CHAPTER 7 CONCLUSION

The technological development has seen a rapid development over the last years. While it took Indonesia around 160 years to benefit from steamships, once they were invented, it took Vietnam only 15 years to profit from the introduction of computers (The World Bank Group, 2016b, p. 6). Most recently the development of mobile technologies has significantly influenced the life and work of hundreds of millions all around the world. It took only a few years for mobile phones and the internet to spread across the globe penetrating almost every part of our daily lives. Today mobile devices are accessible by the majority of the people worldwide and decreasing prices make them available for most of the poorest. Consequently, their features are used in development projects to benefit people in developing nations since their introduction. Since 2007 smartphones continuously replace older devices, providing a wider variety of features, such as easily accessible internet. The benefits of mobile devices, in particular smartphones, have also been acknowledged by agricultural development projects. The possibility of disseminating information and knowledge to a large number of poor, rural and often neglected farmers in an easy and cost-efficient way, seemed promising. Over the last two decades numerous projects have been initiated using mobile devices, lately smartphones, to improve the situation of farmers worldwide. One project trying to harness the potential of mobile devices is managed by Rak Ban Kerd Foundation in Thailand with the support of the mobile provider Total Access Communication PLC. (dtac). While in the beginning a SMS-service delivered information and knowledge to the farmers in Thailand, most recently the increasing number of smartphone users resulted in an application called "Farmer Info".

The "Farmer Info" application is one part of a corporate social responsibility strategy of the Thai mobile phone provider "Total Access Communication Public Company Limited" (dtac). The strategy aims to contribute to the Thai government's plan of a "Digital Thailand" (Total Access Communication PLC., 2016b). Thereby various services, including the application, provide market information and agricultural knowledge to the agricultural community in Thailand, in cooperation with the Rak Ban Kerd Foundation. The overall goal of both parties is to improve the livelihood situation of farmers in Thailand while promoting sustainable and organic agriculture. Additional to the "Farmer Info" application, the strategy includes an SMS-service, a call centre, annual rewards and most recently a project focusing on the ICT use of young farmers in Thailand.

The aim of this research was to provide a first insight regarding the potential impact of a smartphone application on the livelihood of farmers and their input use in Thailand. As an explorative research, it used the "Farmer Info" application as a research object. The results indicate that the application has a positive effect on the average agricultural income of farmers and their use of pesticides and fertilisers. Farmers apply them less often, spend less money and are more likely to use organic inputs than farmers who are not using the application. However, the studies shows no conclusive results regarding higher market prices for agricultural products. Although Rak Ban Kerd sees the price comparison tool as the most valuable tool of the application, farmers criticise the poor coverage of markets in the provinces of Thailand. Similar criticism was raised by officials of dtac. It is essential that Rak Ban Kerd Foundation and dtac to increase the number of markets the application is covering to ensure all farmers nationwide are benefitting. The most useful tool of the application, regarding the interviewed farmers and the statistical analysis of the survey data, is the video channel, providing agricultural advice. The impact videos can have on farmers has already been proven by the successful project "Digital Green" (Food and Agriculture Organization of the United Nations, 2015).

Although most of the findings indicate a positive impact of the application, further research will be needed to confirm the results of this study due to its explorative nature. A well-designed monitoring and evaluation systems, including a baseline survey, should be implemented to ensure the effectiveness of the application. In particular, the price comparison and e-commerce tools require a revaluation to better meet the needs of the farmers and their phone use habits. The most critical factor regarding the application is its involvement in the CSR strategy of dtac. This not only excludes a vast number of farmers form the service, but also might impact the long-term sustainability of the project. High costs, no revenue generation and the dependency on dtac as the main donor requires a fundamental rethink of the service to benefit farmers in the future.

Future studies should follow up on the idea using smartphones as part of agricultural extension. Thailand as middle-income country, with a still strong agricultural sector and a growing number of smartphone users, provides the ideal platform for further research. Studies should thereby also address the current development and governmental engagement towards a "Digital Thailand" or "Thailand 4.0". Over the next years the current government and its newly established Ministry of Digital Economy and Society will focus on the improvement of digital services and the provision of advanced technologies for Thai society to become a developed nation and a global digital leader, escaping the middle income trap. Most recently three cities have been chosen, one of them Chiang Mai in Northern Thailand, for a pilot project regarding smart cities, which includes the use of drones and wireless sensor networks to increase agricultural productivity and overall development (Leesa-Nguansuk, 2017). All the upcoming investment and new interest in the field of ICT and agriculture in Thailand will provide a rich background for future studies. Thereby, it will be necessary for the success of the concept "Thailand 4.0" that future research is further investigating the impact of the Farmer Info application and other ICT services to provide conclusive evidence regarding their impact.

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