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Exploring COVID-19 anxiety, resilience, and consumer lifestyles of rural and urban Thai consumers

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Article Info

Abstract

The COVID-19 pandemic has caused health, economic and social isolation anxiety. This research attempts to explore the effects of these three types of COVID-19 anxiety (i.e., health concerns, economic hardship, and social restrictions) on consumer lifestyles with resilience as the moderating effect during the COVID-19 pandemic. In addition, we investigated participants in both rural and urban areas to respond to the growing concern about the different effects of the pandemic in those areas. Employing questionnaire survey, the data of 2,000 respondents was drawn from the population of Thai consumers aged 18–75 years old. Quota sampling method was applied in the data collection process. The proportion of quota was calculated according to the number of Thai populations separated by gender, age, and regional groups. The results show that urban residents have higher levels of health and economic anxiety, but lower social-restriction anxiety than their rural counterparts. Health anxiety has a positive effect on urban consumers' lifestyles. In contrast, social-restriction anxiety has a significant impact on rural consumers' lifestyles. Moreover, resilience is the key factor that impacts both urban and rural consumers. These findings confirm the need to propose different treatments and public policies for rural and urban consumers.

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Introduction

The COVID-19 pandemic has affected the health, economic and social conditions of people around the world (Kang et al., 2021), inducing psychological distress and various types of anxiety on large proportions of the global population (Petzold et al., 2020). The crisis has worsened people's health, resulting in health-related anxiety (Asmundson & Taylor, 2020). Moreover, COVID-19 has been detrimental to the finances of many people as some are unemployed or have lost a significant proportion of their income, resulting in economic-related anxiety (Bareket-Bojmel et al., 2021). The pandemic has also affected people's social lives due to concern over personal hygiene and the imposition of social distancing policies (Meagher & Cheadle, 2020). Such policies have disrupted people's daily routines and social connections, leading to high levels of social-isolation related anxiety (Bareket-Bojmel et al., 2021).

All this anxiety has led to changes in people's habits, values, and consumption lifestyles (Kim et al., 2022; Stanton et al., 2020). For instance, Mishra et al. (2022) found that anxiety increased excessive buying and reduced people's intentions to share resources with others during the COVID-19 pandemic. Assarut and Pusaksrikit (2022) also found that people tended to be more materialistic and tried to release their COVID-19 anxiety through material possessions. However, these studies only investigated the effect of the general state of anxiety on consumption behavior. In fact, COVID-19 related anxiety comprises different types, including health-, economic- and social-related anxiety (Bareket-Bojmel et al., 2021). Prior research thus emphasizes the need to explore different varieties of COVID-19 related anxiety instead of merely accepting a generalized concept. Examining the level of state or situational anxiety can reflect responses to the changing reality during the pandemic and help policymakers improve treatment and adjust their measures accordingly (Bareket-Bojmel et al., 2021). However, the knowledge of the effect of these different types of COVID-19 anxiety on consumer lifestyles is still limited.

The way to encourage a healthier psychological response to the pandemic would be to strengthen an individual's resilience, so that one can adapt to new routines and cope with change to gain psychological and physical well-being during or after facing a stressful event (Chesterman et al., 2021; Martinelli & Tagliazzucchi, 2019). Prior research suggests that rural residents may have access to more coping strategies in relation to a lockdown than urban dwellers who may live in small apartments. This is probably because a rural environment may offer more space, greater and easier access to nature, and larger private areas (Chesterman et al., 2021). However, low-income groups in rural areas are less likely to keep up with digital migration. During the pandemic, individuals with high incomes and high-speed internet access were more likely to stay at home and shift to online behavior (Loades et al., 2020). In addition, urban consumers continued their regular shopping habits when essential items were available, whereas rural consumers engaged in panic buying due to their fear of supply chain disruptions (Mishra et al., 2022).

It is possible that people living in different areas may experience different types of COVID-19 anxiety at different levels. In addition, the relationship between COVID-19 anxiety and changes in lifestyle may differ depending on individuals' resilience and where they live. This research thus attempts to understand the effect of resilience and its linkage between anxiety and consumer lifestyles by comparing a developing megacity, Bangkok, with small and medium-sized cities in Thailand. Thailand

is a Southeast Asian country with a large population gap between its megacity and the next largest cities (Suzuki, 2019). Bangkok's population is more than seven times larger than that of the next largest city. Furthermore, it has the highest infection rate compared with other cities in the country.

Therefore, this study aims to investigate the effects of anxiety and resilience on consumer lifestyle changes by comparing the effects between Thai consumers in urban (i.e., Bangkok and metropolitan areas) and rural areas (i.e., 54 provinces in five regions of the country). In addition, this study also attempts to understand how different types of anxiety can lead to behavioral and attitudinal changes. The results can help business, social actors, and policy makers develop new strategies to prevent mental health problems and create new ways of living for greater well-being in post-pandemic times (Echegaray, 2021).

Literature Review

COVID-19 Anxiety

People around the world have suffered in various ways from the COVID-19 pandemic. Many have developed high levels of health anxiety, which is a mental concern about contracting a severe illness and is triggered by perceived cognitive or physical changes (Kurcer et al., 2022). Prior research found that one's level of health anxiety affects an individual's hygiene purchasing behavior (Di Crosta et al., 2021). Some also report high levels of economic anxiety, which is a form of psychological distress involving the financial threat to one's stability and security that can cause serious mental and physical health problems (Bareket-Bojmel et al., 2021). Others suffer from anxiety related to social distancing restrictions as they experience a prolonged state of physical isolation from their peers, extended families, and community networks as well as a disruption of their daily routine due to measures that limit outdoor activities (Bareket-Bojmel et al., 2021; Loades et al., 2020).

The previous research demonstrates that COVID-19 anxiety is not a unidimensional construct and should thus be studied using a multidimensional approach (Cheng et al., 2021). Few studies, however, have explored different components of COVID-19 related anxiety, and among those studies the results were inconsistent. For instance, Bareket-Bojmel et al. (2021) addressed four types of anxiety: health anxiety, economic anxiety, daily routine-change anxiety and social isolation anxiety. They reported that people experienced high levels of economic anxiety to the same extent as health anxiety, whereas routine-

change and social isolation anxiety levels were lower. Petzold et al. (2020) investigated the health, economic, and social aspects of COVID-19 anxiety and found that health and social aspects caused more concerns than economic anxiety.

Although these prior studies demonstrate that COVID-19 anxiety comprises different types, little is known about the impact of each variety and its consequences on lifestyles and habits. Moreover, recent evidence reveals regional differences in COVID-19 anxiety that may be affected by sociocultural, economic and environmental factors (Liu et al., 2021). For example, Zhang et al. (2021) demonstrated that the levels of anxiety among urban residents were greater than for those in rural areas. This is because urban residents were exposed to more negative information from various digital media outlets than were rural residents. Moreover, during the lockdown, the scope of activities for urban residents was narrower than for rural residents. It is possible that the prevalence of psychological disorders and coping processes vary greatly between residents in urban and rural areas (Cheng et al., 2021). This study, thus, focuses on exploring these different types of COVID-19 related anxiety (i.e., health, economic, and social-restriction anxiety) and their effects on consumer lifestyles in rural and urban areas.

Consumer Lifestyle Changes

The COVID-19 crisis has intensified the movement toward new ways of living (Das et al., 2022). The different levels of concern about the pandemic guide the changes in consumer behavior (Hesham et al., 2021). Some have embraced digital technologies (Stanton et al., 2020). Some have adopted health-promoting behavior, such as consuming healthier food products or pursuing home-based exercises (Das et al., 2022). Others have taken up new outdoor recreational habits such as hiking or cycling to escape being housebound. These examples indicate that what is happening to consumer lifestyles is complex; however, most evidence on lifestyle changes is based on cross-sectional studies with the emphasis on single or very few lifestyle domains (Cervera-Martínez et al., 2021). To fill this gap, we examine the changes in consumer lifestyles after COVID-19 pandemic regarding online and outdoor activities, at-home orientation, and health and hygiene consumption.

Online lifestyle

The obvious consequences of the lockdowns have been an extreme increase in Internet usage and social media (Cervera-Martínez et al., 2021). Consumption has largely migrated from outside the home to those inside residences with Internet-embedded environments (Stanton et al., 2020). The share of online spending increased by both those consumers familiar with online shopping and those who had never used it because online channels were found to offer more convenience, cost-savings, and diverse products than available in physical stores (Watanabe & Omori, 2021). People also turned to digital platforms for recreation and entertainment (Das et al., 2022). Some of these online activities (e.g., gaming, social networking, and streaming) involved social aspects to cope with social isolation and to stay in contact with others (Lemenager et al., 2021).

At-home Lifestyle

The lockdowns imposed by governments forced people to reduce movement and stay home as a way to limit exposure to COVID-19 (Zhu et al., 2021). People then took the opportunity to spend time with their families and practice their hobbies (Abouzid et al., 2021). This increased time with immediate family resulted in greater subjective well-being (Jackson et al., 2021); however, staying at home raised concerns of contracting Covid when a household member became infected. Moreover, the prolonged home life may have led to an increase in inactive behavior, such as spending more hours on TV and social media (Abouzid et al., 2021; Zhu et al., 2021).

Health and Hygiene Lifestyle

The implementation of safety protocols and public health policies has led to direct and indirect effects on consumption behavior and lifestyles (Echegaray, 2021). People became more health conscious due to the fear of infection and restrictions in mobility, which led to an increase in the demand for health and hygiene products (Das et al., 2022). In addition, the change in health and hygiene lifestyle may have been due to each consumer's daily routine, thought process, and social habits (Das et al., 2022).

Outdoor Lifestyle

During the COVID-19 pandemic, many urban consumers shifted from outdoor- to indoor-only activities as they were afraid of becoming infected (Abouzid et al., 2021; Jackson et al., 2021). This is probably because urban residents living in densely populated areas or in transportation hubs have a higher risk perception than rural residents when choosing to engage in outdoor activities (Mateer et al., 2021). However, given that the

major stress caused by COVID-19 can lead to physical and mental health problems, many people sought to employ outdoor recreation as a strategy to relieve such stress and anxiety (Cervera-Martínez et al., 2021). When making outdoor recreation decisions, consumers seek for health and social benefits as the most important factors (Jackson et al., 2021; Mateer et al., 2021).

The Moderating Effect of Resilience

Resilience is considered a protective mechanism underlying the adjustment process when one faces negative stressors (Cheng et al., 2021; Rossi et al., 2021). People with high resilience experience lower depression and anxiety symptoms (Rossi et al., 2021). They are likely to have a greater capability to manage hardships, recover from difficult experiences, and flourish in their personal and social lives (Sia et al., 2022). Prior research indicates that highly resilient individuals tended to be more physically active and have more positive attitudes and emotional flexibility in response to the COVID-19 situation than lowly resilient individuals (Carriedo et al., 2020). They tended to engage more in outdoor activities and stay emotionally connected with their love ones (Killgore et al., 2020). Resilience then influences the relationship between lifestyle and depression/ anxiety as it can decrease associations between unhealthy lifestyles (e.g., smoking and alcoholic drinking) and symptoms of depression/anxiety (Bottolfs et al., 2020).

Furthermore, prior research suggests that how residents in different areas cope and respond to the COVID-19 crisis depends on external support and the availability and use of resources (e.g., financial, physical, social, and human) (Phillipson et al., 2020). The evidence shows that rural residents show less resilience than their urban counterparts due to the lack of human and financial resources in their communities (Cutter et al., 2016). This study therefore seeks to determine the moderating effect of resilience on different anxiety types and consumer lifestyle changes.

The Disparities of Urban and Rural Areas

During the COVID-19 pandemic, the state of anxiety and depression among urban residents was more severe compared with rural counterparts (Liu et al., 2021). As the majority of COVID-19 cases and numbers of deaths were publicized in urban areas, residents were more likely to express fear and perceive a higher risk of infection (Liu et al., 2021). Moreover, urban residents usually live in a relatively confined space. Their daily lifestyle was much more affected due to restricted activities, which can lead to higher levels of anxiety (Liu et al., 2021).

However, residents living in rural places may be vulnerable to COVID-19 even in the absence of confirmed cases. This is probably because rural populations face health disparities due to multiple barriers such as a lack of health care resources (e.g., health insurance, service providers, and prevention and treatment facilities), geographic distance (e.g., limited transportation services and internet connectivity), and lower socioeconomic status (e.g., low incomes and unemployment) (Chen & Chen, 2020). While a majority of urban residents obtained knowledge through the Internet, rural residents accessed information through interactions within their communities. As rural residents have larger and stronger social networks than their urban peers, social distancing strategies restrict their ability to foster relationships, which can lead to social isolation problem (Muellera et al., 2021). However, there is very little knowledge of comparisons between rural and urban areas in consumer lifestyles during the pandemic. Thus, there is a need for more research on the pandemic's impact on developing countries due to the severity of the economic and social harm (Kang et al., 2021). In this study, we focus on comparing rural and urban areas in Thailand.

Although there is no uniform approach to distinguish rural from urban areas, in this study we categorize the geographic location variable as urban (i.e., megacity) or rural (i.e., small and medium-sized provinces). The Bangkok greater metropolitan area comprises five suburbs with a combined population of 14.29 million (Suzuki, 2019). The Bangkok metropolitan region's per capita GDP of 15,407 USD is more than double that of the entire nation (Suzuki, 2019). Given that about 85 percent of the Thai population lives outside the Bangkok metropolitan area, the contrasting levels of economic and social development between rural and urban areas suggest potential consumer lifestyle differences between these two vastly divided areas (Sun & Wu, 2004). As such, an exploration of the relationship between anxiety, resilience and consumer lifestyles in urban and rural areas is warranted, as these variables may interact in relation to developing coping strategies.

Hypotheses

Following the theoretical review presented above, this study intends to investigate the effect of different anxiety types (i.e., health, economic, and social-restriction) during the COVID-19 pandemic on various aspects of consumer lifestyle changes (i.e., online and outdoor activities, at-home pursuits, and health and hygiene practices) and to determine the moderating effect of resilience in these relationships (see Figure 1).
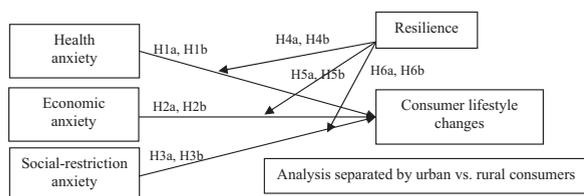
Figure 1 The framework representing the relationship between anxiety, resilience, and consumer lifestyle changes

We expect that the different types of anxiety will positively affect consumer lifestyle changes. In addition, we propose that resilience will moderate the effect of different types of anxiety on consumer lifestyle changes. Thus, the hypotheses are as follows.

H1a: Health anxiety is positively associated with urban consumers' lifestyle changes.

H1b: Health anxiety is positively associated with rural consumers' lifestyle changes.

H2a: Economic anxiety is positively associated with urban consumers' lifestyle changes.

H2b: Economic anxiety is positively associated with rural consumers' lifestyle changes.

H3a: Social-restriction anxiety is positively associated with urban consumers' lifestyle changes.

H3b: Social-restriction anxiety is positively associated with rural consumers' lifestyle changes.

H4a: Resilience moderates the relationship between health anxiety and urban consumers' lifestyle changes.

H4b: Resilience moderates the relationship between health anxiety and rural consumers' lifestyle changes.

H5a: Resilience moderates the relationship between economic anxiety and urban consumers' lifestyle changes.

H5b: Resilience moderates the relationship between economic anxiety and rural consumers' lifestyle changes.

H6a: Resilience moderates the relationship between social-restriction anxiety and urban consumers' lifestyle changes.

H6b: Resilience moderates the relationship between social-restriction anxiety and rural consumers' lifestyle changes.

Methodology

This study's data were taken from a part of the research project entitled "An evaluation of economic impacts from COVID-19 on the tourism sector in Thailand" granted by the Office of National Higher Education Science Research and Innovation Policy Council, Thailand. The data were collected after the first wave of the COVID-19 outbreak

by distributing paper-based questionnaires in October and November 2020. The survey instrument and method were reviewed and approved by the Second Allied Academic Group in Social Sciences, Humanities and Fine and Applied Arts at Chulalongkorn University COA No.179/63.

The population of the survey was Thai people aged 18-78 years old. This age range is considered to have purchasing power, establish clear lifestyles, and face with the direct impact of COVID-19. The 2,000 respondents were sampled using a quota sampling in proportion to the whole country population as counted by the Department of Provincial Administration, Ministry of Interior, in 2019. The criteria for calculation proportion for the quota sampling were the number of Thai populations separated by gender (male and female), age group (18–25, 26–35, 36–45, 46–55, 56–65, 66–75 years old), and region (Bangkok Metropolitan, Central, Eastern, Northern, Northeastern, and Southern). The power analysis calculated using G*power software version 3.1.9.6 (Faul et al., 2007). Based on the criterion of effect size F^2, $\alpha = .01$ and power = .99, the minimum sample size is 253. Thus, the sample size of 2,000 is sufficient for the analysis.

Self-administered questionnaire was used as the data collection method. The survey dataset includes four main sections: (1) socio-demographics, (2) the impact of COVID-19 pandemic, (3) the lifestyle changes, and (4) the tourism motivation and behavior. In this study, we only focused on three variables: COVID-19 anxiety, resilience, and consumer lifestyle changes. Questions about COVID-19 anxiety, developed by Pusaksrikit and Assarut (2021), comprise 11 items about health, economic, and social restriction issues during the COVID-19 pandemic. Ten items evaluate a respondent's degree of resilience after facing the pandemic, adapted from Martinelli and Tagliazucchi's (2019) individual resilience attitude. A five-point Likert scale was applied to rate the anxiety and resilience (1 = strongly disagree to 5 = strongly agree). Lastly, 19-item consumer lifestyle changes measurement that rates lifestyle tendencies after the pandemic was taken from Pusaksrikit and Assarut (2021) with five-point Likert scale (1 = do the least to 5 = do the most). Respondents' socio-demographic profiles were drawn from age, gender, highest attained educational level, and income.

SPSS version 22 was used for all data analysis. Exploratory factor analysis (EFA) using principal component analysis was applied to analyze the multivariate construct of anxiety and consumer lifestyle variables. Multivariate multiple regression analysis was conducted to test the hypotheses. The three dimensions of COVID-19 anxiety are the independent variables that predict consumer lifestyles, while resilience

is the model's moderator. Gender, age, education, and income were also incorporated into the model as control variables.

The analysis was separated into two models by urban and rural respondents to test the differences between the respondents in those areas. As of January 2022, Thailand had 77 provincial cities. Due to the huge gap in socioeconomic conditions and population sizes between Bangkok and provincial cities, people who live in Bangkok and its metropolitan area are considered to be in an urban area; whereas people in 54 provincial cities in five regions (i.e., Central, Eastern, Northern, Northeastern, and Southern) are classified as rural residents.

Results

Respondent Profiles

The 2,000 respondents were distributed according to the proportion of the Thai population according to age, gender, and resident areas as shown in Table 1. There were 1,027 females and 973 males, with 33.33 percent representing the 40–55 age range. Respondents mainly graduated with bachelor degrees (n = 783, 39.15%). The majority (n = 1,043, 52.15%) had monthly incomes of less than 15,000 baht (approximately 425 USD).

Table 1 Respondents' profiles

Respondents' profiles	Count	Percentage
Age		
> 75 years old	12	0.60%
56–75 years old	480	24.00%
40–55 years old	666	33.30%
24–39 years old	611	30.55%
18–23 years old	231	11.55%
Gender		
Male	973	48.65%
Female	1,027	51.35%
Resident area		
Urban (Bangkok Metropolitan)	313	15.65%
Rural (Other provincial cities in five regions)	1,687	84.35%
Education		
Primary school	328	16.40%
Secondary school	359	17.95%
High school	485	24.25%
Bachelor degree	783	39.15%
Higher than bachelor	45	2.25%
Monthly income		
Less than 15,000 baht	1,043	52.15%
15,001–30,000 baht	711	35.55%
30,001–45,000 baht	157	7.85%
45,001–60,000 baht	57	2.85%
More than 60,000 baht	32	1.60%

Testing Construct and Reliability of Measurements

The construct and reliability of the anxiety scale were tested using principal component analysis with the varimax rotation method. Based on criteria that factor loadings of particular items must be higher than 0.400, the initial results suggested dropping one item (Q1: I'm concerned about cleanliness and food safety.) from the analysis. The result shows that the remaining 10 items were extracted into three factors: social-restriction anxiety (SA), economic anxiety (EA), and health anxiety (HA). The Kaiser-Meyer-Olkin (KMO) index of the analysis was 0.819. The eigenvalue of the third factor equaled 1.134, and the cumulative percentage of variance explained by all three factors was 73.584. The factor loadings ranged from 0.665 to 0.890 and the Cronbach's alpha coefficients were higher than 0.800 (appendix A). Following the recommendation of Hair et al. (2010), all indicators confirmed the reliability of the anxiety measurement.

A similar process was also applied to test the construct and reliability of the consumer lifestyle changes scale. The results revealed that consumer lifestyle changes (CL) comprised four types: online lifestyle (OL), outdoor lifestyle (ODL), at-home lifestyle (AHL), and health and hygiene lifestyle (HHL) (appendix B). The KMO index of the analysis was 0.867. The eigenvalue of the fourth factor was 1.055, and the cumulative percentage of variance explained by all four factors was 65.130. The factor loadings ranged from 0.587 to 0.870 and the Cronbach's alpha coefficients were higher than .700. All indicators confirmed the reliability of the consumer lifestyle changes measurement.

Lastly, the analysis of the resilience scale found that the scale was unidimensional with the Cronbach's alpha coefficient equal to .904 and the factor loadings ranging from .698 to .762.

Effects of Anxiety on Consumer Lifestyles between Urban and Rural Areas

Multivariate multiple regression analysis was applied to analyze the data. The dependent variables were four types of consumer lifestyle changes, while the independent variables were three anxiety factors, with resilience as the moderator. Respondents' age, gender, education, and income were incorporated into the analysis model as control variables. Consumer lifestyle changes, anxiety, and resilience factors were calculated by averaging the scores of the items in the factors.

The correlation coefficients between variables separated by urban and rural respondents are presented in

Table 2. It shows that, for urban consumers, resilience and SA have significant positive correlation with all aspects of consumer lifestyle changes ($p < .01$). HA negatively correlates with OL ($p < .01$), ODL ($p < .05$), and HHL ($p < .05$). EA positively correlates with OL ($p < .01$) and AHL ($p < .01$). For rural residents, all types of anxiety show positive correlations with all aspects of consumer lifestyle changes ($p < .01$).

Table 3 presents the multivariate test statistics for all independent variables. The significant predictors of urban consumers' lifestyle changes were HA ($p < .05$), resilience ($p < .01$), HA*resilience ($p < .05$), age ($p < .01$), gender ($p < .05$) and income ($p < .01$). Thus, H1a and H4a were supported. In the rural area, the factors that show significant effects on consumer lifestyle changes were SA ($p < .01$), resilience ($p < .01$), SA*resilience ($p < .01$), age ($p < .01$), gender ($p < .05$), education ($p < .01$), and income ($p < .05$). Thus, H3b and H6b were supported.

Table 2 Correlation between variables

Variables		Means	F1	F2	F3	F4	F5	F6	F7	F8
Urban										
F1	HA	3.757	1							
F2	EA	4.188	.216**	1						
F3	SA	3.253	-.075	.450**	1					
F4	Resilience	4.092	-.116*	.293**	.510**	1				
F5	OL	3.483	-.217**	.224**	.543**	.428**	1			
F6	ODL	3.384	-.143*	-.052	.206**	.174**	.444**	1		
F7	AHL	4.326	-.022	.218**	.172**	.293**	.103	-.147**	1	
F8	HHL	4.203	-.121*	.051	.154**	.362**	.234**	.203**	.467**	1
Rural										
F1	HA	3.658	1							
F2	EA	4.047	.471**	1						
F3	SA	3.361	.563**	.344**	1					
F4	Resilience	3.728	.124**	.262**	.168**	1				
F5	OL	3.149	.253**	.089**	.378**	.321**	1			
F6	ODL	3.000	.276**	.071**	.321**	.181**	.664**	1		
F7	AHL	3.807	.124**	.160**	.198**	.377**	.338**	.200**	1	
F8	HHL	3.635	.155**	.122**	.225**	.386**	.425**	.309**	.550**	1

Note: HA = health anxiety, EA = economic anxiety, SA = social-restriction anxiety, OL = online lifestyle, ODL = outdoor lifestyle, AHL = at-home lifestyle, HHL = health and hygiene lifestyle.
** $p < .01$, * $p < .05$.

Table 3 Multivariate statistics and F approximations for independent variables

Variables	Pillai's Trace	Wilks' Lambda	Hotelling's Trace	Roy's Largest Root	F	p	Hypothesis
Urban							
HA	0.03	.97	0.04	0.04	2.67[a]	.03*	H1a: supported
EA	0.01	.99	0.01	0.01	1.06[a]	.38	H2a: not supported
SA	0.01	.99	0.01	0.01	1.06[a]	.38	H3a: not supported
Resilience	0.60	.40	1.48	1.48	110.41[a]	.000**	N.A.
HA*resilience	0.04	.96	0.04	0.04	3.22[a]	.013*	H4a: supported
EA*resilience	0.01	.99	0.01	0.01	1.11[a]	.35	H5a: not supported
SA*resilience	0.01	.99	0.01	0.01	0.86[a]	.49	H6a: not supported
Age	0.09	.91	0.10	0.10	7.28[a]	.000**	N.A.
Gender	0.03	.97	0.04	0.04	2.65[a]	.033*	N.A.
Education	0.02	.98	0.02	0.02	1.52[a]	.20	N.A.
Income	0.09	.91	0.10	0.10	7.14[a]	.000**	N.A.
Rural							
HA	0.00	1.00	0.00	0.00	1.79[b]	.13	H1b: not supported
EA	0.00	1.00	0.00	0.00	1.39[b]	.23	H2b: not supported
SA	0.04	0.96	0.04	0.04	16.75[b]	.000**	H3b: supported
Resilience	0.31	0.69	0.45	0.45	189.33[b]	.000**	N.A.
HA*resilience	0.00	1.00	0.00	0.00	1.98[b]	.10	H4b: not supported
EA*resilience	0.00	1.00	0.00	0.00	0.69[b]	.60	H5b: not supported
SA*resilience	0.03	0.97	0.03	0.03	11.40[b]	.000**	H6b: supported
Age	0.06	0.94	0.07	0.07	27.53[b]	.000**	N.A.
Gender	0.01	0.99	0.01	0.01	2.76[b]	.027*	N.A.
Education	0.01	0.99	0.01	0.01	5.50[b]	.000**	N.A.
Income	0.01	0.99	0.01	0.01	3.35[b]	.010*	N.A.

Note: HA = health anxiety, EA = economic anxiety, SA = social-restriction anxiety,
a: Hypothesis $df = 4$, error $df = 299$,
b: Hypothesis $df = 4$, error $df = 1673$.
** $p < .01$, * $p < .05$.

Table 4 Results of multivariate multiple regression by resident areas

Variables	OL		ODL		AHL		HHL	
	b	p	b	p	b	p	b	p
Urban — R square	.979		.967		.988		.990	
HA	0.78	.028*	1.07	.013*	0.20	.54	0.54	.06
EA	-0.71	.06	-0.26	.58	0.27	.43	-0.07	.82
SA	0.40	.26	-0.34	.44	0.41	.21	0.29	.31
Resilience	0.54	.000**	0.71	.000**	0.98	.000**	1.06	.000**
HA*resilience	-0.23	.009**	-0.28	.009**	-0.05	.53	-0.14	.045*
EA*resilience	0.19	.046*	0.04	.76	-0.04	.68	0.02	.81
SA*resilience	-0.04	.65	0.11	.31	-0.10	.20	-0.08	.27
Age	0.19	.000**	0.17	.000**	-0.02	.53	0.00	.93
Gender	0.13	.031*	-0.04	.63	0.08	.14	-0.03	.49
Education	-0.01	.87	0.03	.50	-0.08	.015*	-0.03	.29
Income	0.06	.032*	0.16	.000**	0.01	.68	0.07	.002**
Rural — R square	.951		.922		.967		.965	
HA	-0.09	.53	-0.03	.84	-0.35	.009**	-0.09	.49
EA	-0.19	.13	-0.11	.47	0.04	.72	-0.19	.11
SA	0.67	.000**	0.71	.000**	0.96	.000**	0.82	.000**
Resilience	0.48	.000**	0.50	.000**	0.85	.000**	0.79	.000**
HA*resilience	0.04	.23	0.05	.25	0.09	.009**	0.03	.33
EA*resilience	0.01	.74	-0.02	.68	-0.01	.87	0.04	.24
SA*resilience	-0.09	.011*	-0.11	.011*	-0.22	.000**	-0.18	.000**
Age	0.18	.000**	0.19	.000**	-0.02	.23	-0.03	.08
Gender	0.00	.91	-0.04	.34	0.03	.32	0.10	.005**
Education	0.04	.052	-0.04	.06	0.04	.017	0.03	.07
Income	0.06	.034*	0.04	.23	-0.01	.64	0.07	.007**

Note: HA = health anxiety, EA = economic anxiety, SA = social-restriction anxiety, OL = online lifestyle, ODL = outdoor lifestyle, AHL = at-home lifestyle, HHL = health and hygiene lifestyle.
** $p < .01$; * $p < .05$.

Table 4 presents the coefficients of all predictors for four consumer lifestyle changes separated by urban and rural areas. The adjusted R square values of all models ranged from 0.922 to 0.990, indicating the high explanation power of the models.

Considering the respondents in urban areas, HA positively affects OL ($b = 0.78$, $p < .05$) and ODL ($b = 1.07$, $p < .05$). Resilience has a significant positive effect on all aspects of consumer lifestyle changes ($p < .01$); however, it negatively moderated the effects of HA on OL ($b = -0.23$, $p < .01$), ODL ($b = -0.28$, $p < .01$) and HHL ($b = -0.14$, $p < .05$).

There were no significant effects of SA and EA on all dimensions of consumer lifestyle changes. However, resilience positively moderated the effect of EA on OL ($b = 0.19$, $p < .05$). It was also found that age, gender, and income have significant positive effects on some dimensions of consumer lifestyle changes, especially OL and ODL, while education has a negative effect on AHL ($b = -0.08$, $p < .05$).

Regarding rural respondents, SA and resilience show positive effects on all consumer lifestyle changes. HA negatively affects the AHL ($b = -0.35$, $p < .01$), while there was no significant effect of EA on all consumer lifestyle changes. Resilience negatively moderated the effect of SA on all aspects of consumer lifestyle changes. However, it showed a positive moderating effect on the impact of HA on AHL ($b = 0.09$, $p < .01$). Age, gender, education, and income have positive effects on some aspects of consumer lifestyle changes.

Discussion and Theoretical contributions

This research provides novel insights into the impact of COVID-19 anxiety in the prediction of consumer lifestyle changes in urban and rural areas. Our findings underline the importance of multidimensional COVID-19 anxiety and highlight the mechanism behind the formation of new consumer lifestyles. By specifying three major types of COVID-19 anxiety (i.e., health, economic, and social-restriction), this research is among the first to examine how various types of COVID-19 anxiety are associated with different aspects of consumer lifestyle changes along the urban-rural continuum (Liu et al., 2021) and whether resilience plays a role in the decision to adopt these lifestyles (Cervera-Martínez et al., 2021). Moreover, we offer insight by expanding the growing body of urban-rural research in the context of emerging economies (Chen & Chen, 2020; Kang et al., 2021),

whose gap between the two areas is significantly large.

Our results show that urban consumers had a higher degree of health and economic anxiety than their rural counterparts. This is in line with Liu et al.'s (2021) finding. However, only health anxiety has impacted urban consumers' lifestyle changes. Surprisingly, there is no relationship between social-restriction and economic anxiety and consumer lifestyle changes among urban consumers. Instead, resilience is the key factor that drives urban consumers toward new consumer lifestyle changes. This result is similar to Cutter et al.'s (2016) finding. As urban consumers have easier access to facilities and gain more resources that support their lives during social distancing restrictions, they tend to adapt by familiarizing with ways to connect with people, to work and do various activities in the virtual space at home. Thus, urban consumers with high resilience have the ability to adapt in a crisis, enabling them to balance various aspects of their activities including adopting online lifestyle, doing activities at home, consuming more health and hygiene products, and maintaining their outdoor activities. This result supports Carriedo et al. (2020).

Interestingly, urban consumers with high levels of health anxiety plan to engage in more online and outdoor activities after the COVID-19 pandemic. It is possible that they learn the benefit of engaging in online activities and are willing to continue using these online services. After a certain period of time, they then expect to have less fear of becoming infected and feel more relaxed doing out-of-home activities. This result is consistent with the phenomenon of *revenge travel* that happens when people who have high stress due to lockdowns want to release tension by overdoing outdoor activities such as traveling (Wang & Xia, 2021). However, our result also shows that resilience negatively moderated the effect of health anxiety on online and outdoor lifestyles. This implies that resilience can help reduce the panic and overacting caused by health anxiety and prevent the extreme pursuit of new consumer lifestyles.

Among rural consumers, resilience is also an influential factor that is positively associated with various aspects of new consumer lifestyles. This confirms the significance of promoting resilience to consumers so they can confront and adapt to crises regardless of their residential area (Sia et al., 2022). Besides resilience, social-restriction anxiety plays the most significant role among rural consumers in adopting new consumer lifestyles. In addition, the result reveals the significant negative moderating effect of resilience on the relationship between social-restriction anxiety and new consumer lifestyles. This means that resilience could lessen the effect of social-restriction anxiety, which would increase the likelihood of one adopting a rational consumer lifestyle.

Furthermore, we found that health anxiety affects rural consumers by lessening their willingness to stay at home. This is probably because the nature of the extended family in rural areas where old and young family members live under the same roof can cause people with high levels of health anxiety to feel uncomfortable. After the pandemic diminishes, they may tend to stay less at home. Additionally, resilience can help moderate the impact of health anxiety on the at-home lifestyle. Rural consumers with high resilience can manage their private spaces and feel more comfortable staying at home. This result extends the notion of Cervera-Martínez et al. (2021).

Regarding the respondents' profiles of both residential areas, the analysis reveals that young and high-income people tend to adopt online and outdoor lifestyles more than older people. In addition, high-income people tend to have greater levels of concern about health and hygiene. This means that socio-economic factors can explain a variety of consumer lifestyle changes in both rural and urban areas.

Conclusion and Implications

This research provides a snapshot of anxiety in response to changes in consumer lifestyles. Our findings help identify the psychological needs of rural and urban consumers in developing countries that deserve special attention in this circumstance.

Our findings could offer insights into the strategies required to effectively address these important mental health issues in an effort to lower the disease burden of the COVID-19 pandemic (Callaghan et al., 2021; Liu et al., 2020). Given the distinctive results of consumers in urban and rural areas, policymakers and practitioners cannot straightforwardly and uniformly apply urban-centric data to rural populations. Recovery strategies need to be tailored to different socio-demographics and residential areas.

For instance, urban consumers were concerned about their health threats, which led to the significant changes in their online and outdoor lifestyles. When they participate in outdoor activities such as attending a live concert or watching movie in the theatre, it is important for policy planners and event marketers to cooperate and manage how to mitigate crowding by implementing public health procedures and encouraging consumers to practice hygienic behaviors in densely populated areas (Kim et al.,

2022). Additionally, as the online and health and hygiene lifestyles have become major parts of urban society, opportunities are created for online health products such as wearable trackers and telemedicine programs. Marketers can educate urban consumers to see the benefits of these new technologies.

For rural consumers, policymakers can support a wide range of home-based programs (e.g., mobile technology and anxiety-released activities) or develop community-based programs (e.g., call lines, public health assistance, and transportation) that can reduce social-restriction anxiety and boost resilience (Henning-Smith et al., 2019). In addition, marketers can help decrease feelings of isolation among high-income rural consumers and increase their time spent on physical activities by introducing exergames that combine exercise and entertainment for small groups that can be adapted to people at different age levels (Mateer et al., 2021).

Limitation and Future Research

This research, however, has some limitations. Firstly, our study investigated anxiety and its effect on lifestyle changes during the first wave of the COVID-19 pandemic. As the pandemic has continued, future research may benefit from implementing a longitudinal design, particularly by comparing different waves of the pandemic. Secondly, this research only explores the COVID-19 crisis in Thailand. Future research should examine these relationships in other developing countries. Lastly, this research defined urban and rural areas in terms of megacity versus small and medium-sized cities. Future research may further distinguish urban and rural areas by other criteria (e.g., area size, population size, or government administration). It is possible that the effect may be even larger when exploring rural consumers living in the countryside.

Conflict of Interest

The authors declare that there is no conflict of interest.

Fundings

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Appendices

Appendix A Testing construct and reliability of anxiety scale

Measurement items	Factor loadings	Eigen values	Percentage of variance explained	Cronbach's alpha
Social-restriction anxiety (SA)		4.493	44.933	.847
4. I'm stressed when I have to work or study online.	.821			
2. I'm worried about not having a place to exercise.	.812			
5. I'm stressed out when I've got to stay at home all the time.	.738			
3. I'm worried about traveling on public transportation.	.676			
6. I'm stressed that I can't socialize with friends.	.665			
Economic anxiety (EA)		1.731	17.313	.835
10. I'm worried about my future income.	.878			
11. I'm concerned about the stability of my job.	.827			
9. I'm worried that my household income won't be enough for daily living.	.795			
Health anxiety (HA)		1.134	11.338	.902
7. I'm worried that I will be infected.	.890			
8. I'm worried that my family will be infected.	.877			

Appendix B Testing construct and reliability of consumer lifestyle changes scale

Measurement items	Factor loadings	Eigen values	Percentage of variance explained	Cronbach's alpha
Online lifestyle (OL)		6.986	36.767	.866
15. I buy fashion items online.	.783			
13. I study and learn through online channels.	.768			
19. I watch movies/TV series online.	.750			
14. I buy consumer goods online.	.725			
18. I use food delivery services.	.698			
16. I buy fresh produce and food ingredients online.	.649			
17. I conduct business transactions through online channels.	.590			
Outdoor lifestyle (ODL)		2.718	14.303	.860
11. I travel for leisure.	.843			
10. I watch movies in the cinema.	.782			
12. I go to the shopping mall.	.778			
8. I choose to travel using public transportation when I have to travel with other people.	.685			
9. I watch concerts at their actual venues.	.679			
At-home lifestyle (AHL)		1.055	5.552	.793
6. I spend time with my family.	.870			
5. I spend time in my accommodation.	.813			
7. I exercise at home.	.587			
Health and hygiene lifestyle (HHL)		1.616	8.508	.838
3. I'm interested in health products and immune enhancements.	.798			
2. I arrange my house to accommodate the various activities I do at home.	.780			
1. I buy various amenities for living comfortably at home.	.746			
4. I'm interested in purchasing products for cleanliness and hygiene.	.715			