Kasetsart Journal of Social Sciences 45 (2024) 969–980

Kasetsart Journal of Social Sciences

journal homepage: http://kjss.kasetsart.org

Retirement Preparation (RP) scale index in Thailand: Development and validation

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Article Info

Article history:
Received 4 July 2023
Revised 22 September 2023
Accepted 2 October 2023
Available online 30 August 2024

Keywords:
life domains,
retirement,
retirement preparation indexes,
retirement preparation (RP) model,
Thailand

Abstract

Retirement preparation is a multidimensional construct that covers different life domains of an individual. The aims of this research were to construct and validate the retirement preparation (RP) scale among middle-aged and older employees in Thailand and to explore the correlation between retirement indexes: Thinking, Exploring, and Action (TEA). The RP Model in Thailand consists of nine domains and 27 indicators: Financial preparation, Emergency circumstances, Physical health, Mental health, Housing preparation, Appearance, Social relationships, Leisure activities, and Work. The sampling consisted of 488 middle-aged and older employees from the public and private sectors. Structural equation modeling (SEM) was used for the validation of the RP model and its key indexes were analyzed using the best-fit model. Findings show that Model 3, the nine-dimensional model is the optimal one. Statistically significant among the indexes of the Thailand RP Model, the priority index (K2) includes three items: (1) Fin2, the Financial preparation-exploring index; (2) Phy2, the Physical health-exploring; (3) Appearance2, the Appearance-exploring index. Moreover, the transition index (K3) includes four items: (1) Fin1, the Financial preparation-thinking, (2) Phy1, the Physical health-thinking index, (3) Phy3, the Physical health-action, (4) Appear3, the Appearance-action index.

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https://doi.org/10.34044/j.kjss.2024.45.3.26
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Introduction

The radical transformation of Thailand's population is causing alarm. Thailand is considered one of the world's rapidly aged societies (United Nations, 2019). According to the United Nations projections, the growth in the population of individuals aged 60 and above is expected to increase by 50 percent between 2015–2050 (World Bank, 2021). It means that in a span of 35 years, the population will have surged by 12.2 million, rising from 10.7 million in 2015 to 23 million by the year 2050. This massive demographic transition will put a strain on welfare spending in Thailand. For instance, there will be a significant rise in the demand for healthcare services tailored for older people with disabilities, and chronic illnesses will increase (Kananurak, 2014). As the number of aging populations is soaring, the issue of retirement preparedness is in question.

The United Nations projected in 2017 that the younger working age group (15–24 years of age) was equivalent to 14 percent of the population and adults aged between 25 and 59 were 52 percent of the population (United Nations, 2019). A corollary to the mentioned figures, the National Statistics Office of Thailand (2021) stated that there is approximately 40.79 percent of the population in the country consisting of adults who are 45 years old and above, and who are considered working age. Individuals at this age should start retirement preparations in order to attain quality standard of living during their retirement years (Ya-Hui et al., 2022).

Retirement as a major life transition refers to relinquishing active employment, resorting to a pension or social security, or amalgamation of both (Denton & Spencer, 2002). With Thailand's huge demographic shift to an aging society, retirement preparation as a coping strategy has become increasingly significant. Although the workers have a strong demand for retirement planning, corresponding retirement preparation programs have remained developed insufficiently in Thailand, affirmed in several studies that retirement preparedness is lacking in the country (Chamchan, 2018; Naruetharadhol et al., 2021; Pisedtasalasai et al., 2022). Furthermore, it was mentioned in those studies that despite proactive measures instituted by the government, more than half of the citizenry in Thailand lacks retirement provisions for retirement. There is likewise a significant divide between employees in public and private enterprises. The latter was found to have a lesser capability for retirement arrangements because many are inadequately supported by pension plans resulting in a lack of preparedness (Chansarn, 2013). Additionally, another indicator of a lack of retirement preparedness is the declaration of employees of their sole reliance on their employment to support them in their later stages of life (Teerawichitchainan et al., 2015). As a result, working beyond retirement age is inevitable in Thailand (Pittayapongsakorn et al., 2019). Further, only 2 percent of the total retired population lives their pre-retirement savings (Saelowang & Jantarasiri, 2019). As such, this study focused on three dimensions of the RP index, namely: thinking, exploring, and action (Ya-Hui et al., 2022) of the adult working age group in Thailand. Therefore, retirement preparedness is worthy of attention to promote and safeguard the well-being of the aging population in Thailand (Ya-Hui et al., 2022; Ketkaew, 2019; Kananurak, 2014).

The objectives of this study were: (1) to construct a Retirement Preparation (RP) scale for employees in Thailand; (2) to validate the reliability and credibility of the RP scale; and (3) to explore the correlation between RP indexes as Thinking, Exploring and Action (TEA) among employees in Thailand.

Literature Review

Retirement regimes in Thailand traditionally covered only government or public sector employees. The Government Pension Act B.E. 2494 (A.D. 1951) states that the retirement age for public servants in Thailand is 60 years of age (Ministry of Labor, Thailand, 2017). As prescribed by law, civil servants who are retiring are automatically eligible for pension benefits provided by the state. On the other hand, private sector employees are just currently covered in the latest amendment of the Labor Protection Act (No. 6) B.E. 2560 (2017). The new amendments, among others, entitled employees to receive retirement pay and statutory severance pay upon retirement for 60 years old and above employees. Further, the same law prescribed that employers shall have the power to solely prescribe retirement policies, or convene with employees to arrive at a consensus regarding retirement policies. Lastly, informal workers (agricultural and self-employed) who comprise a large portion of the population in Thailand are not eligible to receive pensions (Tangtipongkul & Srisuchart, 2018). Hence, in this study, the researchers propose a retirement preparation (RP) index scale comprising the following determinants: financial preparation, physical health, mental health, appearance, social relationships, emergency response, housing, leisure activities, and work based on the study of Ya-Hui et al. (2022).

Financial preparation

The financial preparation for retirement which focuses on financial planning has long been the focal topic of many studies (Chavis et al., 2019; Hastings & Mitchell, 2020). It was found in studies conducted in Indonesia and Malaysia that those who are financially literate are expected to possess the desired quality to plan financially when they retire (Hamidi & Adrianto, 2022). Additionally, in a study in Thailand, demographic, social, health, and family factors are considered in the economic preparation of would-be retirees aged 50-59 years old (Chansarn, 2013). Further, those employed in the private sector were found to have the least capacity for financial planning as their financial benefits are solely dependent on their employer. Also in the same study, males and married people are considered to have a substantial ability to prepare financially for retirement. Chavis et al (2019) also stated that most entrepreneurs in Thailand are not covered by public retirement savings and are forced to manage their retirement funds.

Some studies revealed that retirees expressed regret for not having saved for retirement at an early age. High levels of saving regret are found among individuals aged 60–79 (Börsch-Supan et al., 2018). In Thailand, lower-income wage employees lack sufficient money for retirement and financial literacy plays an essential role in retirement readiness (Ketkaew et al., 2022). Chansarn (2013) emphasized that it is pivotal to recognize that financial planning for retirement is of prime importance at an early stage as it will encourage better economic preparation for retirement. In Thailand, only 2 percent of the total senior population live on their pre-retirement savings and approximately 19 percent of the population save for retirement. More than half of the older people in Thailand are relying financially on family support which consists of children and other immediate members of the family (Chandoevwit, 2013). This means that the older population in Thailand is working beyond retirement age based on necessity, rather than voluntariness. As a result, working beyond the retirement age in Thailand is inevitable for individuals and organizations due to a lack of economic preparation (Thanapop, 2021).

Physical and Mental Health

In the stage of transitioning from work to retirement, individuals experience transformation first and foremost in their physical health. Sustaining the desired physical health and well-being of retirees prevail as a priority (Biwas, 2018). Prior studies emphasized the significance of physical health among pre-retirees (Chandoevwit, 2013; Naruetharadhol et al., 2020).

Van (2022) explained the effect of mental health on retirement by concentrating on marital status and gender in the Netherlands. Mental health is of paramount importance to retirees in the gradual transition from work to retirement including the Dutch. Further, Chan et al. (2021) posit that physical and psychological well-being influence successful retirement adjustment. The study further claimed that retirees who had greater pre-retirement preparation had more positive attitudes toward retirement, and they likewise exhibited better physical functioning.

Interpersonal Relationship

Retirement signals withdrawal from work which could create tension in a person's normal routine especially as it will occur during the later stage of life (Dingemans & Henkens, 2015). Upon retirement, the retiree would feel a lack of worth since retiring from a certain position reduces or entirely removes the power and control retirees used to enjoy while working (Manor, 2017). In a study conducted to > 60 years old males and > 45 years old females in China, it was observed that involvement in community seniors' organizations have expanded the social interaction channels of retired adults and positively affected their mental health by providing basic interpersonal needs such as inclusion, dominance, and affection (Yuruo et al., 2022).

Several recent studies showed that cognitive decline of elderly was due lack of social network and isolation (Boss et al., 2015); older people's fewer social contacts results in loneliness (Gow et al., 2013).

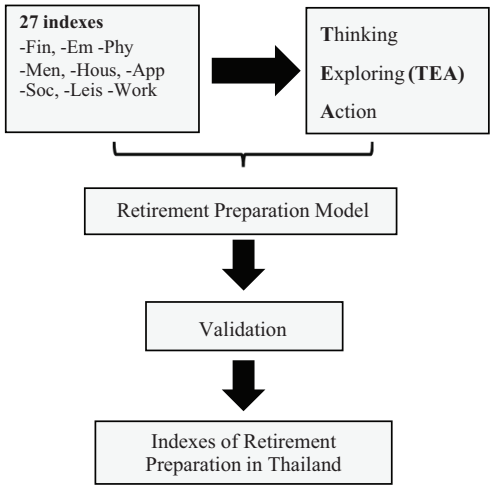

Figure 1 The development of the RP scale in Thailand

Methodology

Sampling

This study investigated the retirement preparedness of pre-retirement workers including middle-aged workers and the elderly in Thailand, focusing on whether participants are "Thinking", "Exploring," or in "Action" retirement, called "TEA" level in their retirement preparation. The participants included 488 middle-aged and older workers who were 45 years old and above in Thailand.The researchers employed stratified random sampling, wherein the population is categorized into distinct groups based on age. The inclusion criteria were (1) working individuals and (2) age range of 45 to 59 years old. The participants were drawn from two public institutions and two private enterprises, with two of these organizations located in the central region and the other two situated in the northern region of Thailand. Initially, 500 participants were selected randomly from private and public organizations. Nevertheless, 488 participants or 97.6 percent returned the questionnaire. It is a cross-sectional study whereby upon informed consent of participants, questionnaires were distributed and later collected.

Research Instrument

This research developed a retirement preparation (RP) scale index derived from the study of Phua & McNally (2008), which proposed three domains in retirement preparation: finance, self, and interpersonal relationship. Furthermore, the questionnaire was designed according to Phua & McNally's (2008) conceptualization of retirement preparation and was the basis to establish its three levels of preparation for participants: thinking, exploring, and action (TEA). To measure participants' retirement preparedness, we developed the retirement preparation (RP) scale index consisting of 27 indexes and nine domains (1) Financial preparation (FinP); (2) Emergency circumstances (EmC); (3) Physical health (PhyH); (4) Mental health (MenH); (5) Housing preparation (HousP); (6) Appearance (App); (7) Social relationships (Soc); (8) Leisure activities (Leis); and Work (Work). We adapted and modified the scales by Kornadt & Rothermund (2014). Each domain consists of three levels of preparation for participants: Thinking, Exploring, and Action (TEA). The answers were measured using a six-point Likert scale, with 6 indicating 'Strongly Agree' and 1 indicating 'Strongly Disagree.' The RP questionnaire is derived from the scales developed by Ya-Hui et al. (2022). After developing the scales, three experts, two in human resource management, and one statistician were employed to examine the face validity of the RP scale.

Data Analysis

There was a total of 488 valid samples in the study. In order to analyze the data collected, SPSS 18.0 was used and descriptive statistics and validity and reliability were obtained. After this, the structural equation modeling (SEM) technique was utilized to verify the goodness-of-fit of RP indexes in Thailand, and the same technique was used to check the validity of observed variables, reliability and validity, and each latent variable's composite reliability and discriminant validity. The 27 indexes within the nine domains were converted into z-scores in order to compare, and tests of significance were instituted to determine the indexes of the RP model in Thailand.

Results and Discussion

Description of Valid Samples

Among all valid samples, female participants accounted for the majority (62.09%), while no significant difference was shown in gender concerning the planning time for retirement. Participants under 49 years old accounted for over half of the sample (55.53%), and participants between 55 to 59-year-old tended to retire in 9 years. Nearly half of the participants had obtained an undergraduate degree (49.80%), and those with master's degrees accounted for 24.18 percent, while those who with lower education tended to retire in 9 years (Adj-Residual low education *vs.* retire in 9 years = 3.50 > 2.58). Participants with master's degrees had a more significant tendency to retire in 10 years, and no significant difference was shown among participants with undergraduate degrees. Overall, people of older ages, or with lower education level, would tend to retire sooner, while those who were younger would expect to work for a longer time.

Table 1 Cross-tabulation of employees' attributes and planning time for retirement

Attributes category	planning time for retirement	In 9 years	10–19 years	After 20 years	Sum (%)	χ^2-test of independence
Gender	Male	75 [1.2]	36 [-2.0]	74 [0.6]	185 (37.91)	$4.026_{(2)}$
	Female	107 [-1.2]	83 [2.0]	113 [-0.6]	303 (62.09)	
Age	Middle-aged (45–49 year-old)	64 [-7.0]	76 [2.1]	131 [5.1]	271 (55.53)	$61.116_{(6)}$ ***
	Prime (50–54 year-old)	58 [1.3]	32 [0.6]	37 [-1.9]	127 (26.03)	
	Mid-life (55–59 year-old)	60 [6.4]	11 [-3.0]	19 [-3.7]	90 (18.44)	
Education	Low (Primary and Secondary education)	31 [3.5]	11 [-0.6]	10 [-3.0]	52 (10.66)	$37.122_{(6)}$ ***
	Average (High school)	34 [1.6]	6 [-3.6]	35 [1.6]	75 (15.37)	
	Middle (Bachelor)	92 [0.3]	63 [0.8]	88 [-1.0]	243 (49.80)	
	High (Master and PhD)	25 [-4.2]	39 [2.5]	54 [1.9]	118 (24.18)	
Total		182	119	187	488	

Credibility, Validity, and Discrimination of the RP Scale in Thailand

The skewness of 27 items in the RP scale ranged from -.450~-.039 (<|2.0|), and the kurtosis ranged from -.654~.027 (<|7.0|), which showed normality in data collection (see Table 2). The CR scored between 15.913~31.698 (p<.001), which indicated a high discrimination rate. To determine the construct reliability, Cronbach's α coefficient of three dimensions' RP was .911、.929、.951(all >9), and credibility was highly associated with each dimension. Concerning the construction in validity, the power value of indexes in each dimension were between .373~.778 (coextraction communalities > 0.3). Factor loadings for indexes in each dimension were between .611~.882 (all >0.55 and had more than 30% of power value). Above all, the credibility and validity of each index are validated.

Table 2 The credibility, validity, and discrimination of the RP scale in Thailand (n = 488)

Index	normality		discrimination	Composite reliability Cronbach's α		construct validity	
	skewness	kurtosis	CR value (t-test) Critical Ratio	Item deleted	Dimension	Coextraction	Factor loading
1. Financial Preparation							
01 FinP-Thinking	-.257	-.326	20.494 ***	.903	.911	.534	.731
02 FinP-Exploring	-.174	-.654	31.698 ***	.883		.778	.882
03 FinP-Action	-.139	-.571	24.593 ***	.899		.579	.761
04 EmC-Thinking	-.190	-.426	23.154 ***	.897		.612	.782
05 EmC-Exploring	-.186	-.511	26.968 ***	.892		.674	.821
06 EmC-Action	-.185	-.602	27.413 ***	.896		.623	.789
2. Self							
07 PhyH-Thinking	-.108	-.107	18.692 ***	.923	.929	.520	.721
08 PhyH-Exploring	-.039	-.409	21.804 ***	.921		.615	.784
09 PhyH-Action	-.040	-.408	17.452 ***	.924		.474	.689
10 MenH-Thinking	-.160	-.349	19.807 ***	.922		.547	.740
11 MenH-Exploring	-.097	-.524	21.645 ***	.921		.612	.782
12 MenH-Action	-.200	-.347	21.465 ***	.921		.614	.784
13 Hous-Thinking	-.313	-.457	15.913 ***	.927		.373	.611
14 Hous-Exploring	-.379	-.312	20.325 ***	.923		.520	.721
15 Hous-Action	-.450	-.399	19.232 ***	.924		.487	.698
16 App-Thinking	-.224	-.419	22.586 ***	.921		.572	.757
17 App-Exploring	-.130	-.224	20.905 ***	.922		.524	.724
18 App-Action	-.134	-.519	19.070 ***	.925		.437	.661
3. Interpersonal Relationship							
19 Soc-Thinking	-.223	-.472	24.681 ***	.947	.951	.651	.807
20 Soc-Exploring	-.234	-.384	24.201 ***	.947		.643	.802
21 Soc-Action	-.386	-.181	22.645 ***	.947		.630	.793
22 Leis-Thinking	-.318	-.027	23.992 ***	.945		.700	.837
23 Leis-Exploring	-.231	-.335	27.906 ***	.944		.756	.869
24 Leis-Action	-.351	-.317	28.527 ***	.944		.731	.855
25 Work-Thinking	-.272	-.304	26.408 ***	.945		.689	.830
26Work-Exploring	-.195	-.388	28.038 ***	.945		.707	.841
27 Work-Action	-.197	-.624	28.648 ***	.946		.666	.816

Note: N = 488.

1) FinP = Financial preparation, 2) EmC = Emergency circumstances, 3) PhyH = Physical health, 4) Men – Mental health, 5) Hous = Housing, 6) App = Appearance, 7) Soc = Social relationships, 8) Leis = Leisure activities, 9) Work = Work.

RP Measurement Model Analysis

The RP model was theoretically categorized either into nine concepts, or each concept was divided into three levels, which were sequence thinking, exploring, and action (TEA) (see Table 3) based on Phua and McNally (2008), Ya-Hui et al. (2022), and Kornadt & Rothermund (2014). The intercorrelation matrix, mean, and standard deviation of the 27 indexes in Thailand is presented in Table 3. In addition, the basic direction for the RP scale was either a three-level model or a nine-dimensional model, and this research adopted the latter one, including nine categories: RP01–03, RP04–06, RP07–09, RP10–12, RP13–15, RP16–18, RP19–21, RP22–24, RP25–27. Each dimension's correlation coefficient was between .53~.73, which was a medium to medium-high correlation. Theoretically, the correlation coefficient of each two indexes in different dimensions should be between .20~.64, which belonged to low-medium to medium correlation. In addition, the 27 items had been in a reasonable range with the mean between 3.64~4.21 and the standard deviation between 1.10~1.30.

Further, this research integrated the retirement planning and financial concepts of Ya-Hui et al. (2022), Kornadt & Rothermund (2014), and Phua & McNally (2008), and accordingly derived three possible models of the RP: Mode 1, a three-dimensional model: finance, self and interpersonal relationship; Model 2, a five-dimensional model: finance, emergency, physical and mental health, home activity, social activity, and work; Model 3, a nine-dimensional model: finance preparation (FinP), emergency circumstances (EmC), physical health (PhyH), mental health (MenH), housing (Hous), appearance (App), social relationships (Soc), leisure activities (Leis), and work (Work). In addition, according to Phua & McNally's (2008)'s concept of the context between perception and retirement preparation, we derived a three-level concept: Thinking, Exploring, and Action (TEA).

According to Table 4, under the same indexes and samples, we found that "Model 3 nine-dimension model" should be the optimal one (RMSEA =.065、CFI =.941、SRMR =.0388、GFI =.881、PGFI =.671、CN =222.295), which included financial planning model constituted by item 1 to 3 (FinP1-FinP3), attitude toward emergency preparation constituted by item 4 to 6 (EmC1-EmC3), attitude toward physical health constituted by item 7 to 9 (PhyH1-PhyH3), attitude toward mental health constituted by item 10–12 (MenH1-MenH3), attitude toward housing preparation constituted by item 13 to 15 (Hous1-Hous3), attitude toward appearance change constituted by item 16 to 18 (Appear1-Appear3), attitude toward social relationship constituted by item 19 to 21 (Soc1-Soc3), attitude toward leisure activities planning constituted by item 22 to 24 (Leis1-Leis3), attitude toward re-employment constituted by item 25 to 27 (Work1-Work3). Each dimension was three-level, including level 1 (thinking), level 2 (exploring), and level 3 (action).

We then used a relatively adapted measurement model for the RP scale to test the discriminant validity of individual index quality, composite reliability of each dimension, and discriminant validity between each dimension. As Table 5 shows, the completely standardized measured residual of each item was between .253~.537 ($t > 2.58$), and the completely standardized factor loading was between .681~.864, which indicated that 27 items constructed latent variable based on reasonable measurement error, and thus fit the rationality of measurement model (Anderson & Gerbing, 1988). Concerning each index's individual reliability, all indexes showed good performance (between .509~.747) except FinP1 and Hous1, which were slightly under 5. Concerning the nine-dimension composite reliability, the reliability of each latent variable was between .792~.872 (all >6), which showed a stable relationship between each factor (Raine-Eudy, 2000). The AVE of the latent variables was between .560~.695 (all >5), which showed strong convergence evidence (Hair et al., 2006). In 9 groups of pair inter-dimensional discriminant validity test, the upper limit of 95 percent confidence interval was under 1.0 (between .558~.877), thus it had basic discrimination. In addition, the pair inter-dimension gap of AVE and MC was between .049~.432 (no minus value) except for overlapping between the finance and emergency dimension and the leisure activity and work dimension. As a result, 2 in 27 dimensions had overlapping phenomena. Overall, the nine-dimensional model was a more stable and clear structure for the RP measurement model, and we adopted this model as a method to analyze key factors and their difference accordingly. The results suggest that it can be assumed that the RP nine-dimensional model is suitable for the Thais whose samples were collected.

Table 3 The intercorrelation matrix, mean value, and standard deviation 27 indexes of the Thailand RP scale

Thailand Samples (n = 488)																											
Index Xi	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
02	.58	1.00																									
03	.53	.60	1.00																								
04	.41	.50	.38	1.00																							
05	.40	.59	.48	.58	1.00																						
06	.37	.54	.48	.58	.58	1.00																					
07	.40	.42	.37	.41	.45	.36	1.00																				
08	.39	.50	.45	.42	.64	.46	.60	1.00																			
09	.36	.43	.39	.35	.46	.39	.69	.62	1.00																		
10	.32	.29	.27	.38	.40	.36	.43	.44	.33	1.00																	
11	.30	.44	.34	.38	.51	.40	.38	.54	.40	.61	1.00																
12	.38	.41	.41	.37	.47	.43	.45	.52	.42	.65	.59	1.00															
13	.27	.26	.29	.28	.21	.26	.30	.23	.20	.35	.29	.27	1.00														
14	.28	.40	.37	.31	.45	.36	.29	.44	.27	.31	.44	.40	.56	1.00													
15	.35	.39	.38	.28	.37	.45	.31	.37	.30	.30	.34	.45	.56	.57	1.00												
16	.24	.41	.28	.31	.37	.38	.31	.40	.28	.41	.44	.40	.36	.42	.37	1.00											
17	.23	.40	.28	.29	.40	.32	.27	.36	.24	.35	.46	.37	.34	.43	.36	.73	1.00										
18	.22	.35	.29	.22	.34	.32	.30	.33	.30	.32	.34	.34	.29	.33	.35	.65	.64	1.00									
19	.23	.35	.26	.29	.34	.39	.30	.39	.28	.39	.42	.36	.33	.44	.32	.54	.51	.41	1.00								
20	.21	.40	.28	.30	.39	.38	.30	.42	.31	.34	.47	.37	.25	.47	.31	.48	.49	.39	.70	1.00							
21	.21	.36	.24	.32	.36	.39	.29	.39	.29	.32	.45	.39	.25	.40	.35	.43	.46	.36	.69	.67	1.00						
22	.24	.33	.27	.30	.34	.38	.31	.37	.30	.46	.41	.40	.35	.38	.33	.53	.49	.41	.54	.50	.48	1.00					
23	.24	.37	.31	.37	.43	.41	.32	.41	.33	.39	.48	.45	.29	.45	.38	.52	.54	.44	.52	.55	.54	.66	1.00				
24	.27	.34	.31	.30	.38	.43	.31	.39	.30	.42	.41	.47	.37	.42	.45	.53	.47	.44	.54	.49	.51	.73	.69	1.00			
25	.25	.32	.25	.31	.33	.34	.28	.36	.21	.40	.40	.39	.36	.40	.34	.47	.44	.36	.52	.48	.47	.56	.57	.58	1.00		
26	.24	.37	.25	.27	.36	.32	.26	.38	.26	.35	.48	.40	.26	.43	.34	.45	.53	.38	.51	.57	.51	.53	.59	.54	.70	1.00	
27	.29	.41	.33	.27	.39	.42	.30	.40	.30	.40	.41	.46	.34	.43	.46	.50	.49	.45	.50	.48	.47	.55	.60	.62	.68	.66	1.00
Mean	4.04	3.68	3.88	3.85	3.70	3.83	3.84	3.73	3.86	4.02	3.85	4.08	4.00	3.91	4.21	3.76	3.64	3.82	3.81	3.78	3.86	3.78	3.64	3.83	3.70	3.68	3.79
SD	1.16	1.30	1.24	1.17	1.25	1.23	1.10	1.19	1.12	1.13	1.22	1.16	1.16	1.21	1.25	1.22	1.18	1.28	1.25	1.23	1.17	1.17	1.25	1.18	1.21	1.24	1.26

Note: Each value was rounded up to two decimal places due to a space limit, while this research adopted a three-decimal round-up.

Table 4 Results of model competition of the assumed RP models in Thailand (n = 488)

Index	Meaning	Criteria	Model 0 Zero-base model	Model 1 Three-dimensional model	Model 2 Five-dimensional model	Model 3 Nine-dimensional model	Model 4 Three-level model
Model df			324	321	314	288	321
WLS-χ^2			4017.447	2367.116	1766.792	888.255	4062.735
RMSEA	Compare hypothesis models and saturated model	<.08	.153	.114	.098	.065	.155
CFI	Difference between hypothesis and baseline model's chi-square	>.9	.680	.784	.845	.941	.681
CN	Appropriateness of samples 'scale	>200	65.844	91.262	118.097	222.295	65.504
SRMR	Overall residuals of the hypothesis model	<.05	.0893	.0693	.0604	.0388	.0892
GFI	Interpretability of data percentage	>.8	.621	.738	.788	.881	.681
PGFI	Parsimony of the model	>.5	.532	.624	.655	.671	.525
Model adaptation judgement			(Control)	Poor	Poor	Good	Poor

Note: N = 488

RMSEA, CFI, CN, SRMR, AGFI, PGF, we adopted criteria based on suggestions of Ciou (2011) measuring retirement preparedness among the Thais. The nine domains covered Financial preparation (FinP), Emergency circumstances (EmC), Physical health (PhyH), Mental health (MenH), Housing preparation (Hous), Appearance (Appear), Social relationships (Soc), Leisure activities (Leis), and Work (Work). Each domain consisted of three levels: Thinking, Exploring, and Action (TEA). The 27 holistic indexes had good reliability and validity.

Table 5 Parameters of "Model 3 nine-dimensional model" measurement model (n = 488)

Dimension	Index Xi	Factor analysis CS-λ_{Xi}	Measurement error CS-$\theta_{\delta i}$	Squared Multiple Correlation SMC	Composite Reliability CR ρ_c	Average Variance Extracted, AVE ρ_v	Correlation coefficient matrix Φ、(Standard error) [95%CI UCL]、{ AVE - MC }								
							Fin	Em	Phy	Men	Hous	Appear	Soc	Leis	Work
Fin	1	.681	.537	.463	.797	.569	1.000								
	2	.848	.281	.719											
	3	.723	.477	.523											
Em	1	.713	.491	.509	.802	.575	.824	1.000							
	2	.811	.343	.657			(.027)								
	3	.747	.441	.559			[.877]								
							{-.110}								
Phy	1	.785	.383	.617	.838	.633	.684	.745	1.000						
	2	.817	.333	.667			(.035)	(.031)							
	3	.785	.384	.616			[.753]	[.806]							
							{.133}	{.049}							
Men	1	.777	.396	.604	.829	.617	.589	.699	.702	1.000					
	2	.777	.396	.604			(.040)	(.034)	(.033)						
	3	.803	.355	.645			[.667]	[.766]	[.767]						
							{.246}	{.107}	{.133}						
Hous	1	.693	.520	.480	.792	.560	.588	.592	.516	.604	1.000				
	2	.792	.373	.627			(.041)	(.041)	(.044)	(.040)					
	3	.757	.427	.573			[.668]	[.672]	[.602]	[.682]					
							{.219}	{.217}	{.330}	{.224}					
App	1	.864	.253	.747	.862	.676	.506	.535	.475	.594	.593	1.000			
	2	.849	.279	.721			(.042)	(.041)	(.043)	(.038)	(.039)				
	3	.749	.439	.561			[.588]	[.615]	[.559]	[.668]	[.669]				
							{.366}	{.339}	{.429}	{.294}	{.266}				
Soc	1	.847	.283	.717	.868	.686	.478	.559	.506	.596	.575	.673	1.000		
	2	.828	.315	.685			(.044)	(.040)	(.042)	(.038)	(.040)	(.032)			
	3	.810	.345	.655			[.564]	[.637]	[.588]	[.670]	[.653]	[.736]			
							{.399}	{.318}	{.404}	{.297}	{.293}	{.228}			
Leis	1	.820	.327	.673	.872	.695	.483	.587	.510	.659	.618	.712	.752	1.000	
	2	.827	.316	.684			(.043)	(.039)	(.041)	(.034)	(.038)	(.030)	(.027)		
	3	.853	.272	.728			[.567]	[.663]	[.590]	[.726]	[.692]	[.771]	[.805]		
							{.398}	{.290}	{.404}	{.222}	{.245}	{.178}	{.125}		
Work	1	.829	.313	.687	.864	.680	.498	.538	.474	.634	.613	.673	.736	.832	1.000
	2	.818	.332	.668			(.043)	(.042)	(.043)	(.036)	(.038)	(.032)	(.028)	(.022)	
	3	.826	.318	.682			[.582]	[.620]	[.558]	[.705]	[.687]	[.736]	[.791]	[.875]	
							{.376}	{.338}	{.432}	{.247}	{.244}	{.225}	{.141}	{-.010}	

Note: All indexes had achieved factor loadings (λ_{Xi}), residuals of observation variables $\theta_{\delta i}$、correlation coefficient all achieved $p < .01$(t > 2.58)

RP Model's Key Index Analysis

This study developed the Thai retirement preparation **(**RP**)** model**.** The RP model consists of nine main domains and 27 indexes, which manifested as a suitable model.

This research adopted the Z score comparison strategy for different scales purposed by Ciou (2011), and the rule that disparity reached 0.5 should be considered as different purposed by Hsieh and Chen (2014), and modified the outcomes to four key indexes with regard to the mean structure and correlation of each index of RP scale, which were: (1) Highly-valued index with high correlation and performance (K1). Rule: $|Z_{[\mu Xi]}-Z_{[\lambda Xi]}|<.5$, and $Z_{[\mu Xi]}>.5$, and $Z_{[\lambda Xi]}>.5$), (2) Priority index with a correlation higher than performance (K2). Rule: $Z_{[\lambda Xi]}>0$, and $Z_{[\mu Xi]}-Z_{[\lambda Xi]}<-.5$, (3) Transition index with good performance yet low correlation (K3). Rule: $Z_{[\mu Xi]}>0$, and $Z_{[\mu Xi]}-Z_{[\lambda Xi]}>.5$, (4) Suspended index with bad performance and low correlation (K4). Rule: $|Z_{[\mu Xi]}-Z_{[\lambda Xi]}|<.5$, and $Z_{[\mu Xi]}<-.5$, and $Z_{[\lambda Xi]}<-.5$. Among these four indexes, K1 and K2 could be viewed as positive key indexes, while K3 to be reviewed key index and K4 to be underdeveloped index.

On the other side, a test of the significance of the difference was made in order to verify the statistical meaning of the key indexes mentioned above. If it is statistically significant, the key index would have inferential meaning, otherwise, further verification would be needed. Concerning the variance of the mean (H_1: μXi -μXj≠0), a repeated measured ANOVA was applied in the analysis of each dimension, and using Bonferroni correction to adjust the family-wise error rate. Concerning variance between factor loadings (H_1: λXi -λXj≠0), a completely standardized factor loading of invariance test was adopted to analyze the whole model, and simultaneously set up invariance of factor loading (λ_{Xi}) and residuals of key indexes ($\theta_{\delta Xi}$) (Chiou, 2011).

Based on the analysis and statistical test mentioned above, the indexes that are statistically significant in the Thailand RP Model, the priority index (K2) includes three items: (1) FinP2, the Financial preparation-exploring index (Z[λFin2]=1.120>0, and Z[μFin2]-Z[λFin2]=-2.151<-.5), (2) PhyH2, the Physical health-exploring (Z[λPhy2]=1.155>0, and Z[μPhy2]-Z[λPhy2]=-2.305 <-.5), (3) Appearance2, the Appearance-exploring index. The transition index (K3) should include four items: (1) FinP1, the Financial preparation-thinking index (Z[μFin1]=.967>0, and Z[μFin1]-Z[λFin1]=1.769 >.5), (2) PhyH1, the Physical health-thinking index (Z[μPhy1]=.490>0, and Z[μPhy1]-Z[λPhy1]=1.068>.5), (3) PhyH3, the Physical health- action index (Z[μPhy3]=.660>0, and Z[μPhy3]-Z[λPhy3]=1.237>.5), (4) Appear3, the Appearance-action index (Z[μAppearance3]=.882>0, and Z[μAppearance3]-Z[λAppearance3]=2.029>.5).

Figure 2 reveals that the exploring-related indexes of FinP2, PhyH2, and Appear2 demonstrated statistically significant results among the Thai participants, as indicated by the K2 indexes. The samples attached high priorities or high levels of importance to the mentioned indexes, which resonated with Chamchan (2018), Chansarn (2013), and Chandoevwit (2013). Furthermore, among the K3 indicators (Transition index), statistically significant results were observed for FinP1, PhyH1, PhyH3, and Appear3. This indicates that the participants attributed a high level of significance to the mentioned factors but expressed a lower level of priority towards them, or such might also mean a lack of understanding.

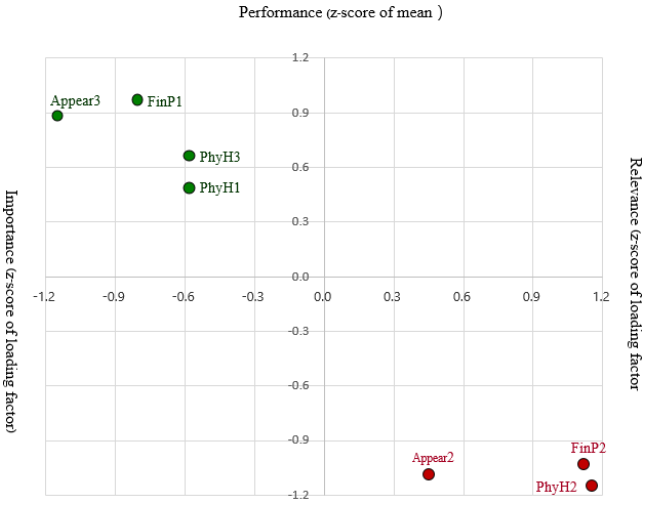

Figure 2 Key Index of RP Model in Thailand

Retirement preparation decisions involve several determinants such as gender and age (Ketkaew, 2019), marital status, education level, physical health, and well-being (Tangtipongkul & Srisuchart, 2018). Nevertheless, this study reveals a considerable lack of knowledge (Thinking), exploration (Exploring), and action (Action) related to emergency circumstances, mental health, housing preparation, social relationships, leisure activities, and work upon retirement.

The participants have been thinking about and exploring the financial readiness indexes, however, lacking action (Chansarn, 2013). In this regard, financial literacy interventions must be instituted in order to prepare for retirement.

The physical health index is the most prioritized among the participants because as individuals are getting older they recognized the importance of healthy aging Chan, Chung, and Yeung (2021). On the other hand, the appearance index is in the exploring and action stage since the Thais put a high value on it as body image satisfaction among the Thais is directly related to self-esteem (Chua et al., 2023).

Additionally, there were no statistically significant findings in the K1 index, which is considered the highest-valued index. This means that the participants have not given the highest importance in any of the indexes of retirement preparation and probably lack of retirement readiness among the Thais (Ketkaew, 2019; Naruetharadhol et al., 2021; Pisedtasalasai, et al., 2022). The result showed statistical non-significant among Emergency circumstances, Mental health, Housing, Social relationships, Leisure activities, and Work. It is undetermined whether the participants are in the "thinking", "exploring" or "action" stage of retirement preparation. The preparedness deficiencies in the six indexes of the RP Model can be assumed as a profound sign of a lack of readiness in retirement preparation among the Thai participants.

Mental health problems are most often avoided topic among the Thais including the elderly, as it is considered a stigma and a sign of being weak (Peltzer & Pengpid, 2022). The elderly people in Thailand are at a low active aging level in terms of leisure and social relationships (Punyakaew et al., 2022), and should be encouraged to participate more to promote healthy aging. Finally, concerning re-employment, Kantachote and Wiroonsri (2023) positively predicted that the Thai elderly's decision to return to the workforce is due to better health. On the other hand, elderly workers with a higher education level were less likely to reemploy.

Further study should be conducted covering the qualitative aspect of the 27 indicators in this study. Moreover, the study presented the current state of retirement preparedness of Thais.

Conclusion

The study developed and validated the Retirement Preparation (RP) Model for middle-aged and older employees in Thailand. The nine-dimensionalmodel consisting of 27 indicators covering Financial preparation (FinP), Emergency circumstances (EmC), Physical health (PhyH), Mental health (MenH), Housing preparation (Hous), Appearance (Appear), Social relationships (Soc), Leisure activities (Leis), and Work (Work). Each of the domains is subdivided into three levels: Thinking, Exploring, and Action (TEA). Thai middle-aged and older employees have unexplored and underdeveloped perceptions of most of the RP model domains: Emergency circumstances, Physical health, Housing preparation, Social relationships, Leisure activities, and Work. As the aging population in Thailand is ascending markedly higher than the usual rate, policymakers, government agencies, employers, and all concerned with retirement must be vigilant in promoting the significance of retirement preparedness.

Conflict of Interest

The authors declare that there is no conflict of interest.

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