

Modern agricultural practices among paddy farmers in IADA KETARA, Terengganu and IADA Kemasin Semerak, Kelantan (Amalan pertanian moden dalam kalangan penanam padi di IADA KETARA, Terengganu dan IADA Kemasin Semerak, Kelantan)

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Keywords: farmers' practices, modernity, paddy farmers daily activities

Abstract

Paddy industry is one of the main industries that is focused on the National Plan aimed at achieving production levels of 2.91 million metric tonnes by 2020. The industry's ability to achieve this targeted production level is dependent on the capacity of farmers to produce sufficient production towards 2020. However, there is a public perception that traditional farming is still being practiced, resulting in a low level of rice production. Therefore, this study was carried out to examine the characteristics of modern agriculture of local paddy farmers according to the theory by Alex Inkeles. Two characteristics of modern society, namely, time management and technology, are discussed. This study was conducted using a quantitative approach by surveying farmers at IADA KETARA and IADA Kemasin Semerak. The findings showed that there is a systematic time management for activities such as managing rice fields and leisure time among farmers in both granaries. In addition, appreciation for new knowledge is also evidenced by the application of technologies in accordance with the cultivation activities undertaken to fulfil all the necessary requirements effectively. The two granary areas showed that there was a difference in the characteristic levels of modernity among the farmers based on farmers' attitude in time management and technology adoption in farming. The achievements of the characteristics of modern farmers in these two granary areas proved the perception that rice farmers are still at the traditional/conventional level to be less accurate. Farmers have demonstrated that there are two characteristics of modernity in their working culture. Therefore, these will contribute to achieving the country's goal to produce enough paddy by 2020.

Introduction

Paddy industry has existed in Malaysia since the pre-colonial era. Since then, the way forward for paddy cultivation showed a vast shift from traditional methods to the implementation of current technologies. In the Third National Agricultural Plan (NAP3), it was aimed to produce 2.91 tonnes by 2020. However, studies by Rosnani (2016) showed that the paddy production from 1990 to 2013 was increased

from 1.88 to 2.63 tonnes, but still below the targeted level. Despite the development of technology in paddy sectors, it seems that some of the farmers were not willing to practice the recommended agricultural practices in their fields (Noorlidawati and Rozita 2015). There are some studies highlighting the issues of introducing new technologies and inputs that have been upgraded but no recent references especially on the human aspects. In other words,

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we have to focus on peasant studies to understand why it happened the other way around even though the technologies and inputs have been provided as suggested in other studies.

New technologies such as SOPs, machineries or inputs have been introduced to all granary areas in Peninsular Malaysia, however, the increase in production is still below the recommended yield. This study focused on IADA KETARA and IADA Kemasin Semerak because these places are located in the East Coast of Peninsular Malaysia together with IADA Rompin and IADA Pekan. Even though there were four granary areas in the East Coast, only IADA KETARA and IADA Kemasin Semerak were selected as IADA Pekan and IADA Rompin are still new and opened around 2014. It is assumed that there these areas are still less exposed especially to the experiences and comparisons of traditional and modern systems. The lack of focus in other studies to the selection of these two areas was also aimed at assessing whether there were any remaining elements of modernity, especially among the farmers. Therefore, this study focused more on how to overcome the problems rather than on the economic and technology aspects as done by other studies. This study therefore, focused on the practices of the farmers in their daily activities and how they adopted the knowledge of related technologies into the farming practices to achieve the targeted production.

Methodology

The study aims to evaluate the farmers' characteristics among the farmers based on modern human characteristics by Alex Inkeles (1975). Although there are many other related theories that can explain the characteristics of modern humans such as Rostow theory, Inkeles theory tried to define the modernist theory in a personal perspective rather than by the effect of industrialisation (Young 1984). Sun and Ryder (2016) also stated the

concept of individual modernity, arguing that a particular set of psychological characteristics, including attitudes, values, and ways of feeling and thinking, prepares a person to be an effective member of modern society.

Alex Inkeles defined nine modern human characteristics. Two of them were appreciating time and ability to adopt new knowledge and technology. The characteristics of appreciating time and being more future-oriented than the past discusses what characteristics exists among farmers in terms of time management either in the context of rice field management or management of their leisure activities. It also identifies whether these farmers have effective management of time features within them. Therefore, this study attempts to identify what activities are planned and how farmers carry out their daily activities and the technologies used by farmers in cultivating their fields as shown in *Figure 1*.

Thirty respondents were selected from IADA Kemasin Semerak and 40 from IADA KETARA using a simple random stratified method. A structured questionnaire based on previous questions from Rosnani et al. (2015) and consisting of 21 questions was modified to meet the purpose of this study. Descriptive analysis was used to describe the results in a simple way so that everyone was able to understand (Zikmund et al. 2009). The discussions covered all aspects of their roles in paddy cultivation, activities that were usually carried out by farmers in a day, activities carried out by their officials such as engagement in NGOs and associations as well as their social activities.

The second characteristic, that is ability in adopting new knowledge and technology, mainly discussed about the capability of the farmers in applying new knowledge and technology in their farming activities. It tried to understand whether the farmers were capable of accepting new knowledge and technology if acquired. This characteristic also tried to identify whether there was any effort by the farmers to take up new

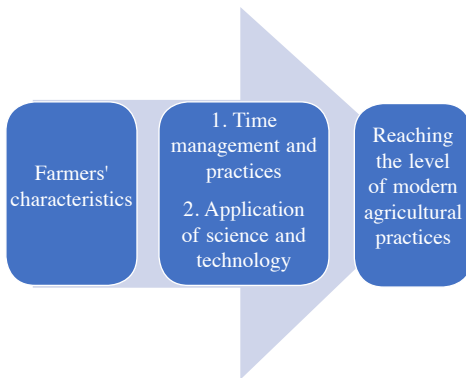


Figure 1. Theoretical framework of the study in the characteristics of modern agricultural practices at IADA KETARA and IADA Kemasin Semerak

knowledge and technology and adopt it into their daily farming practices.

Findings and discussion

The selected respondents were among the farmers selected to provide feedback based on the survey questions that were prepared. Collaboration from IADA KETARA and IADA Kemerak Scuba agencies also helped to get feedback from the respondents for this study.

The study found that 51.4% of the farmers were aged above 50. The majority of them in both areas were poor in health and physical aspects but still continued their paddy cultivation activities. This trend was also found at IADA Kemasin Semerak and IADA KETARA where 66.6% and 40% of the farmers respectively, were 50 years old. However, the younger generation under the age of 30 were less than 3.3% at IADA Kemasin Semerak and 10% at IADA KETARA. The lack of involvement of the younger generation in rice cultivation indirectly threatened the sustainability of the rice cultivation generation among the young who will be the heirs to this commodity (Table 1).

The findings showed that the majority of the farmers (97.1%) who worked at IADA Kemasin Semerak were males with only 2.9% female involvement in the whole

area. Women’s engagement started in this area with 6.7% females. However, it still could not match the percentage of men (93.3%) who worked in the same field. Whereas in the IADA KETARA area, female involvement had not occurred yet and the total involvement were from males.

The level of education among the farmers was good. They received at least a basic education at the primary level (30%) while only 7.1% continued their education until the diploma level/Certificate of Higher Education Malaysia (STPM). The rest were at least at the secondary level (62.9%). The same trend was also seen in the two areas where the majority of the farmers were educated to the middle level of 67.5% and 56.7% for IADA KETARA and IADA Kemasin Semerak, respectively. Only a small number of graduates, 7.5% and 6.7% at the IADA KETARA and IADA Kemasin Semerak, respectively achieved up to the Diploma and STPM levels. However, this still showed that farmers were able to increase their knowledge by attending courses and lectures related to agriculture as there was no barrier to acquire new knowledge compared to the previous generations who sometimes did not have a direct level of primary education as shown in Table 2.

The majority of the surveyed farmers were paddy farmers (94.3%) and only 2.9% were entrepreneurs and in the government

Table 1. Age and gender of respondents

| | IADA KETARA (n = 40) (%) | IADA Kemasin Semerak (n = 30) (%) | Total (n = 70) (%) |
|---------------|--------------------------------|---|--------------------------|
| Age | | | |
| 21 – 30 | 10.0 | 3.3 | 7.1 |
| 31 – 40 | 15.0 | 6.7 | 11.4 |
| 41 – 50 | 35.0 | 23.3 | 30.0 |
| >50 | 40.0 | 66.6 | 51.4 |
| Min. age | 25 | 27 | 25 |
| Max. age | 65 | 76 | 76 |
| Gender | | | |
| Male | 100.0 | 93.3 | 97.1 |
| Female | – | 6.7 | 2.9 |

sector. Subdivision by area indicated that some of the planters (5%) at IADA KETARA were entrepreneurs as their main occupation while some farmers (6.7%) at IADA Kemasin Semerak held office in the government sectors (Table 3).

Further analysis sought to identify the activities planned and how farmers carried out their daily activities (Table 4). Discussions included aspects of their role in paddy cultivation and activities that farmers generally carried out throughout their day including formal activities such as involvement in NGOs and associations as well as their social activities.

Most of the farmers from both areas stated that paddy cultivation was their main income at IADA KETARA (85%) and IADA Kemasin Semerak (86.7%) while still participating in full-time rice cultivation (82.5% at IADA KETARA and 86.7% at IADA Kemasin Semerak). At IADA KETARA, the farmers stated that they spend more time on their paddy activities compared to IADA Kemasin Semerak. At IADA KETARA, farmers spent 6 hours daily (8 am to 12 pm and 4 pm to 6 pm) compared to only 5 hours daily at IADA Kemasin Semerak (8 am to 12 pm and 5 pm to 6 pm).

Table 2. Education level of respondents

| Education level | IADA KETARA (n = 40) % | IADA Kemasin Semerak (n = 30) % | Total (n = 70) % |
|-----------------|------------------------------|------------------------------------|------------------------|
| Primary | 25.0 | 36.7 | 30.0 |
| Secondary | 67.5 | 56.7 | 62.9 |
| Higher | 7.5 | 6.7 | 7.1 |

Table 3. Main occupation of respondents

| Main occupation | IADA KETARA (n = 40) % | IADA Kemasin Semerak (n = 30) % | Total (n = 70) % |
|-------------------|------------------------------|---------------------------------------|------------------------|
| Paddy farmers | 95.0 | 93.3 | 94.3 |
| Entrepreneurs | 5.0 | – | 2.9 |
| Government sector | – | 6.7 | 2.9 |

Table 4. Comparison of the characteristics of time management practices in both granaries

| Time management practices | IADA KETARA | IADA Kemasin Semerak |
|---|------------------------------------|---------------------------------------|
| Participation in full-time rice cultivation | Yes (82.5%) | Yes (86.7%) |
| Rice cultivation as a source of main income | Yes (85%) | Yes (86.7%) |
| Special schedules in carrying out daily activities | Yes (better schedule) | Yes |
| Monitoring activities of the rice fields | Yes (better monitoring activities) | Yes |
| Leisure activities | Yes | Yes (more time on leisure activities) |
| Involvement in organizations and cooperatives | Yes (47.5%) | Yes (90%) |
| The diversity of organizations and cooperatives involved in farming | Yes (3 memberships) | Yes (6 memberships) |

IADA KETARA showed a better time management of rice fields compared to IADA Kemasin Semerak where they had a more tailor-made schedule in their day-to-day activities and conducted more frequent monitoring of rice fields. Farmers at IADA KETARA spent 7 days/week in monitoring the fields compared to 5 days/week at IADA Kemasin Semerak.

For leisure activities, IADA Kemasin Semerak showed that farmers spent more time on leisure activities than on rice fields. Religious, social and neighbourhood activities were the most common activities of the farmers as well as high involvement in organisations and cooperatives (90%) and diversity of organisations and cooperatives participated (6 memberships).

Next analysis discussed how farmers accepted knowledge and technology and used them in crop management. People who believe and value science are said to be modern individuals because they accepted knowledge and thus brought a modern flow into their daily lives. Such knowledge will usually be translated either physically to

change their daily lifestyle or as a physical usage of technology. The ability to use the technology properly requires necessary knowledge to avoid misuse or failure in applying the technology. Through the involvement of farmers in rice-related work, they were able to identify activities carried out based on their level of knowledge and how technologies were used to support modernity in their work as shown in *Table 5*.

Farmers in these two granaries had acquired the knowledge in implementing paddy planting activities but both were considered at a moderate level in terms of implementing it. Farmers at IADA KETARA were able to adopt a higher percentage (55 – 73%) of the practices compared to farmers at IADA Kemasin Semerak (50 – 55% only). Farmers at IADA KETARA applied knowledge in all activities with the highest application on ploughing

and water management meanwhile at IADA Kemasin Semerak, highest application was on fertilizer management.

Farmers at both granaries attended courses to increase their knowledge. At IADA KETARA, farmers attended 6 courses while at IADA Kemasin Semerak, they attended 7 courses. Among the courses attended by these farmers include increasing yield, weed, disease and pest management and agricultural practices.

The effectiveness of the courses in raising the level of knowledge between the two granaries also differed. The idea of benefits from courses is to increase their planting practises knowledge in recent technologies, understanding of technologies, ability in using current technologies, self-motivation, cooperation between farmers and between government agencies. At IADA Semerak scheme, farmers said that there was an increase in the effectiveness of the courses they attended and only one said that he had no impact from attending the courses. In contrast, farmers at IADA KETARA stated that six out of seven courses they attended did not provide them with any level of knowledge. They felt that the courses offered might not be appropriate or lacking in content. However, there were farmers who stated that the courses they attended benefited them.

Implementation of knowledge on rice cultivation activities based on ‘rice check’ consisted of nine activities including water management, ploughing, land preparation, fertilising, seed preparation, post-harvest handling, seeding, weed management, and pest and disease management. The findings showed that farmers at IADA Kemasin Semerak were using the recommended rice check manual approach and practices provided to farmers compared to only six of the nine activities that were used at IADA KETARA. The three activities that were not done well included seeding, weed management and pest and disease management. This showed that based on the knowledge gained from their own

Table 5. Comparison of the characteristics in adapting knowledge of technology in both granaries

| Adapting knowledge of technologies | IADA KETARA | IADA Kemasin Semerak |
|---|------------------------------------|------------------------------------|
| Having knowledge in implementing paddy planting activities | Yes (55 – 73% at a moderate level) | Yes (50 – 55% at a moderate level) |
| Attended courses and the number attended by farmers | Yes (6) | Yes (7) |
| Not getting the effectiveness of knowledge from the courses attended (7 categories, the lowest number are the best achievements) | Yes (6/7) | Yes (1/7) |
| Implementation of knowledge on rice cultivation activities based on ‘rice check’ (9 types of activities, higher number, better performance) | Yes (6/9) | Yes (9/9) |
| Use of machinery or machines in rice cultivation activities either by buying or renting | Yes | Yes |

knowledge and the courses they attended, the farmers at IADA Kemasin Semerak have applied the knowledge and implemented the acquired technologies very well.

The ability to procure machinery and related machines indicated that the farmers in both fields had the knowledge and skills in acquiring machinery and machines suitable for use in rice cultivation activities. Farmers on both sides had the ability to procure machinery and machines either for purchase or rent, to ensure the smooth operation of their rice cultivation. Farmers at both granary areas were able to rent out transplanters, combine harvesters, small trucks and tractors to operate their land. Even some of the farmers at IADA KETARA purchased the combine harvesters to enable them to operate their granaries efficiently. Other types of smaller machineries such as motorbikes, motor blowers, knapsack sprayers and grass cutters were often bought by the farmers themselves as it was more convenient to purchase them rather than rent it. Overall, the knowledge gained had been successfully applied by farmers at both areas.

Recommendations

Comparison of the granaries showed that the unique characteristics of modernity existed in both locations despite the level of implementation and capabilities of the respective farmers. Some were able to demonstrate better capabilities in the context of time management as at IADA KETARA which had a better management system for rice paddy activity than IADA Kemasin Semerak. However, for the involvement in leisure and organisations and cooperatives, farmers at IADA Kemasin Semerak showed that they were more involved than IADA KETARA, displaying the characteristics of modern peasants of time management involved in the structure of organising the communities and not wasting time.

In looking at the application of science and technology, farmers at both fields said that they already had a high

level of knowledge in the implementation of paddy cultivation activities. However, the farmers at IADA Kemasin Semerak stated that their knowledge level was only between 50% and 55% compared to farmers at IADA KETARA who claimed to have a knowledge level between 55% and 73%. Farmers at both areas are striving to increase their knowledge by attending relevant courses to further enhance their knowledge level. Through the knowledge gained, they were able to carry out the rice cultivation activities as recommended and were able to obtain the necessary machines and machinery.

Conclusion

Farmers had acquired a systematic management system and specific schedule in managing their time. Dependency on 'service provider' also demonstrated one of the features of modernity in time management as these farmers had optimised their time between self-executing activities and solving others' activities. These earned time opportunities were utilized by involvement in establishments and cooperatives. This indicated that the characteristics of modernity in the peasants had been formed and the existence of more complex social systems began to develop.

Applications of science and technology in their daily work also showed that these farmers at both granaries were able to accept and understand the new technologies and innovations. Overall, there was a practical application of the knowledge and technologies by farmers in carrying out their cultivation activities. From the knowledge gained, farmers had acquired new knowledge and the appropriate technologies such as machinery and equipment needed, by purchasing or leasing it to help carry out their rice cultivation activities. Therefore, it showed that with right time management, adoption of new technologies and following the right practices in daily farming activities, there is a possibility to achieve the targeted production suggested in the National Plan.

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Abstrak

Industri padi negara merupakan salah satu industri yang menjadi tumpuan dalam perancangan negara yang disasarkan untuk menjana tahap pengeluaran sebanyak 2.91 juta MT menjelang tahun 2020. Kemampuan industri ini untuk mencapai tahap pengeluaran bergantung pada keupayaan para petani untuk menghasilkan pengeluaran yang secukupnya menjelang tahun tersebut. Namun begitu, terdapat juga pandangan yang mengatakan tahap pertanian pesawah masih lagi berada pada tahap pertanian tradisional yang menjadi punca tahap pengeluaran padi masih rendah. Oleh itu, kajian ini bertujuan untuk melihat sama ada masyarakat petani di Malaysia telah mencapai tahap pertanian moden berdasarkan kepada teori ciri-ciri petani moden oleh Alex Inkeles. Dua ciri masyarakat moden dibincangkan dalam kajian ini iaitu menghargai waktu dan lebih banyak berorientasikan masa depan berbanding masa lalu dan percaya pada ilmu pengetahuan dan teknologi. Kajian ini dijalankan dengan pendekatan kuantitatif dengan menjalankan survei dalam kalangan pesawah di IADA KETARA dan IADA Kemasin Semerak. Daripada aspek pengurusan masa, didapati bahawa wujud satu sistem pengurusan waktu yang sistematik bagi pengurusan waktu aktiviti sawah dan masa lapang dalam kalangan petani di kedua-dua jelapang. Selain itu, penghargaan terhadap ilmu dan teknologi juga dibuktikan melalui pengaplikasian ilmu dan penggunaan teknologi yang bersesuaian dengan aktiviti penanaman yang dilakukan yang mana segala keperluan yang diperlukan dipenuhi dalam usaha memastikan aktiviti penanaman padi berjalan dengan lancarnya. Perbandingan yang dijalankan di antara kedua-dua kawasan jelapang bagi ciri-ciri petani moden menunjukkan bahawa terdapat perbezaan tahap kemodenan dalam kalangan para petani tersebut namun masih berupaya membuktikan bahawa ciri kemodenan dalam kalangan petani telah dicapai bagi pengurusan waktu dan pengaplikasian teknologi dalam amalan dan pengurusan mereka. Pencapaian ciri-ciri petani moden di kedua-dua kawasan jelapang ini membuktikan tanggapan bahawa petani sawah yang masih berada di tahap tradisional adalah kurang tepat khususnya di dua lokasi ini. Para pesawah telah menunjukkan ciri-ciri kemodenan dalam pengurusan waktu dan pengaplikasian teknologi dan secara tidak langsung berupaya untuk membantu mencapai hasrat negara dalam mengeluarkan bekalan padi dan beras negara yang mencukupi menjelang tahun 2020.

