are not qualified for the task to be contracted.
- AI/ML will help the members in finding suitable contracts that match his/her skills, qualifications, and interests.
- The AI/ML, with the aid of the blockchain database, also helps maintain the credibility of the SVC with the use of the mutual feedback system, as explained in Section 5.5.1.

### **5.3 The services provided**

The SVC may start offering the basic services that are offered in traditional, privately-owned or franchised workshops, such as:

- Basic oil changes, battery replacements and tire inspections.
- Repairs to mechanical problems and electrical malfunctions.
- Bodywork

Once the tasks are established in the SVC, gradually new services may be added, based on market demand and the available spaces, resources, and members' profiles and feedback from users.

Unlike the privately-owned vehicle service workshops, the SVC is a collaborative effort of the SVC members, society, and the private and public sectors. These could give the SVC a significant momentum and create opportunities to expand, develop and sustain operations.

#### 5.4 The Role of the Major Players in the SVC

The three major players: the social Innovators, social entrepreneurs, and users, which form the social assets, were discussed earlier in Sections 5.2.2.1, 5.2.2.2, and 5.2.2.3. Also, the sharing/collaborative spaces were discussed earlier among the major components of the SESEM in the SVC, in Section 5.2.1.2. These relationships are summarised in Figure 5-3 SVC's Players.

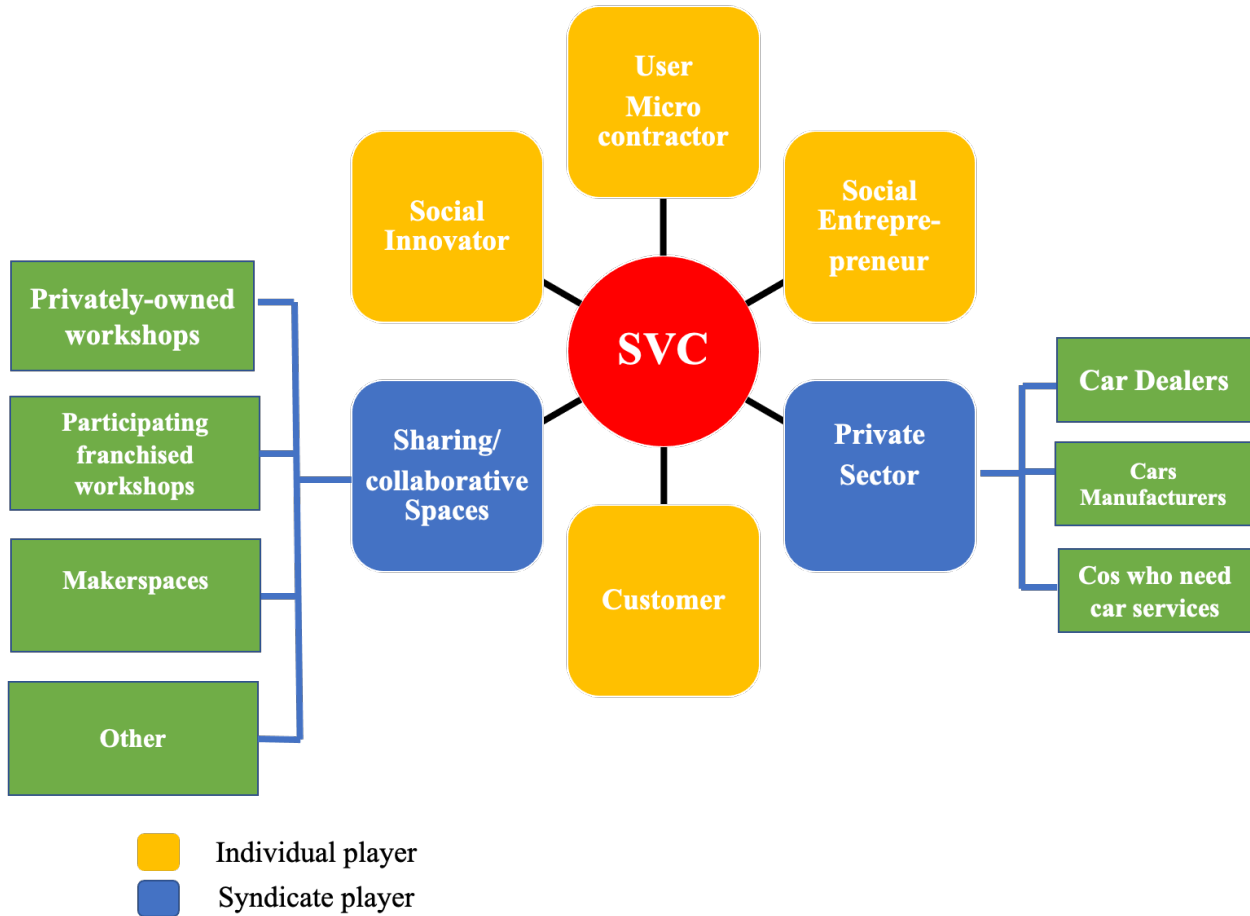


Figure 5-3 SVC's conceptual players

Private sector: The private sector could play many roles here, either as a customer, a sponsor, or a partner. For example, car dealers could be customers of the neighborhood SVC and use its facilities to inspect, maintain and repair the used vehicles before putting them on sale. The vehicle's manufacturers could cooperate and team up with the SVC (be used as User's Designer, UX) to test

new options/features. They could also sponsor some functions by offering parts, equipment, or training. Other private companies could make an agreement with a local SVC to do the routine maintenance and repairs on their fleets at favourable rates, subject to mutual agreement between the local SVC management and the members.

Government: The government's role may be visible during the start-up of the project. The relevant government agencies could help in the following manner:

- Help in financing the development of the SVC: finding the right location, helping in renting, developing the required software, and encouraging the relevant private sector companies to donate or lease the required equipment for the operations and control.
- Encourage the unemployed seniors who have some experience in vehicle maintenance to join the SVC. They could provide some financial incentives at the beginning.
- Provide tax exemption/incentives to the SVC and whoever supports its operations.

These government incentives could be deducted from the allocated budget for employment, social, and senior funds. They could be reduced or cut when the SVC reaches the self-sustainable stage.

### **The users/members**

The member, also referred to as a micro contractor, is a person who joins the SVC to find micro contracts or employment. They can work independently or as part of a team that may include social entrepreneurs and social innovators for complex projects requiring diverse skills, experiences, and innovative talent from multiple participants.

For example, for some demanding tasks, which no member had the skill or capabilities to undertake, the social innovator could take it on. In complex projects, a social entrepreneur could

work a social innovator to coordinate the efforts of several participants including social entrepreneurs, micro contractor members, and one or more social innovators. For example, a complete renovation of a vehicle will require a diversity of skills such as mechanical, electrical, and bodywork expertise.

### **The Customer**

is anyone who needs the services offered in the SVC. The customer could be a member or not. Member customers have the option of “Do It Yourself” where they can book the required equipment for the service they need and execute the task by themselves. This would normally occur for simple routine tasks such as an oil change. Normally the SVC has a library database of knowledge like: Frequently asked questions, What-if maintenance charts, and short how-to videos for simple, risk-free tasks. Also, the SVC’s designated social innovators could help answer specific questions from members, whether they are customers, micro contractors, or social entrepreneurs.

## **5.5 How does the SVC work?**

### **5.5.1 Management**

The SVC management structure is similar to the SESEM’s structure. It is a crowd-base management system that depends on the collaborative efforts of all members, stakeholders, and innovative technologies.

Figure 5-4 gives a general idea of how the SVC management will look and function:

*Board:* The SVC will have an elected board of directors. The members, via electronic online voting, will elect the board members as in any board election, where some members will be nominated as candidates for the board. The board will normally be composed of experienced well-

educated members who will set the basic rules, amend, and improve the rules and regulations when they need updating, and, with the help of the coordinating office will apply the bylaws and regulations.

The board of directors will be responsible for setting the master plan of the SVC, in operations, marketing, pricing, expansion, and development. The board will depend on a voting system to approve new actions or changes.

*Administrative Coordinator:* The responsibilities of the administrative coordinator include:

- Enforcing the rules, and regulations as set and approved by the board.
- Supervising the activities and operations in all the premises of the SVC, in general, and in the local sharing space, in particular, to ensure the safe and proper use of tools and equipment. This is done via a team of experienced monitors, each member of which is responsible for a specific equipment or facility online via a surveillance/monitoring system (which includes a surveillance camera, communication system, and emergency control system). The monitor can communicate with the equipment user, give instructions, and may stop the equipment in case of emergency to prevent (or minimize) damage and injury).
- Resolving any conflicts among users.
- Coordinating the need for external help, including emergencies (fire and/or police).
- Ensuring the availability of the necessary safety tools and stock of safety parts and consumables to ensure sustainable uninterrupted operations of all equipment and facilities.
- Performing the routine payment of bills and other payments by issuing standing smart contracts for each recurring bill and a one-time smart contract for the one-time bill. As for

operations accounting, it will be automatically done via smart contracts, where a separate smart contract will be issued for each contracted work order.

- Performing any other actions required for the smooth operations of the SVC operations.
- All the staff in the administrative coordinator's office work as independent contractors whose income is based on the income from operations and activities executed in the SVC and calculated as a set percentage of each smart contract involved. There are tiny percentages for each equipment rental fee to be allocated to the management and supervision. So, the weekly/monthly income of the coordinators and supervisors is the accumulation of these tiny percentages.
- *Advisory Committee:* An advisory committee, which is composed of qualified well-experienced seniors in the required fields of the SVC, will provide the board with advice and ideas on certain issues during the management process.

*SVC operating system:* the SVC operating system is the central processing unit that coordinates and controls all processes in the SCV: management, marketing, operations, accounting, financing, and other processes. Each of these processes/units has its own sub-operating system package. For example, management has its subroutine of the SVC operating system that coordinates the management processes: supervision, feedback, auto-voting (described below), ...

*Auto-voting system:* this system organizes voting and polling among members and constituents of the SVC on certain issues and occasions, such as board elections, adopting new regulations, and by-laws....

*Feedback System:* the feedback system is a mutual evaluation system where both the SVC users/members and the customers evaluate each other on each contract/transaction they got

involved in. Each of them will have a feedback score and comments records. The score will reflect the percentage of satisfied customers. The higher the score the more reliable the member (or customer) is. The comments may contain some details about the transaction, and, in case of negative feedback, the comments will elaborate on why the respondent gave the negative feedback.

The feedback system is a useful quality control tool, that encourages both parties in the smart contract to abide by its terms, act in good faith, and offer the best work and service quality. If they do not, they may get negative feedback that will damage their credibility and put their future contracts at risk.

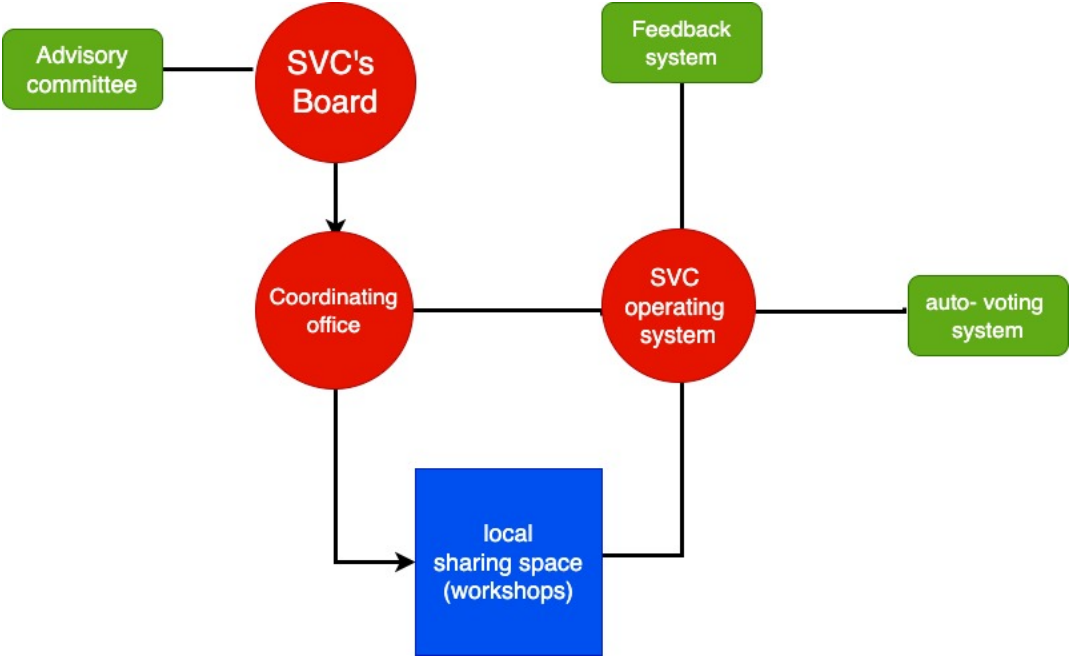


Figure 5- 4 SVC's conceptual Management System

### **5.5.2 Marketing**

The same digital marketing techniques explained in Chapter 4 Section 4.7.2, will be used for both members and customers. Figure 5.5 illustrate the marketing process, where both the members and customers will start by using the “search means and tools” at the bottom of the graph.

All these tools could be searched with voice-activated phones, smart mobiles, PCs, laptops, etc. They could use all the available discovery methods such as search engines, social media, famous trade websites, and government websites links. As illustrated in Figure 5.5, the SVC will conceptually use the marketing facilities of the SESEM to save costs and enhance sharing and collaboration. The probes (from both the members and customers) that are related to the SVC will be directed to the SVC platform (shown on the top left of Figure 5.5). The platform will provide users with further instructions on how to achieve their goals. For example, the customer’s service demand will be posted on the SVC electronic notice board. As for the member, and based on his/her profile and records, the system will search for member all the potential customers that fit his/her qualification and interest criteria.

The marketing system works as a matching system between customers and members, which is the most important step in the process. The following steps will be detailed in the following Sections 5.5.3., 5.5.4, and 5.5.5

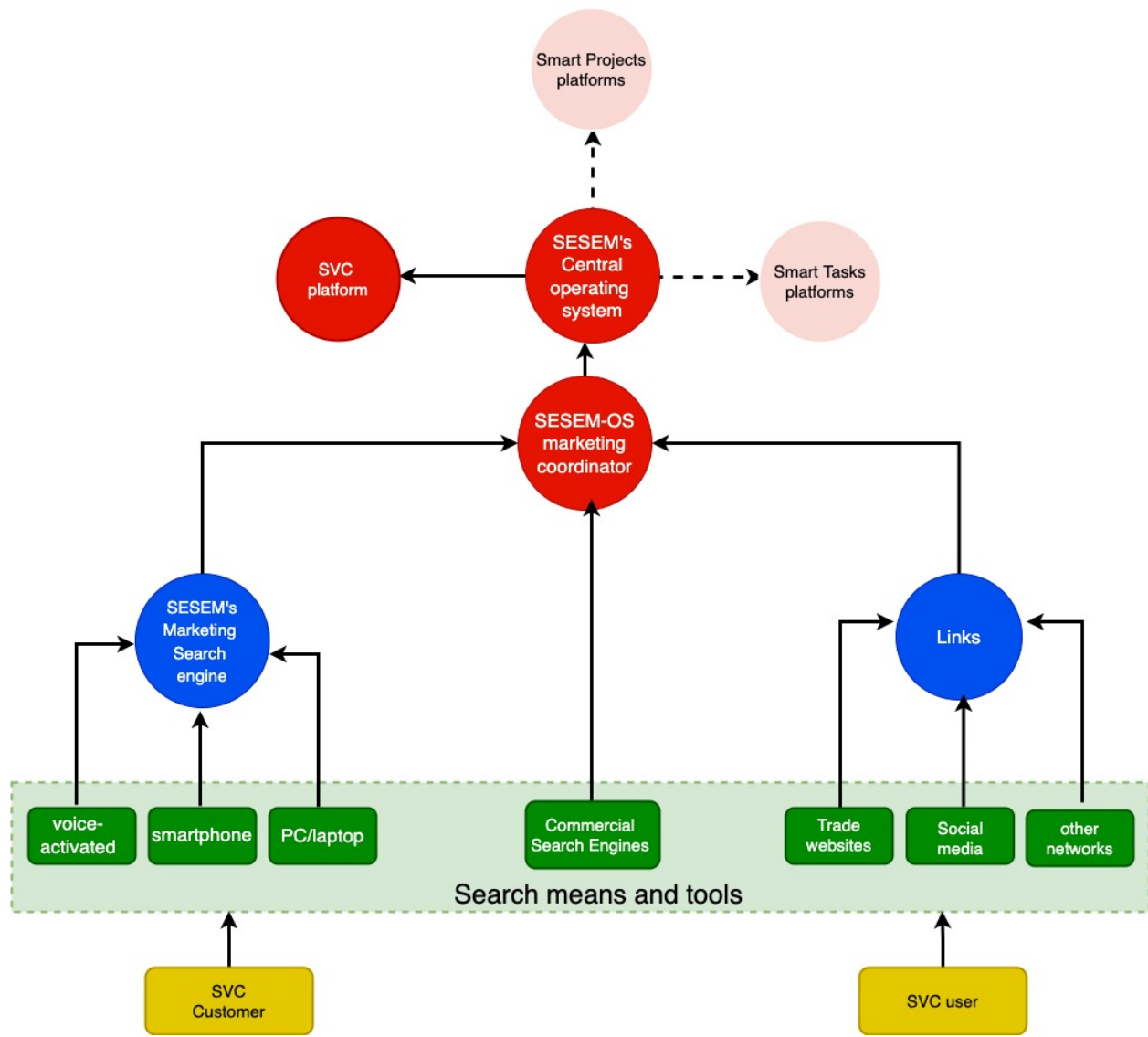


Figure 5- 5 SVC's conceptual Marketing System

### 5.5.3 Operations

The operations phase starts immediately after the matching between the customer and one (or more) of the SVC's members.

Figure 5.6 illustrates the proposed conceptual layout of the operations, which are composed of the components of the SVC's sharing space that hosts the various machinery and tools that are required

to perform the wide range of repairs, maintenance, and bodywork services. It also includes training facilities to help new members get on-job and/or online simulation training.

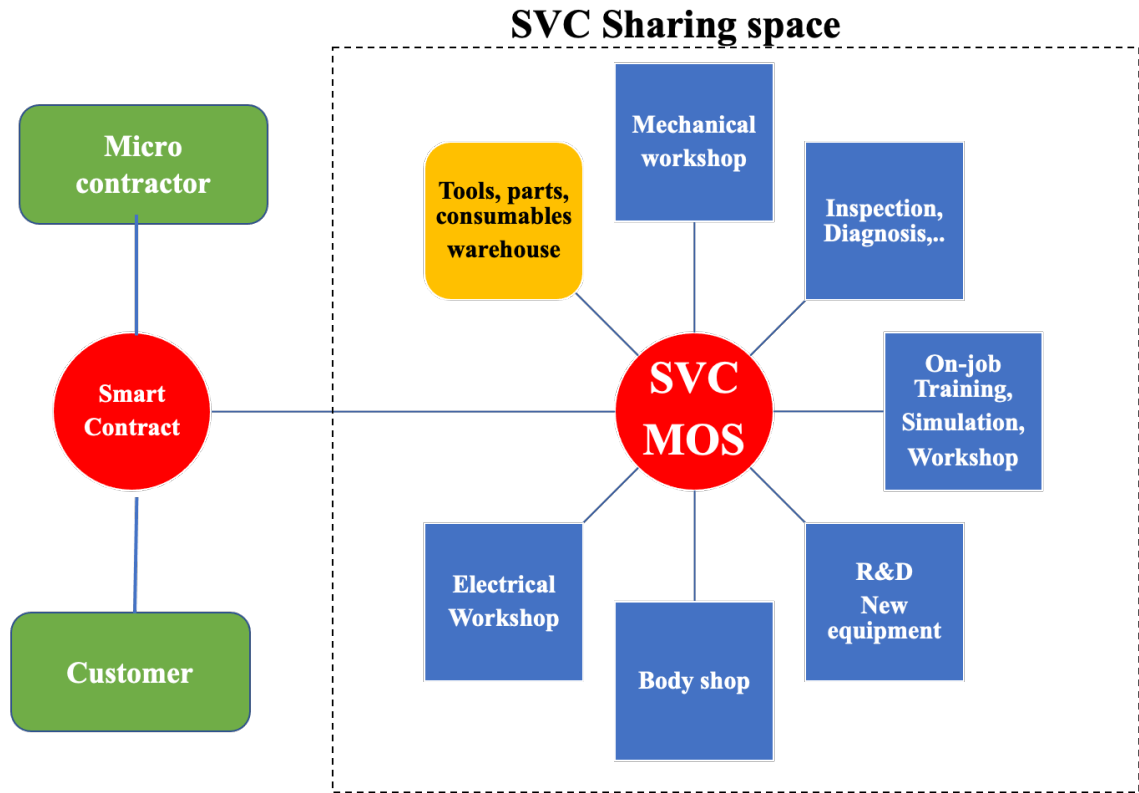


Figure 5-6 SVC's conceptual Operations Layout

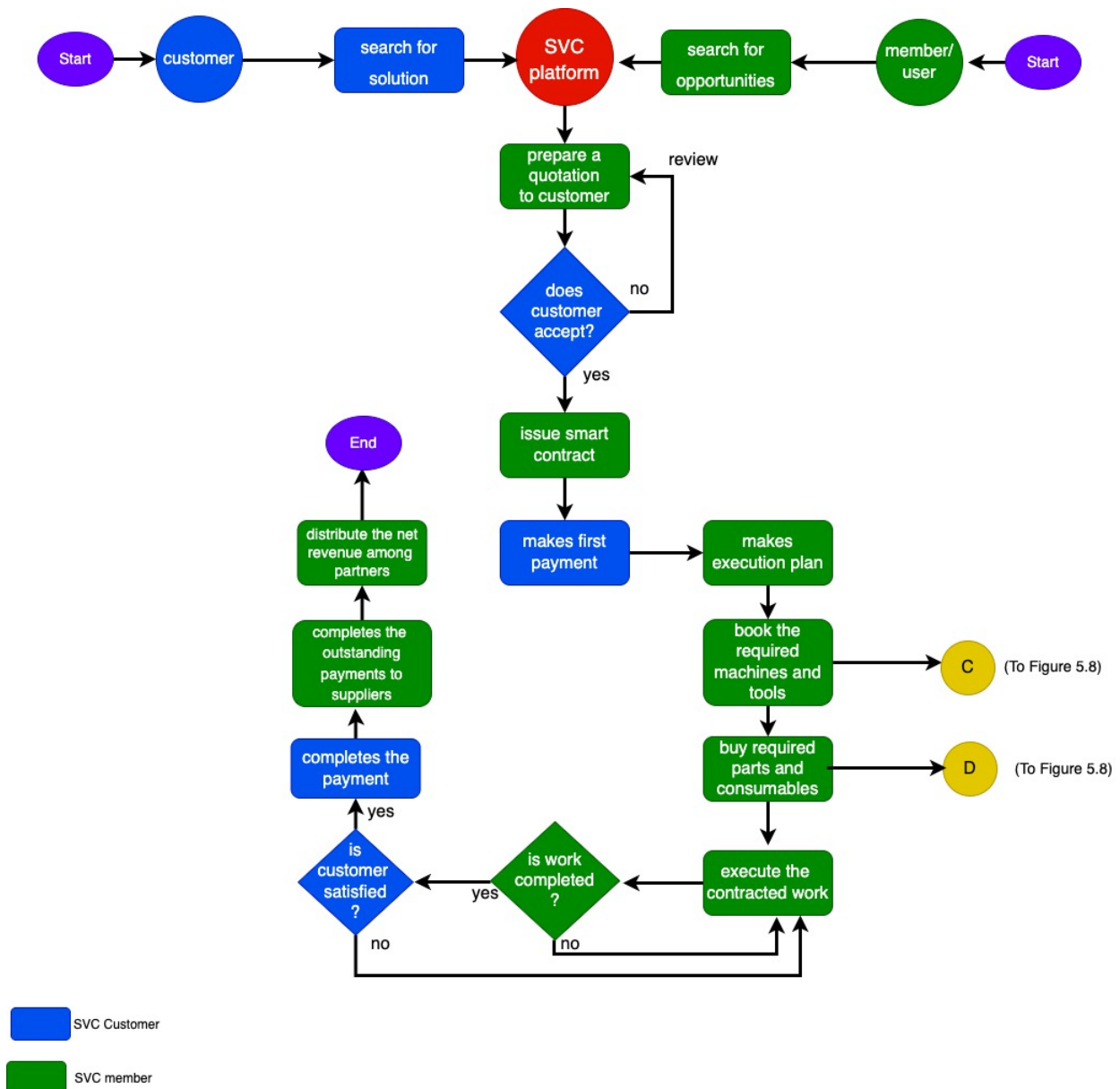


Figure 5- 7 SVC's conceptual Main Operations flowchart

Figure 5.7 is the flowchart of conceptual operations which demonstrates the steps to be taken by the SVC's member/micro-contractor and the customer to complete the execution of the contracted service. Figure 5.8 further explains, specifically, how the subject member books a certain machine in the SVC's collaborative space, and uses it, along with any other requirements (spare parts, consumables, etc.) to complete task.

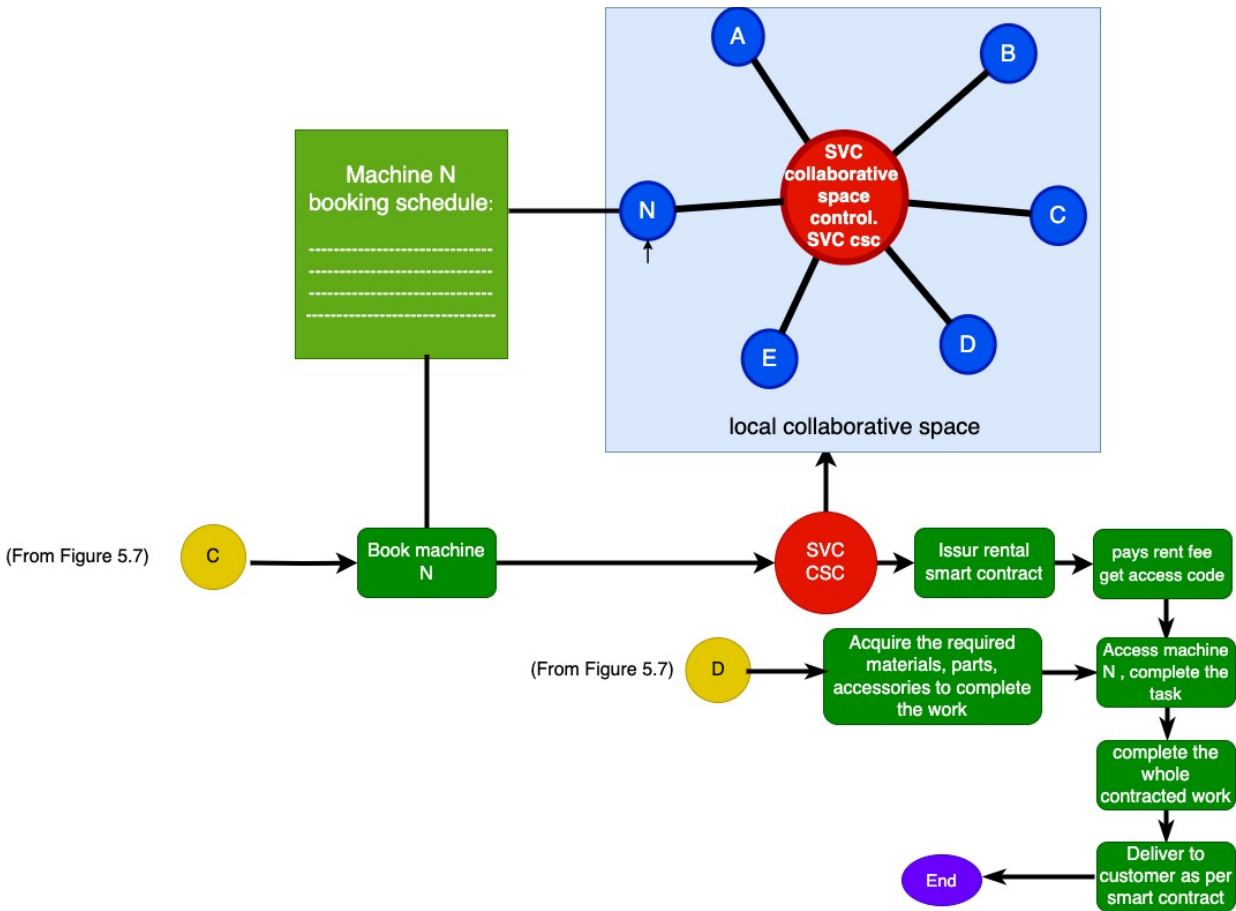


Figure 5-8 SVC's conceptual Operations flowchart 2

#### 5.4.4 Accounting

The SVC's accounting system is part of the SESEM's accounting system explained in Section 4.7.4 and is based on the same principles and basis.

It is composed of a macro accounting system as shown in Figure 5-9 (which is the same as Figure 4-20), where each SVC member will have his/her own account that is opened automatically in the SVC's accounting software, along with the membership package. All the transactions performed by a certain member will be automatically recorded into the SVC's accounting software via the smart contracts, as shown in Figure 5-10, which explains the micro accounting process of every

single transaction associated with its smart contract, which is the same process described in Section 4.7.4 of the SESEM's micro accounting flowchart (Figure4-21).

The sharing payment system introduced in Chapter 4 Section 4.7.4 could also be used here to boost the sharing and simplify the cashless transaction environment.

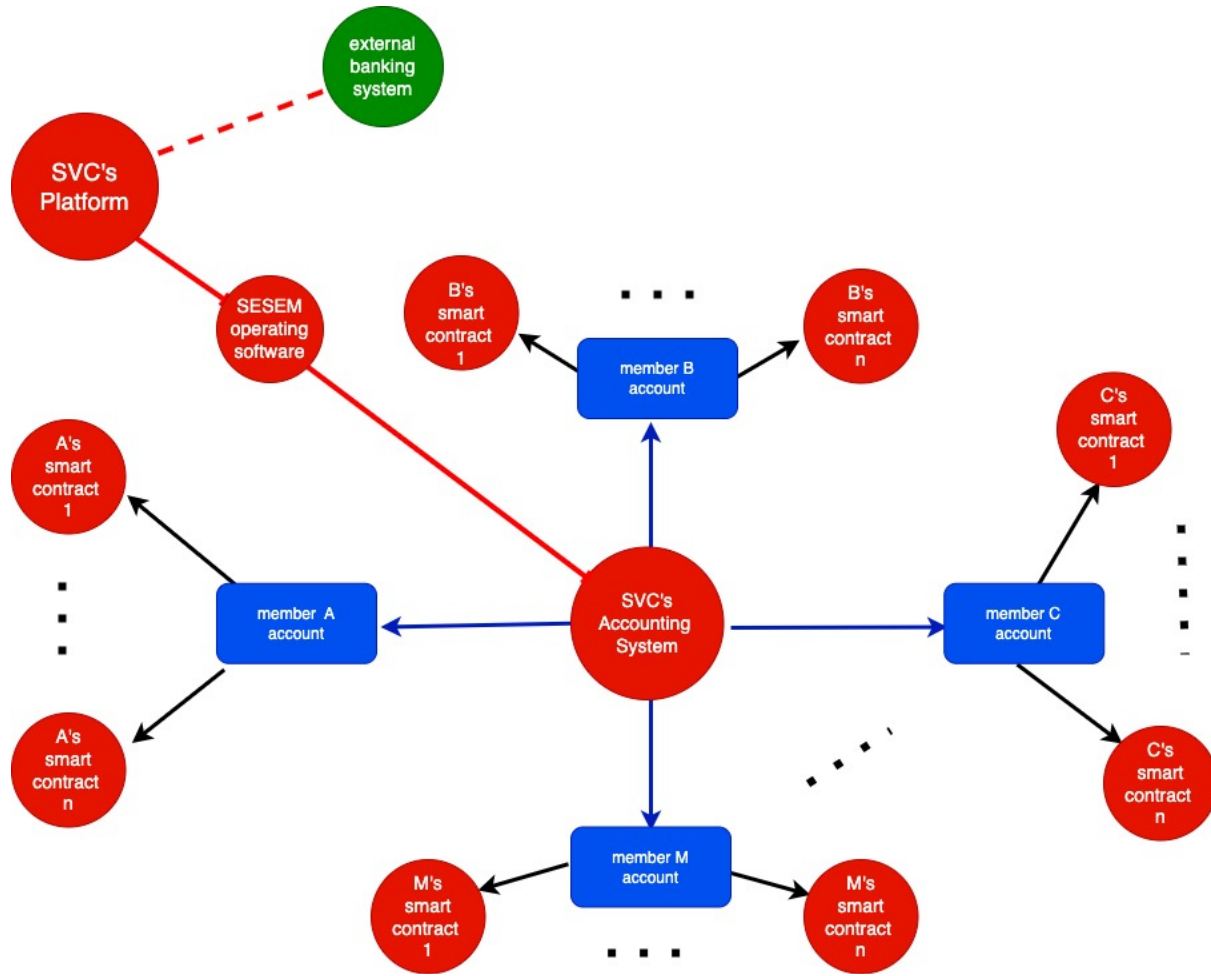


Figure 5- 9 SVC's conceptual Macro accounting

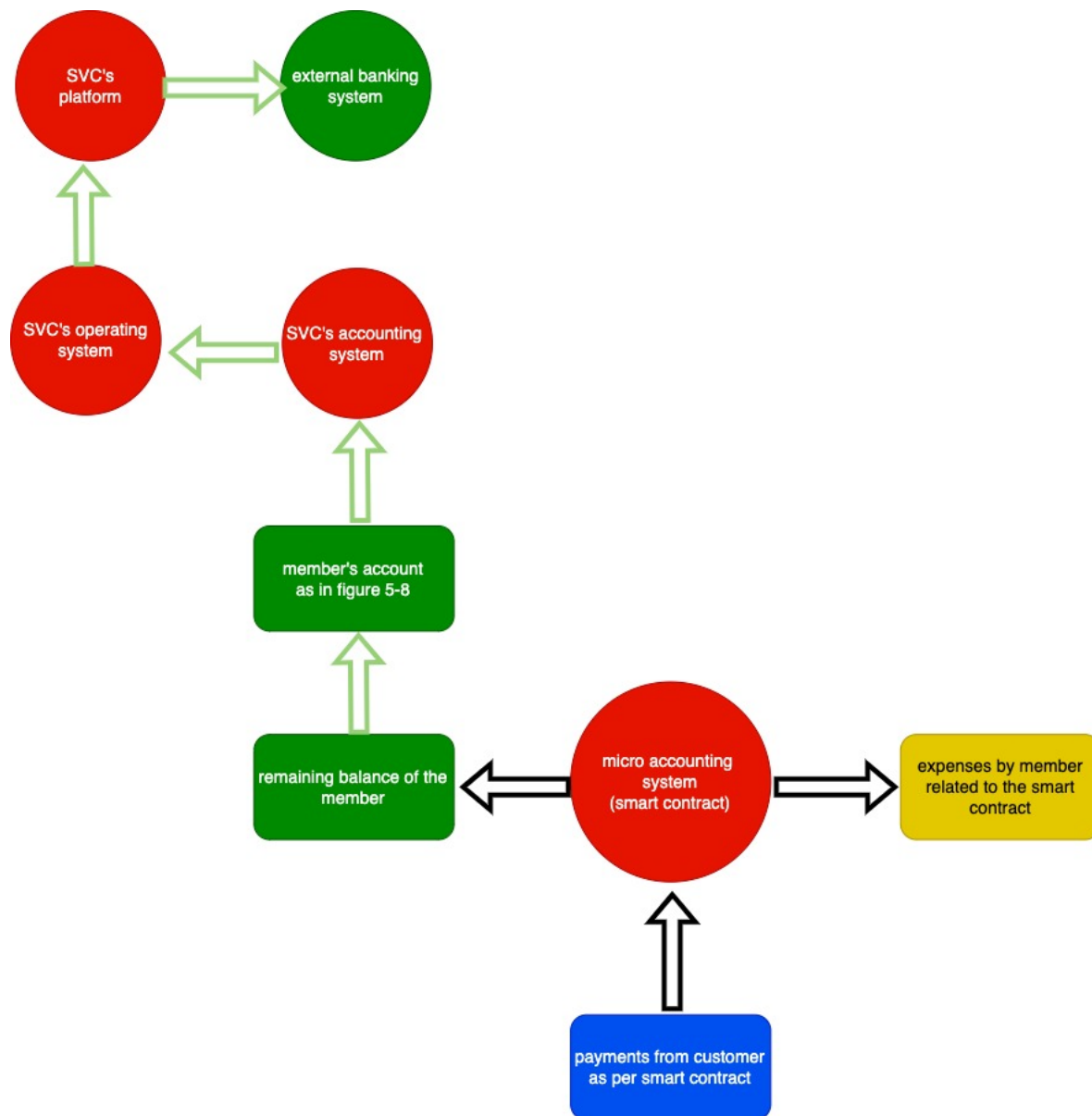


Figure 5- 10 SVC's conceptual Micro (smart contract) accounting

### 5.5.5 Financing

The SVC's financing system is similar to the SESEM's financing system and conceptually illustrated in Figure 5-11.

The revenues come mainly from internal sources:

1. A transaction fee on every transaction executed in the SVC premises. This fee is supposed to cover the administrative, accounting, and operating expenses such as software development and maintenance fees, inspection, reporting, and auditing expenses, ...
2. An equipment rental fee that covers the equipment's services and maintenance expenses to keep the equipment secure and ready for production and income generation. It, also, includes the depreciation cost of the equipment, whose accumulative value will be eventually used to replace the subject equipment after being fully depreciated.
3. A membership fee to cover the administrative cost and to control the quality of the services.
4. Sales of consumables and other services, such as lubricants, cleaning agents, etc. to enable operations. The SVC could benefit from two results with this service: first, it facilitates operations, and second, it produced a modest margin to help improve the services in the future.

There are other sources of revenue, the external revenues, that may not be as significant as the internal sources:

1. Revenues from advertising, where some vehicle manufacturers, car dealers, suppliers, etc., may advertise on the website or in the physical SVC facilities for a regular and/or lumpsum fee.
2. The SVC may use certain brands of equipment, tools, consumables, and parts for a regular or lumpsum fee. It may host some promotional activities for certain brands for a fee similar to that of advertising.

3. The SVC may get grants from some government agencies for its social contribution. It may as well obtain grants from the private sector for contributing to testing and developing certain products/services.
4. The SVC may obtain loans from banks or from government agencies to help fund projects as illustrated by the expenditures below.

Expenditures: as in the SESEM's expenditures, there are two types of expenditures: operating and capital.

Operating expenditures include:

- Paying the rents and utility bills of the spaces used.
- Maintaining the SVC's equipment and facilities which include both regular maintenance and repairs.
- Expenses for consumables that are required for operations and maintenance, such as cleaning agents, lube oils, ...
- Insurance and other subscriptions.
- Any other non-classified expenses, such as sudden damages due to weather conditions and theft.

Capital expenditures include:

- Purchase of new equipment for expansion or as a replacement of old, depreciated ones.
- Adding new service units, such as adding a new unit for electric car battery maintenance.

- Expansion of the SVC horizontally by adding new locations in the same city or other cities and provinces. The vertical expansion is to add new services under the same management, such as vocational training.

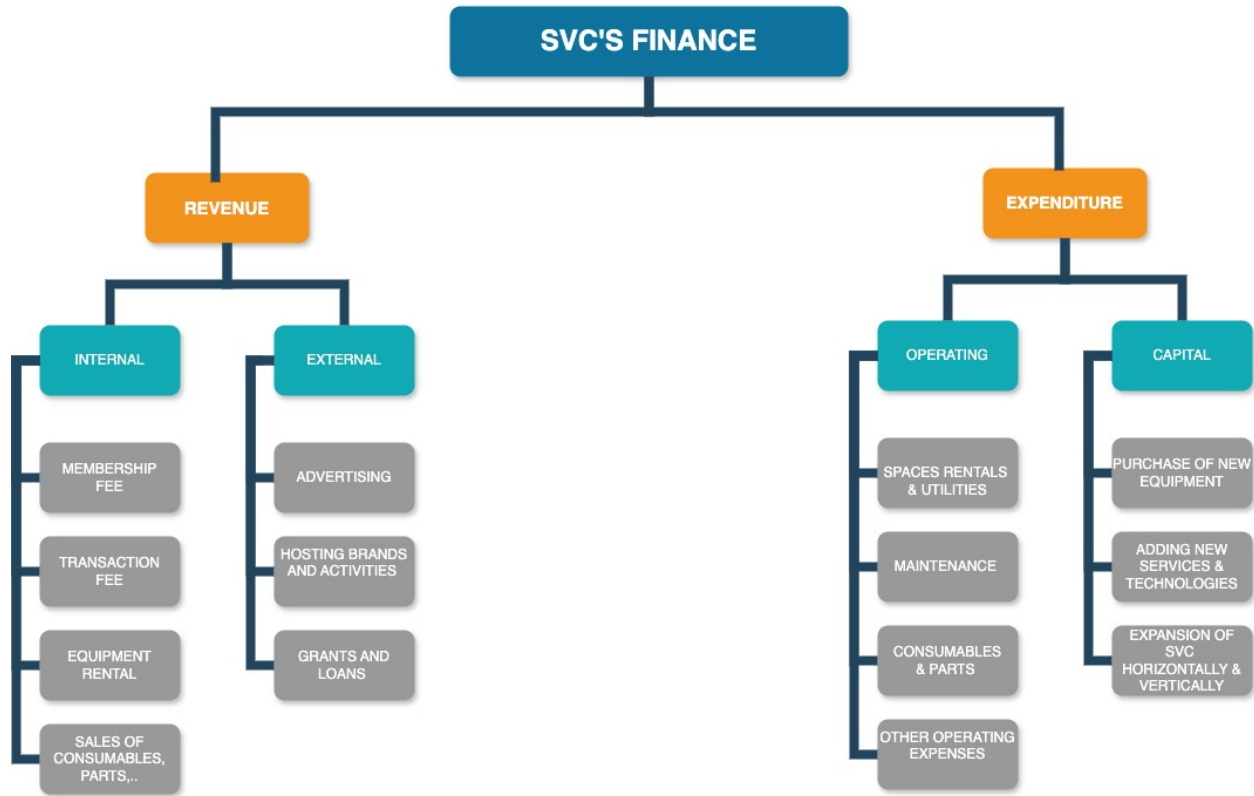


Figure 5-11 SVC's conceptual Financing

## 5.6 Comparison between SVC, classical, and franchised vehicles repair shops

This section highlights, in a conceptually comparative manner, how the SVC, which represents the smart self-employment is much easier, more convenient, and sustainable due to the SESEM's three pillars: sharing principles, social assets, and innovative technologies.

From Table 5.2 comparison, the SVC is distinguished by the following:

- Collaborative efforts of the members in all aspects of the venture, as opposed to the competitive nature of the privately-owned and franchised workshops.
- Sharing of assets and resources as opposed to owning and controlling those assets and resources required for production.
- Socio-economic values as compared to pure economic value
- Distribution of benefits among the members as compared to the lion's share going to the owner/franchisor-franchisee.
- Easy entry and exit into the smart self-employment without the need to worry about start-up cost, management, break-even points, and risks of debt and loss.

These characteristics are more convenient to older population who are willing to work collaboratively with colleagues later in life. Their priority is socially shared value not maximizing profit and/or being in control.

Table 5- 2 Conceptual comparison of the privately-owned, Franchised, and the SVC workshops

| <b>Criteria of Comparison</b>                 | <b>Privately-owned vehicle Workshop (classic type model)</b> | <b>Franchise vehicle maintenance Workshop</b>                          | <b>SVC</b>   |
|---|--|--|--|
| <b>Ownership/legal form</b>                   | Privately-owned by one or more partners                      | Licensed by one or more people from the franchisor.                    | Collaboratively owned by the members: crowd-based ownership      |
| <b>Management</b>                             | Managed by the owners or their representative                | Managed by the franchisee under strict supervision from the franchisor | Collectively managed by the members and users                    |
| <b>Ongoing coaching and technical support</b> | To be externally contracted/purchased                        | By franchisor as part of the franchise agreement.                      | Collaborative efforts by experts' members and social innovators. |

|  |   |  |   |
|--|---|--|---|
| <b>Marketing</b>                                 | Mostly traditional, slowly moving to digital                                  | Both traditional and digital   | Mostly Digital, but also by networking, and word-of-mouth.  |
| <b>Motivation</b>                                | Profit  | Profit   | Collaborative work, social values, and profit.  |
| <b>Quality/Price (Value)</b>                     | Driven by the market demand and competition                                   | Driven by market demand and competition  | Driven by the combination of social values and market demand.   |
| <b>Operations</b>                                | Homogeneous daily routine   | Homogenous daily routine   | Dynamically challenging operations, based on both the members and customers that use sophisticated and innovative digital controls.   |
| <b>Space and equipment use factor</b>            | Limited, depends on the market and availability of workers                    | Limited and restricted to franchisor policy, demand, and availability of workers                             | Could be optimized to reach the maximum possible, due to the ease of entry/use both users and customers and flexibility to adjust to changes                                    |
| <b>Accounting &amp; Revenue distribution</b>     | Routinely done based on the business plan. Revenues are controlled by owners. | Routine bookkeeping. Revenues are distributed according to the franchise agreement and franchisee decisions. | Accounting is done via the smart contract for each task. Revenues are democratically distributed among all members, and partners, according to the terms of the smart contract. |
| <b>Timing/rewarding and compensation systems</b> | Regular timing/ hourly rate with a bonus for experienced                      | Regular timing/ hourly rate.   | Flexible timing/flexible task-based charging (reward) system.   |
| <b>Impact on Society</b>                         | Society is considered as the customers' base and market.                      | Society is considered as the customers' base and market.   | Strong organic relation, where the society is considered as the major resourceful partner.  |
| <b>Impact on Economy</b>                         | An important component in the economy: jobs generator and GDP booster         | An important component in the economy: Jobs creator and GDP booster.   | An important component in the economy and social economy: enhance productivity and innovation.  |

|                                    |  |   |   |
|------------------------------------|--|---|---|
| <b>Impact on the members/users</b> | High positive impact on the owners, with limited impact on the workers.    | Positive impact on the owner (franchisee) and the franchisor, with limited impact on the workers. | Equally distributed impact on all the stakeholders/members, with good potential to grow depending on each member's potential. |
| <b>Development/ Upgradeability</b> | Driven by profit and the owners' entrepreneurial decisions and priorities. | Driven by the franchisor's plans and franchise agreement.   | Driven by the availability of the technology / upgrade.   |

**5.7 Chapter Summary**

Chapter 5 began by showing how the Vehicle Maintenance services field was selected to represent the SESEM's self-employment type.

Section 5.2 maps directly to Section 4.3 and conceptually shows how the SESEM's components in the Smart Vehicle Maintenance Services were identified and explained within the context of Smart Self-Employment.

Section 5.3 lists the services that would be potentially provided by SVC. Section 5.4 is the conceptual implementation in the SVC case study of Section 4.6. It listed and explained the major players in the SVC.

Section 5.5 is the equivalent of Section 4.7 in Chapter 4. It explains, in details, how the SVC potentially works using the same working components: management, marketing, operations, accounting, and finance.

Section 5.6 conceptually contrasts the SVC with the equivalent classical and franchised services to show the distinct advantages of the SVC, the SESEM's self-employment sub model.

## **Chapter 6: Case Study 2: The Smart Task Bank, STH**

### **6.1 Introduction**

This chapter explores how the SESEM design could theoretically be applied to create Smart Tasks Hub (STH), examining its potential benefits and challenges through conceptual analysis and stakeholders feedback.

In this chapter, another option for employment is presented: Smart Tasks, which is an advanced version of the gig works that maintain the benefits of the gig works such as flexibility and convenience; and adds to it some of the benefits of the Standard Employment Relationship, SER (the classic full-time employment), such as employment insurance and career development, see Section 2.3 of Chapter 2: Literature Review.

The Smart Task Hub is conceptually developed from adopting the SESEM sharing principles on gig works, freelance works, and other similar works. Table 6-1 contrasts the classical standard employment relationship, the gig works, and the proposed smart task hub. The smart tasks are simply an advanced version of the gig works that attempt to address the disadvantages and weaknesses of the gig works and make it better and fairer for the workers without compromising the employers' interests.

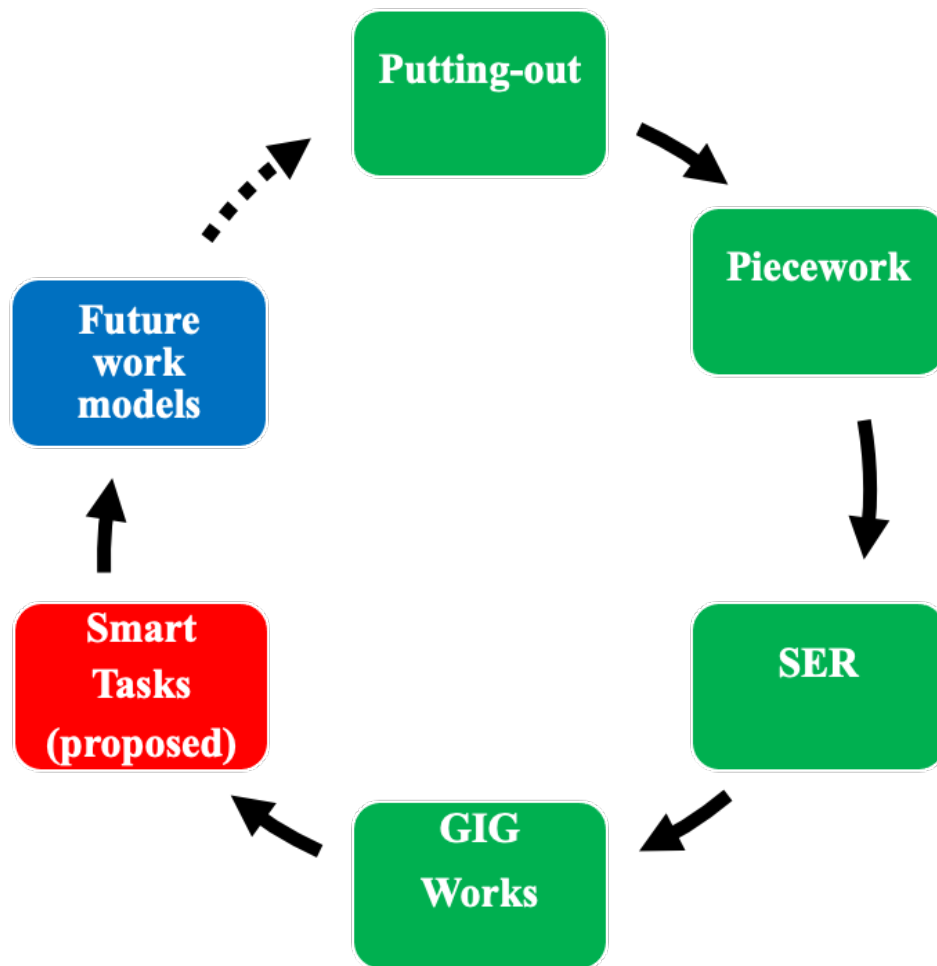


Figure 6-1 work models' cycle (conceptually developed from the literature review of works)

Figure 6.1 presents the work conceptual development cycle in the last two centuries. Starting from the “putting-out” work system that was common in Europe before the 19th century, to the “piecework” system, which is an advanced version of the putting-out work to divide the contracted work into smaller simpler tasks to involve more than one worker. The SER, which is the current full-time work appeared after the second world war, as mentioned earlier, to accommodate the reconstruction of Europe and keep the heavy industries sustainable by ensuring stable full-time and part-time workers on a long-term contractual agreement, (Stanford, 2017, Alkhatib et al., 2017).

Due to the ICT advances, and the souring relations between the employees and employers, especially during the economic crisis, the GIG works was developed to be a short-term solution for employers, on some of the tasks. However, gig works are mainly designed to address the urgent needs of employers and the short-term needs of potential workers. In addition to the interest of the gig platform owners/managers.

The Smart task hub is conceptually developed here to bridge the gaps of the gig works from the workers/tasker interest.

Based on the history of work and its development over time, I believe that the workers of the crowd-based work systems could gain the capabilities and resources to establish their own organizations, both in the production and services domains, and become the collaborative owner and workers simultaneously. They might be capable of competing with the big multinational corporations, on social projects and beyond.

Table 6-1 Conceptual comparison between the Standard Employment Relationship, the gig works, and the proposed Smart Tasks Hub

| <b>Criteria</b>           | <b>Standard Employment Relationship</b>   | <b>Gig work</b>   | <b>Proposed Smart Task Hub</b>   |
|---------------------------|---|---|--|
| <b>Legal arrangement</b>  | Medium to long-term binding legal contract/agreement  | Short-term tasks smart contract-based agreement.  | Short-term tasks smart contract-based agreement  |
| <b>Relationship power</b> | Power rests in the employer's hand, where the employer makes the rules in accordance with the work laws and regulations | End-user (employer) makes the work's rules. It is still immature There is still a lack of laws and regulations to regulate the gig works. | Though the end user makes the rules regarding the tasks, however, the STH can impose minimum requirements and provide workers with important legal and technical advice. |

|   |  |   |  |
|---|--|---|--|
|   |  |   |  |
| <b>Means and place of work/production</b> | Employers provide the place and the tools and equipment for work   | The worker provides the place and equipment for the work  | Place and equipment are provided in a special arrangement where the costs and benefits are shared by the workers   |
| <b>Payment</b>                            | Paid monthly or as per the agreement for the time spent  | Paid directly to the worker after the contracted task is completed. Platform user's fee is directly deducted  | Payment is paid to the worker after deduction of relevant fees, such as transaction, and insurance fees.   |
| <b>Work Security</b>                      | employment insurance and pension plans are provided as part of the employment agreement/contract.  | None  | Workers are required to subscribe to the hub that provides the required work facilities, and insurance fees are deducted from each task done.  |
| <b>Long-term accumulated value</b>        | All go to the employers, however, the employee gains experience, career development, and reputation/prestige of the employer, in the process.  | The long-term accumulated value is gone to the mediating platform and is reflected in the gradual increase in its net worth and share value.  | The long-term value is gone to the smart task hub which is collaboratively shared by the workers and the benefits go to the workers and the society  |
| <b>How work is done and controlled</b>    | The employer is responsible for providing the place, tools, and equipment for doing the job posts designed, supervised, and evaluated by them. | Works/tasks are created and developed by the end users (employers) and executed by the workers/taskers on their premises using their own tools. Tasks are supervised and evaluated by the end user systems. | Tasks are created and developed by the end users/employers and executed by the taskers either in the allocated equipped workspaces or on the taskers' premises. Tasks are supervised and evaluated by dedicated and agreed upon Artificial Intelligence packages |

|                             |   |  |  |
|-----------------------------|---|--|--|
| <b>Impact on old people</b> | Employers prefer younger employees. They may use their power to reduce the number of older people, especially during the economic crisis. | Old workers find gig works convenient and flexible, despite their lack of protecting the basic workers' rights such as minimum wage, employment insurance... | As this platform is developed and managed by workers, it protects their rights and offers old people legal, technical, economic, and financial advice. |
|-----------------------------|---|--|--|

**6.2 The SESEM's components in the smart tasks' hub**

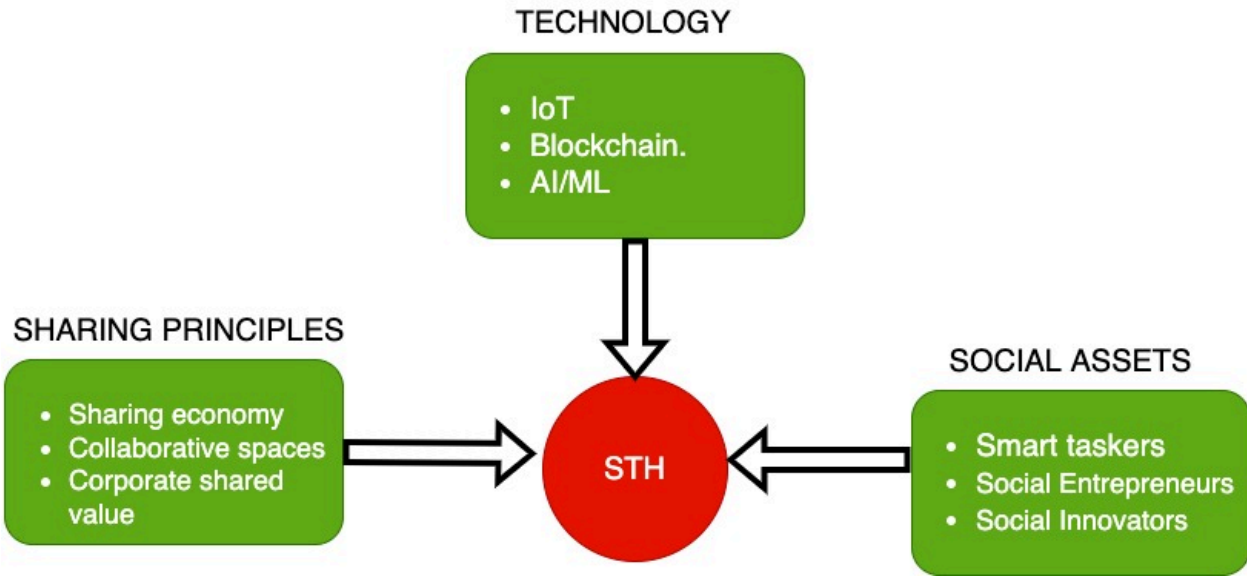


Figure 6-2 The SESEM's conceptual components in STH

**6.2.1 The Sharing principles**

The sharing principles utilized in the STH are the sharing economy principles, the collaborative spaces, and the corporate shared value. Shared manufacturing is involved indirectly as will be explained later in this section.

### **6.2.1.1 The sharing economy:**

The sharing economy principles contribute to the STH in a similar manner to the SVC (Chapter 5):

The smart taskers share the spaces, office equipment, utilities, and other assets and resources that are required to perform the tasks.

In some of the complex tasks, several members (taskers) may share one task and/or an assignment that involves interconnected sequential tasks. Those members may share the rewards according to their negotiated agreement or as per the set regulations.

### **6.2.1.2 Collaborative spaces**

Figure 6-3 shows the conceptual network of collaborative spaces that could host the members who are doing the smart tasks. The current employment centres that are funded by the federal/provincial government for those who search for jobs, could be utilized to execute the smart tasks. Many modern workspaces/cafes could be used as well for some of the tasks. For those complex tasks that may require on-the-job training, a training facility could be arranged as an independent or part of the collaborative spaces. The social innovator coordinators of the space may arrange to recruit some expert members to train other members on certain tasks. Both trainer and trainee may be rewarded from allocated funds dedicated to human development.

The OJT is more effective one-on-one dedicated training that takes a shorter time than the official group training.

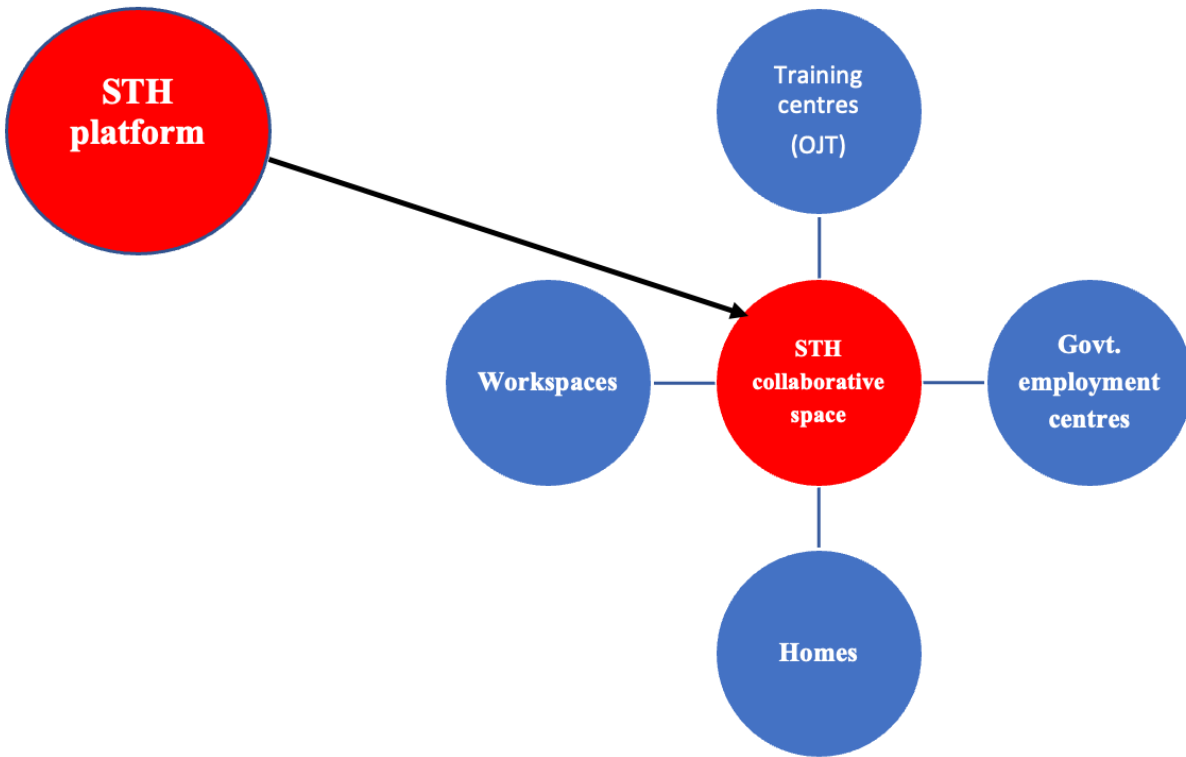


Figure 6-3 STH conceptual collaborative spaces

### 6.2.1.3 Corporate shared value

Since the private sector is mostly, the end user beneficiary of the STH, its partnership with the STH could be a good investment like its investment in personal training and development for its full-time employees.

Among the partnership of the private sector with the local communities under the STH scope:

- Establishing of on-job training and development facilities with the STH. Each corporation may develop its own training programs and materials for its tasks. These tools and materials could be made available and accessible in the STH collaborative spaces in the form of training workstation simulators. The coordinator social innovators will help the potential

trainees. The training and development project could be a social joint-venture by a group of non-competing corporations and the STH. Among the goals of this venture is to develop training and development for smart taskers who will use the participating corporations. This venture could also be used to promote those tasks when there is a shortage in the market.

- The partnership of STH with some specialized corporations in automation and software development to develop a package to develop with the help of the experienced older people, and social innovators in the relevant fields to do the following:
  - Re-engineer some of the complex job posts by decomposing each complex job into smaller and easier tasks that could be done by any adequately trained tasker from anywhere.
  - Develop a process to scrutinize and qualify task members for certain tasks, and to, instantaneously, verify if their work complies with the acceptable quality control standards before being delivered to the end user (employer).
- The development of an insurance system for the tasks workers. Where the STH, the private, and the public sectors could collaborate to develop such a system.

### **6.2.2 Social Assets**

The role of social assets in STH is more visible than in the previous SVC, as the tasks, which are the commodity of the STH, depend mostly on the tasker, and to a lesser extent on the social and technical support offered by the social innovators.

### **6.2.2.1 Social Innovators**

The social innovator's role is like the role of specialized social employment consultants. The main difference is the compensation system. While the social employment consultants are on the federal/provincial government's payroll, the social innovators are compensated from the revenues of the STH. A certain royalty percentage of each transaction is dedicated to the social innovators for their services.

The social innovators' services may include:

- Offer familiarization sessions to new members on how to use STH.
- Coordinate training on specific tasks with the end user companies.
- Coordinate teaming up of several members/taskers for complex tasks.

### **6.2.2.2 Social entrepreneurs:**

**Social entrepreneurs could do the following:**

- Lead complex tasks that require many taskers and an entrepreneurial trait to lead.
- They might lead the development and improvements in the STH processes. For example, they may improve the operational settings/layout of the workspaces and optimize the utilization of the office equipment and other utilities.
- May explore new opportunities, applications, end users, and how to satisfy them.

### **6.2.2.3 Smart tasks members (taskers):**

Taskers could be anyone who wants to execute tasks, anytime he/she wishes, and earn income that depends on the time spent on executing tasks. They include any underemployed and unemployed workers.

Of particular interest in this research are the older workers who fall in any of the following categories:

- Reach retirement age, however, they are willing to stay active but in a more flexible work environment.
- Those who were laid off either as redundant and/or as their salaries are high that replacing them with younger new employees is cheaper.
- Those older people who are under-employed (working part-time or in a work that is below their qualification, experience, and capabilities).
- Those non-employed either temporarily or chronically.
- Those who have medical issues preventing them from mobility.
- Those who enjoy changing jobs frequently or are interested in doing something different from their career work.
- Those who just want to stay socially connected with society and their peers.

All those categories (and more) might find in the smart tasks what they want/need.

### **6.2.3 Information and Communication Technologies (ICT)**

ICTs, also referred to innovative technologies, are mentioned in Chapters 4, and 5, as one of the pillars of the SESEM and its sub-models. We can see the impact of ICTs in all the phases of the STH, from the development of the platform, through to the construction of the databases of both the smart tasks and the members (smart taskers), to the development of search engines, to the matching algorithms between the tasks and the taskers, to the execution of the tasks and the accounting system.

The impact of ICTs could be summarized in the following criteria:

*STH databases, search engines, and matching:* the development of the STH databases depends on the blockchain technology, where the two databases (tasks, and members) use the blockchain database to ensure autonomy of the members to govern operations and development of the STH, enable the monitoring of the transactions' records by the members, and prevent forging. The STH platform depends on the search engine optimization described in Chapter 4 Section 4.7.2 Marketing, search technology, and artificial intelligence and machine learning to match tasks with the capable taskers, based on the requirements for each task. The qualifications, skills, and previous experience of taskers (members) are stored in the members' profiles database after being verified. Each task stored in the tasks database contains the minimum required skills by the potential tasker to execute the subject task. AI will help in the matching process to protect the end user from non-qualified taskers. The machine learning technology could help understand the taskers' qualifications, skills, and what type of tasks they prefer to search for them in the tasks database and suggest for them, in a prioritized manner to save taskers' time and efforts.

*Cost efficiency:* The use of the blockchain technology in building the STH databases enables the collaboration of the STH members and end user to manage and control the hub, in general, and each transaction, in particular, simultaneously online, thus eliminating the need for dedicated full-time employees to these tasks, and the need to third party financial services. This will, significantly, reduce the operating cost and optimize the operations.

*Autonomy:* one of the strong advantages of the STH is its independence from third-party influence whether it is the big corporations (private sector) who look for their interests and/or the political parties (via public sector) who also try to use /manipulate any success only during their campaigns

to win voters. Blockchain technology made this possible as described earlier in Chapters 2, 4, and 5.

### **6.3 Services provided**

The Smart Tasks Hub is intended to do the following:

1. Works as an intermediating platform between the employers, or as they are also called end users, and the workers, or task seekers (taskers).
2. Provide the suitable place and required tools and equipment for doing the work. This may include searching tools and techniques to help taskers find suitable tasks for them, scheduling tools, and using artificial intelligence to build a work profile for every tasker to help in the search and matching processes.
3. Ensure that work is done following the employer's set standards, works laws and educate workers on their rights and help them to achieve them.
4. Offer on-job training and retraining to taskers when needed, especially for the newly introduced tasks.
5. Provide career development programs and counseling services to enable taskers to accumulate and build solid systematic experience and careers.
6. Basic worker's services like the personnel Services in the big corporations, such as keeping records for each worker's work hours, timesheets, Payments (payroll equivalent), employment insurance, and any other needed services
7. Create a positive collaborative and social atmosphere in the workspaces, this may include refreshments /cafe, and exercise spaces.

## 6.4 The role of the major STH players

Figure 6-4 shows the STH's conceptual major players. The social innovators and entrepreneurs are also the social assets of the SESEM's components and are discussed in Sections 6.2.2.1 and 6.2.2.2 above.

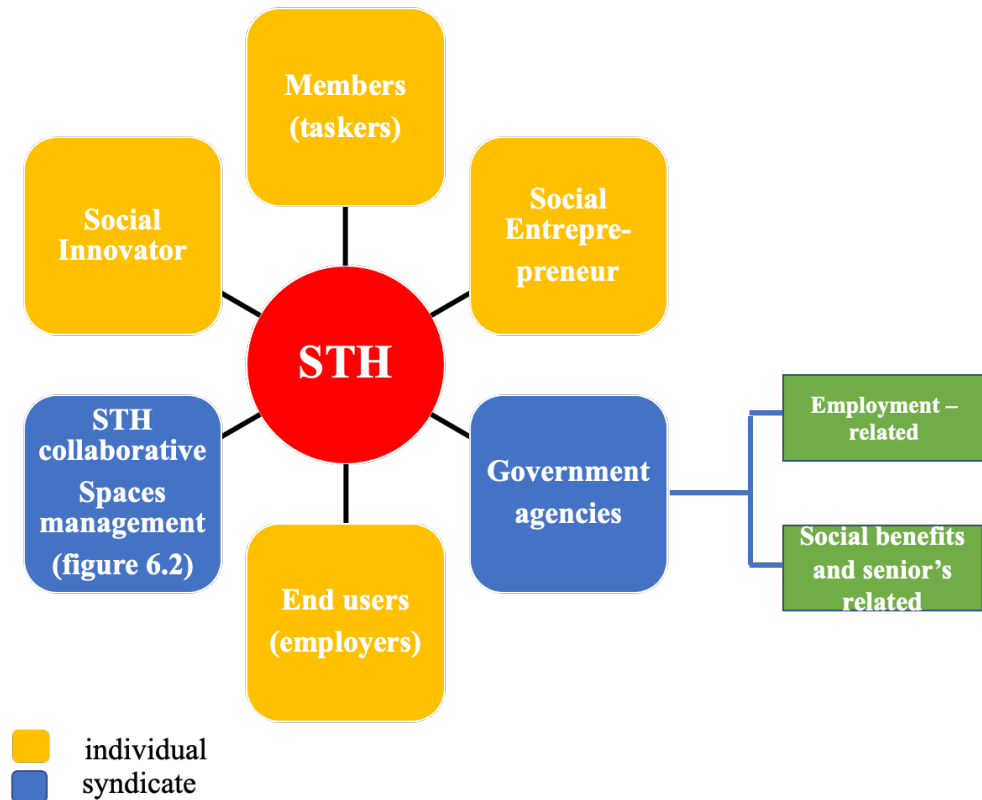


Figure 6-4 STH's conceptual major players

**The private sector (employers)** is the driving force for the STH, where it creates the tasks to be executed by the STH's members/taskers. The employers could be big corporations or even small businesses that can't afford to recruit certain skilled workers on a full-time basis, such as a graphics designer, an accountant, etc., ... The private sector employers could coordinate with the STH's social innovators and entrepreneurs to prepare the tasks to be listed. This may include task descriptions, minimum requirements, selection criteria, and possible training.

**The STH's members (taskers):** Though the SESEM and all its applications are mainly developed for the older population, however, the STH member/tasker could be anyone who needs to work temporarily, regularly, or haphazardly. Even those who lack experience in some tasks, could get on-the-job training and get paid till they gain the required skills and experience. Taskers must register and provide the required profile data before they can be considered and qualified members and use the STH facilities.

**The Government (public sector):** The government plays an important role via its relevant agencies, both at the federal and provincial levels that are concerned with employment, social development, and senior citizen's affairs. They could contribute to the following:

- Funding the start-up and development of the STH.
- Help in establishing the regulations related to the relationship between the employers (end users) and the STH's members (taskers), and those related to taskers' insurance, healthcare, pension, and other rights.
- Help in providing free or cheaper premises to host the workspaces. For example, the current Employment Ontario centres could be shared to include the STH activities.
- Offers incentives to employers who collaborate with the STH, such as tax credits.
- Establish new commissions to regulate the gig works and smart tasks.

## **6.5 How does the STH work?**

### **6.5.1 Management**

STH management is volunteer autonomous efforts collaboratively done by the members with participation from representatives from the private sector and government.

Figure 6-5 illustrates the conceptual management layout. The board of directors which governs the STH is composed of elected members and representatives from the private sector's employers and the government. The number could be 7 or more board members. While the STH members voluntarily participate in the board, the representative of the private sector and the government are appointed by their sectors. The board will have a president (chairperson), vice president, treasurer, and secretary. It may have more functional posts in the future, such as external and internal affairs officers, and other officers. The private sector and government representatives have the right to veto any resolution that may conflict with the interest of the entities they represent. For example, if a resolution is to be taken that contradicts any of the employment laws, the government representative may veto this resolution. On the other hand, if a resolution is to add surcharges to the employer's account, the private sector representative may veto this resolution.

The board will assign a director to supervise the workspace activities. The director could be subcontracted as a full-time job at the start-up, then the supervision could be tasked and treated like the other tasks in the STH tasks database, where any capable tasker could choose to supervise the workspace in a certain time window. Among the board's responsibilities is to ensure that the workspace supervision is always covered, otherwise one of the board members may temporarily cover the supervision post.

The board members are elected periodically. However, if there are not enough nominees, the outgoing board may randomly choose a certain number of qualified members to be nominees and enter the election after they consent.

Each board member will head a committee responsible for certain activities. Each head can choose qualified social innovators and entrepreneurs to help him/her in the committee's activities. The

board member may choose to issue a smart contract for certain tasks and projects in its committee to cover the expenses incurred and reward the members' time when required.

In brief, all management activities are collaborative and to be shared by the STH's members.

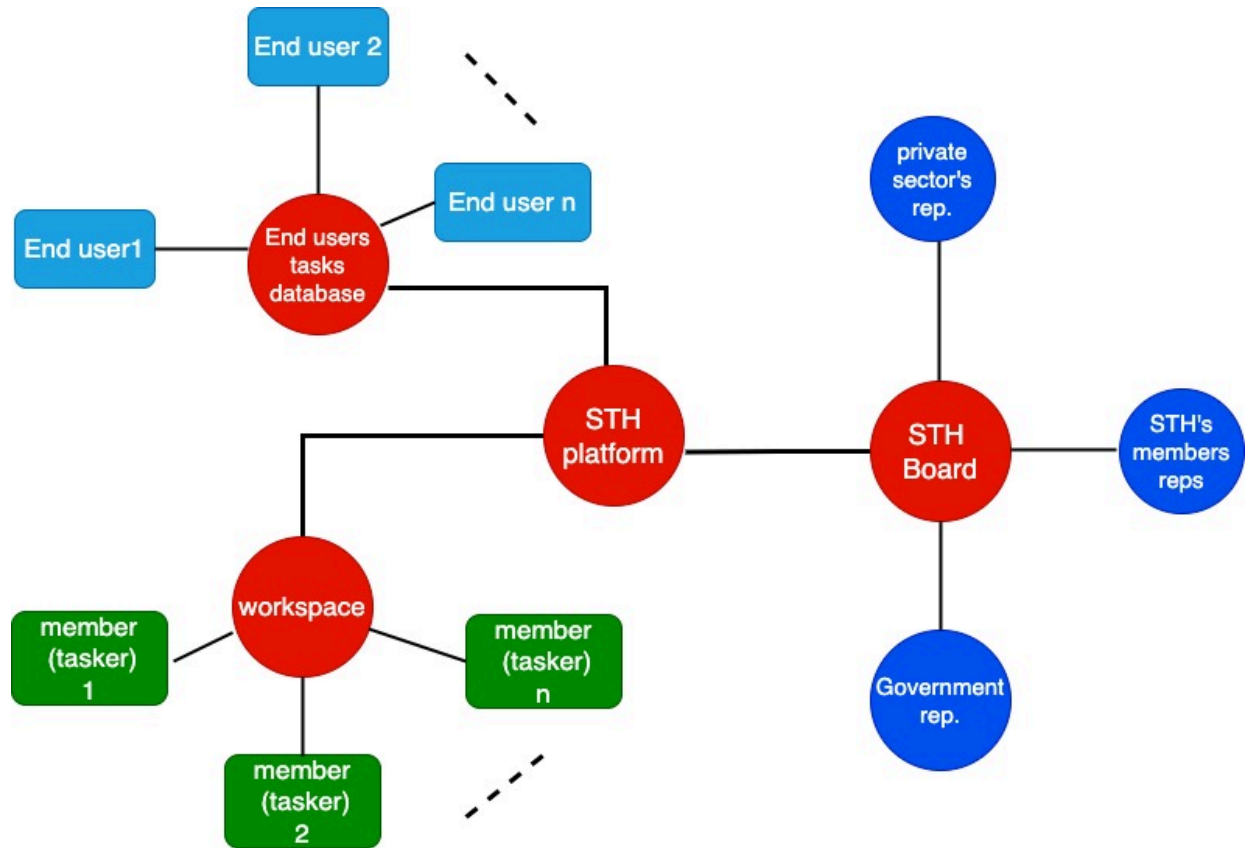


Figure 6-5 STH's Conceptual management layout

### 6.5.2 Marketing

As in the smart Vehicle maintenance in Chapter 5 and the SESEM marketing in Chapter 4, the STH marketing will rely on digital marketing tools and techniques.

The marketing strategy will address the two STH segments:

- The potential task seekers (taskers), where the marketing will encourage them to register and become members.
- The Tasks end user/employers.

Similar digital marketing techniques to those mentioned in Chapter 4 Section 4.7.2 will be used here. Figure 6-6 is a customized version of Figure 4-14 in Chapter 4 for the STH. The only difference is that the link's path in Figure 4-14 is removed as it is unsecured for both employers and taskers to use safely.

There is a separate path for members who use the authorized workspaces, to help members keep track of their tasks and to easily schedule their daily/weekly/monthly timesheets safely.

Those who opt to access the STH from home and/or from remote stations could use a similar path to the employers, as shown in the bottom left of Figure 6-6.

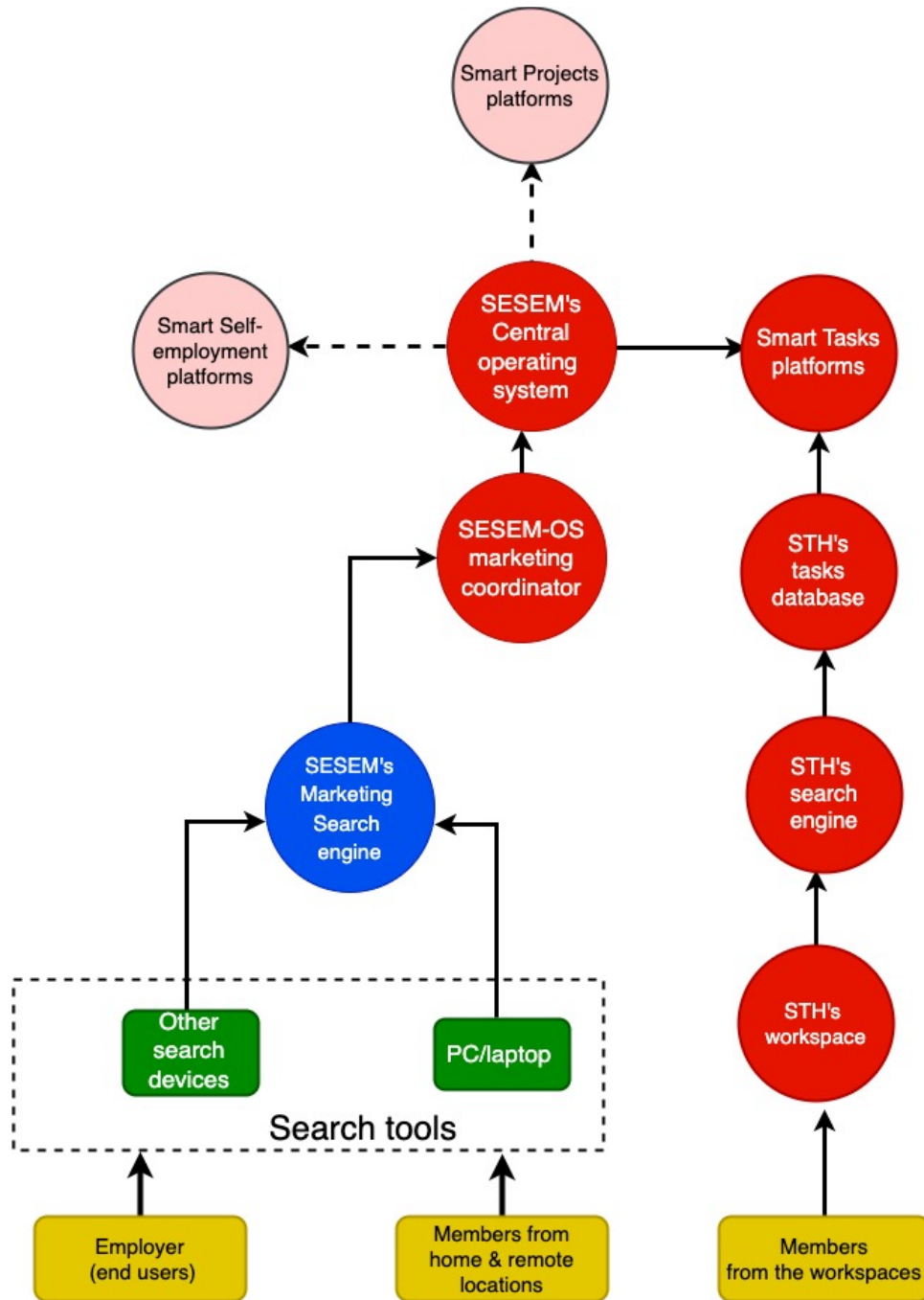


Figure 6-6 STH's conceptual marketing

### 6.5.3 Operations

The STH's operations are based on the same principles of the SESEM, as described in Section 4.7.3:

1. The workspaces, which is equivalent to the collaborative spaces in SESEM. Where STH's members share the workspace and its facilities and equipment in executing the tasks.
2. The social assets are similar in the STH and SESEM. The social innovators and entrepreneurs in both offer consultation, coaching, training, leadership, and support.
3. The ICT which is exemplified in many aspects, such as the smart contract and the internet search engines and other applications that simplify operations, marketing, accounting, and optimize the use of the available assets and resources.

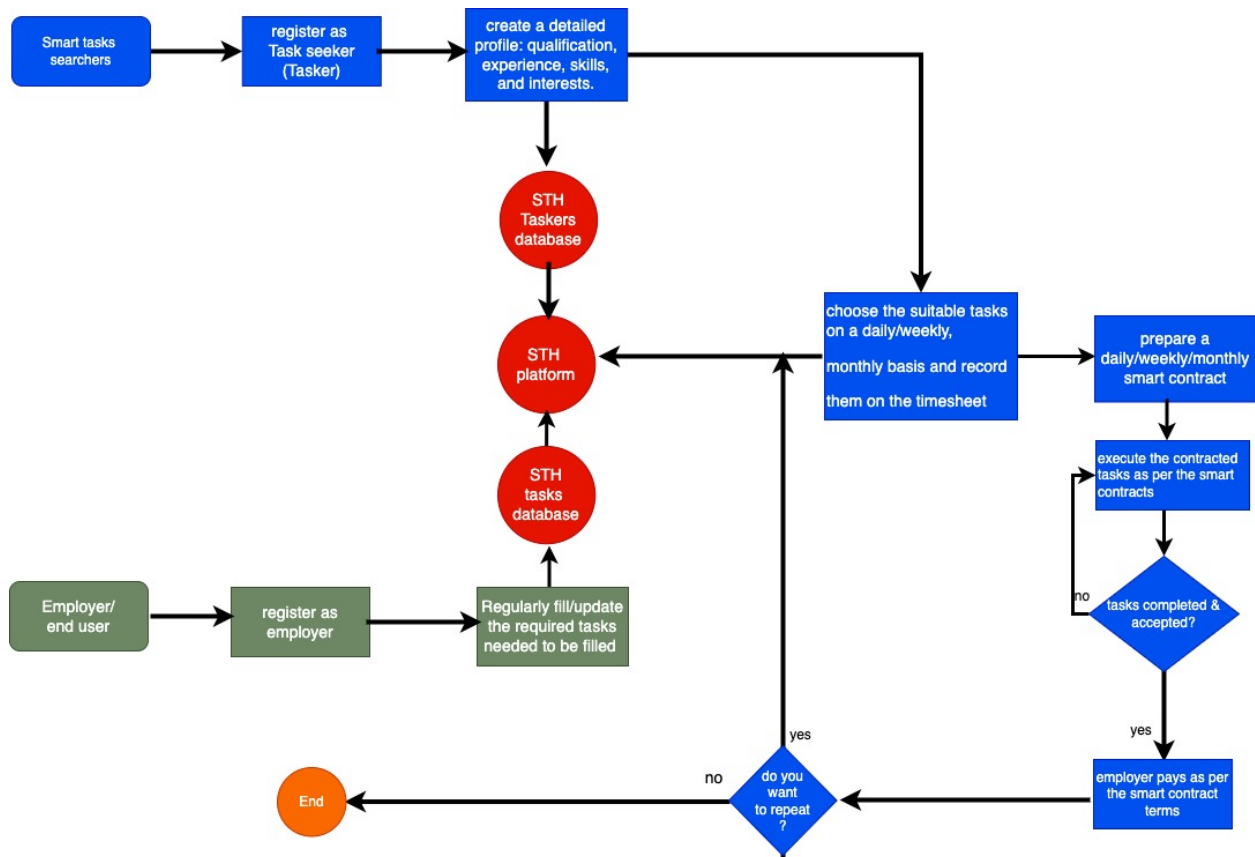


Figure 6-7 STH's conceptual operations

Figure 6-7 demonstrates the flow of the conceptual operations for both the taskers and the employers. They all start from the search step. The upper blue part is the taskers' path. Taskers must register and build their detailed profile. The tasker's profile is equivalent to Curriculum Vitae,

CV, or resume, in the current SER recruitment system. The profile information, after being verified, is used to qualify the subject member for tasks that require specific skills. The matching between the task requirements and the tasker's profiles is done via artificial intelligence. Unlike the CV, the STH member's profile is a dynamic database. The more tasks the member undertakes, the more its profile is fine-tuned and gets more accurate. The STH operations are flexible. The tasker member could prepare a time-sheet schedule for one task, one day, one week, or one month schedule ahead from the available tasks in the STH tasks database. A smart contract will be created, automatically, to cover the tasks, period, and relevant terms and conditions. The member must execute the tasks as per the smart contract terms and conditions. After completion, the smart contract will initiate the due payment in favor of the tasker member and close the smart contract.

The employer must register in the STH as an employer member, and then regularly add and/or edit its required tasks to be executed by taskers. The employer path is shown in greyish green in Figure 6-7.

#### **6.5.4 Accounting**

STH accounting system is a subset of the SESEM accounting system and is based on the same principles of sharing and innovative technologies. As in the SESEM and the SVC, the accounting system is composed of two parts: the macro accounting which creates a separate account for all the STH members, employers, departments, spaces, and projects. Where all the transactions and accounting activities are recorded as a credit or a debit to the relevant accounts.

The micro accounting is concerned with the accounting on the tasks level via the smart contract., where each task will have its own smart contract that will record all the transactions and accounting entries related to the subject task.

As the STH is conceptually composed of two components: the members (taskers), and the employers (end users), the accounting system for each component is illustrated separately, both the macro and the micro as shown in Figures 6-8, 6-9, 6-10, and 6-11 below.

Figure 6-8 depicts the conceptual macro accounting of the members component. Each registered member will have a separate account. For example, account M is created for member M. The tasks booked and executed by member M will be linked to member M's account.

Figure 6-9 illustrates how the smart contract of each task will conceptually do the micro accounting of the relevant task. Where the smart contract will credit the member with the task's contracted amount to the member's account after ensuring completion and acceptance by the employer. The smart contract will also deduct any amounts due from the members' accounts, such as transaction fees, rentals, and royalty. The net balance will be credited to the member's account in the STH accounting system. The credit in the member M account may be transferred to the member M account in the external bank.

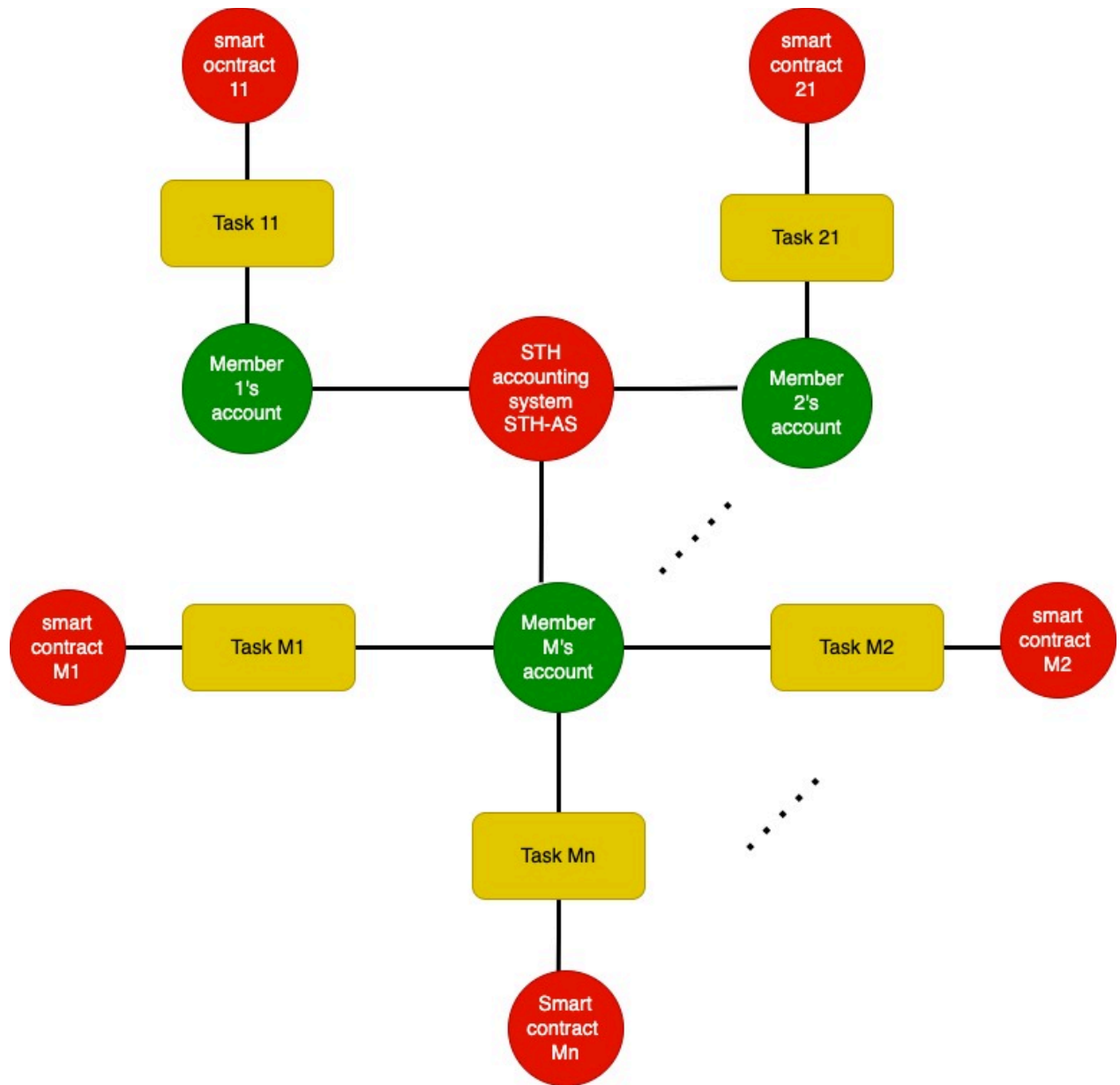


Figure 6-8 Conceptual member (tasker) macro accounting flowchart

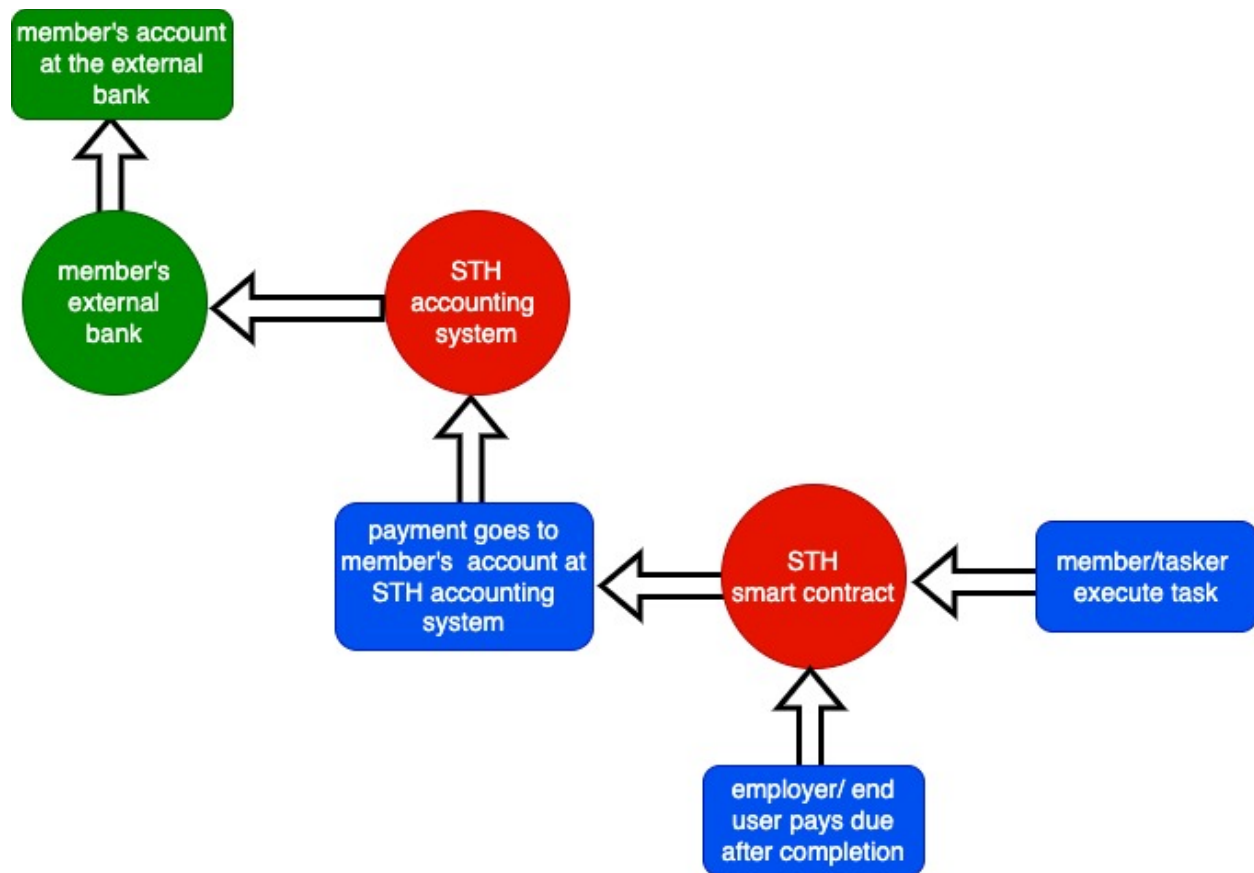


Figure 6-9 STH's conceptual member (tasker) micro accounting flowchart

As with the STH's employers, Figure 6-10 is the equivalent of Figure 6-8 of the members. It conceptually illustrates the employers' macro accounting layout. Each employer, E, will have an account in the STH accounting system.

All the tasks that belong to employer E will be linked to the employer E account, and the same applies to the other employers' accounts.

Figure 6-10 depicts the conceptual path of payment of each task from the employer account to the executor member account within the STH accounting system, to the executing member external account.

Note that the letter E denotes the Employer. The two-digit number associated with the smart contract denotes the smart contract's identification, where the first digit denotes the employer number, and the next digit (or more) is a serial number.

For example, Employer E has n tasks: E1, E2, to En. Each Task creates a smart contract, for example, Task En creates a smart contract En. So, if STH's member M wants to do Task En, then he/she will search for task En. If it is still available, then he/she will be allowed to book it and issue smart contract En, as the second party, the Tasker, against the first party, the Employer. Note that this scenario is highlighted in the dotted rectangle in Figure 6-10.

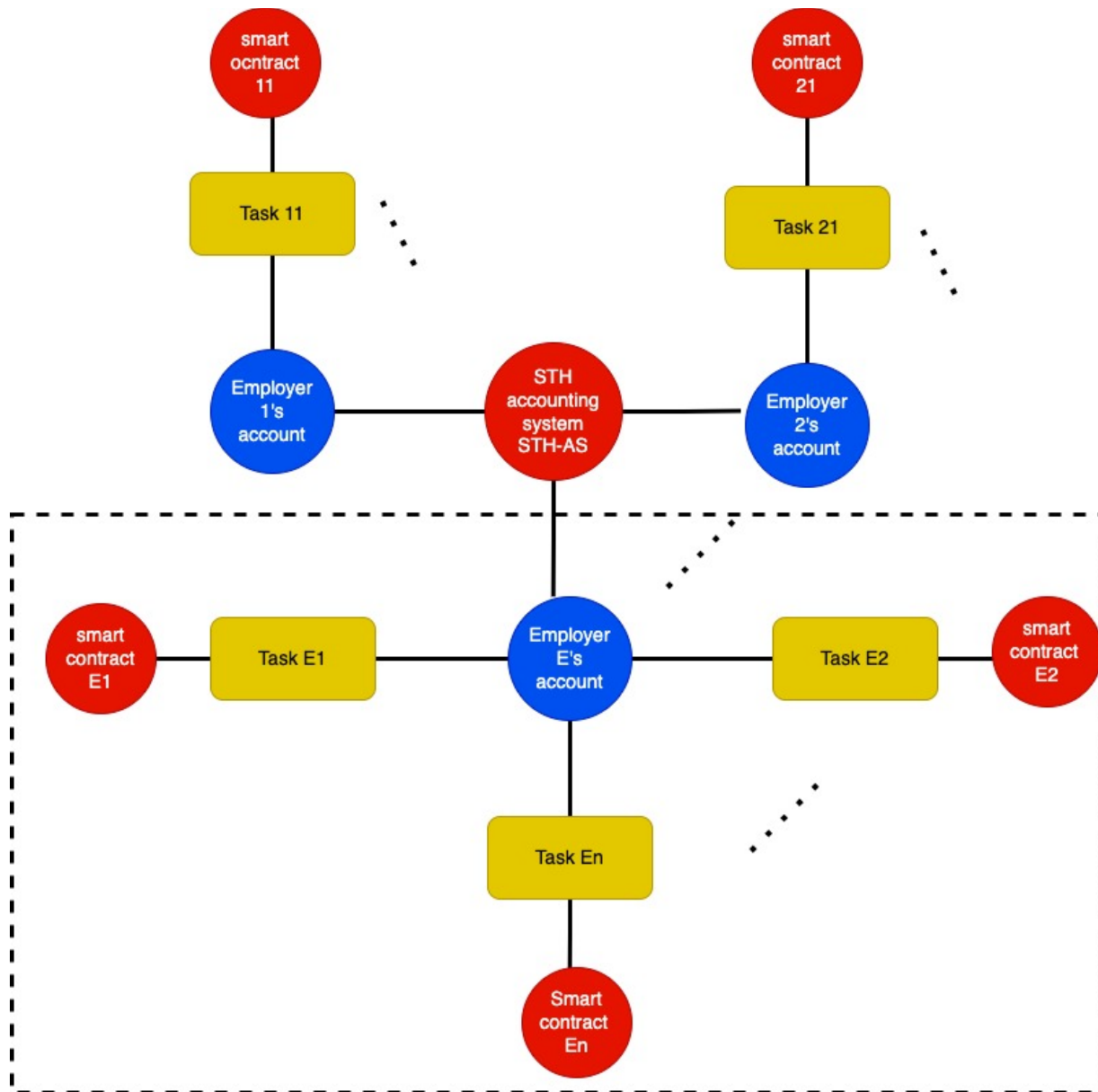


Figure 6-10 STH conceptual end user (employer) macro accounting flowchart

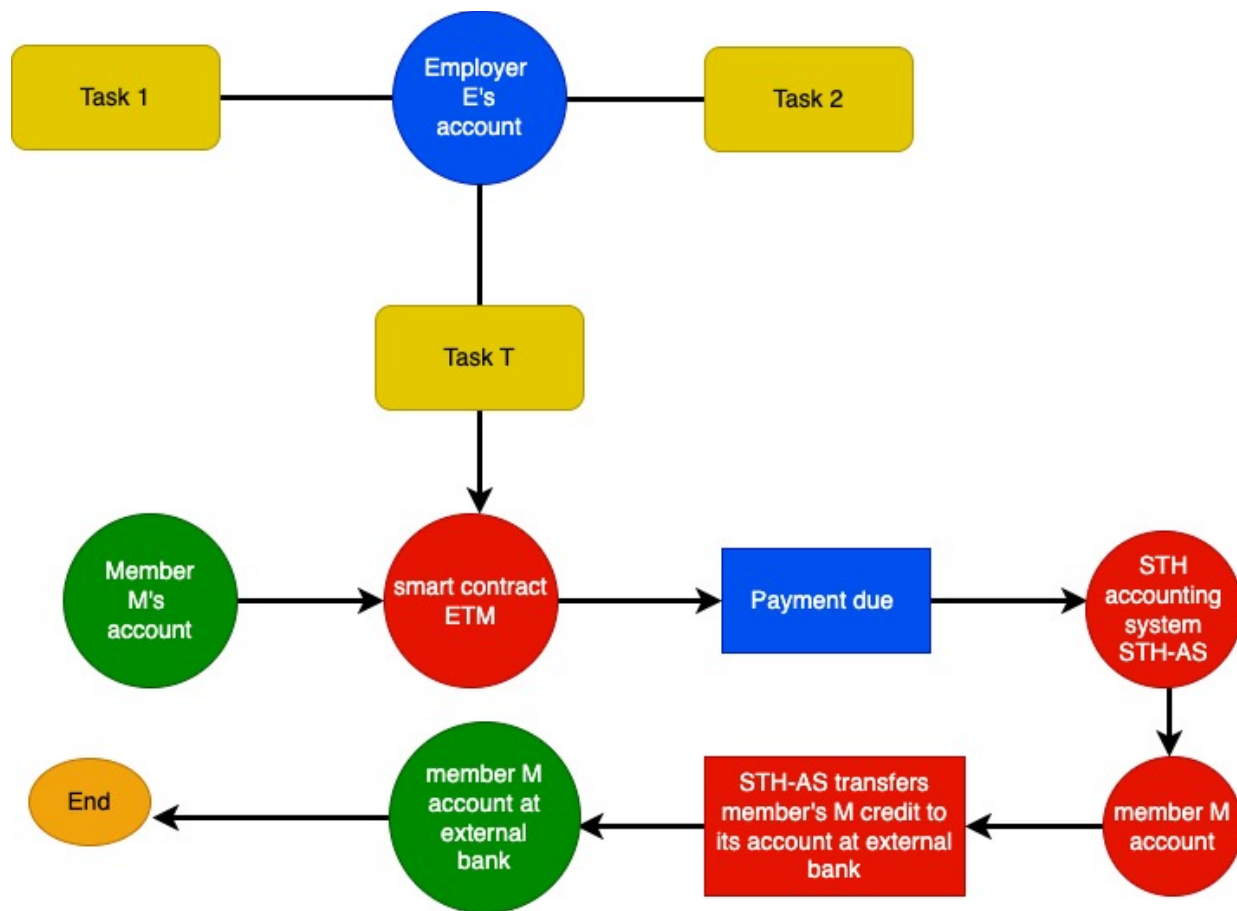


Figure 6-11 STH conceptual end user (employer) micro accounting flowchart

### 6.5.5 Financing:

The STH may start small on a loan from the government to cover the basic expenses and use the spaces assigned for the employment centres.

As it grows and its members gradually grow in numbers, and as it becomes known to many employers, the revenues will continue to grow up to exceed the break-even expenses and accumulate the required capital for expansion and development.

Figure 6-12 conceptually classifies the STH's revenues into internal and external revenues, and expenditures into operating and capital expenditures, as follow:

*Internal revenues* are those generated from the internal activities within the STH:

- Membership fees are the fee collected from members during registration and from annual renewals, to cover the building and verification of the member's profile database. The employer's membership could also be collected from employers upon registration.
- A transaction fee is a fee collected from every transaction issued via a smart contract. It is a tiny percentage of the transaction value to cover the operating expenses of the STH and other expenses.

Training charges, these charges could be collected from the capable members who need training on certain skills to execute certain well-paying tasks. These charges could be deferred and deducted as an additional fee from future tasks executed by the subject trainee. Some training could be sponsored and/or shared by employers and relevant government agencies.

*External revenues* are revenues collected from external sources:

- Advertising, where the STH websites and physical locations could host some advertisements from employers and any other advertisers for a one-time lump sum or regular time-based fees.
- Hosting activities: the STH may host some third-party promotional activities. Example job fairs, promotional campaigns, etc. for a charge.
- Grants and loans: the STH may be eligible for grants from relevant government agencies or to receive loans to finance some development and/or expansion projects or activities.
- *Expenditures* as in Figure 6-12, the two types of expenditures are operating and capital.

*Operating expenditure*: the main operating expenditures are:

- Rental of workspaces and utilities
- Maintenance of the equipment and office equipment used in the workspace
- Other operating expenses, such as consumables, subscriptions, ...

Capital expenditures are:

- Purchase of new equipment and furniture to replace the old ones.
- Upgrading the existing devices and software packages, to ensure optimum efficiency of the workspaces.
- Expansion of the STH’s workspaces and activities geographically and functionally.

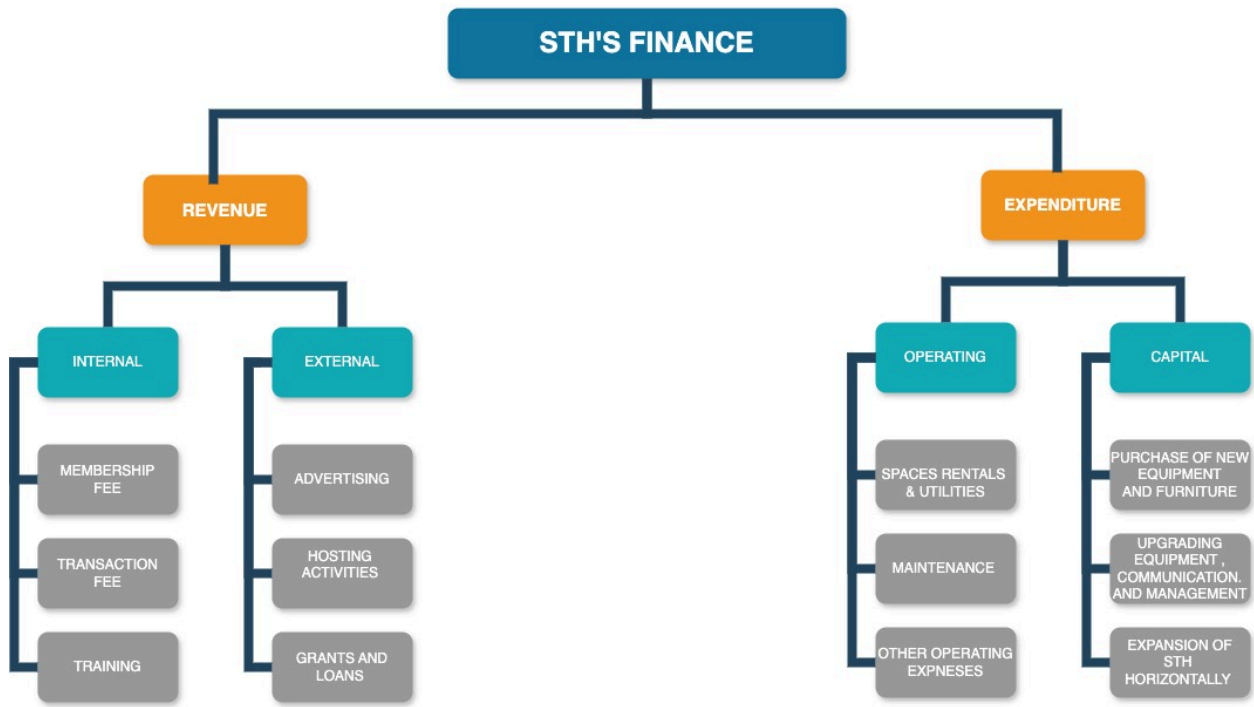


Figure 6-12 STH’s conceptual Financing

## 6.6 Chapter Summary

Chapter 6 started with a brief review of the work to pave the road for the proposed Smart Tasks Hub, STH.

Section 6.2 is the equivalent of Section 4.3 in Chapter 4 and of Section 5.3 in the previous chapter. It identified and conceptually explained the SESEM's components in the STH, within the context of the Smart Tasks short-term employment.

Section 6.3 listed the potential services provided by the STH.

Section 6.4 is the conceptual implementation of Section 4.6 in the STH, where it listed the major players in the STH.

Section 6.5 is the equivalent of Section 4.7 in Chapter 4, and of Section 5.5 in Chapter 5. It explained, in details, how the STH conceptually works using the same working components: management, marketing, operations, accounting, and financing.

## Chapter 7: Case Study 3 Smart Social Housing Ecosystem

This case study examines the conceptual application of SESEM to large-scale social projects, specifically exploring how it might address housing challenges for older adults through a theoretical Smart Social Housing Ecosystem.

### **7.1 Introduction:**

As mentioned in Chapter 1, the population of older people is increasing. At the same time, the gap between the demand and the supply of housing is growing. The housing supply for low- and no-income people, in general, is considerably below the demand. The waiting list is growing and the waiting time for affordable social housing be as long as 10 years. Since many of the older people are i the low- and no-income category, unmet housing needs are one of the significant hurdles older people have to confront in later life. (Council on Aging of Ottawa, 2021).

Added to this, older people need certain housing models that could accommodate their growing physical mobility challenges, the need for healthcare services, and senior social isolation, as discussed in Section 2.4 in Chapter 2: Literature Review.

The objectives of the SSHE are to explore the conceptual application of the SESEM as applied to big social projects and demonstrate how the SESEM could empower the social assets, the seniors' accumulated experience and wisdom, and use the sharing principles and innovative ICTs to handle big social projects. Big projects, such as housing projects are traditionally handled by big private sector corporations and relevant government agencies. However, the first (private sector), by executing efficiently to maximize profit, thus could manipulate the price to achieve this objective. The second (government social housing) is less efficient and slow in executing such projects due

to the long bureaucratic procedures. So even though their objective is to provide affordable housing, their supply is far below the (growing) demand.

The objective of SSHE is to provide the following:

- An affordable convenient housing solution for older people that is flexible enough to address their need for spacious homes that enable their movement in wheelchairs and are equipped with medical support devices.
- The means to help older people to stay active and productive (if they so choose), to increase their income, and stay healthy and socially active.
- A comprehensive housing ecosystem equipped with all the facilities needed by older people, such as a central social kitchen, medical centre, and recreation centre. (See Section 7.4 for a list the major SSHE facilities).
- To maintain the SSHE as a sustainable, expandable, and self-sufficient autonomous housing ecosystem.

The structure of the chapter is as follows:

- Introduction (this section)
- SESEM's components in SSHE
- Players (Actors).
- SSHE Structure
- How the SSHE works

Table 7.1 conceptually compares public social housing, third-sector social housing, and the proposed Smart Social Housing models across several basic criteria. It also presents the expected

characteristics of the proposed smart social housing model. The information is based on relevant literature about social housing and projections of how SESEM could be implemented in social housing through the Smart Social Housing Ecosystem (SSHE) case study.

Table 7- 1 Conceptual comparison between the public, third sector, and the proposed smart social housing

| <b>Comparing Criteria</b>                                     | <b>Public social housing</b>   | <b>Third-sector social housing</b>   | <b>Smart social housing (proposed)</b>  |
|---|--|--|---|
| <b>Organizational structure</b>                               | Centralized: decision power is kept at the federal government level.                                   | Decentralized: decision power is moved to the provincial and municipal levels, with limited participation from the residents/community | Decision power is shared among the community (residents), the relevant government agencies, and the private sector.               |
| <b>Who is involved in decision-making/ Management process</b> | Relevant Federal Government agencies to the social housing   | Relevant provincial and municipal social housing agencies. Residents are involved in the co-operative housing model.                   | Residents under the main guidelines of the relevant social housing regulations and coordination with the private sector partners. |
| <b>Financing</b>  | Federal government   | Both federal and provincial governments  | Federal, provincial governments, and private sector as a social business partners.  |
| <b>Private Sector Role</b>                                    | For-profit Construction companies are contracted to build the housing projects.                        | Non-profit construction subcontractor  | Partnership in the whole process.   |
| <b>The role of the society/community</b>                      | The public social housing is represented by two members (from the residents) in the governing board of | The whole board is elected from the subject social housing community. The boards can make decisions and                                | Full active partnership.  |

|   |   |  |   |
|---|---|--|---|
|   | the subject public housing complex.   | supervise operations and activities but within the relevant social housing laws and regulations that are applicable.   |   |
| <b>Sharing Role</b>   | No sharing  | Limited sharing in the coop model, represented by 1) the board of directors, in the decision-making and supervision of the operating activities. And 2) the residents' participation in general meetings, voting, and some volunteer activities such as general coop cleaning. | Sharing is vital here and includes all activities related to social housing and beyond.   |
| <b>Technology</b>   | Limited   | Limited  | Used in the operations and management to save cost and encourage the sharing principles. Also, in implementing it in the construction and internal social projects. |
| <b>Impact on the economy</b>  | Though helps alleviate the social problem, it is a liability to the macroeconomy. | Helps alleviate social problems with less negative impact on the economy   | Besides solving a social problem, it is considered an active asset contributing to the GDP.   |
| <b>Expertise and resources needed/used in the construction and sustainability</b> | Public human workers.<br>Public funds   | Public and social human resources.<br>Public funds.  | Human resources, mainly senior's expertise.<br>Public and private resources   |

Social housing corporations, whether public or third sector, require supporting specialized services infrastructure in the three main phases:

- The pre-construction phase, which requires planning, designing, and site selection.
- The construction phase requires construction, project supervision, management, and inspection.
- The post-construction phase, which requires property and community management.

Public housing corporations benefit from the available municipal resources. However, the third-sector non-profit corporations don't have this advantage.

“This has led to the proliferation of support services, including a provincial organization for non-profit sponsors (Ontario non-profit Housing Association) and one for co-operatives (Co-operative Housing Association of Ontario); in addition, there are some 15 resource groups that assist co-operatives as they face site selection, design, rezoning, community acceptance, and other hurdles. There are also over 100 development consultants specializing in assisting non-profits with these tasks, (Skelton, 1996).

Despite the significant number of public resources, there remains a lack of proper planning, coordination, and management to optimize the solution to the housing challenges in Canada. There is no better party to do this than the beneficiaries or residents. The proposed Smart Social Housing Ecosystem (SSHE) aims to optimize the use of these resources as well as the other resources, social assets, and innovative technologies to address social housing needs in general, and requirements of seniors' social housing, in particular.

From the review above, I can draw the following conclusions:

- The demand for suitable housing for seniors is growing faster than the limited supply. The supply of social housing is limited to the allocated public funds, which are insufficiently managed due to the centralized bureaucracy that inflates the expenses and the lack of optimizing the available human resources and assets.
- The older people's requirements from the housing models change as they grow older due to the increasing physical and mental challenges they experience as they grow older. Also, the need for medical care and special services increases as a person grows older.
- Most older people prefer to age in place, stay socially active in their community, and have both the required medical and community services and a healthy level of freedom in their residence.
- Except for the collective dwelling models, the other housing models are not suitable and flexible enough to meet the increasing demand for healthcare and community/social services as the resident grows older. These collective dwelling models are not enough and are expensive to build and operate.

Hence there is a need to find a comprehensive solution to the housing problem for older people that take into account sharing principles, social assets, and use innovative technologies. A solution that also includes the private sector in a full social business partnership which prof. Michael Porter termed it as “corporate shared value”, as explained earlier in Chapters 2 and 4. To keep this project sustainable, it must be self-sufficient, sustainable, and expandable for the long term.

The smart social housing ecosystem is not just a social housing complex. It is a productive community that creates social and economic value for the local community and society at large.

They could build, operate, and maintain their homes, grow their food, generate their energy, and be an active member of the society and economy.

Although the SSHE is designed to support 'aging in place' and includes healthcare facilities comparable to Long-Term Care (LTC), it is important to distinguish the target population for the *active employment* components of the model. The SESEM's work and social participation elements are primarily aimed at older adults who retain high functional capacity and a desire to work. Residents with significant cognitive impairments or severe physical limitations – who typically comprise the majority of the traditional LTC population – are considered within this model primarily as the beneficiaries of the ecosystem's care services and social environment, rather than active participants in the workforce or management.

## 7.2 The SESEM Components in the SSHE

The major components of the SSHE are the same as the major components of the SESEM detailed in Section 4.3.

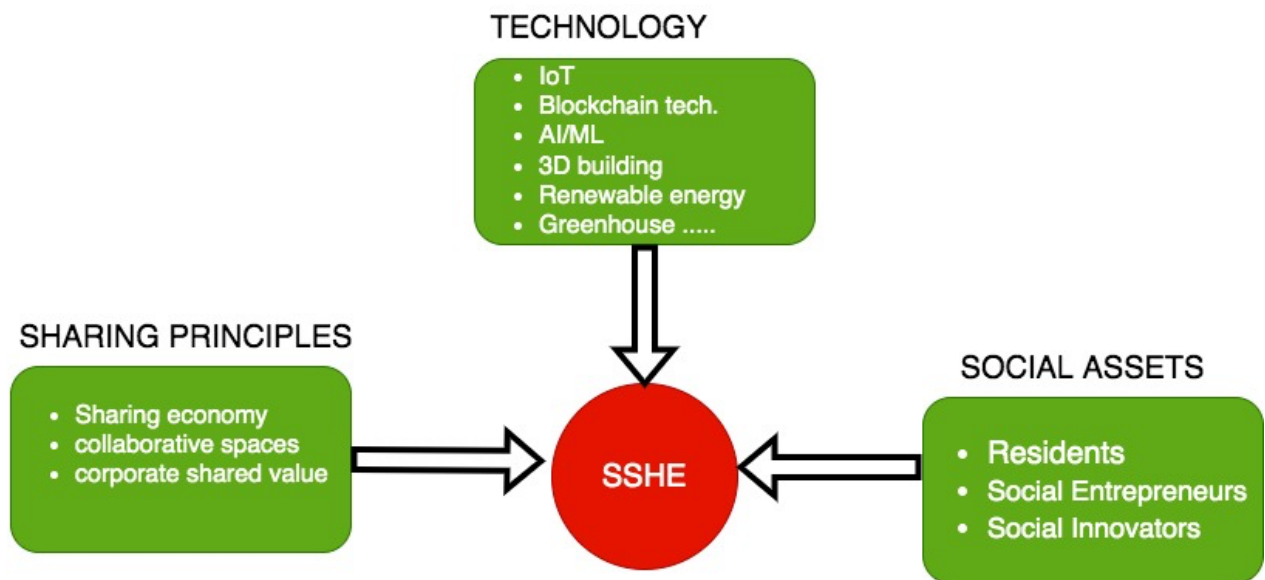


Figure 7- 1 SSHE conceptual components

### **7.2.1 Sharing Principles:**

The corporate shared value of the sharing principles described in Section 2.2.6 in Chapter 2, plays a significant role here. It enables the SSHE to use the considerable resources and expertise of the private sector as a social partner, rather than as a subcontractor or a philanthropist. This partnership is essential in making the SSHE sustainable and self-sufficient as will be explained in Section 7.5.

The sharing of effort, expertise, and resources among older people and other population segments will create better solutions throughout all the phases of the SSHE, from planning, design, and construction to operations.

The collaborative spaces will make it easier to make the SSHE residents productive, to keep the standards of living in the SSHEs high and to be self-sufficient and even to grow.

### **7.2.2 Social Assets:**

The roles of the social innovators and social entrepreneurs in the SSHE are the same as in the SESEM and as in the previous cases (Chapters 5 and 6). They are able to search for the available resources and expertise among the members and others to use in the various phases of the SSHE. For example, when urban planning experts are needed to prepare/review the SSHE plan, they will search in the SSHE's members' database and other databases for the most qualified candidates and negotiate with them to participate in the SSHE innovative pilot project.

During the SSHE management, the social entrepreneurs in collaboration with the social innovators and the private sector partners could come up with innovative ideas on how to involve the residents and benefit from their experience. For example, they could utilize the social kitchen to cook and prepare healthy meals for residents and others outside to get income for the individual participants

and the SSHE. They could develop online business services such as tutoring, where the ex-teachers residents could tutor students online at their convenience.

The unique social assets, here, are the residents.

The potential residents/members of the SSHE could be divided in two different ways:

1. Age-wise, into two categories: a “senior” category where at least one member of the household is 50 years or older; and a second category of those who are not senior.
2. The residents could also, be divided into three categories, according to how the rent and other facilities are paid:
  - a) Those who are willing to be active and productive, and to participate in the work and social activities in return for their rent, utilities, food, and other benefits and facilities.
  - b) Those who are willing to pay the market value of the rent, utilities, and other benefits. They may work and be socially active at their convenience, anytime they wish.
  - c) Those who are transferred from the relevant government social housing agencies registry offices. This category is further subdivided into those no-income fully subsidized residents, and those who are partially subsidized according to the Rent Geared to Income (RGI) method applied in Ontario, where residents pay 33% percent of their net income towards rent, and the balance is paid by the relevant government agency.

The priority will be given according to the following criteria:

1. Those who are 50+ years old, and willing to be active and productive.

2. Those who have no or low income and are willing to be active and productive.
3. Those who are 50+ years old, who can support themselves and pay the market value of the rent, utilities, and facilities.

### **7.2.3 ICT Technology**

In addition to the innovative technologies discussed in Chapters 4, 5, and 6; the following technologies could be utilized in the SSHE:

- 3D printing/building - to build the SSHE units based on the approved urban plans and housing designs. This additive 3D printing technology is much cheaper and faster than traditional building methods. Mud mortar could be used as the structural building material instead of concrete mortar to make the built units environmentally friendly. This will also make it possible to plan and build social housing complexes in environmentally protected areas, provided that other measures, such as the use of non-fossil energy sources (solar and wind energy), and recyclable environment-friendly consumables in the SSHE.
- The use of greenhouse farms: in each SSH project, several greenhouse units could be planned and constructed to produce healthy produce for both local consumption and commercial exchange. These greenhouses could be operated and managed by the residents. The utilization of robots and automation will make it easy and fun for elder people to manage. The food chain companies such as Walmart and Costco could partner with the SSHEs to sponsor building such a greenhouse in return for taking a certain percentage of every production batch to be sold in their retail units in Canada and the USA.

- Renewable energy sources, where each SSHE could build an off-grid hybrid electrical network that is made of solar panels and windmills to supply electricity to the SSHE complex as the main electricity source.

### **7.3 Players (Actors)**

As in Chapter 4 Section 4.6, the three major players are society's social assets and the private and public sectors.

Here some significant roles will be emphasized.

#### **7.3.1 The Private sector**

Private Sector and the Social Enterprises:

The highly competitive and profit-maximizing philosophy of the private sector has been blamed for many social and environmental problems including pollution, natural resource exploitation, and the outsourcing of jobs to low-wage countries and favoring the greed and consumption attitude/habits over collaboration and sustainable productivity.

Michael Porter (Porter & Kramer, 2019), attributes this negative public perception towards the private sector to its preoccupation on short-term financial performance and overlooking the larger picture of the well-being of their customers, the societies they are in, and the environment that provides them with the basic resources for their existence and long-term sustainability.

To alleviate the public's negative perceptions, the private sector introduced what Milton Friedman refers to as a "social responsibility" mindset (Friedman, 2007), according to which they would allocate some funds in their general budgets to social projects via NGOs and/or direct societal

organizations. While these contributions help, their impact is not as significant as when the private sector gets involved as a “value” partner in any social project, utilizing its huge resources, expertise, technologies, and most importantly the efficient management of the project during construction and sustainable operations. This is what Porter refers to as “corporate shared value”, where both the private sector and society can collaborate to create value and share it, without any trade-off, thus, breaking the old business myth according to which businesses should only focus on competition and short-term profit maximization.

“The concept of shared value can be defined as policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates”, (Porter & Kramer, 2019).

In contrast with corporate social responsibility, where companies act as philanthropists by donating funds to charities and/or NGOs as their societal responsibility, the shared value model functions as a kind of joint-venture between the private sector and society to share the value created by social projects. So, in addition to providing direct benefits to the society from the projects, it helps society leaders and social innovators to think strategically about value creation, delivery, and capture, and how to be efficient and innovative in the management process.

The shared value model is an ideal method to make use the substantial resources and expertise of the private sector; however, many companies will still naturally try to take full control of those social joint ventures, to ensure staying strategically competitive, especially in volatile market conditions and during financial crises.

Therefore, I propose a modified version of the corporate shared value concept in the SSHE to ensure that the joint social project maintain the private sector’s shared value principles, while not drifting away from the social values of the SSHE. Table 7.2 illustrates, in a comparative manner, the main characteristics of this new version, which is referred to as “shared value and control” to specify that the sharing is not only in value but also in management and control of the project, which is basically Porter’s corporate shared value with the active involvement of the community social innovators.

Table 7- 2 Characteristics of the proposed “shared value and control”

| <b>Comparison Criteria</b>    | <b>The Classical Social Project (corporate social responsibility)</b>      | <b>The Shared Value Social Project</b>   | <b>Shared Value &amp; Control</b>   |
|-------------------------------|--|--|---|
| <b>Value proposition</b>      | Value is designed to address the social demand from the social perspective | Value is designed from the private sector’s perspective to be shared between the private sector and society, under the control of the private sector | Value is co-designed by the private sector and Social Innovators to be shared between the society and private sector  |
| <b>Social Innovators role</b> | SI could play both roles: initiator and operator                           | SI could only play an advisory/consulting role   | SI could share in both the initiation and operation   |
| <b>Impact on the Society</b>  | Limited in time and scope  | Could be sustainable but limited to the initial objectives   | Could be sustainable and expandable in scope according to the changes in the society  |
| <b>Budget</b>                 | One-time donation from public and/or private funds                         | Funded by the private sector according to the social business model/plan   | Funded by the private sector according to the initial business plan, with a percentage of the revenues re-invested in the expansion of existing and/or new projects |

|   |   |  |  |
|---|---|--|--|
| <b>Lifetime /Durability</b>                   | Limited to the donated funds  | Sustainable based on the private sector’s decision   | Sustainable and could continue based on societal needs                             |
| <b>Scalability/ Expansion/genera lization</b> | Not applicable  | Limited to the private sector partner decision       | Expandable according to society's needs  |
| <b>Decision-making process</b>                | Limited to the assigned NGO/committee assigned by the public/private donors | Limited to the private sector’s appointed management | The decision is done by the elected management. (See Section 7.6.1 and Figure 7.6) |

**7.3.2 Social Assets:**

The social innovators and social entrepreneurs’ roles in SSHE are similar to their roles in the SESEM.

This case study will explore how to implement the SESEM, explained in Chapter 4, in a mega social housing project that involves the private sector, in addition to the public sector, and the community’s social assets.

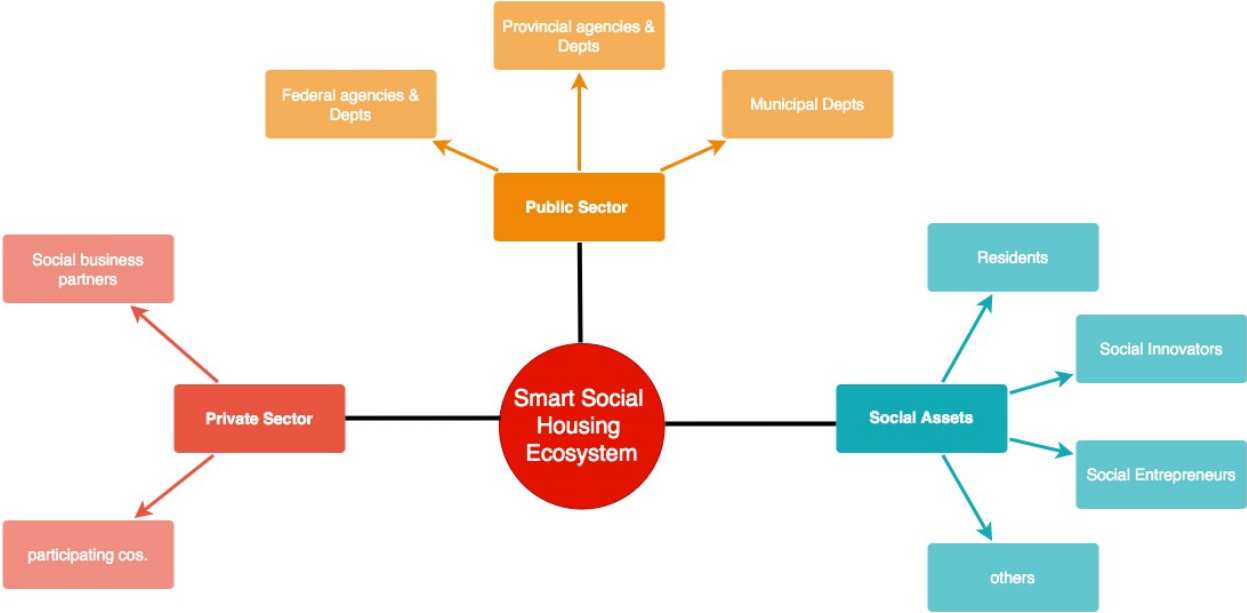


Figure 7- 2 SSHE conceptual Players

#### 7.4 SSHE Structure (Ecosystem)

The SSHE is not just social housing. It is conceptually a comprehensive ecosystem that includes the following (Figure7-3):



Figure 7 3 SSHE's conceptual Ecosystem

#### **7.4.1 Social housing units**

housing units consisting of several different housing models that are flexible and adaptable to the growing needs of older people can accommodate their requirements for internal and external mobility, in-house medical care, and advanced monitoring and communication systems connected to the healthcare centre and other SSHE units. The social housing units' models will be collaboratively designed by the social assets to mainly address the needs of older people and the other younger population segments. The design is to be made modular and to be executed using the 3D building technologies to ensure the following:

- Significantly reduce construction costs.
- Significantly reduce the construction period to a fraction of the traditional building construction period.
- Build environment-friendly units by using the mud and hay mortar to replace the traditional cement mortar. This could allow the construction of the SSHE in any area without fear of damaging the natural habitat. All other activities in the SSHE will restrict the use of non-recyclable materials and the use of fossil fuel equipment as will be mentioned in the other components of the SSHE structure.

#### **7.4.2 Work and makerspaces**

a workspace is a convenient and flexible alternative to the offices and workspaces of corporations and government agencies. It will be equipped with all the administrative and office requirements to allow the residents to plan, search, book, and execute smart self-employment and smart task activities. The makerspace is similar to the classic makerspace. It helps the residents pursue

hobbies and collaboratively explore their ideas and solutions to emerging problems and challenges.

The workspace helps achieve two purposes:

- 1) Help older people to work in a convenient and flexible manner and, also, improve their sources of income.
- 2) Provide the SSHE with a regular source of revenue to help finance the operating expenses and the expansion of housing and improvement of services.

### **7.4.3 Healthcare centre**

An advanced healthcare centre that is connected to all the housing units that need medical assistive care. Housing models are designed to be equipped with all the requirements for medical assistive care similar to the system provided in long-term care.

### **7.4.4 Social kitchen**

A central kitchen and mass catering facility that provides:

- Daily meals to the subscribed residents at an affordable rate.
- Catering inside and outside activities.

The kitchen could be subcontracted by local and external entrepreneurs to produce special meals, snacks, or nutrition items in accordance with the relevant health and food regulations. The social kitchen could be subcontracted or used by local seniorpreneurs and social innovators with collaboration of major food and meal supply chains to prepare certain meals and food items on regular basis, themselves socio-economic income generating projects.

The social kitchen thus provides employment opportunities to the residents and a source of revenue for the SSHE.

#### **7.4.5 Social farms**

The SSHE will contain several social farms within its premises, where residents could plant their own crops for domestic use and for outside markets. The farms could contain several greenhouses equipped with advanced irrigation and plantation technologies. The social farms work with the same principles as the social kitchen. It can provide healthy organic vegetables and fruits to the local SSHE needs. It could also supply food chains such as Costco, and Walmart, with certain fruits, vegetables, and other products such as flowers, seeds, etc..... The social farms provide employment opportunities to the residents and a source of revenue for the SSHE.

#### **7.4.6 Stores and warehouses**

Central stores and warehouses are essential to the routine operations and productive activities in the SSHE. These stores house a safety stock of consumables, parts, and other items needed for the operations and maintenance of the units and facilities. The warehouses store products produced in the SSHE, such as crops, prepared meals, and many other items for external use. Warehousing facilities could also be rented to residents who need warehousing as part of their operations. For example, some residents may run their online business, others may have a value-adding process where they use some components that require special storage.

The stores and warehouses are managed as financially independent units by a group of social entrepreneurs and innovators under the SSHE organization. These units provide employment opportunities to residents and revenue sources for the SSHE.

#### **7.4.7 Recreation and entertainment centre**

This centre would provide places for residents to gather, play some games, have fun, exercise, watch movies, etc. It is to be designed and equipped to accommodate seniors who use wheelchairs and other assistive equipment. For example, the doors and walkways should be wide and equipped with rails and ramps, and well lighted. The fitness facility would have some exercise equipment that allows seniors to work out while remaining in their wheelchairs or more smoothly move in and out between pieces of equipment. The basic activities would be free for residents; however, some special activities that have special value-added features may require a fee to cover the incurred costs. The centre would be managed under the same crowd-based collaborative autonomous managements as the SSHE. The special activities would be developed, organized, and managed by social entrepreneurs and innovators.

#### **7.4.8 Security & Safety System**

As with the SSHE and other components, the objective of this system is to maintain law and order and keep the SSHE safe using the same principles and techniques: sharing principles, social assets, and innovative technologies. The system will rely on sensors/detectors, communications, and AI, technologies, in addition to the social assets, where residents collaborate to do some tasks such as visual inspection, and reporting any incident or non-normal situations. They could also check on their neighbors in case of emergencies. This, in addition to automation and the use of open-source software, could save operating expenses considerably.

Figure 7.4 depicts the conceptual general components of this system and their relationship with each other:

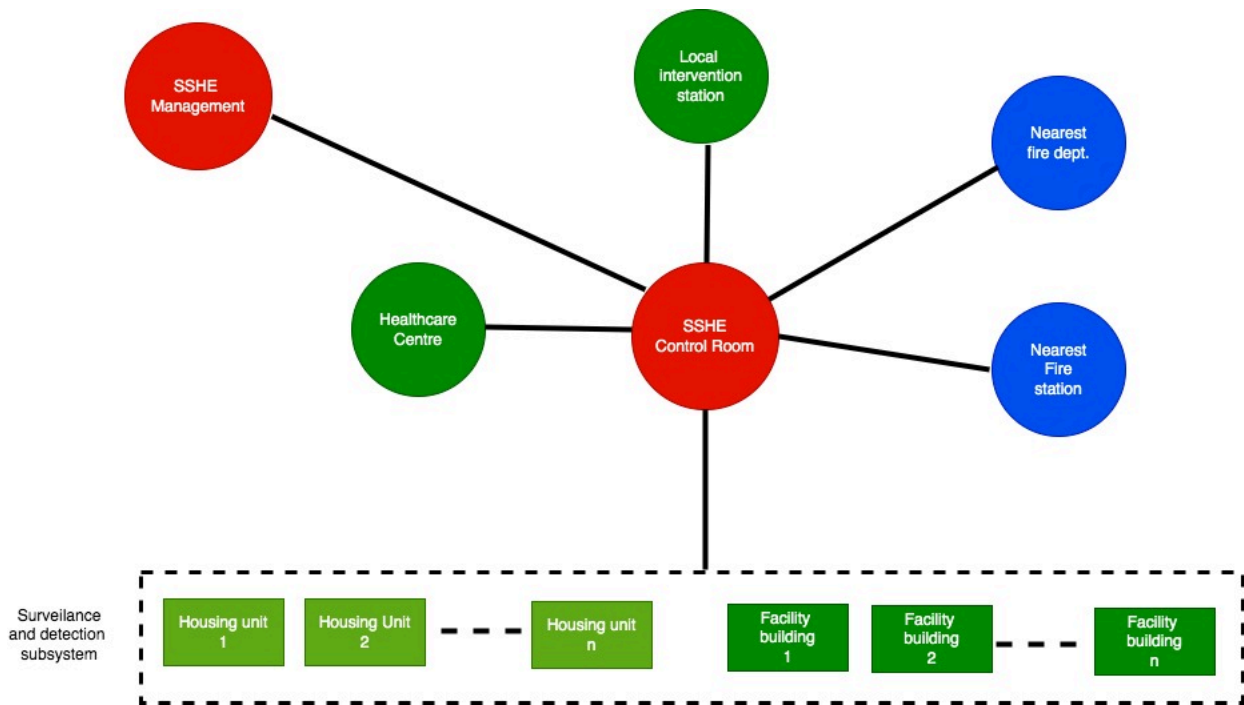


Figure 7- 4 Conceptual security and safety system

*The control room* works as the central processing unit. It connects all the SSHE units, monitors all activities, enables control officers to take necessary and timely decisions, and to coordinate the execution by the various parties (SSHE management, local intervention station, healthcare centre, nearest police station, and nearest fire station).

*Surveillance and detection network*, where all residential units and facilities are equipped with surveillance cameras, sensors, and detection devices such as smoke, fire, and leak detectors, that are connected to the control room to enable the control room officers to monitor all activities 24/7 and take the proper pre-emptive actions when needed.

*Local intervention station*, which is considered the first line of defense. It contains some drones equipped with a high-resolution camera and speakers to enable the control room officer to get a closer look when an incident occurs and communicate some instructions. It could also have an

intervention vehicle equipped with first aid equipment and driven by a well-trained driver paramedic who can help the control room and SSHE management assess the situation and provide preliminary assistance.

*Healthcare centre*, in case of any medical situation, the healthcare centre will be notified to send a nurse to give first aid assistance to whoever needs it and be prepared to receive any injuries or cases.

*Nearest police station*: the control room has a direct channel with the nearest police station in case police intervention is needed.

*Nearest fire department*: same as in the police station (5), the control room could contact the nearest fire department in case of fire or the need for a fire dept. intervention.

## **7.5 How the SSHE works**

As the SSHE is an implementation of the SESEM, its operations will be based on the three components of the SESEM: Sharing principles, social assets, and innovative technologies.

The same structure that is used in the SESEM (Chapter 4) will be used, where the management & administration, marketing, operations, accounting, and finance of the SSHE will be described.

### **7.5.1 Management & Administration**

As described in Section 4.7.1 of the conceptual SESEM management and administration, SSHE management is a crowd-based sharing process that depends on the collaborative efforts of the residents. The same process, techniques, and tools are used. The organization is a non-hierarchical autonomous, collaborative, and democratic system. The elected board works as the

coordinator/liaison among the participating partners/parties as illustrated in Figure 7-5 takes decisions based on the advice of the Advisory Committee that is made of advisors seconded by the participating partners/parties.

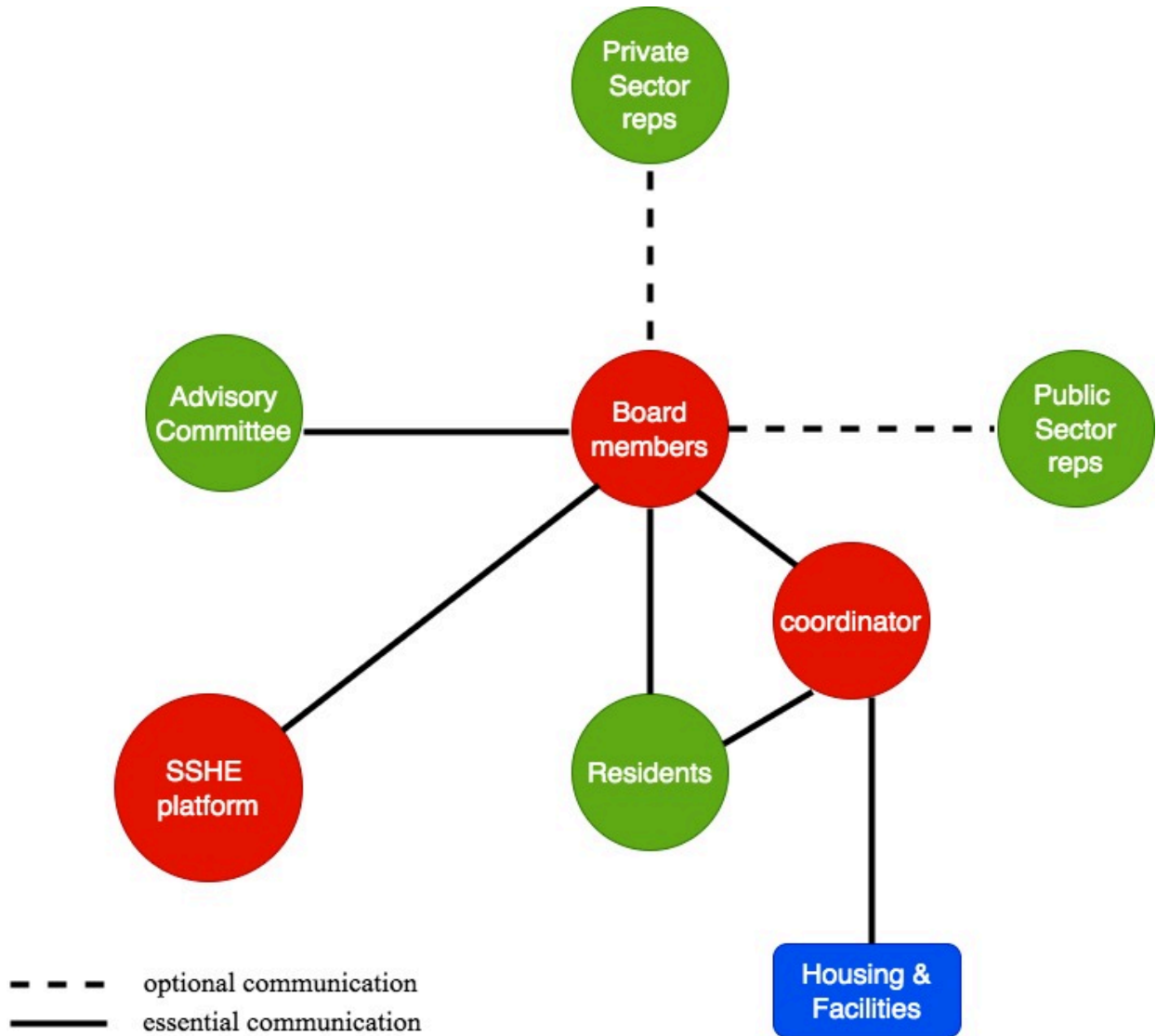


Figure 7- 5 SSHE's conceptual management system

### **7.5.2 Marketing**

The same marketing techniques, described in Chapter 4, Section 4.7.2, will be used to conceptually market the SSHE project's facilities and activities.

Marketing will be done by volunteer experts either as social participation/volunteering and/or for a nominal fee to be agreed on. The SSHE's social innovators could allocate those marketing experts via searching among the older people.

The marketing plan will address the following segments:

1. Older residents who are willing to be socially active (see Section 7.4.2 Work and makerspaces).
2. Older residents who are looking for a convenient housing model for seniors and capable of paying the rental cost at market rates.
3. Partners from the private sector companies for new internal projects
4. Customers (both private sector companies and individuals) for the SSHE products and services.

The SSHE will also be promoted as a good hosting place for the private sector's social activities relevant to the older population segment.

### **7.5.3 Operations**

Operations start with the planning for the SSHE, followed by the design, then the execution of all the phases, and eventually the operations of all the SSHE ecosystem by keeping all components working according to the plan, maintaining it comfortable for the residents, economically and socially viable for all the partners: the private and public partners, and for society.

The SSHE's operations include:

1. Construction of the housing units and the other facilities (Figure7-3) which are ongoing operations that are supervised by the SSHE management team.
2. Operations of the SSHE's facilities (Figure7.3), where each facility is operated in accordance with the objectives set by the private sector's sponsor and the SSHE's general social goals.
3. The ongoing improvement and expansion of the existing facilities, and the possible addition of new projects.

Operations are based on the basic principle that SSHE's members are not only residents but are active residents that participate in a social and productive way. In this respect the SSHE is more than a social housing compound. It should help residents to stay active, and productive, and gain some income to enable them to live healthier and happier.

The means to keep residents active differ and are based on several factors. However, here, the age factor will be discussed based on the surveys done.

One of the essential pillars of the SSHE is its creative and innovative nature, as, besides its direct creation of business opportunities via the projects it finances, it creates a healthy environment for the residents and outsiders to develop new innovative ideas and concepts in the work and makerspaces.

Residents would be selected/recruited according to specific rules and conditions. For example, the following quotas might be applied: 33% of the residents are allocated to seniors of 65 years and more. 33% for elder people of age from 50 to 65. The rest could be not age-restricted and could be

reserved for the special skills and other requirements necessary for the safe and efficient operations of the SSHE. For example, skilled workers in the 3D building and construction, the social farms, the social kitchen, and the healthcare centre workers.

Table 7-3 Proposed residence categories for the SSHE

| Criteria                        | Category 1                                | Category 2                                    | Category 3                                  |
|---------------------------------|---|---|---|
| <b>Age range</b>                | 65+                                       | 50-64   | Any age                                     |
| <b>Rent category</b>            | Market and RGI                            | RGI, market                                   | Market                                      |
| <b>Source of Income</b>         | Personal wealth, Pension, OAS, Social     | Personal wealth, social, employment           | Employment in partner companies             |
| <b>Expected needs from SSHE</b> | Residence with healthcare and social life | Residence, employment opportunity             | Residence as part of employment assignment. |
| <b>Type of employment</b>       | Optional as part of social activities     | Necessary to pay the rent and other expenses. | Assigned by the relevant private partners   |

During the selection interviews, the potential residents will be briefed on the structure of the SSHE and how it works.

Each resident will have a detailed profile specifying, besides their basic information, their qualifications, work experience, hobbies, and interests. A placement program will use the profile data of each resident to help recommend suitable employment and tasks opportunities to them, and in preparing their daily/weekly or monthly tasks schedule. The process is simple, and the workload is flexible to fit the potential worker's ability, needs, and lifestyle.

Examples are:

From category 1: the residents could choose tasks to keep them socially active such as gardening, online tutoring, etc... Category 1 residents could initiate some opportunities for others either residents and/or outsiders. For example, a senior who has solid extensive experience in renovation

could initiate, with the help of some social innovators/entrepreneurs, an online renovation consulting service, which is a SESEM's smart self-employment (see Chapter 4). The senior will provide counseling services and solutions with a cost estimate to potential customers. If the customer accepts the estimate, the subject senior will issue a smart contract and subcontract/hire someone to do the work according to their guidance and supervision. The required tools and equipment could be rented internally, if available in the local makerspace, or externally. The revenue from the project would be distributed as per the negotiated agreement recorded in the smart contract. Section 4.7 of Chapter 4 explains in detail how this can be done.

For category 2 (50–64-year-olds), as these people are relatively younger, their needs are greater requiring them to work more to satisfy their needs and pay their bills. They could work in the SSHE facilities, use the workspace to perform some smart tasks, or develop their own smart self-employment. For example, they could offer specific services needed by certain SSHE residents.

Category 3 is composed of different resident groups. The main group is of skilled experts in specific fields who are needed during the construction and commissioning of certain projects. This includes, for example, experts in operating and maintaining 3D building printers, those who construct and commission the greenhouse farms, etc. The other type of this category could be ordinary low/no-income families who are transferred from the social housing registry office. This group within category 3 is treated as the other categories (1 and 2), where they must perform some work to be able to live comfortably.

The Key difference between those who live in the SSHE and those who live outside is that the SSHE residents receive assistance in finding suitable work and are encouraged to remain active and productive in a flexible and convenient manner.

As discussed previously, mainly in Chapter 4, there are many factors that help them to stay active and productive, mainly:

- The work and makerspaces, where they could find smart tasks and the tools and equipment to take smart self-employment projects at virtually zero cost.
- The presence of social innovators and entrepreneurs in many fields who could offer advice, coaching, and counseling at reasonable and flexible cost, that could be calculated as a percentage of the gained rewards.
- The share-pay concept, as explained in Section 4.7.4 and illustrated in Figure 4-22 in Chapter 4, simplifies the transactions, exchange, and sharing of assets and services even in the absence of cash or classic credit payment means.

#### **7.5.4 Accounting**

Figure 7-6 illustrates how the accounting is done. Each resident will have an account file/number within the SSHE operating system package. The account will record all the credit and debit accounting activities of the resident. For example, all income such as the pension, old age security, social assistance, and income from tasks and employment (smart contracts on the top of Figure 7.6) will be credited to the resident's account.

On the other hand, all expenditures, such as rent, utilities, food, etc. ... will be debited to the resident's account. The net balance, if positive could be kept in the SSHE accounting or could be transferred to the resident's account with an external banking system. If the balance is negative, the resident must work for an equivalent amount or more to keep benefiting from services that go beyond the basic services.

The basic services (rental, electricity, and food) are not affected by their net balance.

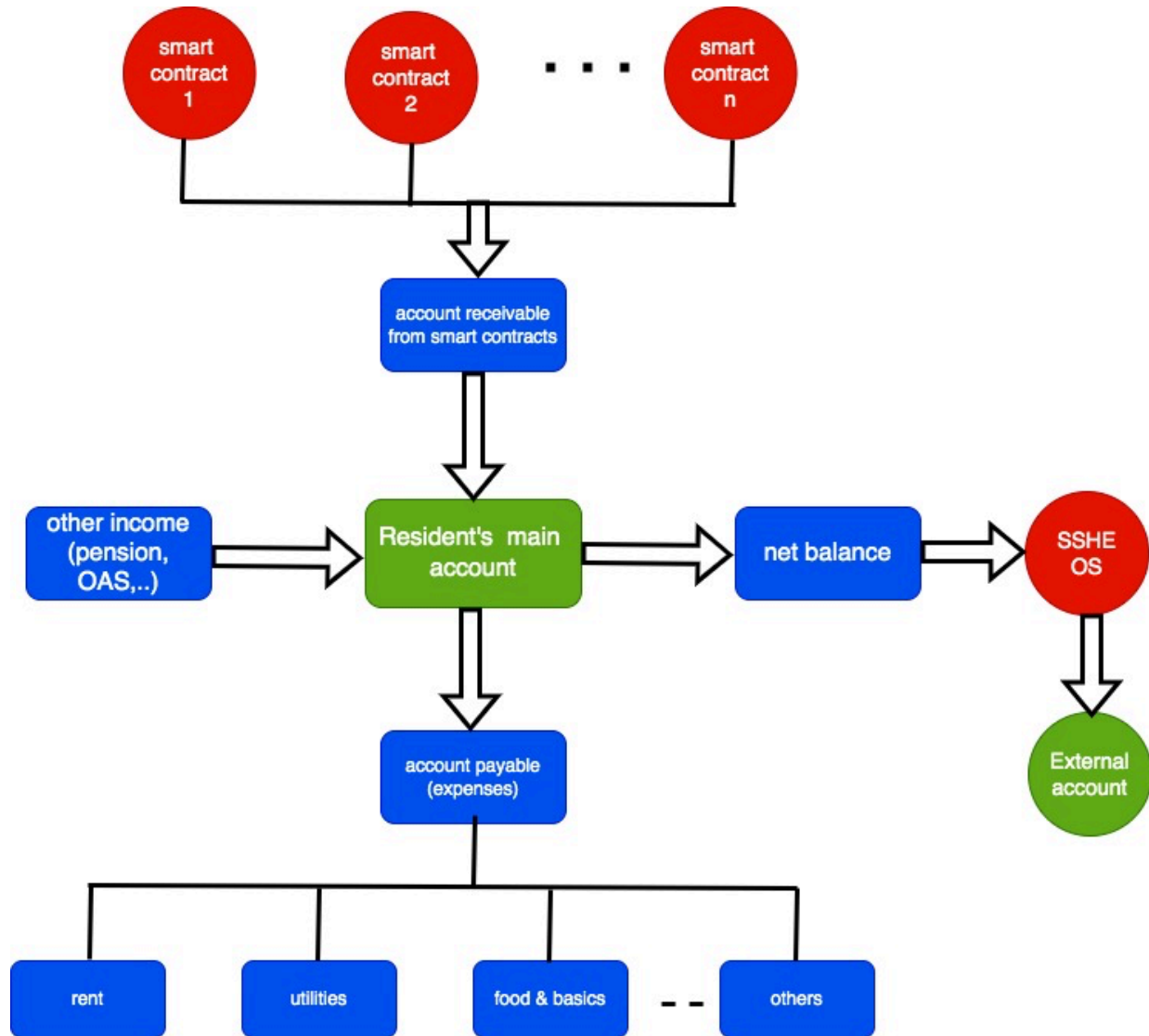


Figure 7- 6 SSHE’s conceptual accounting flowchart

### 7.5.5 Financing

To ensure sustainability and healthy growth, the SSHE should have a healthy financial position. That means the SSHE should have healthy, diversified, and expandable revenues that go beyond the regular rents and government grants.

As conceptually depicted in Figure 7-7, SSHE revenues come from two main sources:

1. Internal revenues generated from internal services offered to residents (other than housing rent), such as the SSHE share /commission from providing smart self-employment, smart tasks, social kitchen, and social farms services.
2. External revenues from the social joint venture projects with the private and public sectors.

The expenditures are also divided into two categories:

1. Operating expenditures, such as rentals, utilities, maintenance, ...
2. Capital expenditures: these represent the most important expenditures since they are actually an investment that will keep the SSHE sustainable and growing:
  - a. New internal projects needed to improve the standard of living and create new opportunities. Examples include: to create in-house spa services for seniors, where project entrepreneurs/developers may offer mobile in-house services, such as bathing, haircut, massage, and other spa-like services. Another entrepreneur may offer a monthly subscription for home cleaning services., ...
  - b. Expansion of existing projects. For example, adding units in the social kitchen to prepare pet food from leftovers and other ingredients.
  - c. Purchase of new equipment and replacement or upgrading of old equipment in the workspaces and makerspaces and other productive profit centres in the SSHE, such as the social kitchen and social farms.
  - d. Joint ventures with the private and/or public sectors: For example, a food chain retailer may invest in the SSHE to grow and package certain food items. Another private investor might establish a centre for online tutoring, benefiting retired teachers residing in the SSHE.

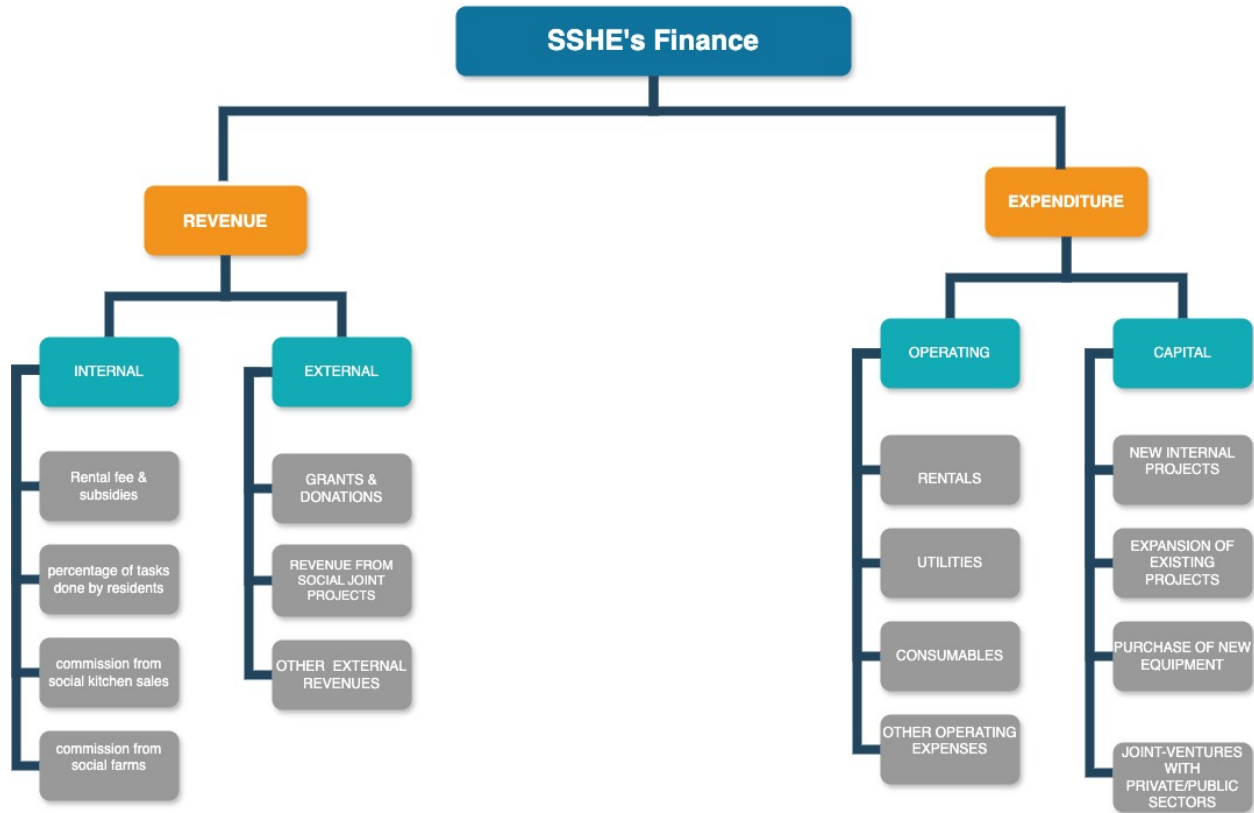


Figure 7-7 SSHE's conceptual financing

## 7.6 Chapter Summary

Chapter 7 started with a brief review of social housing in Canada and in the province of Ontario.

Section 7.2 identified and explained the SESEM's conceptual components in the Smart Social Housing Ecosystem, SSHE.

Section 7.3 listed the conceptual major players of the SSHE.

Section 7.4 listed the conceptual structural components of the SSHE: the social housing units, the work and makerspaces, the healthcare centre, the social kitchen, the social farms, the stores and warehouses, the recreation and entertainment centre, and the security and safety system.

Section 7.5 explained conceptually how the SSHE works, in the same detailed manner as in Section 4.7 of Chapter 4 and the previous chapters/case studies.

## Chapter 8: Evaluation

In this chapter I will evaluate the SESEM, its types (sub models), and corresponding case studies.

The structure of the chapter is as follows:

- a. The employment models and the evaluation criteria used in the evaluation are briefly defined.
- b. General evaluation of the selected 11 models against 10 selected criteria is conducted.
- c. Evaluation of each SESEM's type against the comparable models from the 11 models listed in Section 8.2.
- d. Assumptions, limitations, generalizability, the social and economic impact of SESEM.
- e. Summary.

The objective of this chapter is to provide a conceptual assessment and comparative evaluation of the SESEM and its three components: smart self-employment, smart task hubs, and the smart social housing ecosystem. Since SESEM and its components are presently at the design and pre-implementation stage, this evaluation employs a conceptual evaluation approach aimed at examining the internal coherence, logical consistency, and anticipated socio-economic contributions of each model. Rather than measuring empirical outcomes, the analysis focuses on testing the theoretical soundness of the design - that is, whether the proposed mechanisms, value propositions, and interaction logics of each type align with SESEM's overarching goal of promoting flexible, sustainable, and inclusive employment for older adults. The values assigned to SESEM and its sub-models therefore represent conceptually derived benchmarks — not

observed results, but reasoned estimations of the model's expected performance and transformative potential within real socio-economic contexts.

In order to conduct this conceptual validation, the assessment applied a set of interrelated evaluative criteria derived from the SESEM's core theoretical foundations. These criteria include social sustainability (the extent to which SESEM and its sub-models support inclusion, empowerment, financial independence, and community engagement among older adults), economic sustainability (the model's potential to generate income stability, flexible participation, and value co-creation within local economies), and digital sustainability (the capacity to integrate innovative technologies that enhance sharing, connectivity, autonomy, and learning). All these allow a systematic evaluation of the SESEM and its sub models against the ten stated evaluation criteria that were chosen with the older population needs in mind.

### **8.1 Employment models and Criteria used in the Evaluation**

The employment models that will be used in this evaluation are:

1. *Classic small businesses*, which are the traditional small businesses, such as grocery stores, restaurants, and skill-based small businesses, such as accounting and legal firms.
2. *Entrepreneurial small businesses*, which are created/developed by entrepreneur(s), based on emerging market needs, or improve on a classical small business with technology.
3. *Franchised businesses*, as defined in Chapter 4, are small businesses developed by a franchisor entrepreneur, who offers the concept as a complete package that includes the brand name, training, ongoing support, and marketing for small investors.
4. *Smart self-employment businesses, SSEs*, which is the first type of SESEM that was explained in Chapters 4 and 5.

5. *Putting-out systems of work*, which was a common model in the 19<sup>th</sup> century in Europe, before World War II, in which the merchant (equivalent to nowadays employer) and the producer (equivalent to an independent contractor), agree to perform a task under contract. (See Section 2.3 Brief History of work).
6. *Piecework* which is the decomposition of complex contracted work into a sequence of simpler tasks that can be done by ordinary workers with minimum training and experience.
7. *Standard Employment Relationship, SER*, is the standard full-time employment model
8. *Gig work* as defined in Section 2.3 of Chapter 2: Literature Review.
9. *Smart Tasks* as explained in Chapter 6: Smart Tasks Hub, STH.
10. *Smart Projects: as explained in Chapter 7: Smart Social Housing Ecosystem.*
11. *Smart Ventures*. Here it refers to the extrapolation of smart social housing ecosystem towards the smart city concept as mentioned in Chapter 9: Conclusion and Future Research.

These 11 models were chosen to represent the three main employment categories: self-employment, standard employment (or employer-controlled employment), and project employment. The other models, that were not among the 11 models, may resemble one or more of these 11 models. For example, the platform employment model, such as online trading platforms and Uber, are similar to gig work, and smart tasks. Among the 11 models, I included two historical systems—the *putting-out* system and *piecework*—to enable a longitudinal evaluation spanning the past, the present, and the future.

Ten business model criteria are chosen, based on their significance and relevance to the research.

The main criteria that are used in the evaluation and comparison are:

1. *Income*: this includes all the rewards and compensation the model's user receives from using the subject model. It may take various forms as salaries, wages, compensation, rewards, overtime, and bonuses.
2. *Employer/employee power relationship* is the power relation between the employer and the employee. For example, in the SER, the employer is in almost full control over the decision-making regarding important issues, such as wages, and working hours, while in the smart self-employment, the member/user has relatively more power.
3. *Risk* indicates the level of risk of the subject model. Risky models are non-stable and surrounded by threats that may cause their failure. Examples of such risks are financial risks (limited funds), recession, lack of the required skills and technology, to name few.
4. *The barrier to entry* indicates how difficult to enter the subject model. The higher the barrier, the more difficult entry becomes. For example, the classic self-employment and franchise models require start-up capital and basic skills in operations, and accounting. On the other hand, the old piecework and the gig work require only basic skills/knowledge of the tasks to be performed, which are normally not complicated.
5. *Employment stability* indicates the level of stability the employee/user achieves from the model, whether it is short-term, such as smart tasks. Smart self-employment or longer term such as the SER.
6. *Independence* indicates the level of freedom the user has in the model. For example, all the self-employment models (indicated with blue color in the indicator's bar charts in the following graphs) have more independence compared to the SER model.

7. *Flexibility* indicates how the model can adapt to the employees' demands and needs. Examples include timing, duration of work, entry, and exit conditions, and the ability to change tasks or positions.
8. *Sharing and Collaboration* indicate (a) the extent of resource and asset sharing and (b) the level of collaboration among participants in the model.
9. *Technology* indicates how technology is utilized in managing the subject model. This does not refer to the technology used in the core goods and services offered. For example, a model may offer classic services to customers but use state-of-art technology in management, accounting, and marketing.
10. *Career development and training* refer to the training and development opportunities available to the user/member of the subject model. These could be official training program, on-job training, or collaborative training, where the newcomers join an experienced individuals or groups to gain required skills.

## **8.2 Evaluation of SESEM**

As mentioned earlier, SESEM was developed primarily to simplify the process of creating employment opportunities for the older population and possibly other underprivileged groups. These opportunities are not only easier and faster to access but also convenient and flexible for the older population.

The development process of SESEM originated from the existing small business models (the classic, entrepreneurial, and franchise models) as described in detail in Chapter 4.

The main reasons are:

1. Small businesses are simple in structure, and organization and are relatively independent, especially from the influence of big corporations. (See Table 8-1).
2. I have considerable prior experience in the theory (my MBA from Concordia University specialized in small business management and entrepreneurship) and practice (over 25 years' experience as a small business consultant and small business owner/manager).
3. The older population tends to pursue small businesses in later life, (Ratten, 2019). The percentage of self-employed seniors is growing especially among older women, (Uppal, 2015).

Based on the feedback from a selected sample of older people and the relevant literature review (Sections 2.3 and 2.4) the SESEM has a version that includes smart tasks, for those who are not into entrepreneurial and self-employment ventures. Smart social housing was developed to solve a major chronic problem for seniors, namely a suitable housing model for the older population that accommodates their healthcare and physical needs and also helps them stay socially active and develop a work-life balance tailored to their needs.

The 11 models used for the evaluation are divided into three sets:

1. The self-employment set, identified by the blue colors in all the graphs and tables used hereunder for the evaluation.
2. The employer-controlled employment set, identified by the green color, and
3. The project employment set is identified by the orange color.

The evaluation here will be done in three parts:

Part 1 will evaluate the models against the three SESEM pillars, the sharing principles, social assets (social innovation and social entrepreneurship), and Technology as shown in Figures 8-1 to 8-4.

Part 2 will use correlation among three of the criteria: risk, income, employer power- employee power. These are demonstrated in Tables 8-1 and 8-2.

Part 3: Each of the remaining criteria will be demonstrated, in an estimated qualitative score against the 11 models in a bar chart format. The Y-axis shows the level of the subject criteria against the 11 selected models. The Y-axis has three levels: low, medium, and high.

In Figure 8-1, the 11 models are arranged chronically along the timeline from the older, on the left, to the newer on the right. They are also arranged according to the level of sharing and collaboration in each of them, from the individual-based on the left to the crowd-based models on the right as follows:

- The individual-based (non-collaborative) models, such as the classic and the entrepreneurial small businesses models.
- The corporate-individual (collaboration under the corporation/employer control), such as the old piecework, SER, and franchise models.
- The crowd-based collaboration, such as all the SESEM types.

Note that although smart tasks are managed as crowd-based systems, most task demands come from corporations, making them relatively employer-controlled.

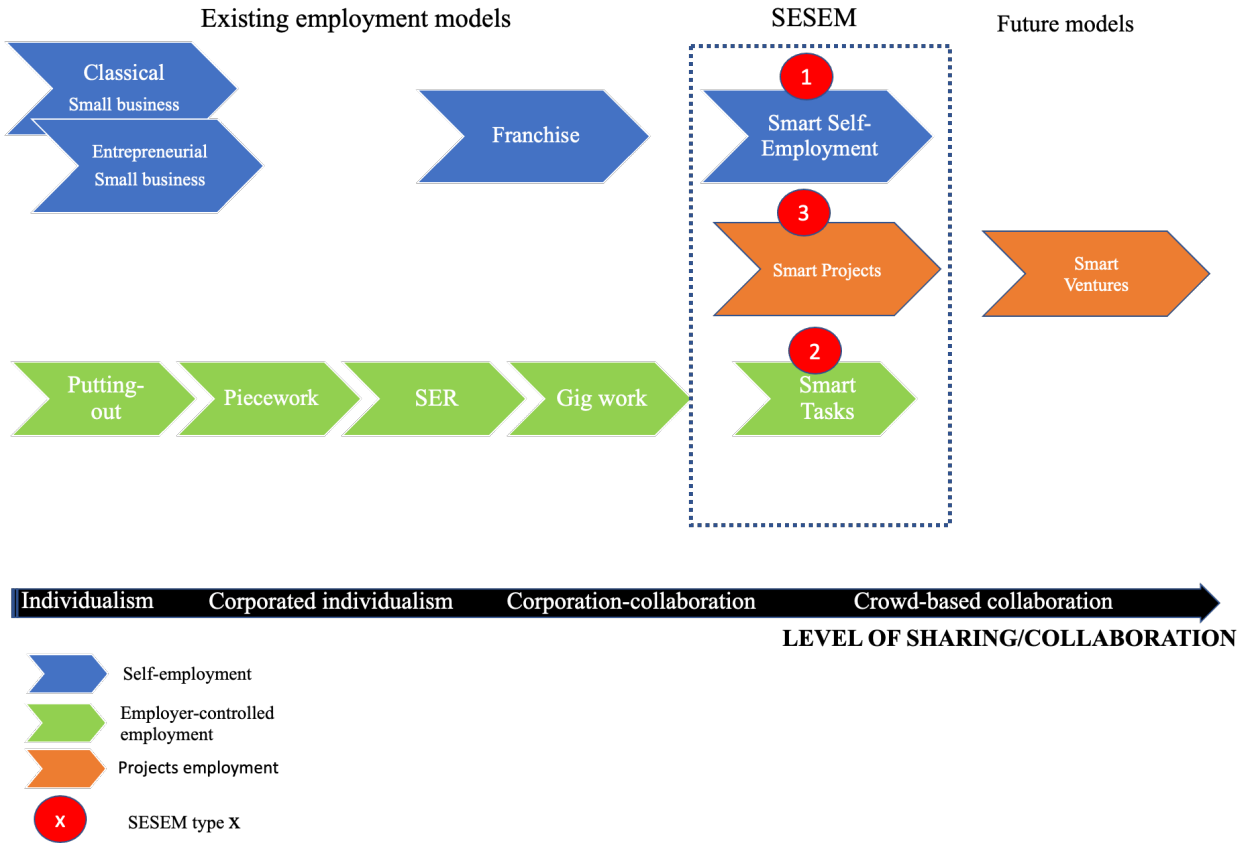


Figure 8- 1 Distribution of models across the level of sharing and collaboration

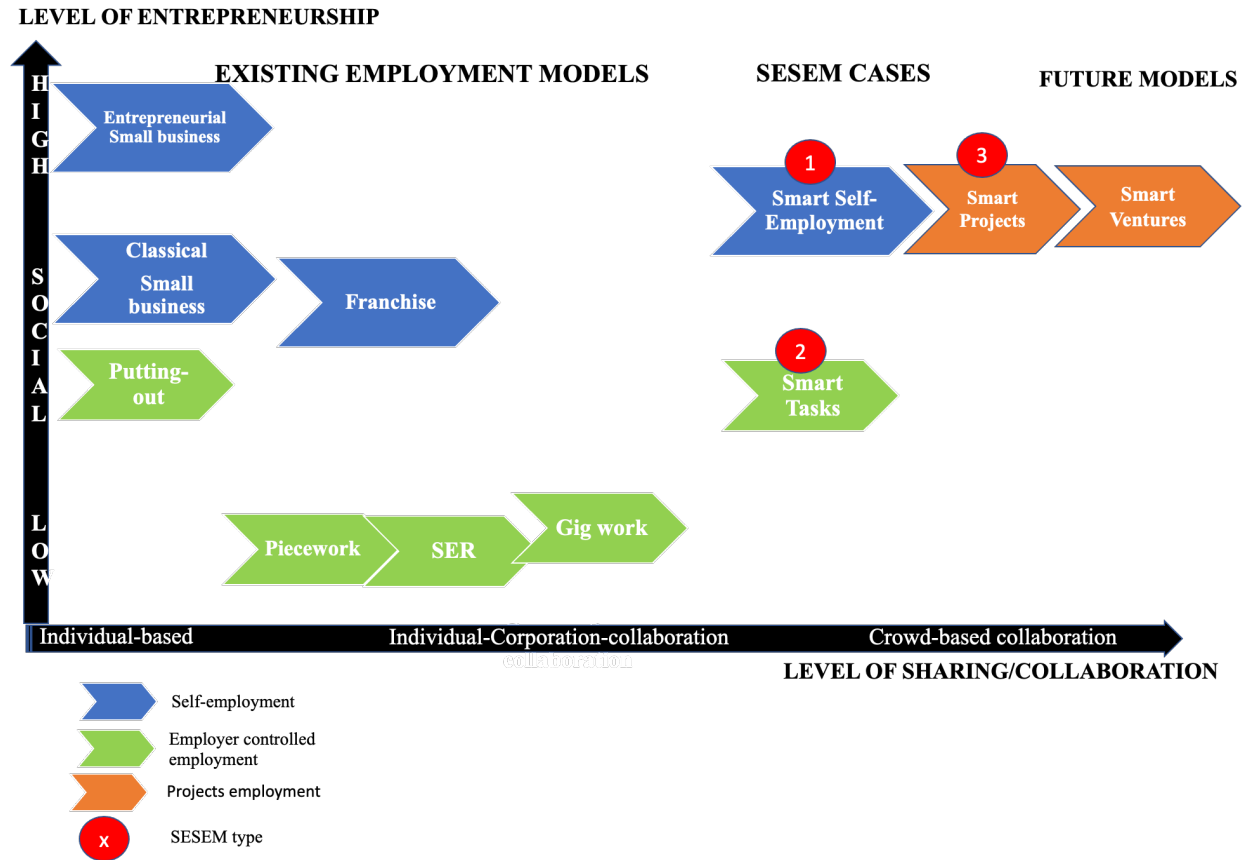


Figure 8- 2 Distribution of models across level of entrepreneurship

In Figure 8-2, the vertical axis represents the level of entrepreneurship, which is divided into three categories: low, medium (social), and high entrepreneurship. Social entrepreneurship is considered medium level as compared to the high competitive individual entrepreneurship. At first glance, we notice that most of the employer/corporate-controlled models are in the low entrepreneurship region, while all of the self-employment models lie in the medium to high entrepreneurship region. All the three types of SESEM are in the social entrepreneurship region and at the crowd-based collaboration level, which is one of the main characteristics of SESEM.

The position of crowd-funded entrepreneurial ventures within Figure 8-2 is not static. Instead, its position determined by two primary variables that correspond to the graph's axes (the sharing /

collaboration (X-axis) and the Level of Entrepreneurship (Y-axis)). The placement of crowd-funded ventures along the X-axis depends on the depth of the funders' involvement. If the crowd acts merely as silent or passive financiers, the level of sharing is low, positioning the venture toward the left of the graph. Conversely, if the funding group actively participates in decision-making and operational roles, the level of sharing is high, which moves the position toward the far right.

The placement crowd-funded ventures along the Y-axis is determined by the degree of innovation. Ventures involving novel technologies or entering new markets are positioned toward the top (high entrepreneurship), whereas traditional or 'classic' ventures are positioned lower (low entrepreneurship).

For example, an ambitious venture developing new technology, financed and actively managed by a small group of equal partners, would demonstrate both high entrepreneurship and high sharing. Consequently, this venture would be located in the upper-right quadrant, adjacent to the 'Smart Ventures' category.

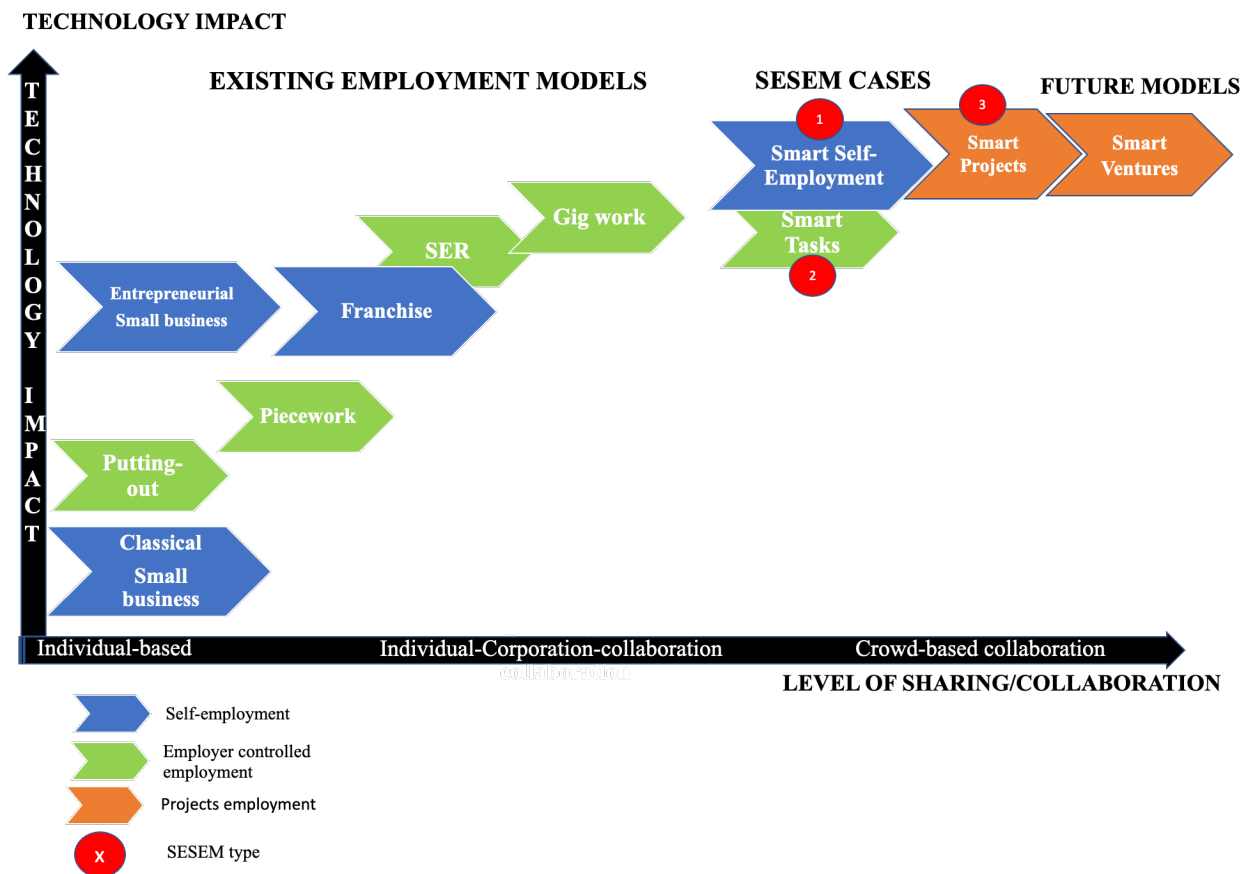


Figure 8- 3 Impact of Technology on models

Figure 8-3 indicates that all the three types of SESEM use, in their operations, a high level of technology. This explains their ability to optimize the crowd-based collaboration, which is made possible by ICTs, as explained in Chapter 4. The Technology here refers to the one used in the model's structure and operations, not in the production of goods and services offered by the subject model.

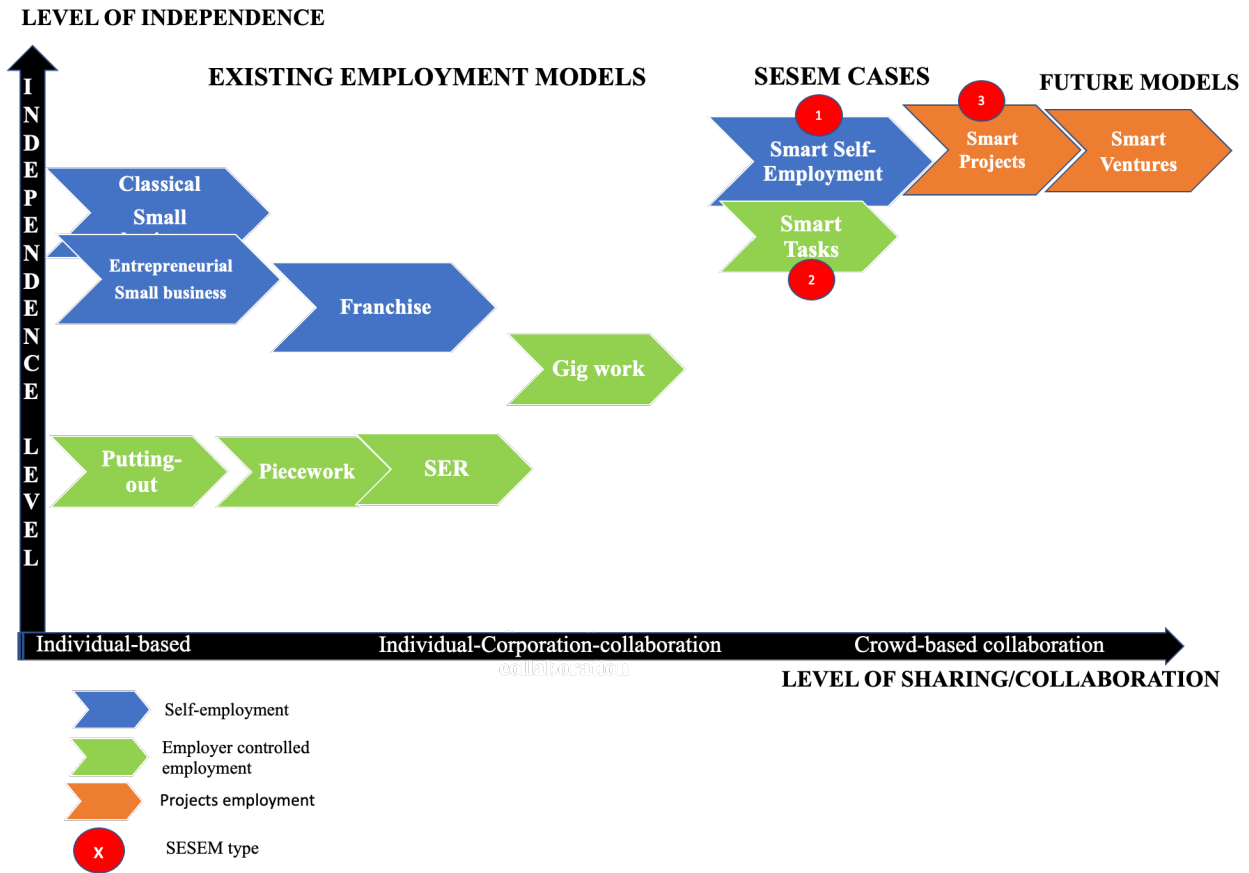


Figure 8- 4 Level of Independence in models

Figure 8-4 shows the distribution of the 11 selected business models against the “Independence Level” or freedom from the influence of large corporations. It shows that all the SESEM types enjoy a higher level of independence. Even the smart tasks type, which depends on large corporations for its operations, is still enjoying a relatively higher level of independence as compared with the gig work model.

In part 2 of the evaluation, I use tabulated correlative comparison between two correlated criteria, where one of the correlated criteria is put in rows, while the other is in columns. Both columns and rows are classified into three levels: High, Medium, and Low, as demonstrated in Tables 8-1 and 8-2 below.

Table 8- 1 Risk versus Income Relationship

|      |        | INCOME    |                         |                                 |  |
|------|--------|-----------|-------------------------|---------------------------------|--|
|      |        | LOW       | MEDIUM                  | HIGH                            |  |
| RISK | HIGH   |           | CLASSIC SELF-EMPLOYMENT | ENTREPRENEURIAL SELF-EMPLOYMENT |  |
|      | MEDIUM | PIECEWORK | PUTTING- OUT<br>SER     | FRANCHISING                     |  |
|      | LOW    | GIG WORK  |                         | SMART SELF-EMPLOYMENT ★         |  |
|      |        |           |                         | SMART TASKS ★                   |  |
|      |        |           |                         | SMART PROJECTS ★                |  |
|      |        |           |                         | SMART VENTURE                   |  |




Table 8-1 shows the correlation between Risk and income. Generally speaking, higher income is associated with higher risk. The table shows that over 80% (9 out of the 11 models) lies in the low and medium risks, indicating the tendency of the existing and potential models towards less risky models. The two high-risk models are both self-employment types.

One of the main objectives of SESEM is to minimize the risk. That is why all three SESEM types (identified in Tables 8-1 and 8-2 with a red star on the right) are in the low-risk medium-income zone. The SER is relatively riskier than all SESEM types, with a relatively similar level of income.

Table 8-2 maps the 11 models between the two opposing powers: the employer's power versus the employee's (user). Here over 60% (7/11) of the models are located in the 'high employee power'

zone, versus 36% in the ‘high employer zone. indicating a trend towards more independent models. SESEM’s types, however, are evenly distributed among the three levels of employer’s power to accommodate the trend toward more freedom, and yet benefiting from the resources, technologies, and experience of the private sector employers.

Table 8- 2 Employer/Employee Power relationship among employment models

|                |        | EMPLOYEE POWER |  |   |
|----------------|--------|----------------|--|---|
|                |        | LOW            | MEDIUM   | HIGH  |
| EMPLOYER POWER | HIGH   | SER            | GIG WORK   | SMART PROJECTS           |
|                |        | PIECEWORK      |  |   |
|                | MEDIUM |                | PUTTING- OUT   | FRANCHISING   |
|                |        |                | SMART TASKS  |   |
|                | LOW    |                |  | CLASSIC SELF-EMPLOYMENT   |
|                |        |                |  | ENTREPRENEURIAL SELF-EMPLOYMENT   |
|                |        |                |  | SMART SELF-EMPLOYMENT  |
|                |        |                |  | SMART VENTURE   |

Part 3: As mentioned earlier, each of the remaining criteria is shown across the 11 models in Figures 8-5, 8-6, 8-7 and 8-8.

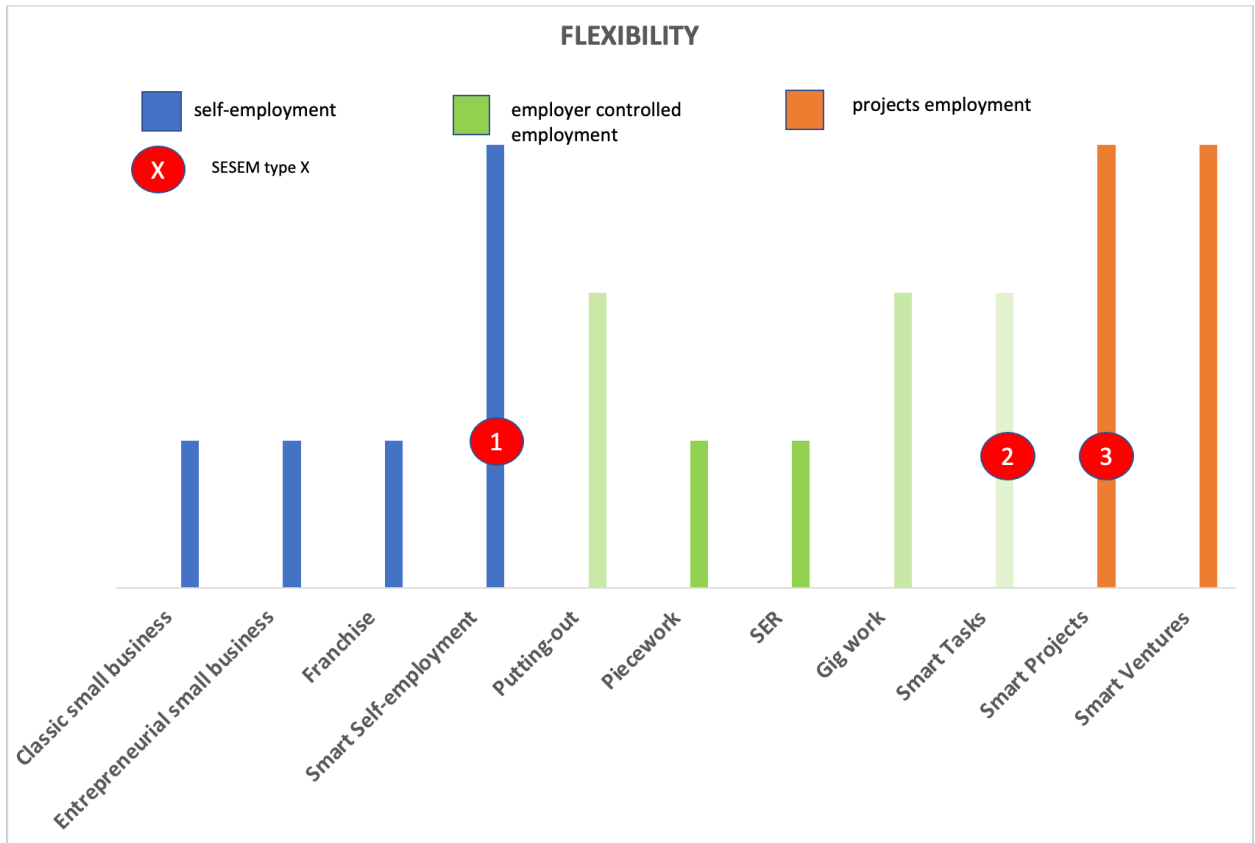


Figure 8- 5 Flexibility across the employment models

Figure 8-5 indicates the level of flexibility, from the workers' perspective, across the models. Both the self-employment models and the employer-controlled models have a lower level of flexibility, while all the SESEM types have a higher level of flexibility. As mentioned in Chapter 4, SESEM was developed to have a high level of flexibility and convenience for older workers.

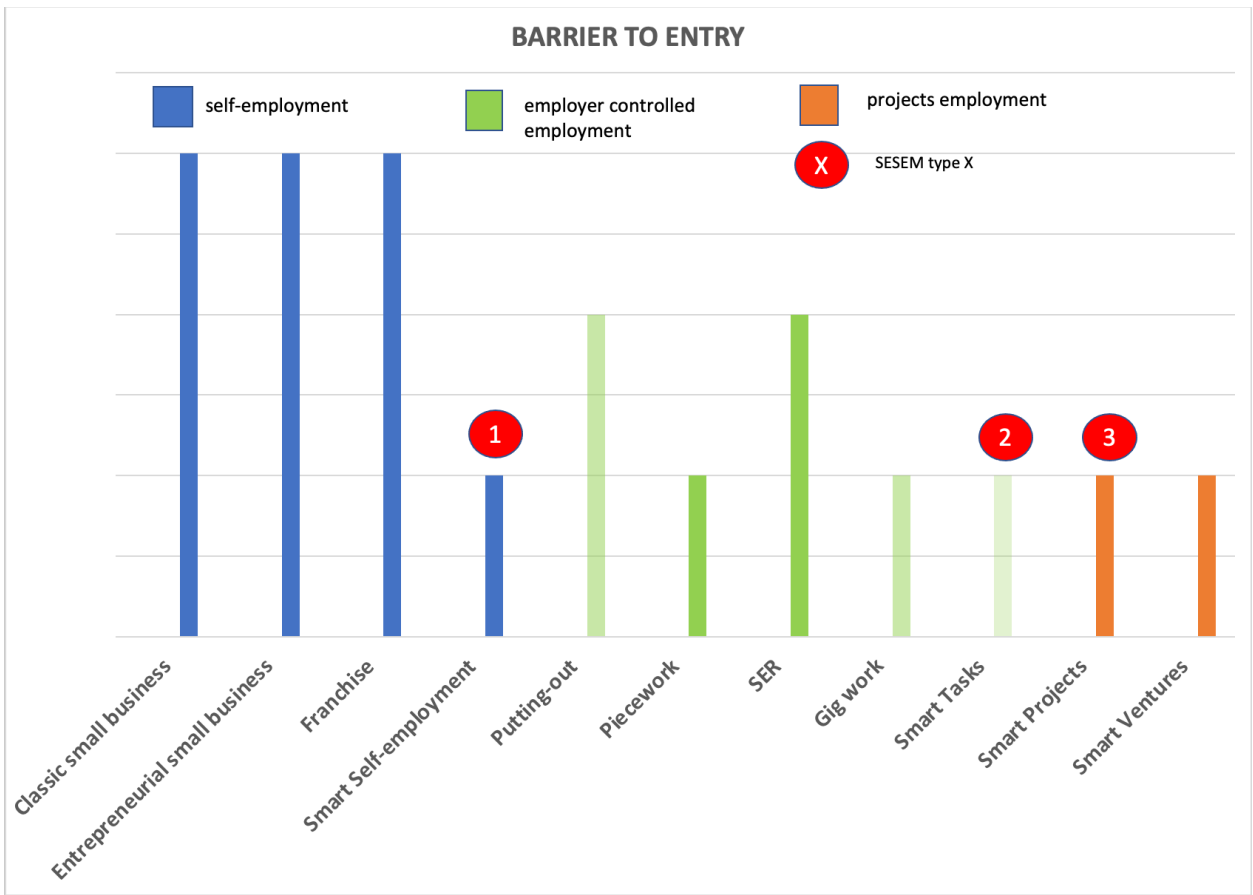


Figure 8- 6 Barrier of Entry across the models

Figure 8-6 shows that self-employment, including the franchise models, has the highest barrier to entry due to the start-up capital costs and basic small business management skills requirements. Smart self-employment, along with the other types of SESEM have a low barrier to entry, thanks to the sharing of assets and resources, and the utilization of the social assets, as explained in Chapter 4.

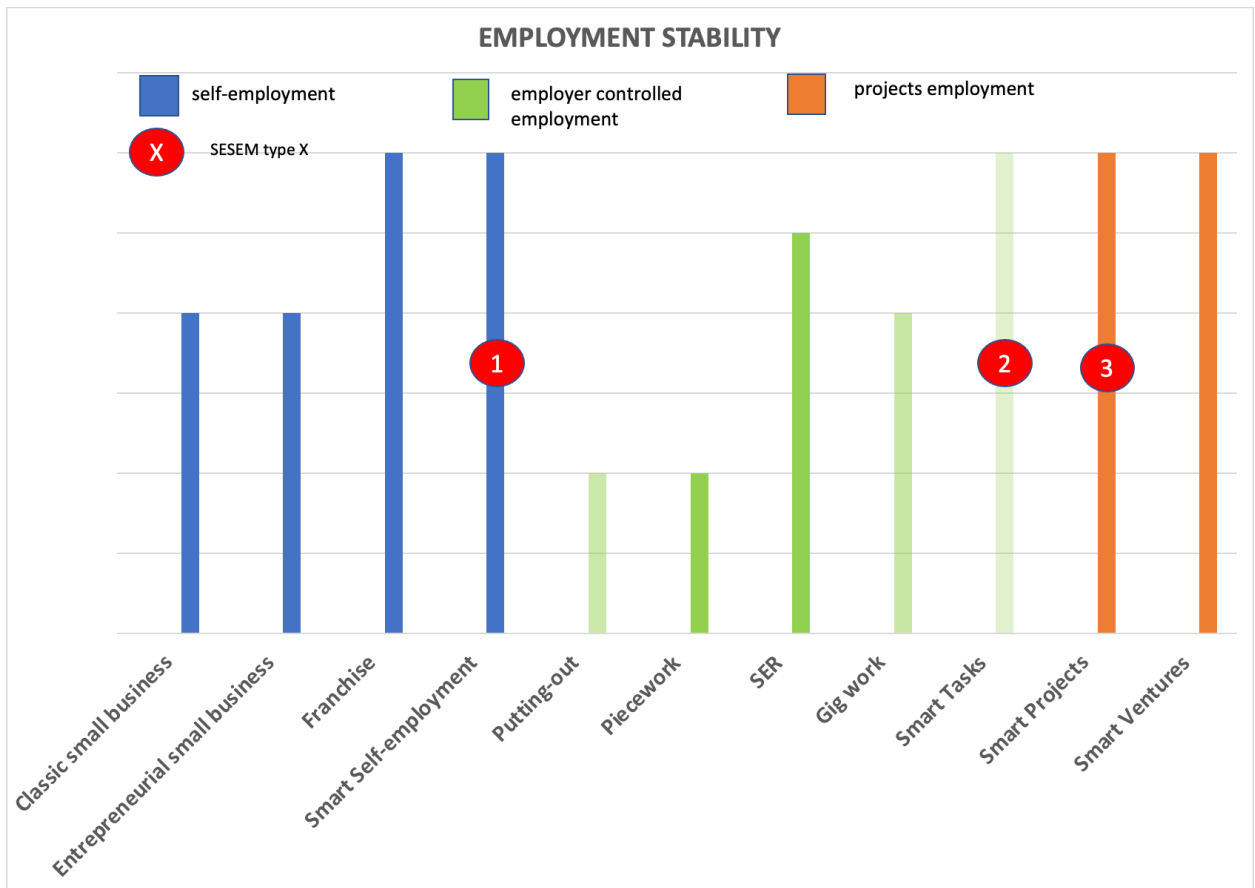


Figure 8- 7 Employment Stability across the models

Figure 8-7 shows the relative level of employment stability from the worker's point of view, particularly for older workers. All the SESEM types have a higher level of employment stability due to the embedded sharing and collaborative nature of their structure.



Figure 8- 8 Career Development and Training across the models

Figure 8-8 approximately compares the Career development and training among the models. Employees in the SER of large corporations benefit from the highest level of career development and training. However, all SESEM types are designed to accommodate above-average career development and training systems. This could be due to the sharing of assets and resources, collaboration under the guidance of social innovators and entrepreneurs, and the use of open-source materials for training and development.

The SESM's version of self-employment (the Smart Self-Employment, SSE) is developed to overcome the major obstacles in the classic and franchise self-employment models, as discussed in Chapters 4 and 5.

### **8.3 Evaluation of the SESEM types and Case studies**

In this section evaluate each of the three types of SESEM against similar available models. The selected case studies will also be compared with specific relevant models to comparatively evaluate each SESEM's type against the major criteria in its respective field.

#### **8.3.1 Evaluation of Type 1- Smart Self-Employment, Case Study 1: Smart Vehicle Maintenance Centre, SVC**

SESEM's type 1 addresses the self-employment field, and the vehicle maintenance and services field was chosen to be the case study for this type.

Table 8-3 (which is identical to Table 4-5 in Chapter 4) compares SESEM's smart self-employment (SSE) type against the two most important and widely spread self-employment models: the typical entrepreneurial small business model and the franchise model.

From Table 8-3 I can conclude the following:

- 1) The franchise model was developed to make self-employment more appealing to newcomers, by mitigating the main obstacles against potential newcomers, namely the start-up package, risk, skills required, and the dedicated hard work for a longer period to reach the break-even period. It succeeded in lowering most of them, however, it remains relatively expensive as it replaces the start-up capital with the franchise initial fee and the other fee such as monthly royalty and marketing fees.
- 2) With the rapid technological development, it becomes harder and more expensive for small business owners to keep up with these developments in both equipment upgrades and labor retraining.

- 3) The SESEM smart self-employment offers a practical solution to all these difficulties in 1) and 2).
- 4) The SESEM-SSE solution is not without a cost. The relative profit margin from the SSE is low compared to the high and medium margins in the previous models. Besides, the SSE user needs to adapt to socially work in groups and teams.

Table 8- 3 Comparison between the Classical small business, the Franchise, and SESEM

| <b>Comparing Criteria</b>                          | <b>Typical Entrepreneurial Small Business</b> | <b>Franchising</b>                                   | <b>SESEM's Smart Self-Employment, SSE</b> |
|--|---|--|---|
| <b>Risk</b>  | High  | Medium-low   | Very Low                                  |
| <b>Capital requirement</b>                         | High  | High   | Low to none                               |
| <b>Start-up period</b>                             | Three years avg.                              | Less than a year                                     | Not required/needed                       |
| <b>Labor costs long and short term</b>             | High  | High   | Short-term partnership                    |
| <b>Training &amp; Retraining</b>                   | Life-long trial and error                     | Initial start-up and when adding new service- costly | Basic knowledge                           |
| <b>Profit margin</b>                               | High  | Medium   | Low                                       |
| <b>Model's life</b>                                | Medium  | Medium   | Very short                                |
| <b>Technology adaptation &amp; upgrade</b>         | Hard  | Hard   | Easy -just change to newer equipment      |
| <b>Competition</b>                                 | Very high                                     | High   | Low                                       |
| <b>Maneuvering &amp; Survival in a bad economy</b> | Low   | Low  | High                                      |

In Table 8-4 (which is the same as Table 5-2 in Chapter 5), the smart vehicle maintenance centre is compared with the two major vehicle maintenance facilities models, the privately-owned

workshops (mostly family-type business) and the franchise type such as Mr. Lube, Midas, and Mr. Muffler.

Here the comparison takes a more practical perspective than in the one in Table 8-3:

- 1) Ownership/legal form, Management, operations, marketing, and ongoing support criteria are compared here, to show how SVC is developed to minimize the operating cost and distribute responsibilities among the members/users and provide the technical and other required supports almost for free, thus, making SVC competitive and sustainable.
- 2) Despite the collaborative nature of the SVC, which some may consider less effective compared to the entrepreneurial ventures (with single-person decision making), or franchising (where specialized management teams make decisions), the combined forces and resources driving SVC can still keep it competitive, offer value (quality/price) to customers and the community, and remain sustainable.
- 3) During the economic and/or financial crises, the SVC can survive with minimum losses compared to the other two counterparts, which could be affected, with many potentially facing bankruptcy.
- 4) Though the level of freedom (independence) of the SVC is relatively low as compared to the privately owned and franchised workshops, the equitable sharing of the responsibilities and rewards provides the SVC more resources and dedicated members who consider SVC as their own business rather than viewing themselves merely as workers.

Table 8- 4 Comparing the Privately-owned, Franchise, and SVC workshops

| <b>Criteria of Comparison</b>                 | <b>Privately-owned vehicle Workshop (classic type model)</b>                  | <b>Franchise vehicle maintenance Workshop</b>                                    | <b>SVC</b>   |
|---|---|--|--|
| <b>Ownership/legal form</b>                   | Privately-owned by one or more partners                                       | Licensed by one or more people from the franchisor.                              | Collaboratively owned by the members: crowd-based ownership  |
| <b>Management</b>                             | Managed by the owners or their representative                                 | Managed by the franchisee under strict supervision from the franchisor           | Collectively managed by the members and users  |
| <b>Ongoing coaching and technical support</b> | To be externally contracted/purchased   | By franchisor as part of the franchise agreement.                                | Collaborative efforts by experts' members and social innovators.   |
| <b>Marketing</b>                              | Mostly traditional, slowly moving to digital                                  | Both traditional and digital   | Mostly Digital, but also by networking, and word-of-mouth.   |
| <b>Motivation</b>                             | Profit  | Profit   | Collaborative work, social values, and profit.   |
| <b>Quality/Price (Value)</b>                  | Driven by the market demand and competition                                   | Driven by market demand and competition  | Driven by the combination of social values and market demand.  |
| <b>Operations</b>                             | Homogeneous daily routine   | Homogenous daily routine   | Dynamically challenging operations, based on both the members and customers that use sophisticated and innovative digital controls.          |
| <b>Space and equipment use factor</b>         | Limited, depends on the market and availability of workers                    | Limited and restricted to franchisor policy, demand, and availability of workers | Could be optimized to reach the maximum possible, due to the ease of entry/use both users and customers and flexibility to adjust to changes |
| <b>Accounting &amp; Revenue distribution</b>  | Routinely done based on the business plan. Revenues are controlled by owners. | Routine bookkeeping. Revenues are distributed according to the                   | Accounting is done via the smart contract for each task. Revenues are democratically distributed among all members, and                      |

|  |  |   |   |
|--|--|---|---|
|  |  | franchise agreement and franchisee decisions.   | partners, according to the terms of the smart contract.   |
| <b>Timing/rewarding and compensation systems</b> | Regular timing/ hourly rate with a bonus for experienced                   | Regular timing/ hourly rate.  | Flexible timing/flexible task-based charging (reward) system.   |
| <b>Impact on Society</b>                         | Society is considered as the customers' base and market.                   | Society is considered as the customers' base and market.  | Strong organic relation, where the society is considered as the major resourceful partner.                                    |
| <b>Impact on Economy</b>                         | An important component in the economy: jobs generator and GDP booster      | An important component in the economy: Jobs creator and GDP booster.                              | An important component in the economy and social economy: enhance productivity and innovation.                                |
| <b>Impact on the members/users</b>               | High positive impact on the owners, with limited impact on the workers.    | Positive impact on the owner (franchisee) and the franchisor, with limited impact on the workers. | Equally distributed impact on all the stakeholders/members, with good potential to grow depending on each member's potential. |
| <b>Development/ Upgradeability</b>               | Driven by profit and the owners' entrepreneurial decisions and priorities. | Driven by the franchisor's plans and franchise agreement.   | Driven by the availability of the technology / upgrade.   |

**8.3.2 Evaluation of Case Study 2: Smart Tasks Hub, STH**

Case study 2 demonstrates the application of SESEM type 2, which addresses the needs of those who prefer to work in the standard employment system, or a more convenient version of SER.

The Smart Tasks Hub, STH, which is explained in Chapter 6, is evaluated here in comparison with the SER, and gig work models.

Table 8-5 (originally Table 4-6 of Chapter 4), compares SESEM type 2 with the SER and gig work against specific criteria, which were explained in Section 4.4 SESEM Employment Types in Chapter 4.

Table 8-5 illustrates how the SESEM's smart tasks are developed to address features that present obstacles for older workers, such as those related to productivity, profitability, and market positioning of the employer – especially during financial difficulties, which normally lead to ageism against them. It also addresses to the flexibility of working conditions and timing. Table 8-5 also shows how the SESEM Smart Tasks Hub, STH, try to fill the gaps in the gig work model:

1. The contracted terms of the gig work and smart tasks are flexible.
2. The power relationship in the smart tasks' hub is more balanced between the user (employer) and the tasker (employee) compared to the other models.
3. Unlike gig work, the smart tasks hub provides the location, utilities, and help in the training and protection of workers.
4. Payment in STH is similar to gig work; however, a very small percentage of payments is deducted to cover the administration, overheads, insurance for workers, training, and legal and other services.
5. Unlike gig work, which is employers and market demands, the STH is workers driven. It will continue to search for the potential demand from all subscribers/users in the job/tasks market. The STH may explore creating projects (such as in SESEM's smart social housing) or connecting users to existing ones.
6. While the rewards and the long-term goodwill value of gig work platforms benefit only platforms' owners, all the benefits of STH platform are reinvested back into the STH to improve services, upgrade technology, and create new ventures.
7. As the STH is primarily designed for older workers, it will provide all the supporting services they may need, including coaching, counseling, training, insurance, and the protection of their rights.

Table 8- 5 Comparison between SER, Gig works, and SESEM's STH

| <b>Criteria</b>  | <b>Standard Employment Relationship, SER</b>   | <b>Gig /freelance works</b>   | <b>SESEM's Smart Task Hub, STH</b>  |
|--|--|---|---|
| <b>Legal arrangement</b>                               | Medium to long-term binding legal contract/agreement   | Pay-as-you-go agreement   | Pay-as-you-go agreement   |
| <b>Relationship power</b>                              | Power rests in the employer's hand, where the employer makes the rules following the work laws and regulations             | Work's end-user (employer) makes the work's rules. There is still a lack of laws and regulations governing the gig works. | Though the work's end user makes the rules about the tasks, the STH can provide workers with vital legal and technical advice.  |
| <b>Means and place of work/production requirements</b> | Employers supply the place, tools, equipment, and administrative logistics for work, which requires a big operating budget | Workers supply the place and equipment for the work.  | Place and equipment are provided in a special arrangement where the costs and benefits are shared by the workers, as part of the SESEM's smart tasks hub arrangement. |
| <b>Flexibility &amp; convenience</b>                   | Not flexible for both the employer and employee due to the medium to long term contractual agreement                       | Flexible for both the employer and employee due to the very short contractual agreement                                   | Flexible for both the employer and employee due to the very short contractual agreement   |
| <b>Stability</b>                                       | Relatively stable for both employer and employee due to medium to long contractual agreement                               | No stability due to a very short contractual agreement.   | No stability due to a very short contractual agreement  |
| <b>Payment/rewards and expenses accounting.</b>        | Paid monthly or as per the agreement for the time spent. Taxes, insurance, and other charges are deducted by payroll.      | Paid directly to the worker after the contracted task is completed and accepted. Platform user's fee is directly deducted | Payment is paid to the worker after deduction of subscription and insurance fees  |

|  |   |   |   |
|--|---|---|---|
| <b>Work Security for the workers</b>                       | Employment insurance and pension plans are prepared and deducted from the workers' salaries as part of the employment agreement/contract.               | none  | Workers must subscribe to the hub that provides the required work facilities, and insurance fees are deducted from each task done.                      |
| <b>Long-term accumulated value build-up in the project</b> | All go to the employers' company name; however, employees gain experience, career development, and reputation/prestige of the employer, in the process. | The long-term accumulated value is captured by the mediating platform and is reflected in the gradual increase in its net worth and stock share value. There are no arrangements for career development/accumulated experience records. | The long-term value is gone to the smart task hub which socially belongs to the workers, and the benefits indirectly go to the workers and the society. |
| <b>Skills requirements &amp; selection process</b>         | Many skills and experience are required for the job post. Selection is done via a complicated process   | Only skills and experience for the subject task. The selection process is easy  | Same as in the freelance/gig works.   |
| <b>How work is done, controlled, and assessed</b>          | The employer is responsible for providing the training, production requirements, supervision, and evaluation.   | Works/tasks are developed by the end users (employers). Control and assessment is automated and online.   | Same as in the freelance/gig works.   |
| <b>Impact on old people</b>                                | Employers prefer younger employees. They may use their power to reduce the number of older people, especially during economic crises.                   | Old workers find gig works convenient and flexible, despite their lack of protection of basic workers' rights such as minimum wage, and employment insurance, ...   | As this platform is developed and managed by workers, it protects their rights and offers old people legal, technical, economic, and financial advice.  |

### **8.3.3 Evaluation of Case Study 3: Smart Social Housing, SSH**

Case study 3 is the implementation of SESEM type 3. Its objective is not only to address the employment needs of older works but also their accommodation needs and their work-life balance. This approach aims to integrate work as part of older adults' lives, fulfilling both health and social requirements.

The comparison will be conducted separately for both the housing and employment models.

Table 8-6 (which is originally Table 7-1 of Chapter 7), compares the most popular housing models for the older population: public social housing and third-sector social housing – both of which were defined and reviewed in Section 2.4 of Chapter 2- Literature Review, with the proposed smart social housing ecosystem, which is explained in Chapter 7.

From the comparison we notice:

1. Though the SSHE may start like the other social housing models with financing from different levels of government, in the medium and long term, it should be financially independent with the potential to grow and expand.
2. Unlike other social housing models, the SSHE optimizes the sharing principles to integrate the efforts of all the members, and the available resources, and to offer a comprehensive partnership with society and the private sector.
3. The SSHE optimizes the utilization of innovative technologies to improve housing models that adapt to the older population's needs for accommodation, healthcare, work (staying active and productive), and social life.

Table 8- 6 Comparison between the Public, Third sector, and the proposed social housing model

| <b>Comparing Criteria</b>                            | <b>Public social housing</b>   | <b>Third-sector social housing</b>   | <b>Smart social housing_(proposed)</b>  |
|--|--|--|---|
| <b>Organizational structure</b>                      | Centralized: decision power is kept at the federal government level.   | Decentralized: decision power is moved to the provincial and municipal levels, with limited participation from the residents/community   | Decision power is shared among the community (residents), the relevant government agencies, and the private sector.               |
| <b>Who is involved in decision-making Management</b> | Relevant Federal Government agencies to the social housing   | Relevant provincial and municipal social housing agencies. Residents are involved in the cooperative housing model.  | Residents under the main guidelines of the relevant social housing regulations and coordination with the private sector partners. |
| <b>Financing</b>                                     | Federal government   | Both federal and provincial governments  | Federal, provincial governments, and private sector as social business partners.  |
| <b>Private Sector Role</b>                           | For-profit Construction companies are contracted to build the housing projects.  | Non-profit construction subcontractor  | Partnership in the whole process.   |
| <b>The role of the society/community</b>             | The public social housing is represented by two members (from the residents) in the governing board of the subject public housing complex. | The whole board is elected from the subject social housing community. The boards can make decisions and supervise operations and activities but within the relevant social housing laws and regulations that are applicable. | Full active partnership.  |
| <b>Sharing Role</b>                                  | No sharing   | Limited sharing in the coop model, represented by 1) the   | Sharing is vital here and includes all activities related to  |

|   |   |  |  |
|---|---|--|--|
|   |   | board of directors, in the decision-making and supervision of the operating activities. And 2) the residents' participation in general assembly meetings, voting, and some volunteer activities such as general coop cleaning. | social housing and beyond.   |
| <b>Technology</b>   | Limited   | Limited  | Used in the operations and management to save cost and encourage the sharing principles. Also, it is implemented in the construction and internal social projects. |
| <b>Impact on the economy</b>  | Though it helps to alleviate the social problem, it is a liability to the macroeconomy. | Help alleviate social problems with less liable impact on the economy  | Besides solving a social problem, it is considered an active asset contributing to the GDP.  |
| <b>Expertise and resources needed/used in the construction and sustainability</b> | Public human workers.<br>Public funds   | Public and social human resources.<br>Public funds.  | Human resources, mainly senior expertise.<br>Public and private resources  |

On the other side of SSHE, the work and projects side, Table 8-7 (which is originally Table 7-2 in Chapter 7), compares the SSHE against two models: the classic project model used to build public social housing, and the emerging model that tries to utilize the private sector's contribution as part of their corporate social value, as explained earlier in the literature review and Chapter 7. Besides the management sharing system, financial sufficiency and the utilization of the technology, the main takeaways from the comparison are:

1. The SSHE project is developed to create significant social value that enhances the integration and collaboration of the older population and other population segments to create healthy and prosperous neighborhoods and environments.
2. The SSHE enables the integration and utilization of the experienced senior entrepreneurs and social innovators drawn from the pool of senior expertise that resides in the SSHE and offer them a comfortable and encouraging environment to stay productive and socially active.
3. The SSHE utilizes the resources and expertise of the private sector to enhance and expand the SSHE with the collaboration and supervision of SSHE management.

Table 8- 7 Characteristics of the proposed "shared value and control"

| <b>Comparison Criteria</b>    | <b>The Classical Social Project (corporate social responsibility)</b>      | <b>The Shared Value Social Project</b>  | <b>Shared Value &amp; Control projects, SSHE</b>   |
|-------------------------------|--|---|--|
| <b>Value proposition</b>      | Value is designed to address the social demand from the social perspective | Value is designed, from the private sector's perspective, to be shared between the private sector and society, under the control of the private sector. | Value is co-designed by the private sector and Social Innovators to be shared between society and the private sector |
| <b>Social Innovators role</b> | SI could play both roles: initiator and operator                           | SI could only play an advisory/consulting role.   | SI could share both the initiation and operation   |
| <b>Impact on the Society</b>  | Limited in time and scope  | Could be sustainable but limited to the initial objectives  | Could be sustainable and expandable in scope according to the changes in the society                                 |

|  |   |  |   |
|--|---|--|---|
| <b>Budget</b>                                | One-time donation from public and/or private funds                          | Funded by the private sector according to the social business model/plan | Collaboratively funded by the smart social housing project and the private sector according to the initial business plan, however certain percentage of the revenues could be re-invested in the expansion of existing and/or new projects. |
| <b>Lifetime /Durability</b>                  | Limited to the donated funds  | Sustainable, based on the private sector's decision.                     | Sustainable and could continue based on societal needs.   |
| <b>Scalability/ Expansion/generalization</b> | Not applicable  | Limited to the private sector partner decision                           | Expandable according to society's needs.  |
| <b>Decision-making process</b>               | Limited to the assigned NGO/committee assigned by the public/private donors | Limited to the private sector's appointed management.                    | The decision is done by the elected management. See Section 7.6.1 and Figure 7.6  |

**8.4 Assumptions, Limitations, Generalizability, and Socio-economic Impact**

**8.4.1 Assumptions**

During the design of SESEM, the following are assumed:

1. A significant percentage of the older population is willing to stay active in later life. Furthermore, some of those who are initially reluctant could be convinced to change their mind when they see the merits, incentives and social arrangements, especially in the Smart Social Housing Ecosystem.

2. The various government levels, through the relevant agencies, will participate both financially and through the development and implementation of the required regulations and laws.
3. The private sector will also participate in the various types of SESEM, particularly in the Smart Social Housing Ecosystem, as a social business partner based on corporate shared value, rather than merely as a donor, sponsor, or philanthropist.

### **8.4.2 Limitations**

#### Data collection limitations

1. The difficulty in interviewing the older population, especially during the COVID-19 pandemic. This became even harder during case study 3 (Smart Social Housing) where I was supposed to meet residents of long-term care homes. Due to the restrictions on access to long-term care homes, I was only able to meet with the management, legal advisor, and staff.
2. Difficulty in obtaining consent from owners/managers of the surveyed workshops in case study 1. When I began asking questions related to workers' behaviour, productivity, and motivation, they start to become suspicious and defensive.
3. Difficulty in finding older adults searching for employment in the Ontario Employment Centres. This challenge applied to almost all age segments during the COVID restrictions and was compounded by the fact that jobs during the pandemic were almost nonexistent.
4. In many cases, it was challenging for older people to complete the survey, given that older participants were often unwilling to engage in interviews lasting longer than 20 minutes.

#### Theoretical limitations

The SESEM and its sub models are at the design stage. It was developed using the relevant literature review on the three pillars demonstrated in the conceptual framework, business model theory and social business model canvas, existing relevant models, and the action research and case study strategies. So, it remains as conceptual model that need to be empirically verified and tested. This may limit its capability to predict socio-economic outcome, its impact on the older adults, society, and the economy, till it is empirically tested and validated.

#### Practical limitations

The interdisciplinary nature of the SESEM and the fact that it addresses the older population raises many practical limitations:

- The integration of the sharing principles, the social assets, and innovative technology to optimize the SESEM is challenging and require time, efforts, and resources. However, a simples prototype could be used as the starting point to initiate the implementation, development and improvement ongoing process.
- SESEM is designed for the older population segment, which is a very diversified segment, extending to all industries, fields, and walks of life, making it a big challenge to prioritize and plan the gradual implementation.
- The fact that the implementation requires the active participation of the society, public and private sectors, create another challenge. For example, to make develop an employment insurance system for all SESEM sub models, and for the smart tasks hub requires approval of both private and public sectors. In addition, new laws and regulations are required to regulate these. Same applies to the on-job-training and coaching.

## **Scope of Integration**

The SSHE proposes a mixed-community approach to housing residents with varying levels of functional and cognitive ability. A limitation of this conceptual design is the practical challenge associated with housing high-functioning, active older adults alongside those with significant cognitive impairments (such as advanced dementia). The existing literature on housing transitions (e.g. Garner et al. 2018) suggests that the differing care needs, paces in lifestyle, and social dynamics among the older population can create barriers to successful integration in a single facility. This thesis conceptually proposes a diverse ecosystem that could remove these barriers, but whether or not it would in practice is subject to further empirical validation.

### **8.4.3 Generalizability**

The SESEM is mainly designed for the older population segment as a conceptual design. It could be conceptually generalized to other segment groups that suffer from social isolation and difficulties in finding employment or starting self-employment. These segments include:

- Women in general and women in business, in particular. Women, like older adults, are forced to accept marginal jobs with less salary and benefits relative to similar positions held by men.
- The newcomers to Canada: they are exposed to the same treatment as older adults, if not worse, even if they are highly qualified and experienced.
- Minority groups.
- People with temporary or permanent disability
- Refugees

All these categories constitute a considerable percentage of the total population that are not economically optimized. On the contrary, many of them rely on social aids that strain the budgets of the various government levels and could be at the cost of development and other essential services to the society.

The SESEM under the management and operations of the older adults could serve as a catalyst for these other groups. Where experienced older adults could work as mentors, coaches and trainers to newcomers, refugees, to introduce and familiarize them with the Canadian work and employment regulations.

#### **8.4.4 Expected impact on the Society and Economy**

This section outlines the SESEM's anticipated social and economic impacts which is divided into three levels, the older adults individual level, the society level, and macro economy level.

At the individual level, SESEM can help older adults remain healthy, active, productive, and financially independent, thereby reducing social isolation and reliance on public support systems. Sustained engagement in purposeful and income-generating activities can also alleviate fiscal pressures on pension and healthcare systems, as older adults maintain physical, cognitive, and social well-being through participation in self-employment or collaborative digital ecosystems.

At the societal level, SESEM facilitates intergenerational collaboration and knowledge transfer. Older adults can support younger or under-resourced individuals by offering skills training, mentoring, and empowerment programs through SESEM's platforms. By providing on-the-job guidance and customized coaching, they can enhance the efficiency and relevance of workforce training, reduce employment risks, and improve success rates in both employment and self-

employment. This collaborative model strengthens social cohesion and stimulates inclusive local economic development.

At the macroeconomic level, SESEM enables older adults to extend their productive contribution beyond the conventional retirement age, directly increasing the Gross Domestic Product (GDP) through continued participation in paid and value-creating activities. Indirectly, SESEM's operations generate fiscal benefits through taxation, employment insurance contributions, and broader economic multipliers linked to entrepreneurship and service innovation. SESEM's design encourages networked economic activity and community-based value creation, positioning it as a potential catalyst for more resilient, and human-centered economic growth.

## **8.5 Chapter Summary**

In this chapter we evaluated the SESEM, and its three sub models represented by the three specific case studies in two separate sections.

The evaluation was conducted by comparing SESEM (Section 8.2) and each of the three cases (Section 8.3) against seven well known employment models: Classic self-employment, Entrepreneurial self-employment, Franchising, Putting-out, Piecework, SER, Gig work, the three types of SESEM, and “project ventures”, using the ten most relevant criteria.

Section 8.4 discussed the Assumptions, Limitations, Generalization, and the Expected impact on the society and Economy.

# Chapter 9: Conclusion and Future Research

## 9.1 Conclusion

This thesis examines the lives of older adults and investigates ways to improve their quality of life by addressing both physical and psychological barriers to maintaining their social, economic, and health-related well-being.

Our research revealed that one of the primary challenges facing older adults, which compounds other difficulties, is the combination of idleness and social isolation. These factors significantly impact their economic stability and overall health.

We developed a socio-economic business model, the SESEM, to create diverse business opportunities that can be tailored to match the needs, aspirations, and lifestyles of older adults.

During economic downturns, even minor financial disruptions can substantially affect older adults, as they are particularly vulnerable to the diminishing purchasing power of their pensions due to inflation and their increasing need for medical care and other essentials. Furthermore, during times of crisis, negative societal attitudes often lead to older adults being perceived as an economic burden.

The SESEM model, detailed in Chapters 4, 5, and 6, introduces new forms of employment that differ from traditional full-time and self-employment arrangements. The model aims to achieve several key objectives:

1. Create flexible employment opportunities for older adults that leverage their accumulated experience to improve their economic status.

2. Enhance their social engagement through the socio-economic structure of SESEM employment.
3. Utilize their extensive experience in needed fields while facilitating intergenerational knowledge and skill transfer.
4. Contribute to GDP growth by maintaining an active, productive, and healthy older population.

Maintaining social engagement among older adults improves both their physical and mental health, as previously discussed. This engagement also enables them to achieve economic independence and access comfortable, well-equipped housing models.

The three foundational pillars of the SESEM model—sharing principles, social assets, and innovative technologies—can be optimized to develop additional socio-economic systems. These include complementary systems for work and employment models, such as reward/compensation systems, valuation methods, and non-traditional smart value exchange among SESEM users. The SESEM can also be used to develop new organizational structures that fully utilize shared manufacturing and optimize relationships between large corporations and investors on one side, and individual workers and society on the other.

These topics will be explored further in the next section, Future Research.

## **9.2 Future Research**

The model, its components, and the three case studies open several avenues for further inquiry across multiple fields. The main clusters are: (i) human-related research, (ii) affordable housing, and (iii) the future of work. Where relevant, the agenda below draws on evidence about maker/peer

production and platform-enabled participation (Browder, Aldrich, & Bradley, 2019; Sutherland & Jarrahi, 2018; Niaros, Kostakis, & Drechsler, 2017), shared-manufacturing and blockchain infrastructures (Sun, Yan, & Zhang, 2016; Yu, Jiang, Yu, & Yang, 2020), and business-model innovation and shared value (Teece, 2010; Porter & Kramer, 2019).

### **9.2.1 Human-related research**

External validation of the conceptual design of SESEM with other population groups.

SESEM should be externally validated with populations that experience low employment and higher poverty risk. A priority group is newcomers to Canada, who often face barriers to labour-market entry, credential recognition, and the frequent objection of lacking “Canadian experience.” During SESEM’s development with older adults, I explored its potential spillovers for younger cohorts; preliminary (informal) observations were encouraging, with only slightly lower effectiveness than among older adults.

Future studies could examine how SESEM shortens newcomers’ integration period and directs them toward sectors with labour shortages. This work could inform immigration and skills policy by identifying high-impact pathways and the support mix that accelerates job entry. It could also estimate potential GDP gains from engaging under-utilized human resources while decreasing reliance on social assistance (Teece, 2010).

Applications in fragile and conflict-affected contexts.

SESEM may also be explored in unstable regions (e.g., parts of the Middle East) where corruption, protracted conflict, and the manipulation of public resources leave populations vulnerable to recruitment by extremist groups. A **SESEM hub**—organized around social assets, sharing

principles, and digital platforms—could coordinate local entrepreneurs, civil-society actors, and responsible private-sector partners to support **autonomous, sustainable micro-economies**, even when formal banking is disrupted. As outlined in Chapter 4 (Section 4.7.4), a **shared valuation and payment system** could enable bartering and value exchange during system outages (Sun et al., 2016; Yu et al., 2020).

This bottom-up approach seeks to complement slow, top-down models by mobilizing communities directly through open tools, shared manufacturing, and distributed coordination (Murray, Caulier-Grice, & Mulgan, 2010; Browder et al., 2019).

### **9.2.2 Affordable Housing (Smart Social Housing)**

The Smart Social Housing (SSH) sub-model warrants deeper research on how to integrate dispersed resources to address chronic housing shortages.

1. Coordinating social assets.

Study how experienced older adults (engineers, project managers, planners) can act as pro bono coordinators—planning, prioritizing, and supervising work—while the private sector focuses on execution capacity and specialized equipment under a corporate shared value logic (Porter & Kramer, 2019).

2. Cost and time reduction via open and shared technologies.

Investigate how open designs, shared manufacturing, and 3D printing for construction can reduce unit costs and accelerate delivery at scale (Tay et al., 2017; Yu et al., 2020).

3. Governance and partnership models.

Compare collaboration structures in which firms participate as partners (not merely sponsors) to create mutual economic and social value—i.e., win-win shared-value partnerships with communities—while maintaining accountability and safety standards (Porter & Kramer, 2019).

4. Investigating how to leverage the expertise and experience of older adults in building, construction, urban planning, and related infrastructure fields to establish well-equipped production organizations dedicated to executing specific tasks of mass housing construction. These organizations could utilize innovative technologies, such as 3D printing building machines, operated through the combined efforts of freelance experts, social entrepreneurs, and engineering students.
5. Examining direct collaboration between society (through relevant organizations such as the Smart Social Housing Ecosystem) and the private sector, with minimal government interference in the decision-making process, except for necessary engineering and safety procedures. By bypassing bureaucratic processes and political influence, this approach could minimize both the cost and time required for such projects. The experience gained from this direct collaboration between societies and the private sector could have significant impact if applied in underdeveloped countries

The model, its components, and case studies open avenues for further research across multiple fields. The three main areas are:

### **9.2.3 Future of Work**

Chapter 6 introduced the Smart Task Hub (STH) as SESEM’s implementation in gig work. STH retains the advantages of platform work while addressing gaps in job security, unemployment insurance, pensions, and career development. It uses sharing principles, social assets, and digital

infrastructure to provide predictable security for task workers (Sutherland & Jarrahi, 2018; Browder et al., 2019).

A promising direction is to re-engineer complex roles found in large organizations so they can be simplified for inclusion in the Smart Tasks Hub, making them accessible on a short-term basis to small and medium sized companies. The executive (c-suite) positions could serve as a good example for this.

This future research would need to address:

1. Re-engineering complex positions by dividing them into two components: a. Tasks that can be automated through artificial intelligence and machine learning b. Tasks requiring entrepreneurial and leadership qualities.
2. Engaging experienced older professionals in relevant fields to oversee job execution and coordinate between AI-managed tasks, senior management, and organizational stakeholders.
3. Development of a protection and security system to handle the organization's privacy, critical data, and trade secrets from leaking to competitors or other adversaries.

For example, the post of maintenance manager in a petrochemical plant could be divided into two parts: the routine part that include the routine inspection and preventive maintenance of the equipment, which could be planned, executed, and reported by an AI system that could optimize the process of this part using sensors and actuators to be connected on the equipment using the IoT to a central data collection and processing unit. The AI system will then analyze the data, make some recommendations and report them to the human-in-charge.

The second part is the human-centric part of the new re-engineered task of the maintenance manager. This part requires taking timely decisions based on both the history and present conditions of the subject equipment and associated systems to the subject equipment. Though this part is smaller in scope than the first part, however, it may have greater impact. This part could be handled by some qualified and experienced personnel on a task-based or contract-based agreement as an alternative to the standard employment relationship. Later in the future, the AI could take this part too, after enhancing the learning curve/machine learning.

Future Research priorities for further developing Smart Tasks should address:

- Further enhance the empowerment and participation of the older population and other marginalized population groups in the economy.
- Provide both task-based employees and employers with more flexible control over their time, economic choices, and career development.
- Explore crowd-based venture, where a group of social assets (entrepreneurs, innovators, and other volunteers and experts in a specific field) would have the facilities and tools to meet and plan socio-economic ventures that address emerging demands in the market or society. These ventures could range from manufacturing face masks to using open designs, shared manufacturing, and 3D building (printing) to build cost-effective social housing, as in case study 3 in Chapter 7 (Browder et al., 2019; Tay et al., 2017).

Figure 9-1 illustrates the evolution of work from before the 19th century to the present. It suggests that future work relations between stakeholders in the local economy may resemble those of the 19th-century putting-out model, where workers could establish smart ventures with large organizations and other players in the socio-economic market for short-term projects. The concept

of work is expected to converge with the new smart enterprise model, enabling workers to become equal partners with other stakeholders in the ecosystem on a case-by-case basis. In other words, employers and employees will transition into partnerships within goods and services ventures.

Future research could further investigate and validate the "smart venture" concept, focusing on:

- The feasibility of using this model for short-term and/or one-time production ventures in both the private sector and society. Research could explore how the three pillars of SESEM could facilitate the realization of such ventures in response to emerging needs—such as the demand for face masks during the early stages of the COVID-19 pandemic. Collaboration among social entrepreneurs, innovators, and experienced elderly individuals could lead to the development of emergency business plans utilizing the SESEM platform, open-source resources, and shared manufacturing to rapidly produce masks, ventilators, or other essential commodities for short-term ventures.
- The potential of such ventures to provide innovative solutions to emerging and chronic societal challenges worldwide. Capital and infrastructure requirements could be optimized by leveraging SESEM's three pillars: sharing principles, social assets, and innovative technologies.

Further research could also explore the smart venture's ability to coordinate and integrate global societal efforts in a bottom-up strategy starting from individuals and local communities to the private sector and government entities. This approach could serve as a complement to the existing top-down strategy, which is managed by governments and United Nations agencies and then implemented through NGOs, societies, and individuals. The top-down model is often slow due to political agendas, bureaucratic processes, and the potential for corruption at various levels. In

contrast, a bottom-up approach could be more efficient, acting swiftly and directly toward targeted objectives while reducing resources wasted on bureaucracy and corruption.

Examples of smart ventures that could address current global challenges are the energy crisis, by developing technologies that empower individuals, communities, and small and medium-sized enterprises (SMEs) to generate their own electric power independently. These systems could serve as complementary solutions to centralized power stations, with integrated networks optimizing collective energy utilization through sharing and exchange. Renewable energy sources, such as solar and wind, could be harnessed to support this transition.

The future “smart ventures” proposed here are bottom-up and are based on the SESEM’s three pillars. To retain the intentions with which SESEM was developed, such smart ventures should be created and developed by social entrepreneurs and innovators, not by big corporations and business tycoons.

In contrast to SESEM “smart ventures” It is noted that the 100-billion-dollar AI Stargate mega project between Open AI, Oracle, and Softbank, is a clear example of a top-down mega venture in which the US government partners with big corporations who are the potential developers of this mega project and whose objective is to maintain the US leadership and domination of the AI technology.

Open AI, which created ChatGPT, started as non-for-profit open-source venture by a group of entrepreneurs headed by Sam Altman in 2015. When the ChatGPT become successful and was understood to have great commercial potential, Open AI’s non-for-profit model was replaced by a

capped-profit business model to legally permit Open AI to charge user-subscription fees and licensing fee to integrate its capabilities in other applications, such as MS Azure.

However, the launch of the DeepSeek, the Chinese equivalent of ChatGPT, that was developed with less than 6 millions dollars, raises many concerns about the viability of Stargate's mega project, particularly its huge budget and its top-down strategy that benefits big corporations. versus the bottom-up strategy followed in developing ChatGPT as non-for-profit open-source venture.

This raises the question of whether it is possible to use the SESEM model (i.e., a bottom-up, community driven undertaking) to launch similar AI ventures that significantly minimize costs, involve a wider range of social innovators, entrepreneurs, scientists, and students, and, most importantly, ensure its availability to all users as open-source. Furthermore, the model could offer a subscription fee option and provide value-added and customized services for the private sector to fund further development.

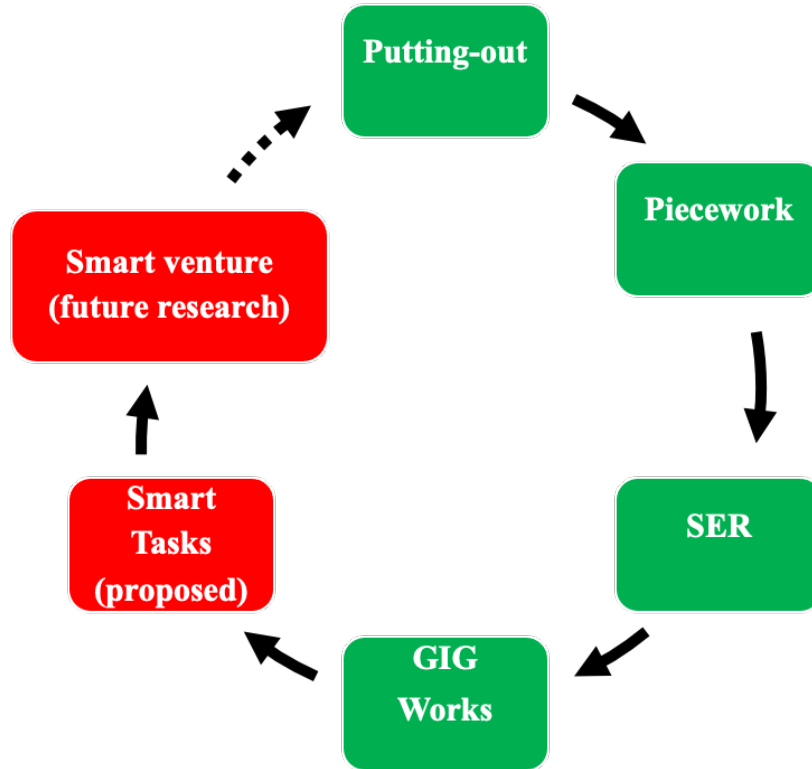


Figure 9- 1 Work Development cycle (based on the literature review in chapter 6)

A schematic timeline from pre-industrial putting-out systems to contemporary platform work, indicating SESEM’s **Smart Task Hub** as a hybrid: open, bottom-up coordination of tasks with shared security features and expert oversight—bridging the gap between standard employment and gig work (Sutherland & Jarrahi, 2018; Browder et al., 2019; Niaros et al., 2017).

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## **APPENDIX – 1: IMPORTANT DEFINITIONS**

**Older people:** also referred to as older workers, and senior citizens; are defined here as the population who are greater than or equal to 50 years old. This threshold is chosen to reflect the significant increase in barriers to re-employment that typically emerge at this age in developed economies.

**Blockchain Technology:** The Blockchain is a distributed database comprising records of transactions that are shared among participating parties (Zhao, Fan, & Yan, 2016) or as another type of database for recording transactions- one that is copied to all computers in participating networks (Deloitte, 2016). See Section 2.2.4.2, Chapter 2.

**Business Model and Social Business model:** The business model is defined as the rationale of how an organization creates, delivers, and captures value. The social business model is simply a business model with a social value as opposed to pure market/profit value. See Section 4.1 Background in Chapter 4 for more details.

**Business model canvas, BMC** is the nine building blocks of any business model: Customer segments, Value proposition, Channels, Customer relationships, Revenues Streams, Key Resources, Key Activities, Key partnerships, and Cost structure. For the Social Business model, as the value is a social value, the value proposition should be a social value proposition. Besides, two additional building blocks are added: Eco-social cost and eco-social benefits.

**Social Assets:** is referred to the social entrepreneurs, social innovators, and the elder population, which is the subject of the research.

**Corporate Shared Value, CSV:** The concept of shared value can be defined as policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates, see Section 2.2.6 of Chapter 2.

**Internet of things, IoT:** The Internet of Things is a system that directly connects a set of sensors, actuators, and devices to a central computer or processing unit without the interference of the human. The central computer stores, analyze the data and take decision and action directly. See Section 2.2.4.1 in Chapter 2.

**Maker space, workspace, and Collaborative spaces:** Makerspace is defined as “community-led common spaces where individuals share resources and meet on regular basis to collaboratively, engage in creative commons-oriented projects usually utilizing open-source software and hardware technologies”, Viriyasitavat et al., (2019). Collaborative spaces are spaces where individuals, community members, and groups with common social goals share the space, assets, and resources for the common goals and objectives. See Section 2.2.5 of Chapter 2.

**Platform:** Here we refer to the Digital Platform which is defined by (Seppälä et al., 2015)

as “.. a Digital platforms refer to information technology systems upon which different actors — that is, users, service providers, and other stakeholders across organizational boundaries — can carry out value-adding activities in a multi-sided market environment governed by agreed boundary resources. Typically, these actors create, offer, and maintain products and services that are complementary to one another. Platforms quintessentially lure and lock in various types of actors with their network effects and economic benefits thereof”,(Seppälä et al., 2015)

**SER:** stands for Standard Employment Relationship, commonly known as the famous full-time employment system that appeared after the second world war.

**SESEM:** Acronym to Socio-Economic Smart Employment Model, is the Social

Business Model developed in this thesis to help the older population stay healthy, socially active, and productive.

**Sharing Economy:** Also known as Collaborative consumption, is an alternative business model that allows the users to share assets, resources, consumption, and benefits. See Section 2.2.1 in Chapter 2.

**Shared Manufacturing:** “Shared manufacturing is a peer-to-peer-based resource sharing paradigm boosted by the widespread of the sharing economy”(Yu et al., 2020a). See Section 2.2.7 of Chapter 2 for more details.

**Smart Contract:** The smart contract is an event-driven, state-based code contract and algorithm contract, which has been widely concerned and studied with the deep development of blockchain technology..., that has the characteristics of decentralization, autonomy, observability, verifiability, and information sharing. It can also be effectively applied to build programmable finance and programmable society, which has been widely used in digital payment, financial asset disposal, multi-signature contract, cloud computing, Internet of things, sharing economy, and other fields” (He et al., 2018). See Section 2.2.4.3 of Chapter 2.

**Social Entrepreneur:** Dees (1998) defines social entrepreneurship based on the emphasis on discipline and accountability of their “... value creation from innovation and change agents from

Schumpeter, pursuit of opportunity from Drucker, and resourcefulness from Stevenson, in brief, the definition can be stated as follow:

- Adopting a mission to create and sustain social value (not just private value),
- Recognizing and relentlessly pursuing new opportunities to serve that mission,
- Engaging in a process of continuous innovation, adaptation, and learning,
- Acting boldly without being limited by resources currently in hand, and
- Exhibiting a heightened sense of accountability to the constituencies served and for the outcomes created.” See Section 2.2.2 of Chapter 2

**Social Farms:** the farms within the Smart social housing ecosystem (see Case Study 3) that are owned and operated by the residents to provide vegetables, fruits, and other crops.

**The Social Housing Model** is the larger umbrella that offers affordable housing for low- and no-income individuals and families, including the elder population. See Section 7.2-Chapter 7.

**Social Innovator** “Social Innovations are new approaches to addressing social needs through engaging beneficiaries and supporting actors in the development of solutions” (Dinant et al., 2017). See Section 2.2.3 of Chapter 2

**Social isolation:** A low quantity and quality of contact with others. The older population are the major victims of social isolation in what is known as Senior social isolation. See Section 7.2 in Chapter 7.

**Social Kitchen:** a central kitchen and mass catering facility that provides daily meals to the smart social housing ecosystem residents. See Section 7.6.4 of Chapter 7.

**SSHE:** Acronym for Smart Social Housing Ecosystem. It is also referred to as SSH, smart social housing. See Chapter 7 for details.

**STH:** Acronym for Smart Tasks Hub, a social platform that connects smart task seekers (also known as gig workers) and employers. See Chapter 6 for more details.

**SVC:** Acronym for Smart Vehicle's Centre. It is also referred to as SVMC, Smart Vehicles' Maintenance Centre. See Chapter 5 for more details.

## APPENDIX – 2: DATA COLLECTION PACKAGE

- 2.1- GENERAL SURVEY
- 2.2- SPECIFIC INTERVIEWS
- 2.3- SHORTER VERSION OF SURVEY
- 2.4- CERTIFICATE OF ETHICS APPROVAL

### 2.1 GENERAL QUESTIONNAIRE- OLDER POPULATION SURVEY (ALL)

**Introduction:** *The purpose of this survey is to explore the elder population's attitude towards working after retirement age, in general, and towards being independently self-employed.*

*All the data collected from this survey will be treated as anonymous and will be only used in research intended to improve the working, social, and health conditions of the elder population and is approved by the University of Ottawa. The Data Collection process will strictly follow all the privacy and confidentiality procedures.*

*The samples will be sought within the city of Ottawa, among those who are 50 years or more, in all walks of life.*

*Please note that self-employment here is very flexible and short-term: similar to Uber's driver's assignments.*

**Please Circle the appropriate:**

- 1) **Gender:**
  - a. M
  - b. F
  - c. Other: please specify: .....
  
- 2) **Age group:**
  - a. 50-64
  - b. 65-79
  - c. Above 80
  
- 3) **Level of Education:**
  - a. General education
  - b. High school/vocational training/specialized high school
  - c. University graduate
  - d. Higher degrees (master's, Ph.D....)

***In the next questions please choose a number between 1-5, where 1 represents the lowest agreement, and 5 as the highest agreement with the statement.***

- 1) ***How difficult it is to find a full-time job at the age of 50 years or above? (1-5)***
  
- 2) ***How difficult it is to find a part-time job at the age of 50 years or above? (1-5)***

- 3) ***What is the most important virtue/quality of the classical work you are seeking: Please put 1-5 against each of the qualities listed under with 1 as the least agreement, and 5 as the most.***
- a. The salary amounts
  - b. The type of work whether you like it, is dynamic, ...
  - c. The Employer's reputation.
  - d. The position you are offered.
  - e. The company culture (the relationship between co. and employees).
  - f. The field the company is in (is it within your fields of interest)?
  - g. Other: please specify: -----
- 4) ***Have you tried self-employment/having your own business before; or are you currently self-employed/having your own business?***
- a. Never tried
  - b. Not interested in self-employment at all.
  - c. Yes, I tried once.
  - d. Yes, I tried several times before.
  - e. I'm currently self-employed/ have my own business.
- 5) ***How difficult it is to be self-employed /have your own business?***
- a. Very difficult
  - b. Somehow difficult
  - c. It is not difficult
  - d. I don't know
- 6) ***What is the most difficult issue(s) in having your own business (in your opinion)? you can choose more than one choice?***
- a. Hard work.
  - b. Require big capital (a lot of money to start up)
  - c. It is very Risky
  - d. Great responsibilities beyond my capacity
  - e. Require experience and expertise
  - f. A lot of Patience.
  - g. All the above
  - h. Other please specify:
- 7) ***In question #6, what is the most difficult issue in your opinion, put the letter (a, b... h.).***
- 8) ***From question #7, if the most difficult issue you chose in question #7 is solved (made easy for you), would you consider having your own business? Put 1-5***
- 9) ***What are the most attractive virtues of having your own business (in your opinion)? You can choose more than one choice. (Or better to put 1-5 against each)***

- a. Being your own boss.
- b. Being in control/managing others.
- c. Freedom of work hours.
- d. Doing what you want/like to do.
- e. You decide the level of income you wish/to balance between work and income.
- f. Other virtue/quality, please specify....

**10) In question #9, choose the most attractive quality from the item a-f.**

**11) Assume that you can have your own business without the need for capital, location, and labor. and you can do the work you like to do; however, your income will not be stable! Will you agree to have your own business? Put 1-5 with five as strongly agree.**

**12) Can you work collaboratively as a team member, where all are on the same level, i.e., no boss, but rather a coordinator/facilitator? Put a number 1-5....**

**13) Can you work on a job/task you like at your convenience if the compensation/reward is lower than you expect?**

- a. Yes, I can if I do what I like when I like.
- b. Yes, but not always.
- c. I'm not sure
- d. No
- e. No way

**14) Have you heard of the makerspace, co-worker space, fab lab... and/or any other collaborative space?**

- a. I know and I used at least one of them.
- b. I know but never used
- c. I slightly know or heard about them somewhere.
- d. I don't know anything.

**15) Which of the following self-employment virtues/qualities is the best?**

- a. Flexible above average income
- b. A work that you enjoy doing
- c. Being your own boss
- d. Work with your family, friends/people you enjoy working with.

**16) If you are given a second chance to fulfill your dreams that you could not fulfill in your early life, what would you choose:**

- a. I will definitely work to fulfill it.
- b. That depends on the efforts required and the benefits achieved.
- c. No, I lost interest.

**17) Why do you want to stay active?**

- a. Money/need extra income
- b. I like to stay active to avoid depression/loneliness
- c. I like to be social
- d. I still have plans in my life to pursue.
- e. Other, please mention

**18) How savvy are you with new technologies and social media applications?**

- a. Facebook, Twitter, WhatsApp, ...
- b. Virtual meeting/working apps: zoom, google meet, MS Team, ...
- c. More specialized work-related apps: CAD, CAM, ...

## 2.2 SPECIFIC INTERVIEWS

### PART 1- INTERVIEWING THE ELDER POPULATION FOR TESTING THE PROPOSED MODEL

*SELECTED ELDER POPULATION (IN OTTAWA REGION) INTERVIEW QUESTIONS:*

**Subject to the interviewee's decision and consent, the interview will be recorded, and/or notes will be written by the interviewer.**

**1) Age (optional, just to know you are 50+)**

**2) Are you self-employed (now or before)?**

**3) Level of Education:**

High School or lower

Vocational,

Graduate or higher

**4) Field of work experience:**

Manufacturing,

Services,

Retail,

self-employment,

Other (specify):

**5) If we develop a new employment system, where you can:**

Have a flexible schedule

Do what you like to do (provided you know how...)

Change employer as often as you can.

However:

There is no job security as in the full-time

Your salary/benefits will depend on how many hours you worked and on the type of work you chose in the subject period (rate per hour differ per type...

You need to prepare your schedule: daily/monthly or you may opt to choose some settings that specify what kind of work you want, and the system will automatically prepare the daily/weekly and monthly work schedules.

***What would be your reaction to that (put a number between 1-5 where 5 is strong support and 1 is strongly do not like).***

**6) *What will be the most appealing work merit for you (you can choose more than one)?***

Easy and fun tasks.

The highest paid regardless of difficulty, risk, and impact on your health and environment.

Those fit in your field of interest/ you enjoy doing.

Other: .....

**7) *How many hours daily/weekly do you think you can spend working:***

Same as full-time (40-48 per week)

I prefer to be flexible: some weeks will be higher than others.

This will depend on my personal/family financial situation.

Other answers: ...

**8) *Do you like to work collaboratively in a team? Have you worked before in a team?***

**9) *If you work in collaboration as a team, what role do you prefer:***

- a. To be the leader always
- b. Depends on the task. I could be flexible
- c. I rather not be the boss.
- d. I do not want to be the boss.
- e. I don't enjoy working in teams
- f. Other response:

**10) *Do you like to work independently within the smart task setting (short-term micro contracts)?***

**11) *Do you prefer being a short-term self-employed (micro contractor) same as Uber drivers?***

**12) *Assume you can do your old work assignment (clerk, sales, technical...) but on a contractual basis (get paid for what you do), with no employment contract, no monthly salary.... Similar to hourly rate workers, where you are paid based on task contracting. The tax and insurance will be deducted upfront to ensure legal status and long-term:***

- a. This could be a better alternative
- b. I prefer long-term job security
- c. It makes no big difference

**13) Do you like to mix: sometimes you work as a smart task employee and sometimes as a smart self-employed? What reasons would make you do the mix?**

**14) Have you heard about:**

- a. smart contract,
- b. sharing economy platform,
- c. makerspace/co-worker space,
- d. social innovators,
- e. social entrepreneurs?

**15) How do you feel about the cashless smart contract-based transactions, where all accounts are cashless, and everything is recorded electronically?**

**16) What tasks do you hope to see available (mention as many as you can)?**

**17) Do you like the idea of working in collaboration with others as a team on certain tasks?**

**18) If your task requires a workspace and some tools and equipment, would you use a makerspace-like setting to do your task?**

**19) If the new task requires some new knowledge, or new technology, that requires on-job fast training:**

That is ok I like challenges.

Depends on the level of knowledge, if complicated I rather keep away.

I don't like to be technically challenged.

Other, please state: .....

**20) Would you accept to work as a trainer on some tasks?**

**21) Would you accept lower rewards for some tasks that help the community/not-for-profit in return for being recognized as an active community champion?**

**22) If you happen to find a full-time or part-time job while doing these tasks/contracts, would you leave the task-based work and go for the job...?**

Absolutely without hesitation

I will go for the job for a trial period.

I will go for the job but will try to remain active in doing some contracts/tasks as much as I could.

No, I prefer flexible tasks/contracts.

I prefer not to do either.

***23) What tasks/contracts do you prefer to do?***

I prefer those I can do from home.

I'm flexible I can work from home and/or from anywhere.

That depends on the task/contract.

Other, please specify

## **PART 2: INTERVIEW QUESTIONNAIRE FOR SOCIAL HOUSING CASE STUDY 3:**

*Please answer the questions*

- 1) *what age cohort are you in:***
  - a. 50-64
  - b. 65-80
  - c. Over 80
  
- 2) *What type of housing are you living in currently?***
  - a. Private separate house
  - b. Apartment
  - c. Coop housing
  - d. Long-term care
  - e. Other: please specify:
  
- 3) *Are you satisfied with your current housing?***
  - a. Yes
  - b. No
  - c. There are issues
  
- 4) *If your answer is b or c in question 3, what are the main issues you are experiencing (you may choose more than one):***
  - a. Rental cost
  - b. Issues with neighbors related to ageism
  - c. Mobility issues inside the unit and/or outside (getting in and out, accessing utilities,)
  - d. Lighting issues inside and/or outside
  - e. No social activities for seniors in the neighborhood
  - f. No accessible medical activities in the neighborhood
  - g. Other please specify:
  
- 5) *From question 4, which are the most demanding issue, please arrange them from most demanding to least demanding:***
  
- 6) *Have you heard about Senior Social Isolation? Do you feel it applies to you? What do you do to fight it?***
  
- 7) *Do you have an idea or description of your ideal housing model?***
  
- 8) *Which are the most important facilities/merits you are looking for in the house?***
  - a. Comfort: fully furnished, equipped, automated, ...
  - b. Family (living with family members or close to family members)
  - c. Privacy

- d. Availability of in-house or near medical care facilities
- e. Social activities and entertainment
- f. Other, please specify:

**9) *Will you accept to continue working at your convenience, to afford to live in better more convenient housing? Please elaborate***

**10) *If you are offered housing in a remote smart village, where the residents support themselves: plant their food, share cooking, dining, and do other necessary services:***

- a. I would love to move permanently
- b. I would love to explore and make the decision after experiencing
- c. I would rather move there for a few months regularly
- d. Not my type, I prefer urban housing
- e. Other option: please explain/elaborate

**11) *What if the smart village is in an urban area and not far from the city and is fully equipped with all the facilities of urban areas?***

**12) *If you are offered several housing model options to choose from, however, each option has its requirements which are based on the work quality and quantity you can provide, what is your feedback on this?***

- a. It is fair
- b. Not fair for those who cannot work due to disability or chronological disease...
- c. Depends on the type of work: please elaborate.....

**13) *If the work to be done is affordable and intended to keep the residents active, productive, and socially active, would you support and participate?***

**PART 3: INTERVIEWING GOVERNMENT-IN-CHARGE IN THE FIELDS OF EMPLOYMENT, HUMAN DEVELOPMENT, AND SOCIAL HOUSING AGENCIES (ALL GOVERNMENT LEVELS):**

**1) *What do you think of the “smart task” approach as an employment alternative for certain job posts? Will your department help in providing the requirements to promote it?***

- a. The workplace: where you can convert/share the huge current employment centre (or part of it) into a workspace, where people can do their contracted tasks.
- b. Encourage on-job- training where experienced workers train those who require specific training to do the smart task (more precise and effective than what you normally do in an employment centre).
- c. Coordinate and encourage government and private companies to use this service.
- d. Participate in the development of a more sophisticated software package to make it more secure, effective, and easy to use even from home for old, single moms, and people with disability.
- e. Adjust some laws and regulations to make this approach a better alternative to full-time employment (income tax, another taxing system, employment insurance, and pension....).
- f. Re-arrange some of the funds and allocated them for employment and social funding in a way to encourage those who choose to work in later life.

**2) *Regarding smart self-employment: similar question to 1) for self-employment: What do you think of smart self-employment that works on the collaboration and sharing principles?***

- a. Help in providing the makerspaces, equipping them with the required tools and equipment
- b. Help in training the potential self-employee on operation, accounting, and marketing....
- c. Help in encouraging the government agencies at all levels to allocate a quota of their purchase and procurement for the old smart self-employed.
- d. Encourage the private sector to do so (by offering them some tax incentives).
- e. Adjust some laws and regulations to encourage and promote smart self-employment (tax regulation, employment insurance, tax breaks, and incentives to those private companies who support smart self-employment.
- f. Rearrange the funds and incentives dedicated to promoting self-employment and entrepreneurship. This may include the creation of new funds, loans, and grants to kickstart such micro projects.

**3) *Regarding Social Housing: If the communities in collaboration with the private sector come up with a new approach to help alleviate the chronic problem of social housing, would the relevant government agencies participate:***

- a. Lease the needed land for the project
- b. Review the relevant laws and regulations to encourage such collaboration among the societies, private and public sectors
- c. Explore the possibilities of treating these social complexes in a similar manner to the natural reserves, provided that all environmental protections regulations will be strictly adhered to. Explore the possibility of giving them the extra privilege to be self-sufficient and independent as smart villages (special regulations, funding....)
- d. A social smart village where affordable housing and work opportunities are secured to old people and those underprivileged to ensure they enjoy a self-sufficient stable and healthy lifestyle, that is sustainable and self-financed in the long term.

#### **PART 4: INTERVIEW WITH REPRESENTATIVE(S) FROM THE PRIVATE SECTOR:**

- 1) *Can you accept the smart task as an alternative to certain jobs that are routine, and non-essential, if you save on costs of office spaces, and utilities, in addition to easing the legal restrictions and costs of full-time employment?*
- 2) *Can you expand your involvement in these smart tasks gradually as the technology matures to protect your company's privacy and competitive information?*
- 3) *Can you participate in the development as a partner with other non-competing private companies, societies, and governments?*
- 4) *Can you enter a partnership with the societies in social projects where you can achieve a relatively modest return on investment, however, you earn social value, trust, and recognition.*
- 5) *Have you heard about Corporate shared value?*
- 6) *Can you participate in mega social projects such as smart social housing? Smart villa*

#### **2.3 SHORTER VERSION OF QUESTIONNAIRE AND SUMMARY OF RESULTS SHORTER VERSION OF THE QUESTIONNAIRE:**

- 1) Gender m/f/other
- 2) Age group: a: 50-64, b:>64, c: no answer/don't know
- 3) How difficult is to find a full--time job? a: very difficult, b: not difficult c: other
- 4) How difficult to find part-time job? a: very difficult, b: not difficult c: other
- 5) Most important criteria the job (open ended)
- 6) Do you want to stay active (work after your retirement)? a: yes, b: no, c: not decided/not sure:
- 7) If answer is YES in 6, why? a: increase income, b: stay socially active, c: other reason
- 8) For those who answered NO in #6, If given the chance to work in a comfortable (stress-free, less flexible hours, the work you enjoy, would you change your mind? a: yes, b: no, c: not sure.

For self-employment (General)

- 9) Have you tried self-employment? a: yes, b: no, c: other/no answer
- 10) How difficult is it to start self-employment: a: difficult, b: not difficult, c: I don't know
- 11) Most difficult issue in startup: a: capital, b: skills/experience, c: too much work, d: other
- 12) If given a chance/second chance to start a self-employment, would you consider it a: yes, b: no, c: not sure

For self-employment: another sample of 26 current small business owner and interested in self-employment)

- 13) if you are given the chance to be self-employed without the need to invest any money, without risk, worry-free environment, would you agree? (yes/No)

yes= 19

no = 7

14) ) if your answer is no in Q13, why?

Lot of work, pain and worries= 4

Don't know skills to manage self-employment = 3

## SUMMARY OF RESULTS

- 1) Total older adults approached over 200
- 2) Total given the complete part one in person around 20
  - returned completed zero
  - returned partially completed 5
- 3) Total surveyed using iPad version with the researcher ask the questions and record the answers = 20
  - completed in one session 2
  - completed in more than one session 3
  - completed 2
  - partially completed 18
- 4) Using agent/third party help (providing coffee and muffin during Sundays morning in McDonald Montreal rd.
  - total approached 50
  - completed 10
  - partially 28
  - this whole patch was disqualified by my supervisor as the third party did not get the approval of the Ethics Review Board.
- 5) direct interview format by the researcher for specific questions directly related to the development of the proposed model:
  - total approached >100
  - responsive in several session =17
- 6) interviewed using shorter version of part 1 of the questionnaire = 35 (see the shortened format)

| Question Number & brief description | Possible answers/variables                  | Recorded Data    | Statistics                                       |
|-------------------------------------|---|------------------|--|
| Q1: Gender                          | M, F, Other                                 | M=19, F=16       | M=54%, f=46%                                     |
| Q2: Age group                       | a=50-64, b=>64                              | a=18. b=17       | Eye-judged by researcher. 50-64                  |
| Q3: F-T job difficulty              | a= difficult, b not difficult, c=don't know | a= 15, b=5, c=15 | Difficult=43%, not difficult=14%, don't know=43% |

|  |  |  |  |
|--|--|--|--|
| Q4: P-T job difficulty   | A=difficult, b=not difficult, c= don't know  | a=12, b=15, c=8  | difficult=34%, not difficult=42%, don't know=23%   |
| Q5: most important job merit   | Open most important: money, flexible timing, all other benefits  |  | salary/money=57%<br>23% flexibility<br>security. 20% Others.   |
| Q6: continue working after retirement  | a= yes, b=no, c=not decided/don't know the 35 sample were divided into:<br>50-64 sample=18<br>>64 sample= 17 | For the group age 50-64: a (interested to work 15/18), b (not interested to work 3/18.<br>For the age group older than 64 (total 17): a (interested to work after retirement=7/17, b (not interested) =10/17 | Age group: 50-64:<br>Interested to work 83%.<br>Not interested 17%<br><br>Age group older than 64:<br>Interested to work 41%<br>Not interested 59% |
| Q7: Reason to stay active (all >50   | a: increase income, b: stay socially active, c: other reason   | Increase income=22/35, socially active = 10, other =3  | Income =63%,<br>Socially active = 29%<br>Other = 8%  |
| Q8 If answered NO in #6, If given the chance to work in a comfortable (stress-free, less flexible hours, the work you enjoy, would you change your mind? | a: yes, b: no, c: not sure.  | Yes will go with the new model: 16/35<br>No : 17<br>Not sure/no answer:2   | Will go with the new employment model: 44%<br>Will not go: 46%<br>Not sure: 6%   |
| Q9 have you tried self-employment  | a: yes, b: no, c: other/no answer  | Yes=2/35<br>No= 33   | Tried self-employment =4%<br>No=96%  |
| Q10: How difficult is it to start self-employment  | a: difficult, b: not difficult, c: I don't know  | Difficult=33<br>Not difficult or n/a=2   | SE is difficult=96%<br>Not difficult= 4%   |
| Q11 what is the most difficult issue in startup  | a: capital, b: skills/experience, c:   | Most difficult issue.<br>Money/capital=2/35  | Money/ startup capital as most difficult issue=6%  |

|  |   |   |  |
|--|---|---|--|
|  | too much work, d:<br>other  |   |  |
| Q12 If given a chance/second chance to start a self-employment, would you consider it  | a: yes, b: no, c: not sure  | Yes=6/35<br>No:19<br>Other /don't know=10   | Yes, to start SE again= 17%<br>No= 54%<br>Other/don't know= 29%                    |
| <b>For questions 13 &amp; 14 a sample of 26 self-employed or interested in, were used</b>  |   |   |  |
| Q13 if you are given the chance to be self-employed without the need to invest any money, without risk, worry-free environment, would you agree? | a: yes,<br>b: no<br>c: don't know/no answer   | Yes=19/26<br>No =7/26<br>Don't know=0   | Yes to new safe and easy self-employment=73%<br>No=27%<br><br>Don't know=0%        |
| Q14) if your answer is 1q2qno in Q13, why?   | a =too much work, pain, and worries= 4<br>Don't know skills to manage self-employment = | Too much work, pain and worries=4/26<br>Does not possess the skills=3<br>Other=19 | Too much work, pain, and worries=15%<br>Lack of SE skills=12%<br>Other reasons=73% |

#### Note on Raw Data Availability and Recovery Efforts

The summary statistics presented in this appendix are derived from original survey and interview data collected between 01/02/2021 and 28/06/2023 under Ethics Review Board approval (certificate included in Appendix 3). Following completion of the data analysis and in accordance with the ERB guidelines regarding data retention periods, the raw data files were archived.

Unfortunately, due to a combination of factors including the challenging conditions during the COVID-19 pandemic, multiple storage locations, and technical issues with data recovery, the complete raw dataset is no longer fully accessible. Extensive efforts were made to recover this data, including an attempt by the thesis co-supervisor (Dr. Vellino) to converted approximately

830 documents from the researcher's iPad Notability application to PDF format so that he could systematically reviewed all files in a common format.

Partial evidence of the data collection process was recovered, including interview fragments and handwritten notes documenting the research process. The documentation confirmed the target of interviewing 200+ individuals and notes explaining variations in completion rates.

The summary statistics presented here were compiled contemporaneously during the active data collection period when the ERB permit was valid. These summaries represent data from:

- Over 200 older adults who were approached
- Approximately 35 individuals who completed the shortened versions of the survey
- 25+ participants who provided responses used in the final analysis
- Multiple interview sessions with key stakeholders

While the absence of complete raw data represents a limitation, the summary statistics provided here, combined with the methodological documentation in Chapter 3, provide sufficient evidence of the research process and findings to corroborate the conclusions in this thesis. The conceptual nature of the SESEM model development relied primarily on iterative feedback and qualitative insights rather than quantitative validation, making these summaries adequate for the thesis objectives.

## 2.4 CERTIFICATE OF ETHICS APPROVAL

**Université d'Ottawa**

Bureau d'éthique et d'intégrité de la recherche  
29/06/2022

**University of Ottawa**

Office of Research Ethics and Integrity

### CERTIFICAT D'APPROBATION ÉTHIQUE | CERTIFICATE OF ETHICS APPROVAL

**Numéro du dossier / Ethics File Number**

H-04-22-7510

**Titre du projet / Project Title**

USING THE SHARING  
ECONOMY AND INNOVATIVE  
TECHNOLOGIES TO KEEP  
ELDER POPULATION ACTIVE  
AND PRODUCTIVE

**Type de projet / Project Type**

Thèse de doctorat / Doctoral  
thesis

**Statut du projet / Project Status**

Approuvé / Approved

**Date d'approbation (jj/mm/aaaa) / Approval Date (dd/mm/yyyy)**

29/06/2022

**Date d'expiration (jj/mm/aaaa) / Expiry Date (dd/mm/yyyy)**

28/06/2023

### Équipe de recherche / Research Team

**Chercheur /**

|                   | <b>Affiliation</b>  | <b>Role</b>                                     |
|-------------------|---|---|
| <b>Researcher</b> |   |   |
| Jamal<br>BAHORMOZ | École de science informatique et de génie électrique / School of Electrical<br>Engineering and Computer Science | Chercheur Principal /<br>Principal Investigator |
| André VELLINO     | École des sciences de l'information / School of Information Studies   | Superviseur / Supervisor<br>Co-superviseur /    |
| Martine LAGACÉ    | Département de communication / Department of Communication  | Co-supervisor                                   |

**Conditions spéciales ou commentaires / Special conditions or comments**

## **APPENDIX – 3: SOCIAL BUSINESS MODEL CANVASES, SBMC’S**

### **3.1 Socio-Economic Smart Employment Model SBMC**

1. Smart Vehicles Maintenance Centre SBMC
2. Smart Tasks hub’s SBMC
3. Smart Social Housing Ecosystem SBMC

**Social Business Model Canvas (based on:[www.businessmodelgeneration.com](http://www.businessmodelgeneration.com))**

**Project Name: SESEM**

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| <p><b><u>Key Partners</u></b></p> <ul style="list-style-type: none"> <li>• Social Assets: entrepreneurs, Innovators, senior experienced workers</li> <li>• Local communities</li> <li>• Relevant Federal and Provincial govt. agencies</li> <li>• Private Sector (as employers, equipment, tools... manufacturers.</li> <li>• Relevant educational, R&amp;D... organizations</li> </ul> | <p><b><u>Key Activities</u></b></p> <ul style="list-style-type: none"> <li>• smart self-employment.</li> <li>• smart tasks employment</li> <li>• mega social projects management</li> <li>• optimize the utilization of used equipment, materials, and idle resources</li> <li>• Upcycle and recycle</li> </ul> | <p><b><u>Social Value Proposition</u></b></p> <ul style="list-style-type: none"> <li>• provides convenient employment options to elder populations, both self-employment and smart task employment.</li> <li>• provide means to manage socio-economic projects</li> </ul> | <p><b><u>Customer Relationships</u></b></p> <p>will focus on encouraging SESEM customers to consider themselves as partners in all levels and activities. Customers/partners will be encouraged to provide feedback, and suggestions and be critical and proactive...</p> | <p><b><u>Customer Segments</u></b></p> <p>The main segment is the elder population of 50 years and above. However, other unemployed population segments could also be included.</p> |
|   | <p><b><u>Key Resources</u></b></p> <ul style="list-style-type: none"> <li>• Collaborative spaces</li> <li>• Social assets</li> <li>• Innovative technologies</li> </ul>   |   | <p><b><u>Channels</u></b></p> <ul style="list-style-type: none"> <li>• Direct visit/contact.</li> <li>• dedicated websites</li> <li>• collaborative spaces, workspace, makerspace...</li> </ul>   |   |

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| <p><b><u>Cost Structure</u></b></p> <p>operating costs:</p> <ul style="list-style-type: none"> <li>• rental,</li> <li>• utilities,</li> <li>• subscription/membership, user's fees, ...</li> <li>• maintenance/ consumables...</li> </ul> <p>Capital cost:</p> <ul style="list-style-type: none"> <li>• new projects</li> <li>• expansion of existing projects.</li> <li>• purchase of new equipment</li> <li>• new smart joint-ventures with the private and/or public sectors.</li> </ul> |  | <p><b><u>Revenue Streams</u></b></p> <ul style="list-style-type: none"> <li>• subscription/membership</li> <li>• transaction fee (for each transaction executed).</li> <li>• the user fee for using/renting the SESEM facilities.</li> <li>• hosting activities and other marketing activities</li> <li>• grants and loans/</li> </ul>      |  |  |
| <p><b><u>Eco-Social Cost</u></b></p> <p>none</p>  |  | <p><b><u>Eco-Social Benefits</u></b></p> <ul style="list-style-type: none"> <li>• Keeping the elder population active and benefiting from their experience</li> <li>• Sharing the available resources.</li> <li>• optimize the use factor of equipment and facilities</li> <li>• Upcycling and recycling equipment and materials</li> </ul> |  |  |

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| <p><b><u>Key Partners</u></b></p> <ul style="list-style-type: none"> <li>• Social Assets: entrepreneurs, Innovators, senior experienced workers.</li> <li>• Suppliers: Parts, consumables, utilities</li> <li>• Used cars Dealers</li> <li>• Equipment manufacturers.</li> </ul>   | <p><b><u>Key Activities</u></b></p> <ul style="list-style-type: none"> <li>• Diagnosis, inspection, and repairs</li> <li>• Routine maintenance</li> <li>• overhaul</li> <li>• Upgrade, installation.</li> <li>• Bodyworks</li> <li>• Buy, sell exchange used cars</li> </ul> | <p><b><u>Social Value Proposition</u></b></p> <p><b>For the elder population:</b></p> <ul style="list-style-type: none"> <li>• provide convenient self-employment.</li> </ul> <p><b>For the users:</b></p> <ul style="list-style-type: none"> <li>• Inspection, maintenance, and repair services at affordable cost and convenient payment method</li> <li>• Value co-creation.</li> </ul> | <p><b><u>Customer Relationships</u></b></p> <p>will focus on encouraging SVC users to consider themselves as partners in all levels and activities. Customers/partners will be encouraged to provide feedback, and suggestions and be critical and proactive.</p> | <p><b><u>Customer Segments</u></b></p> <ul style="list-style-type: none"> <li>• Individual vehicles' owners.</li> <li>• Vehicle's Dealers</li> <li>• Vehicle's auctions</li> </ul> |
|  | <p><b><u>Key Resources</u></b></p> <ul style="list-style-type: none"> <li>• Collaborative spaces</li> <li>• Social assets</li> <li>• Innovative technologies</li> </ul>  |  | <p><b><u>Channels</u></b></p> <ul style="list-style-type: none"> <li>• Direct visit/contact.</li> <li>• Digital marketing, Search engines, social media,...</li> <li>• community centres</li> <li>• word of mouth</li> </ul>                                      |  |
| <p><b><u>Cost Structure</u></b> (for both the SVC and users)</p> <p>operating costs:</p> <ul style="list-style-type: none"> <li>• rental,</li> <li>• utilities,</li> <li>• subscription/user's fees for makerspace equipment/tools....</li> <li>• maintenance, parts, consumables, and other needed materials</li> <li>• labor cost</li> </ul> |  | <p><b><u>Revenue Streams</u></b></p> <p><b>Revenues for the SVC:</b></p> <ul style="list-style-type: none"> <li>• subscriptions/membership</li> <li>• transaction fee</li> <li>• space/ equipment rental</li> <li>• hosting activities and other marketing activities</li> </ul> <p><b>Revenue for the self-employed:</b></p>  |   |  |

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| <p>Capital cost:</p> <ul style="list-style-type: none"> <li>• purchase new equipment</li> <li>• adding new services/upgrading existing</li> <li>• expansion to new locations</li> </ul> | <ul style="list-style-type: none"> <li>• income from services provided</li> </ul>   |
| <p><b><u>Eco-Social Cost</u></b></p> <ul style="list-style-type: none"> <li>• wastes resulting from the repairs (oils, chemicals...)</li> <li>• salvaged parts and equipment</li> </ul> | <p><b><u>Eco-Social Benefits</u></b></p> <ul style="list-style-type: none"> <li>• Keeping elder people active and benefiting from their experience</li> <li>• Sharing the workshop equipment, tools, and other facilities by many micro-entrepreneurs.</li> <li>• Upcycling used/old cars and reselling them</li> </ul> |

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| <p><b><u>Key Partners</u></b></p> <ul style="list-style-type: none"> <li>• Social Assets: entrepreneurs, Innovators, senior experienced workers</li> <li>• Local communities</li> <li>• Relevant Federal and Provincial govt. agencies</li> <li>• Private Sector (as employers, work-related research centres.</li> <li>• Software developers/programmers</li> </ul> | <p><b><u>Key Activities</u></b></p> <ul style="list-style-type: none"> <li>• Provide workspaces for smart tasks.</li> <li>• re-engineer full-time work into a short set of tasks.</li> <li>• provide the platform, databases, operations, control, and accounting programs.</li> </ul> | <p><b><u>Social Value Proposition</u></b></p> <ul style="list-style-type: none"> <li>• provides convenient smart task employment options to elder populations and other population cohorts.</li> </ul> | <p><b><u>Customer Relationships</u></b></p> <p>will focus on encouraging STH users to consider themselves as partners in all levels and activities. Customers/partners will be encouraged to provide feedback, and suggestions and be critical and proactive.</p> | <p><b><u>Customer Segments</u></b></p> <ul style="list-style-type: none"> <li>• The main segment is the elder population of 50 years and above.</li> <li>• Other unemployed population segments could also be included</li> </ul> |
|  | <p><b><u>Key Resources</u></b></p> <ul style="list-style-type: none"> <li>• Collaborative spaces</li> <li>• Social assets</li> <li>• Innovative technologies</li> </ul>  |  | <p><b><u>Channels</u></b></p> <ul style="list-style-type: none"> <li>• workspaces</li> <li>• employment centres</li> <li>• home-based</li> </ul>  |   |

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| <p><b><u>Cost Structure</u></b> (see Figure 6.11)</p> <p>Operating costs:</p> <ul style="list-style-type: none"> <li>• rental,</li> <li>• utilities,</li> <li>• subscriptions,</li> <li>• maintenance, ...</li> </ul> <p>Capital cost:</p> <ul style="list-style-type: none"> <li>• new equipment,</li> <li>• upgrade existing equipment &amp; software,</li> <li>• expansion</li> </ul> |  | <p><b><u>Revenue Streams</u></b> (see Figure 6.11)</p> <p>For the STH:</p> <ul style="list-style-type: none"> <li>• subscription fee,</li> <li>• transaction/</li> <li>• royalty fee</li> <li>• hosting training, social activities, and other marketing activities</li> </ul> <p>For the taskers(employees):</p> <ul style="list-style-type: none"> <li>• rewards payment</li> </ul> |  |  |
| <p><b><u>Eco-Social Cost</u></b></p> <p>none</p>   |  | <p><b><u>Eco-Social Benefits</u></b></p> <ul style="list-style-type: none"> <li>• Keeping the elder population active and benefiting from their experience and reducing unemployment and poverty in society.</li> <li>• Sharing the available resources.</li> <li>• optimize the use factor of equipment and facilities</li> </ul>  |  |  |

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| <p><b><u>Key Partners</u></b></p> <ul style="list-style-type: none"> <li>• Social Assets: entrepreneurs, Innovators, senior experienced workers</li> <li>• Local communities</li> <li>• Relevant Federal and Provincial govt. agencies</li> <li>• Private Sector (as employers, equipment, tools... manufacturers.</li> <li>• Relevant educational, R&amp;D... organizations</li> </ul> | <p><b><u>Key Activities</u></b></p> <ul style="list-style-type: none"> <li>• social housing</li> <li>• social employment</li> <li>• utility management, operations, and security.</li> <li>• socio-economic activities:                             <ul style="list-style-type: none"> <li>- social farming</li> <li>- social kitchen</li> <li>- other socio-economic activities</li> </ul> </li> </ul> | <p><b><u>Social Value Proposition</u></b></p> <p>Develop a platform to integrate and coordinate all the resources towards providing convenient affordable social housing and a sustainable self-sufficient ecosystem for the elder population and all other low-income populations.</p> | <p><b><u>Customer Relationships</u></b></p> <p>will focus on encouraging SSHE customers to consider themselves as partners in all levels and activities. Customers/partners will be encouraged to provide feedback, and suggestions and be critical and proactive.</p> | <p><b><u>Customer Segments</u></b></p> <ul style="list-style-type: none"> <li>• elder population in general.</li> <li>• Other low-income population groups</li> </ul> |
|   | <p><b><u>Key Resources</u></b></p> <ul style="list-style-type: none"> <li>• Social assets</li> <li>• Innovative technologies</li> <li>• Allocated government funds for housing and social needs</li> <li>• Private sector resources and expertise.</li> <li>• open sources</li> </ul>   |   | <p><b><u>Channels</u></b></p> <ul style="list-style-type: none"> <li>• Social housing government agencies, and registry office.</li> <li>• Older populational social services organizations and societies.</li> </ul>  |   |

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|   |  |  | <ul style="list-style-type: none"> <li>• Community centres</li> </ul> |
| <p><b><u>Cost Structure</u></b></p> <p>operating cost:</p> <ul style="list-style-type: none"> <li>• utilities</li> <li>• maintenance, consumables &amp; parts</li> </ul> <p>capital cost:</p> <ul style="list-style-type: none"> <li>• new internal projects</li> <li>• expansion of existing projects.</li> <li>• purchase of new equipment.</li> <li>• new venture expenses.</li> </ul> |  | <p><b><u>Revenue Streams</u></b></p> <ul style="list-style-type: none"> <li>• Rental and rent government subsidies.</li> <li>• royalties from tasks done in the SSHE</li> <li>• Commissions/fees from social farms, kitchens, and other social activities.</li> <li>• revenue share from smart social ventures in the SSHE.</li> <li>• grants and loans</li> </ul> |   |