Provincial Migration and Agricultural Population Change in Thailand

การย้ายถิ่นระดับจังหวัดกับการเปลี่ยนแปลงของประชากรเกษตรในประเทศไทย

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บทคัดย่อ: งานวิจัยฉบับนี้ศึกษาถึงความสัมพันธ์ของการย้ายถิ่นระดับจังหวัดกับการเปลี่ยนแปลงของสัดส่วนและโครงสร้างอายุประชากรเกษตรในประเทศไทย จากการศึกษาพบว่ากรุงเทพมหานครมีจำนวนประชากรย้ายถิ่นสุทธิมากที่สุดมาโดยตลอด รองลงมาได้แก่จังหวัดในเขตปริมณฑล ขณะที่จังหวัดที่มีจำนวนประชากรย้ายถิ่นออกมากที่สุดหลายจังหวัดอยู่ในภาคตะวันออกเฉียงเหนือ โดยส่วนใหญ่ได้ย้ายถิ่นไปยังกรุงเทพมหานคร สาเหตุมาจากความเป็นเมืองที่เติบโตในรูปแบบเอกนครทำให้ประชากรย้ายถิ่นข้ามจังหวัดมาเพื่อรายได้ที่สูงขึ้น ซึ่งเห็นได้จากความสัมพันธ์ระหว่างการเติบโตของผลผลิตทางเศรษฐกิจและร้อยละของการย้ายถิ่นสุทธิของแต่ละจังหวัด ผู้ย้ายถิ่นออกส่วนใหญ่มีอายุระหว่าง 15 ถึง 29 ปี จึงก่อให้เกิดสังคมเกษตรสูงวัย โดยพิจารณาจากค่าสัมประสิทธิ์สหสัมพันธ์ระหว่างร้อยละของการย้ายถิ่นออกกับสัดส่วนประชากรเกษตรสูงอายุที่เปลี่ยนแปลงในแต่ละจังหวัดมีค่า 0.61 สัดส่วนประชากรเกษตรสูงอายุโดยรวมทั้งประเทศเพิ่มขึ้นจาก 6.6 เปอร์เซ็นต์ เป็น 16.0 เปอร์เซ็นต์ ภายใน 30 ปี พบการเปลี่ยนแปลงสูงที่สุดในภาคตะวันออกเฉียงเหนือซึ่งเพิ่มขึ้นจาก 4.6 เปอร์เซ็นต์ เป็น 16.9 เปอร์เซ็นต์ จึงสามารถสรุปได้ว่า การย้ายถิ่นระดับจังหวัดก่อให้เกิดสังคมเกษตรสูงวัยในประเทศไทย ซึ่งอาจส่งผลกระทบต่อเสถียรภาพของภาคเกษตรไทยได้

คำสำคัญ: สังคมสูงวัย ประชากรภาคเกษตรกรรม การย้ายถิ่นระดับจังหวัด ประเทศไทย

Abstract: This paper examined associations between inter-provincial migration and change in age structure, as well as the proportion, of agricultural population in Thailand during 1980 and 2010. Bangkok, the capital city, had highest net migrant numbers through the reference period, followed by its neighboring suburban provinces. Meanwhile, provinces with highest out-migrants were in agricultural Northeast region and most of them targeted Bangkok. The predominant urbanization stimulated inter-provincial migration with higher income opportunities, which can be seen from the relation between per-capita GDP growth and percent net migration of all provinces, consequently caused less agricultural labor proportion in rural provinces. Furthermore, the majority of migrants were 15-29 years old which raised aging agricultural worker proportion for whole country from 6.6 to 16.0 percent in only 30 years. The worst was found in out-migrating Northeast region, from 4.9 to 16.9 percent. A positive correlation coefficient of 0.61, between average percent out-migration and change in aging agricultural worker percentage, clarified that inter-provincial migration in Thailand has created aging agricultural society and may cause instability in Thai agriculture.

Keywords: Aging, agricultural workers, inter-provincial migration, Thailand

Introduction

There have been discussions for decades about labor transfer from agricultural sector to modern sectors since Arthur Lewis' Dual sector model was proposed in 1954 (Gersovitz *et al*., 2012). Under the same unit of space, urban lands are mainly occupied for residence, industry, commercial, etc. (Naab *et al*., 2013). Urban-centered development along with the economic growth causes people move from rural to urban areas by two incentives: wages and infrastructures (Panudulkitti, 2011; Samuel and George, 2002). The degree of urban concentration is meaningful; unevenly distributed urban population swings economic and social structures (Bertinelli and Black, 2004). Asian cities in 2008, including Thailand, were 42 percent urbanized and continued growing 2.5 percent per year (Lehman, 2008). Thailand has been complying with the dual sector model upon rapid economic growth, yet the country came across a parallel phenomenon; urbanization in Thailand has been city-dominated (Hill, 1995).

There are several pieces of research on relation between migration and aging society in rural areas. The study of Nyanguru (2007) stated that migration is linked with urbanization and changes population structure. Urban growth is driven by young migrants from rural areas to cities (Kinsella, 2001). Compared to urban areas, aging population proportion in rural area is expected to be higher as a result of young out-migration or in-migration of retirees (Burholt, 2012). A case study conducted in Chiang Mai province, in the Northern part of Thailand, by Fongmul and Meka (2013), showed that a majority of agricultural workers in the area was elderly as young farmers migrated out increasingly; that resulted in powerful worker shortage.

Still, there is hardly a study in macro-viewpoint about how migration in Thailand impacts age structure of agricultural population, who mainly reside in rural area. Hence, the objective of this paper is to find out whether or not, and to what extent, Thailand's inter-provincial migration causes aging agricultural society (Thailand consists of 76 provinces and officially divided into six regions -

North, Central, Northeast, West, East, and South region). The reference time period of this study was between 1980 and 2010. In order to fulfill the objective, major factor driving migration directions are analyzed. Then the effects of inter-provincial migration on age structure of agricultural workers are examined, followed by positive discussions. Population data concerning numbers and characteristics-age, sex, occupation, and migrating direction–are derived from Thailand Population and Housing Census (Thailand National Statistical Office, 1980a; 1980b; 1990a; 1990b; 2000a; 2000b; 2010a; 2010b). Economic data - GDP per capita, total agricultural products, are acquired from National Economic and Social Development Board, Thailand.

Migration in Thailand from 1980 to 2010

The data on inter-province migrants are provided decennially, by Thailand National Statistical Office, in Thailand Population Census that includes numbers of migrants in last five years of the census year. Totally there are three periods of migrant data available from 1980 to 2010: numbers of migrants during 1985-1990, 1995-2000, and during 2005-2010. Migration data, along with summary, in regional level are also provided in Population Migration Survey (full report) since 1994, annually since 2008. Analysis of the statistics was published in 1995 by Mahidol University's Institute for Population and Social Research, National Migration Survey of Thailand. According to the survey, migration had been rural-to-rural before 1970 (Institute for Population and Social Research, 1995). At the time of survey, Bangkok played as origin or destination around 56 percent of total interregional migration (Institute for Population and Social Research, 1995). Over three periods, region with highest in-migrants was Central region. All regions but Northeast had increases in number of in-migrants along the reference time. Northeast region also had rocketing out-migrant number from 779,027 people, during 1995-2000, to over 1.13 million, becoming the most out-migrating region which most of the migrants targeted Bangkok.

The next step on analyzing tendency of migration is to find most related indicator to number of migrants in each province. Ullah (2004) suggested PEST factors: political, economic, social, and technical factors influencing migration. Among those, Sricharoen (2013) asserted that out-migrants from rural to urban areas give their priority to better income, the economic factor. As reported in Thailand Population Census 2010 (Thailand National Statistical Office, 2010b), the major reason of overall migrants during 2005-2010 was work-related reason, accounting for 41.6 percent of total migrants. This can be presumed that economic factors influence most on migration; but degree of the influence is dubious.

To find the relation between the economic indicator and inter-provincial migration, this paper calculated net-migration percentage in five-year period since using in-migrant data in percentage form cuts influence of population growth. Per-capita GDP growth from 2005 to 2010 of all 76 provinces, together with net migrant percentage over last five years was plotted in Figure 1. It was found that there was a positive relation between the two variables. The correlation coefficient of GDP per capita growth during 2005-2010 and in-migrant percentage during 2005-2010 was 0.767. This can be implied that provinces with high per-capita GDP growth, which are mainly comprised of non-agricultural sectors induced people to move in, meanwhile which with low per-capita gives people no incentive to migrate in.

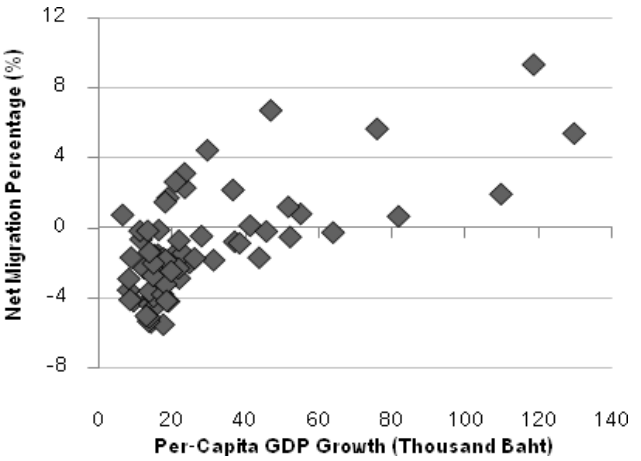

Figure 1 Association between per-capita GDP growth and net migration during 2006-2010 of all provinces

There is a room for argument about effects of migration on population age structure as people normally do not migrate evenly by age group. Whole country's out-migrant age-group with highest proportion was 20-24 years old group accounting for 23.4 percent for male migrants, and 20.9 percent for female ones. The second highest percentage of whole country was found in age group 25-29, 17.2 percent for males and 15.5 percent for females. Yet, there was gradual dissimilarity of age-group proportions between sexes. Male out-migrants in age group 15-19 accounted for only 11.1 percent of total male out-migrants, while female ones were 15.9 percent of total female out-migrants. A reason behind the difference was suggested by Osaki (1999) that female workers are preferable for service and commerce sectors, which are increased in urban development. However, the age proportion of out-migrants changed gradually over periods. The country's average proportion of out-migrants aged 30-39 and 40-49 also increased by 5 percent from period 1985-1990 to 2005-2010, implying that out-migrants from many provinces tended to be older. The young out-migrant percentage (5-9 years old) declined by 6.5 percent over the same time, probably due to better capacities of overall educational places.

Effect of inter-provincial migration on agricultural society

Such migration trend in which people aged 20-29 took a major role was questioned that it would impact the agricultural society in rural areas in several ways.

1. Less agricultural worker percentage

For one thing, realizing a vast GDP gap, out-migrants usually enter modern sectors in urban areas upon migration leaving the agricultural sector (Aemkulwat, 2010). This paper introduces agricultural worker percentage defined as persons aged fifteen and over who are employed in economic activities related to agriculture.

The agricultural worker percentage is a fraction of number of agricultural workers on total

number of 15-years-old-up workers, in given province. Data on number of agricultural workers and total workers by province are provided in Thailand Population and Housing Census (Thailand National Statistical Office, 1980a; 1980b). According the census, Thailand had provincial average agricultural worker percentage at 72.3 percent; however the percentage varied in different regions in 1980. Figure 2 displays the map of agricultural worker proportion in 2010, to be compared with 1980. The region with highest agricultural worker percentage was Northeast region (89.3 percent), while region with lowest one was Central region (61.6 percent). Si Sa Ket, a Northeast province, ranked first with 93.3 percent, whereas Bangkok got the lowest rank merely 4.9 percent. It was clear that agriculture was hardly left in Bangkok, that is to say Bangkok was greatly urbanized. It can be seen from the map that Bangkok and its surrounding provinces were apparently urban zone of the country. Central region was the most urbanized region and Northeast region was the most rural one.

The most dramatic drop in agricultural worker percentage from 1980 to 2010 was found in the East region, not the Central region, which plunged by 29.2 percent to solely 37.1 percent. In keeping with the 2010 percentage status, Central region was still identified as the most urbanized. Region with highest percentage in 2010,

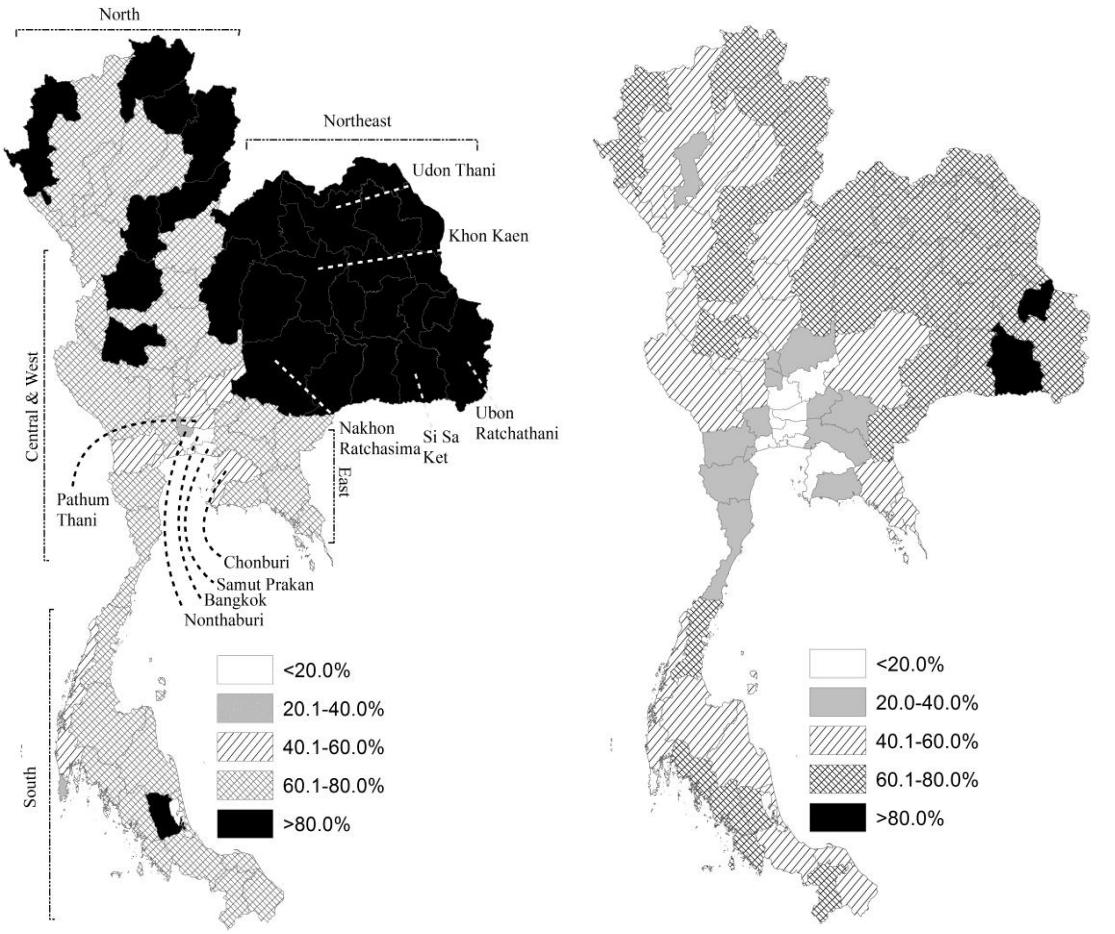

Figure 2 Thailand map by agricultural worker percentage in 1980 (left) and 2010 (right)

73.8 percent, was still Northeast in spite of it falling by 15.5 percent since 1980. During the period 2005-2010, 11.6 percent of total migrant moved within province from non-municipal areas. The sinking agricultural worker portion may partly come from other factors, namely intra-province migration, yet the effect was small. The average changes in agricultural worker percentage of the entire state from 1980 to 2010 were negative 22.8 percent, while percentage of population in municipal area rose by 27.17 percent. Briefly considering inter-province migrant percentage from non-municipal of whole country population, there were 2.79 percent during 1995-2000 period and 2.62 percent during 2005-2010 (no available data in 1985-1990). Provided that the percentages were negligibly fluctuated, there may have been 17.33 percent of whole country population who migrated from non-municipal areas across provinces over 30 years. This means that there is possibility that 17.33 percent out of the 22.8 percent agricultural decrease migrated to more-urban provinces transferring to non-agricultural sectors.

Viewing at provincial levels, the maximum decrease in agricultural worker percentage was found in Rayong, by 45.3 percent from 70.0 percent in 1980. The east-region coast to the Gulf of Thailand with its capes and gulfs are appropriate for sea ports and transportation industry. As a consequence, an industrial boom occurred in Rayong province since 1990s under the (IEAT) project, centered in Mabtapud district (Aruninta, 2012; Leuprasert *et al*., 1995).

2. Higher aging agricultural worker proportion

Even worse than the first impact, the consequent one was that inter-provincial migration changed age structures of agricultural population in rural area. As noticed before, a vast majority of out-migrants who were previously in agricultural sector was likely young adults. It is discussed that the move-out ones would lead to aging agricultural society in rural area. This research brings in percent aging agricultural worker to indicate how much agricultural working society grows old. The indicator equals number of agricultural workers with 60 years old and over (in a province) divided by the total number of agricultural worker in the province. According to Table 1, in 1980 the average percent aging agricultural worker of Thailand was 6.6 percent. The province with the lowest one, located in North region, was Phayao (3.3 percent), while the province with highest one was Nonthaburi, 12.8 percent. Seeing that Nonthaburi connects to the capital Bangkok, young agricultural workers in the province might have been impelled entering modern sectors in the capital city properly. From 1980 to 2010, age structure of agricultural society seriously shifted. There were 48 of total 76 provinces that had more than 8 percent increase in aging agricultural workers. Ten out of 18 provinces in Northeast rise to over 16 percent, causing itself the region with oldest agricultural worker proportion, expanded from 1980 by 12.4 percent. Thailand's average aging agricultural worker percentage significantly augmented from 6.6 percent in 1980 to 16.0 percent in 2010.

There was a remarkable change in agricultural worker's age structure in the entire state. As can be seen from Figure 3, in 1980 the age group 15-19 years old had the highest proportion 18.3 percent. The second highest one was 20-24 years old, 15.5 percent. While in 2010, the percentage for those aged 15-19 declined to merely 3.4 percent.

Table 1 Percent aging agricultural workers by region in 1980 and 2010

Region	Year	
	1980	2010
North	4.92	13.89
Central	7.70	18.57
Northeast	4.97	16.91
West	6.75	14.59
East	6.66	15.89
South	7.90	12.72
Whole country	6.63	16.02

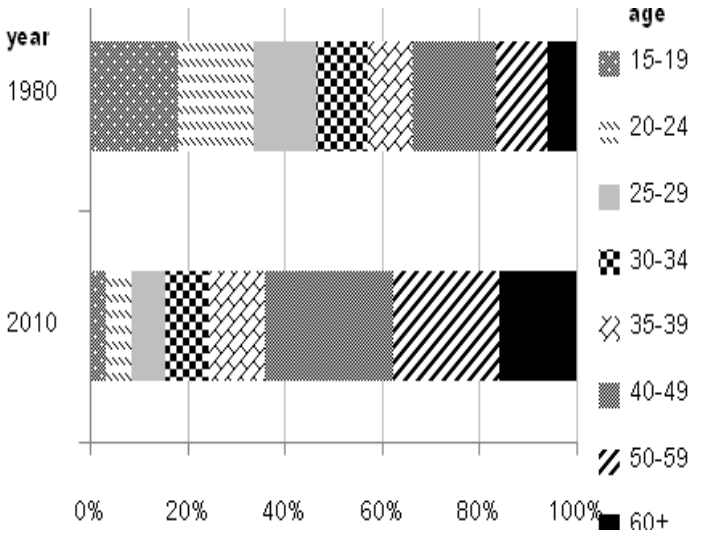

Figure 3 Whole country's age group proportions of agricultural workers in 1980 and 2010

Likewise, the proportion in age group 20-24 was 5.2 percent. The age group with the highest proportions in 2010 was 40-49 years old, at 26.8 percent, augmented by 9.7 percent from 1980. The elderly groups of them in year 2010 were 14.1-17.9 percent. It is clear that there was an age-structural wave moving to older groups, insuppressibly aging group. Considering agricultural workers aged 50-59 is necessary due to their last steps before elderly states. This means aging agricultural worker proportions are going to vastly expand in 2020.

Statistical techniques were also used to analyze influence of rural-urban migration on agricultural age structure. The variables considered in the analysis were average percent out migration (independent variable) over three periods (1985-1990, 1995-2000, and 2005-2010) and 30-year-interval change in percent aging society (dependent variable) in provincial level. The calculated data of average percent out migration and change in percent aging agricultural worker were plotted in Figure 4. As reported by the graph, there was a good association between the two variables. Provinces with high average percent out migration also had a wide margin in percent aging workers, and vice versa, showing a positive relation between them. Correlation coefficient of the two variables was 0.61 which is moderately strong. There is

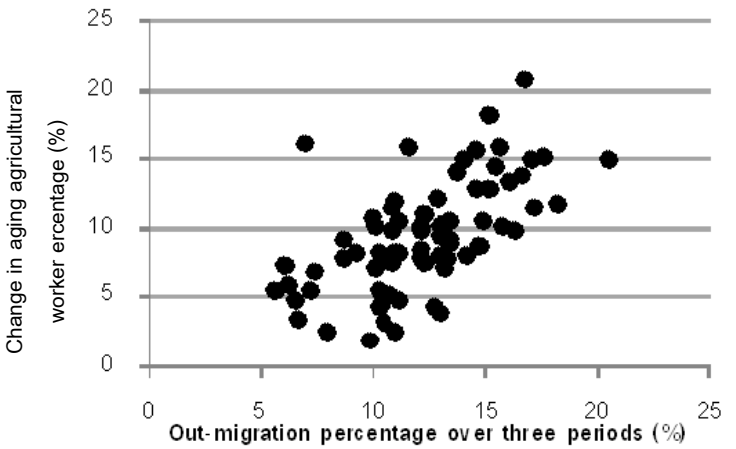

Figure 4 Out-migration percentages over three periods and change in aging agricultural workers percentage

a possibility that exogenous influences came from migration within province. Nevertheless, the correlation coefficient value clarified significant impact of out-province migration on aging population proportions in agricultural work society.

Discussion

What happens when agricultural workers in rural area grow old? As reported by the Office of the National Economic and Social Development Board, Thailand (2012), total agricultural product with constant price of year 1988 has been growing for every region, especially South region that rose by 3.3 times from 1981 to 2009. As stated in Leturque and Wiggins' study (2011), labor productivity in Thai agriculture has been rising from 1989 to 2007 with 2.4 percent average growth rate. The number of agricultural worker has dropped since 1990, from 20 million to 16 million in 2010, accompanied by indifferent agriculture land area from 17.47 million hectares in 1988 to 18.01 in 2008. Concurrently there was overwhelming influx of immigrants from neighboring countries namely Myanmar, Cambodia, and Lao, pressuring Thai government to admit Memorandum of Understanding (MoU) in 2006 for better control over them (Walsh and Ty, 2011). According to Office of Foreign Workers Administration (2012; 2013), in 2012 totally 940,531 immigrants were registered and accepted under the MoU, and already passed a million (1,155,826) in 2013. This excluded a vast group of unregistered illegal migrants. Registered ones mainly go for construction works (27.0 percent) and agriculture-related works (19.3 percent). The incoming migrant labor takes part in compensating agricultural shortage in rural area of the country.

Furthermore, agricultural production increase should be driven up mainly by technologies and chemical inputs. The study of Suphannachart and Warr (2011) concluded that publicly funded agricultural research has a positive significant support on total factor productivity. On the top of others, uses of chemical fertilizers and pesticides were utilized by 89.2 percent and 51.4 percent of farmers in 2008 respectively (Thailand National Statistical Office, 2008), which boosted their expenditure on farming, consequently by their debts.

It can be said that lacking youth strength in agricultural production can be helped up by the mentioned factors. Although agricultural workers, who are growing old, could maintain the production, they cannot improve their low returns. A study of Isvilanonda and Bunyasiri (2009) identified that increase in food price and production cost is closely related to rural poverty. Even though migration holds up income of rural households, it is incapable of reducing poverty and inequality (Amare *et al*., 2011).

Conclusion

The inevitable inter-provincial migration trend to provinces with higher GDP per capita has two-fold effects on rural agricultural society, namely less agricultural labor proportion, and changing age structure of agricultural workers. Continually young and middle-aged ones have been leaving the agricultural sector in their origins for modern sectors in urbanized provinces, resulting in more proportion of aging agricultural workers. To make up productivity from young labor, agricultural sector relied more not only on costly technologies and materials, but also on international labor from neighbor countries resulting in low returns from agriculture.

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