

## Article

# What Influences Older Urban Poor's Attitude towards Online Job Search? Implications for Smart Cities Development

Chonticha Asavanirandom <sup>1</sup>, Watchara Pechdin <sup>2,\*</sup>, Ritthikiat Ngamsomsak <sup>1</sup> and Ruttiya Bhula-Or <sup>1</sup><sup>1</sup> College of Population Studies, Chulalongkorn University, Bangkok 10330, Thailand<sup>2</sup> Thammasat University Research Unit in Social Equity, Faculty of Social Administration, Thammasat University, Bangkok 10200, Thailand

\* Correspondence: w.pechdin@tu.ac.th

**Abstract:** There is an increasing number of older adults being encouraged to come back to the workforce in search of better financial security in their later years. At the same time, the job market nowadays has increasingly depended on technology to recruit new workers, especially in Smart Cities, a concept that has been recently introduced to developing countries. As a result, the use of the Internet for job searches has become increasingly important for older adults living in urban environments, especially those with limited resources. However, there has not been an in-depth paper exploring the various factors that may affect the older population's ability to use this new development to their advantage. This study offered a closer look at the social and economic factors that influence acceptance of using the Internet to look for a job among older urban poor in Thailand. By understanding the influences that shape their attitudes and behaviors towards online job searches, it is then possible to guide the development of Smart Cities and offer better assistance to older adults who wish to use the Internet for employment opportunities. We applied a logit regression model on data collected from individuals aged pre-retirement and retirement ( $n = 1505$ ) in two Thai cities with significantly different economic development levels. The results showed that gender, religion, family arrangement, and income had a significant impact on older adults' online job search activities, especially when it came to women, people of the Islamic faith, people living with partners, and high-income individuals. Urban planners are recommended to take these aforementioned factors into account while formulating the Smart Cities development plan.

**Keywords:** older population; internet; online; job search; urban poverty; urban poor; smart cities; determinants; development; Thailand



**Citation:** Asavanirandom, C.; Pechdin, W.; Ngamsomsak, R.; Bhula-Or, R. What Influences Older Urban Poor's Attitude towards Online Job Search? Implications for Smart Cities Development. *Smart Cities* **2023**, *6*, 614–625. <https://doi.org/10.3390/smartcities6010028>

Academic Editor: Pierluigi Siano

Received: 26 December 2022

Revised: 30 January 2023

Accepted: 31 January 2023

Published: 13 February 2023



**Copyright:** © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

As the proportion of the older demographic within the population increases, the impact on economic development from labor shortages is becoming increasingly apparent [1–4]. To resolve this issue, numerous governments have implemented initiatives to facilitate and encourage the re-entry of older adults into the workforce. Such policies are not only components to sustain economic stability and productivity [5] but are also beneficial to those older people who are not yet ready to retire due to financial insecurity [6,7].

At the same time, multiple countries have introduced the concept of Smart Cities that are designed to be efficient and sustainable, utilizing the latest technologies and data-driven insights to make decisions and improve urban life [8,9]. They have the potential to revolutionize the job-seeking process, which is ordinarily the initial step for individuals entering the workforce. This development, by leveraging the power of technology to aggregate data from multiple sources, can provide an up-to-date list of the latest job openings. Then, job seekers can have access to a wide range of job opportunities, making it easier and more efficient to find the most suitable job openings.

However, the increasing dependence on technology to look for and apply for a job can be particularly difficult for older individuals [10,11]. Many of those are often less technology-oriented and more easily overwhelmed by the rapid pace of the technological revolution [12,13]. As they are more reluctant to take advantage of the online job search platform, they are more likely to be left behind in the digital landscape [13]. Therefore, it is important for governments around the world to motivate this particular demography to be more technologically literate and to utilize online job search tools to find employment.

The first step to achieve this feat is to understand the socioeconomics of this population group and gain a better understanding of the attitudes they may have towards this type of technology. This research is of particular interest since most studies on this subject largely focus on younger adults [14,15]. Without this crucial information, we cannot provide them with the best support to adapt to the changing job market in the era of Smart Cities.

Therefore, in this study, we investigated the influence of the socioeconomic background of older people in Thailand, where the Smart Cities development strategy was introduced in 2003 [16], on their acceptance of online job search tools. Using this information, we could identify the best methods to encourage their participation in this area. In particular, we focused on the older urban poor who are significantly vulnerable to becoming marginalized in urban economic structures [17,18]. They are more likely to have to return to the workforce mainly because of the lack of financial security in later life and may not be able to find suitable positions without the help of technology [19].

We compared the urban poor populations over 45 years of age in two nested layers, namely, age and areas. We separated our observations into pre-retirement (45–59 years old) and retired (60 years old and over) age groups as well as their locations, and two cities of disparate paces of urbanization (see details of the study area in Section 3). By utilizing this comparison, those responsible for policymaking, particularly urban planners, can create initiatives and strategies that are more specifically tailored to the older demography and the pace of urbanization.

The rest of the study is divided into five sections. Firstly, we provide an overview study regarding acceptance for online job searching among older demography and its socioeconomic determinants. After that, the methodology, including the study area, participants, method of data collection, variables, and econometric model for investigation are presented, followed by its findings. Then, the study discussion is addressed, followed by suggestions for how to proceed going forward and how Thailand, including other countries, can promote and enhance acceptance of using the Internet for an online job search in the older population in the era of Smart Cities.

## **2. Literature Review: Socio-Economic Factors towards Acceptance of Online Job Searching among Older Demography**

Several studies on the impact of socio-economic factors on technology acceptance regarding online job searching in the older population have failed to produce significant results as experiences and perceptions vary greatly among the studied individuals [11,20]. However, some have suggested that factors such as age, gender, family arrangement, religion, frequency of Internet usage, income factors, and occupations may all play a role in determining an individual's likelihood of accepting online job searching [21–28]. Among these factors, age has been identified as a critical one to determine an older individual's likelihood of using the Internet, not only for job searching but all Information and Communications Technology (ICT) activities. Expectedly, the young-old (aged 65–69) are more likely to use the Internet and have more confidence in their ability to use the Internet [20,23,29]. Those of the older age brackets (aged 70+) often lack familiarity with the technology and the Internet or are reluctant to use the Internet for such a purpose.

Another important factor is gender. Existing studies revealed that there are significantly different attitudes toward the acceptance of online job searching between older men and women [22,24]. Older women are more likely to use online job searching than older men, potentially due to the fact that older women may lack access to the same offline re-

sources such as contacts in their community or in-person networks that men may have [25]. Utilizing the web as a job search tool can provide these women with the ability to find better opportunities and resources that may have otherwise been inaccessible to them [24]. In addition, religion has also been reported as a significant factor that influences an older individual's acceptance of Internet usage [30,31]. More specifically among Muslims, the perceived usefulness of the Internet has a significant impact on behavioral intention [27,28]. Many older Muslims opt to use the Internet only in search of more understanding about their religion, rather than other purposes [28]. Furthermore, the role of family dynamics has an effect on how older individuals view using the Internet. Those who are married or in a relationship may be more receptive to using the Internet than those who are not, likely because of the support and help a partner can provide [25,26]. However, some older people may be hesitant to use the Internet because they do not want to be a burden to other family members [32–34].

Moreover, Internet usage frequency, income, occupation, and education level are also noteworthy factors in determining the willingness of older adults to use online job search. Those with higher levels of using the Internet are more likely to use online job searches [35] as they recognize the advantages of using technology [36]. Older adults with higher incomes are also more likely to engage in technology in their daily lives than those with lower incomes [37,38]. Moreover, people in higher-skilled occupations are more likely to use these tools than lower-skilled workers [37]. Individuals in professional occupations such as an official tend to have higher levels of technology acceptance and are more likely to adopt online job searches than those in other occupations [37,39].

The different impacts of these socioeconomic factors can be conceptualized by the Technology Acceptance Model (TAM) [36]. The model is founded on the premise that user acceptance of a technology is contingent upon their perceptions of two key elements: usefulness and ease of use. Perceived usefulness has been defined as the degree to which a person perceives that utilizing a specific system would improve their job performance. Similarly, perceived ease of use has been defined as the degree to which using a system is thought to be free of effort. These two components are then employed to predict user acceptance of a technology. This infers that technology acceptance can be seen as a two-step process: first, the user must perceive the technology as useful, and second, the user must find it easy to use. It has been widely accepted that this model provides a useful framework to understand the predictors of human behavior toward potential acceptance or rejection of the technology [37]. In relation to studies on older populations, it has also proven to be an effective tool to help understand their intentions to use digital technology [39–41]. By understanding the factors that influence older adults' technology acceptance, one could recommend and design interventions that can help to increase the ease of using technology and thus enhance their acceptance of technology and engage them to do more with technology.

In summary, older adults' acceptance of technology can be impacted by a multitude of elements, such as age, gender, family arrangement, religion, frequency of Internet usage, income, and occupation. It is essential to take these factors into consideration while developing technology that meets the specific needs and preferences of the older demographics, thus optimizing their engagement and opportunities.

### 3. Research Design

#### 3.1. Study Area

The study was conducted in two economically distinct cities in Thailand using the convenience method by Etikan [42]. One was the Khlong Toei District of Bangkok, Thailand's metropolitan capital with an advanced level of urbanization and progress where Smart Cities initiatives were ongoing [16]. The other was Pattani, the capital of Pattani province with an early level of urbanization [43] and long-term potential for Smart Cities development. These selections allowed us to gain insight into the direction of change in

urban poverty and to gain a better understanding of how socio-economic factors influence the adoption of online job search platforms over time.

### 3.2. Participants

Since the study focused on urban poverty, the study participants primarily comprised low-skill workers or those performing labor-intensive tasks. This was carried out to better understand the challenges faced by people in poverty. The participants consisted of two groups:

Group 1: reserve pre-retirement group (aged 45–59)

Group 2: early older population (aged 60–69)

In order to guarantee that the participants selected for the study are appropriate for its aims and key findings would reflect the accurate influencing factors, exclude participants who are (1) hospitalized or physically incapable of providing data independently, (2) illiterate, and (3) with visual impairments or difficulties in reading or utilizing digital or mobile devices.

### 3.3. Method for Collecting Data

We employed a socio-economic survey in the form of a questionnaire in which questions were divided into two sections; socio-economic questions, which respondents answered either by choice questions or fill-in questions, and attitude questions, which were designed to be answered using a Likert scale ranging from Strongly Disagree (level 1) to Strongly Agree (level 5).

All questionnaires were completed during in-person interviews that allowed us to observe the respondent's behavior and whether they understood the objectives of the survey. Interviewers were local staff who were properly trained by the research team to ensure ethical conduct and their understanding of the survey. Clarifications were made immediately by the surveyors whenever necessary.

### 3.4. Analytical Techniques

#### 3.4.1. Variables

- Dependent variables

Our dependent variable was technology acceptance for online job searching in older adults (OJS). Initially, this variable was measured on a 5-point Likert scale. To gain more insight into the relationship between two binary outcomes, we reclassified this variable into a dichotomous form where: (a) Levels from 1–2 to represent an avoidance context (OJS = 0) or the respondents prefer to use the traditional way of job searching such as community network or contacting public employment agencies, and (b) Levels from 3–5 to represent an online-preferred context (OJS = 1). This process enabled us to more accurately predict the probability of an event occurring.

- Independent variables

Regarding our review, we incorporated six predictors of technology acceptance for online job searching in older adults (OJS) into our investigation, categorized into three analytical groups. They were dichotomous variables: gender (GDR), religion (REL), income factors (INC), and type of employment (TEP); categorical variables: family arrangement (FAM); and total Internet usage per day (TIU).

### 3.4.2. Empirical Model

To best incorporate the specific characteristics of the dependent variables, namely, the attitudes of local citizens, we decided to apply the Logit Regression model (logit) [44] which had been reported to be particularly effective in the analysis of the dichotomous variables. The model allowed the estimation of the probability of being one category compared to another. The estimation method was denoted as follows:

$$P(OJS_i = 1) = \frac{e^{\beta_i X_i}}{\sum_{i=1}^k e^{\beta_i X_i}} \quad (1)$$

where

$$X_i = \alpha_0 + \beta_1 GDR_i + \beta_2 REL_i + \beta_3 FAM_i + \beta_4 TEP_i + \beta_5 INC_i + \beta_6 TIU_i$$

where  $\beta, \alpha$  is a set of coefficients.

According to Equation (1), the probability of a local individual posing a non-negative attitude towards the refugees  $P(OJS = 1)$  was quantified by  $\beta$  in the set of predictors  $X$ . The marginal effect was used to interpret the meaning of  $\beta$ , indicated as the following equations:

Marginal Effect:

$$\frac{\partial \hat{P}}{\partial X} = \hat{\beta}_X \hat{P}(1 - \hat{P}) \quad (2)$$

As indicated in Equation (2), the partial derivative of probability  $P(ATT = 1)$  with respect to  $X$  gave us the marginal effect. When the marginal effect had a positive sign, increasing the predictor or independent variable by one unit increased the probability of a successful event. On the other hand, when the marginal effect had a negative sign, increasing the predictor or independent variable by one unit decreased the probability of a failure event. For a dichotomous variable or categorical variable, its coefficient can be interpreted by comparing each category to a baseline category. For example, considering  $\beta GDR$ , if we used male as the baseline category and the marginal effect (mfx) was less than 0 ( $mfx < 0$ ), it meant that the marginal effect contributed by a female was less than that of a male, which indicated that changing from male to female reduced  $P(OJS = 1)$  by  $(1 - \beta) \times 100\%$ .

## 4. Results

### 4.1. Participants' Profiles

The socio-economic profiles of all participants across all age groups in both locations were unexpectedly similar with the exception of religion (Table 1). Almost all of the participants in Bangkok were Buddhist, while those in Pattani were predominantly Islamic. The majority of participants were reported to be married with children, had standard employment, and were satisfied with their daily expenses.

Despite a noticeable difference in Internet usage between Bangkok and Pattani, the data revealed a stark contrast in the way older adults aged 60–69 years old interacted with the Internet. While 73.89% of those in Bangkok used the Internet for less than two hours per day, only 34.17% of adults in Pattani can say the same; the remaining 65.83% used the Internet for over two hours per day.

Similar results were also found among answers regarding technology acceptance. Technology acceptance for an online job search in Bangkok among 45–59 years old was relatively high, with 14.51% of them actively using online job search tools, while 85.49% were avoiding such tools. Among 60–69 years old, acceptance was much lower with only 14.17% actively using online job search tools and 85.83% avoiding them. In Pattani, the technology acceptance for online job searches was mixed with a majority of people avoiding the use of an online job search. For the 45–59 years old group, 86.36% avoided online job

searches while 12.76% accepted them. For the 60–69 years old group, 83.19% avoided online job searches while 16.81% accepted them. This suggested that there was still huge hesitance to use online job searching in both Bangkok and Pattani, and there may be a need for more education and awareness about the advantages of using an online job search.

**Table 1.** Descriptive Statistics. (Unit: Percentage).

Profile of the Respondents	Bangkok ( <i>n</i> = 812)		Pattani ( <i>n</i> = 793)	
	45–59 Years Old ( <i>n</i> = 572)	60–69 Years Old ( <i>n</i> = 240)	45–59 Years Old ( <i>n</i> = 567)	60–69 Years Old ( <i>n</i> = 226)
Gender				
Male	44.1	40.8	37.1	37.8
Female	55.9	59.2	62.9	62.4
Family arrangement (multiple choices)				
Single living	7.5	6.7	7.8	5.8
With spouse	65.4	62.5	68.8	65.5
With children	64.5	66.3	72.3	81.9
Other family members	42.8	49.6	32.3	39.4
Religion				
Buddhism	100.0	99.6	28.0	38.5
Islam	-	-	72.0	61.5
Other	-	0.4	-	-
Type of employment *				
Standard employment	84.83	83.19	82.87	81.25
Non-standard employment	15.17	16.81	17.13	18.75
Income factors				
Satisfied with daily expenses	54.67	54.42	51.92	56.67
Dissatisfied with daily expenses	45.33	45.58	48.08	43.33
Total hours per day for using Internet				
Less than two hours	31.75	73.89	16.96	34.17
2–3 h	16.58	3.98	11.71	10.83
3–4 h	16.93	7.96	10.31	11.67
4–5 h	16.05	7.52	20.10	21.25
More than 5 h	18.69	6.64	40.91	22.08
Technology acceptance for online job search				
Acceptance for online job search	14.51	14.17	12.76	16.81
Avoidance for online job search	85.49	85.83	86.36	83.19

Note: \* A group of standard employment refers to those that typically involve a set of duties and a fixed salary paid regularly. Meanwhile, non-standard employment refers to those whose work involves specific time or responsibilities and hourly pay. Source: calculated by authors using data from the survey.

#### 4.2. Empirical Results

In general, we found only two significant factors influencing the technology adoption of both pre-retirement and retired groups in both Bangkok and Pattani. Our first significant result was of religions for which the mfx was 0.161 or 16.1% (Bangkok) and 9.6% (Pattani) at a *p*-value of 0.05. This suggested that individuals who identify as Buddhist were more likely to accept technology for an online job search than those who identify as Muslim. The marginal effect (mfx) of accepting technology for an online job search for gender was not statistically significant with a *p*-value of 0.932 (Bangkok) and 0.698 (Pattani), indicating that there was no significant difference in acceptance for males and females. In terms of family arrangements, the mfx of those who lived with a partner was  $-0.043$  (Bangkok) and  $-0.054$  (Pattani), which was significant at a *p*-value of 0.05, indicating that those living with a partner were unlikely to use an online job searching tool compared to those who were not (Table 2).

**Table 2.** Factors influencing probability for accepting Internet for online job search.

No	Factors	Total		45–59 Years Old				60–69 Years Old					
		Bangkok		Pattani		Bangkok		Pattani		Bangkok		Pattani	
		Mfx <sup>1</sup>	p-Value	Mfx <sup>1</sup>	p-Value	Mfx <sup>1</sup>	p-Value	Mfx <sup>1</sup>	p-Value	Mfx <sup>1</sup>	p-Value	Mfx <sup>1</sup>	p-Value
1	Gender (male = 1, female = 0)	−0.002	0.932	0.010	0.698	0.020	0.469	0.003	0.918	−0.064 <sub>*</sub>	0.101	0.040	0.698
2	Religion <sup>2</sup> (Buddhism = 1, Islam = 0)	0.161 <sup>**</sup>	0.00	0.096 <sup>**</sup>	0.00	0.155 <sup>**</sup>	0.000	0.092 <sup>**</sup>	0.002	0.164 <sup>**</sup>	0.000		
3	Family Arrangement												
	With partner (=1)	−0.043 <sup>**</sup>	0.049	−0.054 <sup>**</sup>	0.027	−0.035	0.194	−0.055 <sup>**</sup>	0.046	−0.057 <sub>*</sub>	0.105	0.002	0.919
	With son (=1)	0.026	0.365	0.043	0.249	0.009	0.798	0.053	0.224	0.054	0.284	0.011	0.752
	With daughter (=1)	−0.008	0.754	0.004	0.876	0.001	0.971	−0.010	0.744	−0.066	0.250		
4	Income factor (Satisfied with daily expenses = 1, otherwise = 0)	0.013	0.564	−0.037	0.148	−0.010	0.719	−0.034	0.247	0.070 <sup>**</sup>	0.081	−0.016	0.671
5	Type of employment (standard employment = 1, otherwise = 0)	−0.007	0.782	−0.014	0.572	−0.005	0.873	−0.022	0.453	−0.006	0.868	0.024	0.684
6	Total usage of Internet per day (hours)	0.007	0.216	0.006	0.332	0.005	0.422	0.003	0.733	0.012	0.236	0.020	0.676
Pr = 1 Accepting Internet for online job search		N = 812		N = 793		N = 572		N = 567		N = 240		N = 226	

Remark: (1) mfx = marginal effect. (2) blank cells represent nearly singular matrices in which attribute logit calculation cannot present analytical outcomes. \* significance at level 0.05. \*\* significance at level 0.10. Source: Calculated by authors.

When we specifically consider the factors that may influence acceptance of technology within the pre-retirement age group (45–59 years old), the results were largely consistent with the overall ones (Table 2). Buddhist individuals were found to be much more likely to accept technology for an online job search than Muslims. Surprisingly, neither having a partner nor children had a significant effect on the acceptance of online job search technologies among the older urban poor in Bangkok. This suggested that the pre-retirement age group in Bangkok's urban poor communities was less likely to involve family members when it came to using the Internet for an online job search.

Of the retired age group (60–69 years old), there were significant differences between the study areas. Those who lived in Bangkok's urban poor communities demonstrated a greater willingness to accept the Internet for an online job search than their counterparts in Pattani, which was less urbanized. Notably, female retirees were found to be more likely to embrace the Internet for online job searching than male retirees (at  $p$ -value = 0.10). Similarly, Buddhists were also more likely to adopt the Internet than those of the Muslim faith. Furthermore, having a partner and being satisfied with their income were significant factors in the acceptance of the Internet for online job searches of those living in Bangkok. This suggested that the retired age group in Bangkok's urban poor communities had a positive attitude towards the adoption of technology for online job searching, indicating that they were more open to the idea of utilizing an online platform to seek employment opportunities.

## 5. Discussion

### 5.1. Factors Influencing the Acceptance of Technology for Online Job Searching

The acceptance of the Internet for online job searching in older adults was heavily influenced by their individual experiences and perceptions [11,20]. Specifically, when studying older adults in urban poor areas of Bangkok and Pattani, Thailand, we were able

to identify certain factors that could significantly shape the acceptance of this technology among the pre-retirement age population.

It was interesting to note that our main conclusion revealed that gender had no apparent influence on the acceptance of online job searching in older adults in the pre-retirement group. This can be explained by the fact that much of the technology was designed to be equally accessible and beneficial to both genders and hence, it provided the same resources and opportunities to all of our participants. However, this factor might be significant when we took into account the effects of age and living environment factors [22]. Our findings suggested that older females in Bangkok were more likely to embrace technology for online job searching than older males, which was in line with Barbanchon et.al. [22]. In Bangkok's urban poor areas, older women may not have access to the same offline resources as men, such as contacts in their community or in-person networks which then encouraged them to turn to online job searches to gain access to more opportunities and resources [24].

Moreover, it was evident from our survey that religion had a profound impact on the adoption of technology for online job searching, as religion had long been an important source of support, comfort, and guidance for individuals [30], especially in older generations. For urban poor older adults, religion may provide a sense of stability and continuity and can serve as a guide for navigating the unfamiliar and challenging world of online searching [30]. It may provide a moral framework to accept or reject new technologies, and religious beliefs can shape perceptions of the perceived risks and benefits of Internet usage [30]. We could deduce that adults in both study areas were strongly influenced by their religious beliefs in regard to their attitudes towards technology and decisions on its usefulness [27,28]. Our study suggested that Muslims were less likely than older Buddhist adults to make use of the Internet for online job searching. Perceived usefulness could be a major factor in determining the intention of Internet usage [27,28]. Notably, some older Muslims may be more inclined to use the Internet to gain more knowledge about their religion as opposed to other reasons [28].

Furthermore, our findings indicated that there was no positively observable relationship between family arrangement and the acceptance of technology for online job searches among pre-retirement and retired individuals in both Bangkok and Pattani. In particular, those living with a partner were found to have a negative attitude towards the adoption of the Internet for online job searches. Some older adults may have been hesitant to ask for help from their families, feeling as though they would be an unwelcome imposition [32,33]. This reluctance could come from a fear of burdening their loved ones, and a desire not to create any additional responsibilities for them [32,34]. As a result, they chose to go without assistance rather than reaching out to their relatives. If this hypothesis was true, our results may highlight the need to enhance and improve family support for an online job search in Thailand.

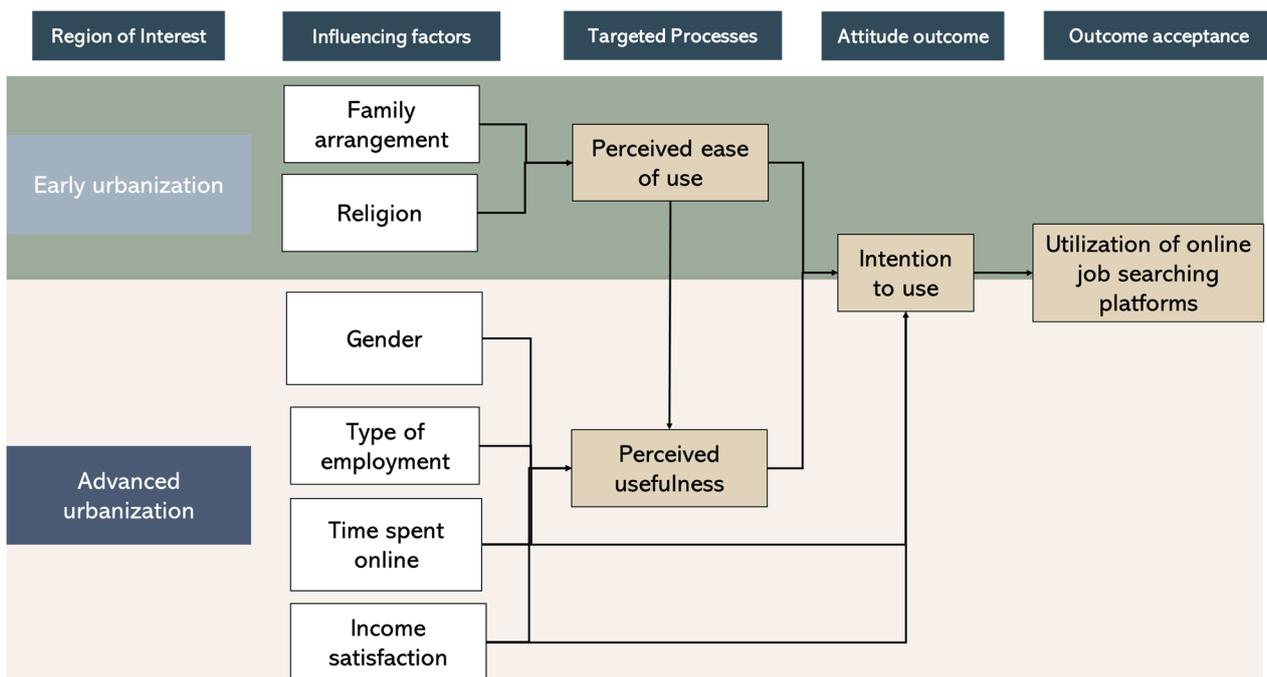
In terms of income factor, our key findings revealed that pre-retirement individuals in Bangkok who were satisfied with their income tended to use the Internet for job searches. This was likely because Bangkok was a thriving economic hub, and the cost associated with accessing the technology may not be a factor of concern [37,38]. This encouraged pre-retirement individuals to take advantage of the available online opportunities.

No other factors were found to have a significant impact on our respondents. This was likely because these factors failed to convince the individual, both in pre-retirement and retired groups, of the perceived usefulness and ease of use [35,36]. Particularly, those who use the Internet more on a daily basis were still not more likely to accept the Internet as a useful tool to search for employment. This may be because they did not recognize the benefit of the Internet as a potential platform to look for jobs [36].

## 5.2. Policy Implications

Our empirical results, incorporated into the TAM model [36], suggested that policies needed to be implemented to achieve positive results in encouraging the older population's

utilization of online job search platforms, varied from one location to another, depending on a wide-ranging list of factors. We recommend that, for areas with high levels of urbanization and development, urban planners need to focus on the perceived usefulness of these platforms and take into account gender, types of employment, familiarity with the Internet, and income factors. On the other hand, those in an area with early urbanization and less progress need to concentrate on the influence of religion and family arrangements to enhance the perceived ease of use. The interactions between these factors and the targeted processes and outcomes are not exclusive (Figure 1). Both processes need to be met in order to achieve the desired outcome of encouraging the older urban poor to want to use the Internet when they look for suitable employment on different platforms.



**Figure 1.** Recommended framework for implementation of policies to enhance older population’s use of the Internet while searching for suitable employment based on levels of urbanization of the local community. Source: developed by authors.

For example, in the case of Pattani city, much effort should be spent on enhancing the perception of the ease of using the Internet to look for jobs with Muslims and those who live with their partners and children. We suggest local officials organize community outreach programs, including classes on the use of computers, smartphones, and other devices, as well as helping with writing resumes and filling out job applications online. On the other hand, urban planners in Khlong Toei District need to direct their attention to aiding older men and those with a lower level of income satisfaction to understand how online tools can help them find better jobs that offer social benefits. In addition, given the fact that there are a number of older urban poor who spend a significant amount of time online but still did not find the Internet a useful platform when searching for new employment, these people should be encouraged to spend more time familiarizing themselves with these platforms and utilize them more often while searching for employment. We also recommend that the said programs should be made available to those who are not with standard employment and who could benefit greatly from using these tools to look for jobs that provide higher income security and additional benefits.

## 6. Concluding Remarks

An increasing number of older adults around the world are being encouraged to come back to the workforce to help sustain their country's economy. However, they face the risk of being marginalized in the face of job markets that increasingly depend on technology development when it comes to recruitment. This dependency is of particular interest in Smart Cities that have been developed with the intention of making life easier for citizens by utilizing technology and data-driven solutions [45,46] where younger adults have gained a significant advantage over their older counterparts. This issue is notably more serious for the older urban poor who are significantly vulnerable to becoming marginalized in urban economic structures.

Our study found that occupation, income, and total Internet usage had a less significant impact in our study areas. This could be due to a lack of perception of usefulness and difficulties in using the Internet in Thailand. Nonetheless, it is still important to progress the development of Smart Cities initiatives for older citizens, especially for those who are urban poor. As such, for future study, we would suggest research scholars investigate how to strengthen these factors in order to encourage older adults to accept technology for online job searching and help provide them with financial security for their later life.

**Author Contributions:** Conceptualization, C.A. and W.P.; Data curation, W.P. and R.N.; Formal analysis, C.A. and R.N.; Funding acquisition, R.B.-O.; Investigation, R.B.-O. and C.A.; Methodology, C.A.; Project administration, R.B.-O.; Resources, R.N.; Software, W.P.; Supervision, C.A. and R.B.-O.; Validation, R.B.-O.; Writing—original draft, C.A. and W.P.; Writing—review and editing, W.P. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was funded by the National Research Council of Thailand (NRCT), grant number 324/2564.

**Institutional Review Board Statement:** The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of The Research Ethics Review Committee for Research Involving Human Research Participants Group 1, Chulalongkorn University with the ethical certification No.145/64.

**Data Availability Statement:** Not applicable.

**Acknowledgments:** This study was a part of the project "Innovation to enhance job security and income for informally pre-aging and older workers by promoting the solidarity economy through a digital platform" funded by the National Research Council of Thailand. The authors would like to thank all research members including Anuk Pitukthanin, Akkanut Wantanasombut, Suphasit Taweejamsup, Wimpat Rajpradit, and Piti Eiamchamroonlarp for their suggestions and recommendations.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Aiyar, M.S.; Ebeke, M. *The Impact of Workforce Aging on European Productivity*; International Monetary Fund: Singapore, 2016.
2. Dallmeyer, S.; Wicker, P.; Breuer, C. How an aging society affects the economic costs of inactivity in Germany: Empirical evidence and projections. *Eur. Rev. Aging Phys. Act.* **2017**, *14*, 1–9. [[CrossRef](#)] [[PubMed](#)]
3. Fukuda, S.-I.; Okumura, K. The aging society, savings rates, and regional flow of funds in Japan. *J. Jpn. Int. Econ.* **2021**, *62*, 101165. [[CrossRef](#)]
4. Osatis, C.; Asavanirandom, C. An Exploring Human Resource Development in Small and Medium Enterprises in Response to Electric Vehicle Industry Development. *World Electr. Veh. J.* **2022**, *13*, 98. [[CrossRef](#)]
5. Asavanirandom, C.; Pechdin, W.; Trang, N. Identifying Factors Influencing Productivity of Older Workers in Service Sector: A Case Study in Pilot Companies in Thailand. *Behav. Sci.* **2022**, *12*, 268. [[CrossRef](#)] [[PubMed](#)]
6. Costa, G.; Di Milia, L. Aging and shift work: A complex problem to face. *Chronobiol. Int.* **2008**, *25*, 165–181. [[CrossRef](#)] [[PubMed](#)]
7. Zacher, H.; Kooij, D.; Beier, M. Active aging at work. *Organ. Dyn.* **2018**, *47*, 37–45. [[CrossRef](#)]
8. Khan, H.H.; Malik, M.N.; Zafar, R.; Goni, F.A.; Chofreh, A.G.; Klemeš, J.J.; Alotaibi, Y. Challenges for sustainable smart city development: A conceptual framework. *Sustain. Dev.* **2020**, *28*, 1507–1518. [[CrossRef](#)]
9. Caird, S.P.; Hallett, S.H. Towards evaluation design for smart city development. *J. Urban Des.* **2019**, *24*, 188–209. [[CrossRef](#)]
10. Brdulak, A. The concept of a smart city in the context of an ageing population. *Transp. Econ. Logist.* **2017**, *68*, 65–75. [[CrossRef](#)]

11. Torku, A.; Chan, A.; Yung, E. Implementation of age-friendly initiatives in smart cities: Probing the barriers through a systematic review. *Built Environ. Proj. Asset Manag.* **2021**, *11*, 412–426. [[CrossRef](#)]
12. Karaoglu, G.; Hargittai, E.; Nguyen, M. Inequality in online job searching in the age of social media. *Inf. Commun. Soc.* **2022**, *25*, 1826–1844. [[CrossRef](#)]
13. Vaportzis, E.; Clausen, M.G.; Gow, A. Older adults perceptions of technology and barriers to interacting with tablet computers: A focus group study. *Front. Psychol.* **2017**, *8*, 1687. [[CrossRef](#)] [[PubMed](#)]
14. Karácsony, P.; Izsák, T.; Vasa, L. Attitudes of Z generation to job searching through social media. *Econ. Sociol.* **2020**, *13*, 227–240. [[CrossRef](#)]
15. Vacchiano, M. Nine mechanisms of job-searching and job-finding through contacts among young adults. *Sociol. Res. Online* **2022**, *27*, 361–378. [[CrossRef](#)]
16. Taweesaengsakulthai, S.; Laochankham, S.; Kamnuansilpa, P.; Wongthanavas, S. Thailand Smart Cities: What is the Path to Success? *Asian Politics Policy* **2019**, *11*, 144–156. [[CrossRef](#)]
17. Chirisa, I.; Mutambisi, T.; Chivenge, M.; Mabaso, E.; Matamanda, A.R.; Ncube, R. The urban penalty of COVID-19 lockdowns across the globe: Manifestations and lessons for Anglophone sub-Saharan Africa. *GeoJournal* **2022**, *87*, 815–828. [[CrossRef](#)] [[PubMed](#)]
18. Kuddus, M.A.; Tynan, E.; McBryde, E. Urbanization: A problem for the rich and the poor? *Public Health Rev.* **2020**, *41*, 1–4. [[CrossRef](#)]
19. Van Hoof, J.; Kazak, J.K.; Perek-Białas, J.M.; Peek, S. The Challenges of Urban Ageing: Making Cities Age-Friendly in Europe. *Int. J. Environ. Res. Public Health* **2018**, *15*, 2473. [[CrossRef](#)]
20. Hunsaker, A.; Hargittai, E. A review of Internet use among older adults. *New Media Soc.* **2018**, *20*, 3937–3954. [[CrossRef](#)]
21. Faberman, R.J.; Kudlyak, M. What does online job search tell us about the labor market. *Econ. Perspect.* **2016**, *40*, 1–15.
22. Le Barbanchon, T.; Rathelot, R.; Roulet, A. Gender differences in job search: Trading off commute against wage. *Q. J. Econ.* **2021**, *136*, 381–426. [[CrossRef](#)]
23. Hargittai, E.; Piper, A.; Morris, M. From internet access to internet skills: Digital inequality among older adults. *Univers. Access Inf. Soc.* **2019**, *18*, 881–890. [[CrossRef](#)]
24. Hasan, H.M.; Linger, H. Older women online: Engaged, active and independent. In *Australasian Conference on Information Systems 2018*; Australasian Conference on Information Systems, Ed.; University of Wollongong Australia: Wollongong, NSW, Australia, 2018.
25. Gao, Q.; Ebert, D.; Chen, X.; Ding, Y. Design of a mobile social community platform for older Chinese people in urban areas. *Hum. Factors Ergon. Manuf. Serv. Ind.* **2015**, *25*, 66–89. [[CrossRef](#)]
26. Baker, S.; Warburton, J.; Waycott, J.; Batchelor, F.; Hoang, T.; Dow, B.; Ozanne, E.; Vetere, F. Combatting social isolation and increasing social participation of older adults through the use of technology: A systematic review of existing evidence. *Australas. J. Ageing* **2018**, *37*, 184–193. [[CrossRef](#)] [[PubMed](#)]
27. Islam, M.T. The impact of social media on muslim society: From islamic perspective. *Int. J. Soc. Humanit. Sci.* **2019**, *3*, 95–114.
28. Salim, S.Y. Media Qualities and Preferences in Da’Wah among Muslim Converts in Borneo. *Al-Hikmah* **2021**, *13*, 80–101.
29. Mitzner, T.L.; Boron, J.B.; Fausset, C.B.; Adams, A.E.; Charness, N.; Czaja, S.J. Older adults talk technology: Technology usage and attitudes. *Comput. Hum. Behav.* **2010**, *26*, 1710–1721. [[CrossRef](#)]
30. Campbell, H. Internet and Religion. In *The Handbook of Internet Studies*; Wiley-Blackwell: Hoboken, NJ, USA, 2011; pp. 232–250.
31. Kluser, R.; Cheong, P. Technological Modernization, the Internet, and Religion in Singapore. *J. Comput. -Mediat. Commun.* **2007**, *12*, 1122–1142. [[CrossRef](#)]
32. Hunsaker, A.; Nguyen, M.H.; Fuchs, J.; Djukaric, T.; Hugentobler, L.; Hargittai, E. “He Explained It to Me and I Also Did It Myself”: How Older Adults Get Support with Their Technology Uses. *Socius* **2019**, *5*, 2378023119887866. [[CrossRef](#)]
33. Marler, W.; Hargittai, E. Division of digital labor: Partner support for technology use among older adults. *New Media Soc.* **2022**, 146144482110684. [[CrossRef](#)]
34. Peek, S.T.; Luijckx, K.G.; Rijnaard, M.D.; Nieboer, M.E.; Van Der Voort, C.S.; Aarts, S.; van Hoof, J.; Vrijhoef, H.J.M.; Wouters, E.J.M. Older adults’ reasons for using technology while aging in place. *Gerontology* **2016**, *62*, 226–237. [[CrossRef](#)]
35. Hanson, V.L. Influencing technology adoption by older adults. *Interact. Comput.* **2010**, *22*, 502–509. [[CrossRef](#)]
36. Davis, F.D.; Bagozzi, R.; Warshaw, P. User acceptance of computer technology: A comparison of two theoretical models. *Manag. Sci.* **1989**, *35*, 982–1003. [[CrossRef](#)]
37. Marangunić, N.; Granić, A. Technology acceptance model: A literature review from 1986 to 2013. *Univers. Access Inf. Soc.* **2015**, *14*, 81–95. [[CrossRef](#)]
38. Green, A.E.; Li, Y.; Owen, D.; De Hoyos, M. Inequalities in use of the Internet for job search: Similarities and contrasts by economic status in Great Britain. *Environ. Plan. A* **2012**, *44*, 2344–2358. [[CrossRef](#)]
39. Yang, C.-C.; Li, C.L.; Yeh, T.F.; Chang, Y.C. Assessing Older Adults’ Intentions to Use a Smartphone: Using the Meta-Unified Theory of the Acceptance and Use of Technology. *Int. J. Environ. Res. Public Health* **2022**, *19*, 5403. [[CrossRef](#)] [[PubMed](#)]
40. Martín-García, A.V.; Redolat, R.; Pinazo-Hernandis, S. Factors Influencing Intention to Technological Use in Older Adults. *The TAM Model Application. Res. Aging* **2022**, *44*, 573–588. [[PubMed](#)]
41. Yau, Y.; Hsiao, C.-H. The Technology Acceptance Model and Older Adults’ Exercise Intentions—A Systematic Literature Review. *Geriatrics* **2022**, *7*, 124. [[CrossRef](#)]

42. Etikan, I.; Musa, S.; Alkassim, R. Comparison of convenience sampling and purposive sampling. *Am. J. Theor. Appl. Stat.* **2016**, *5*, 1–4. [[CrossRef](#)]
43. National Statistical Office. Demography Population and Housing Branch. Available online: <http://statbbi.nso.go.th/staticreport/page/sector/en/01.aspx> (accessed on 15 December 2022).
44. Cramer, J.S. The origins and development of the logit model. *Logit Model. Econ. Other Fields* **2003**, *2003*, 1–19.
45. Lim, Y.; Edelenbos, J.; Gianoli, A. Identifying the results of smart city development: Findings from systematic literature review. *Cities* **2019**, *95*, 102397. [[CrossRef](#)]
46. Yigitcanlar, T.; Kamruzzaman, M.; Buys, L.; Ioppolo, G.; Sabatini-Marques, J.; da Costa, E.M.; Yun, J.J. Understanding ‘smart cities’: Intertwining development drivers with desired outcomes in a multidimensional framework. *Cities* **2018**, *81*, 145–160. [[CrossRef](#)]

**Disclaimer/Publisher’s Note:** The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.