

Article

Transforming Street Business Model in a Matsu Island Village: Practice of University's Social Responsibility in Taiwan

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Abstract: This study aims to analyze the influences of the street revitalization project, conducted by the University Social Responsibility (USR) project and implemented by researchers at a TW university (a code name) in a commercial area in Tangqi Village, Beigan Township, Lienchiang County (also called Matsu Islands). A literature review, field investigations, interviews, and workshops as well as civil community meetings, were used to collect primary and secondary data in this study. This study concludes the following. (1) The TW University specializes in educating and developing talent, Research and Development (R&D), and international studies. These specializations expand the scope of its social responsibilities to maintain an interactive dialog with the town in question about the goal of the USR Project. The ongoing dialogue between the researchers and the townspeople explains and updates the locals about the aim of the project, the business model, and about the desirable economic impact that the project has on the area. (2) The implementation of the USR project by TW university changes consumption patterns in the street area of Tangqi Village. These changes were the result of the creation of a business culture receptive to international visitors as well as the establishment of a mobile payment system. Further changes include the image of the street area, a mobile technology application for local shop owners, the packaging of souvenirs and hands-on activities, and the integration of English as part of the business activities.

Keywords: Business model, Matsu Islands, University Social Responsibility (USR), Taiwan

1. Introduction

During the Cold War, Matsu Islands (Lienchiang County) and Kinmen Islands (Kinmen County) were on the frontlines as the Republic of China (Taiwan) faced military threats from the Communist Chinese Regime (Figure 1). As such, economic activities, social life, and communication were controlled by the military. After the Government of Taiwan discontinued its battlefield missions to the Matsu and Kinmen Islands in 1992, the economic patterns of these two islands gradually changed from an economy that fulfilled the demands of military personnel and centered around service to troops to an economy that included fishing and tourism. The new economy required promoting a local culture that attracted visitors from outside. However, the relatively small populations on offshore islands play a major role in what is and is not possible in their economies. According to the Ministry of Interior Department of Statistics whereas Kinmen Islands had a population of 137,406 people in 2021, the population of Matsu Islands in 2022 decreased to 13,782. Population and demographics play a significant role in the development of the island economy, especially in the case of the Matsu islands.

Matsu Islands belong to Lienchiang County and encompasses jurisdiction over four townships and five islands including Nangan, Beigan, Dongyin, and Juguang Townships. The main spoken languages are Mandarin and the Matsu dialect (related to the Mindong dialect). According to the official statistics, the household population in the Beigan Township surged from 1,762 people in 2008 to 3,084 in 2022. The ratio of people aged 0 to 19 in the population, however, dropped to 11.7 from 21.7% in 2008, and the number of citizens aged 65 and over rose from 9.6% to 13.7% (Department of Statistics, Ministry of Interior, 2022). In other words, the household population of Beigan Township increased by 1,322 people, at the same time that the older population climbed by 4.1% and the young population dropped by 10%. A low birth rate and an aging population are important aspects of the economy in the Matsu Islands.

Secondly, in order to boost the development of the offshore island economy, the Government of Taiwan introduced the "Mini Three Links" policy in 2001 and the "Expanded Mini Three Links" in 2008 to bring to the islands more visitors from Taiwan, China, and foreign countries. There have been more than 1,000 foreign annual visitors since 2013. However, official statistics showed that the economic benefits of the Mini Three Links policy were not significant. The total number of people entering and leaving Matsu

Islands through Mini Three Links between 2001 and 2008 reached 246,253 with a peak number of 90,333 in 2009. It dropped since then to 35,303 in 2012. Despite a slow comeback in 2013, the count has not exceeded 70,000 since then (Mainland China Council, 2019). Next, regarding household income, the economic development in Matsu Islands appears to have declined during the past twenty years. While the recurring mean income per household exceeded NT\$1.4 million in 2000, 2001, and 2010, it dropped below NT\$1.2 million by 2014 (Directorate General of Budget, Accounting, and Statistics, 2019). This means that being a cross-strait layover location has not enhanced the household income level.

The Mini Three Links policy has not improved the average residential income level nor has it demonstrably changed the economy, population, and per capita income. Aging and a low birth rate are two critical issues facing the tourism industry in Matsu Islands. It is particularly important to shape an international sightseeing environment to capture profits from the more than 1,000 foreign visitors per year to Matsu Islands. In addition to local culture, Matsu Islands possess abundant ecological wonders such as the mysterious “Blue Tears”, or sparkling blue light which is spotted along the shore in Matsu Islands. In addition, there are endangered species such as the Chinese Crested Tern (*Thalasseus bernsteini*) (Matsu National Science Area, 2019). The village has ancient architectural structures influenced by builders from the eastern part of Fujian. There are culinary delicacies of special to Matsu, Taoist temples, and a variety of religious-centered activities such as the worship of Mazu (a Chinese Sea Goddess) (Matsu National Science Area, 2019). These are important tourist attractions on the Matsu Islands. In addition to tours, young people, especially from western countries travel around Matsu Islands alone or in groups. Therefore, the region needs to be internationalized by implementing smart tours, self-guided sightseeing, and mobile payment facilities. The tourist industry must develop in a way that is sustainable for the local environment.



Fig. 1. Location of Matsu Islands.

2. SDGs to University Social Responsibility (USR)

The university plays a major role in designing responsible and sustainable development for the Matsu Islands. Sustainable development means growing the economy in a way that does not undermine future opportunities for future generations’ needs (World Commission on Environment and Development, 1987). According to the Sustainable Development Goals (SDGs) of the United Nations declared in 2015, there are 17 SDGs in the 2030 Agenda for Sustainable Development. Goal 8, for example, is Decent Work and Economic Growth and is needed to promote sustainable and inclusive economic growth and have full and productive employment. There needs to be decent work for all people (United Nations, 2015). However, the promotion of sustainable development in human society requires that all stakeholders take social responsibility: government, the business community, universities, and others. According to the definition of social responsibility in ISO 26000, it “helps businesses and organizations translate principles into effective action and shares best practices relating to social responsibility globally. It aims at all types of organizations regardless of their activity, size or location (International Organization for Standardization, 2010).”

Many studies reveal that the social responsibility of a university covers many things: systematic responsibility (Navarrete, et al., 2012), cognitive responsibility (Dominguez Pachon, 2009), and environmental responsibility (Chen et al., 2015; Dominguez Pachon, 2009; Navarrete et al., 2012; Porter and Kramer, 2006; University Politehnica of Bucharest, 2015). Interactive dialog with the local population (Esfijani et al. 2013), the creation of social awareness among citizens (Vasilescu et al., 2010; Coelho and Menezes, 2022), social responsibility (Kiezel et al, 2021; Navarrete et al., 2012; Martinez-Valdivia et al., 2020), economic responsibility (Kiezel et al, 2021; Navarrete et al., 2012), ecological responsibility (Kiezel et al, 2021), technical responsibility(Kiezel

et al., 2021; Navarrete et al., 2012), responsible organizational governance (Chen et al., 2015; Kiezel et al., 2021; Navarrete et al., 2012; University Politehnica of Bucharest, 2015), responsible labor practices (Chen et al., 2015; University Politehnica of Bucharest, 2015), community involvement and development (Chen et al., 2015; University Politehnica of Bucharest, 2015; Chen and Vanclay, 2021), fair operating practices (Chen et al., 2015; University Politehnica of Bucharest, 2015), responsibility toward consumer issues (Chen et al., 2015; University Politehnica of Bucharest, 2015), human rights and democratic citizenship (Chen et al., 2015; University Politehnica of Bucharest, 2015), and responsible learning strategies (Ting et al., 2021). All these studies reveal that social responsibility at a university means that the university needs to pursue sustainable development at the university as well as sustainable development in the external environment.

None of these studies have explored the impact of sustainable development on communities such as this University Social Responsibility (USR) project from the time of implementation of a street business model. Therefore, we aim to close this research gap based on the developmental needs of the Matsu Islands. We provide an analysis that examines the strategies used in the USR project of the TW university (a code name) to transform the street area of Tangqi village, Beigan Township, by providing a new business model. This study examines how the development was carried out, and the impact the change of business model had on businesses, the community, and the residents. To enhance the role of a university in community development projects, the Ministry of Education in Taiwan 2017 began promoting University Social Responsibility Projects (USR Projects) to encourage universities “to proactively combine local, social, economic, and industrial developments by passing down knowledge to the public to drive local prosperity and development and to fulfill university social responsibilities (Center for University Social Responsibility, Ministry of Education, 2017).

Accordingly, in 2017 the Ministry of Education (MOE) sponsored the TW university (Matsu Campus) located in the Beigan Township with the plan to develop a project entitled “Prosperity for Fisherman, Fishing Village, and Fishery- International Blue Economy Pilot Zones.” This plan focused on three themes: ecology, culture, and health. Three strategies were employed: (1) there was a collaboration between a professional consulting T company (a code name) and a combination of industry and academia, (2) collaboration between the university and the community, and (3) civil community meetings. The goal of the overall project was to follow a development model that would result in assisting Matsu to implement sustainable development (National Taiwan Ocean University, 2017). To encourage international visitors to Beigan Township as well as to develop smart tours and mobile technology, this project entailed remodeling the street area with a long-term goal of SDG-8 (Decent Work and Economic Growth) sustainably developing the business area downtown. Initially, an analysis was made by the TW university with the guidelines and implementation strategies outlined by USR regarding the network of collaborators in the project, and the ultimate impact on the street area.

In the next section, the research materials and methods are described in detail. The research results are reported in section 4. The last section includes the discussion and conclusion.

3. Materials and Methods

A “research action approach” was used in this study. The researchers participated in the USR project action plan to encourage the transformation of the street business area. The study was conducted in coordination with the members of Tangqi Village and Beigan Township. The Township Office, Township Council, Public Health Center, and Police Headquarters are located in the Village. There are also stores and lodgings on Beigan Boulevard and Zhongzheng Road. The site in question is the political, economic, and social center of the Beigan Township (Figure 2).

A literature survey, field investigation, interviews, and workshops (civil community meetings) were used to gather the primary and secondary data that served as the basis for empirical analysis. The primary data came mainly from several field investigations that included civil community meetings, interviews, filming, and videotape recordings conducted between August 2017 and December 2021. The 52 participants, including local government officials, members of community organizations, residents, senior directors of elementary and junior high schools, and neighborhood shop owners, took part in the civil community meetings, interviews, filming, and videotape recordings. Participants took part voluntarily in the civil community meetings conducted for this study after receiving the invitation issued by the research team. In-depth interviews were conducted between August 2020 and December 2021. Respondents were recruited by the research team and signed the Research Participant Informed Consent Form to voluntarily take part in the in-depth interviews for this study. Triangulation was applied in this study and all the different data were cross-checked, interpolated, and integrated to enhance the validity of the results.

The questions in the interviews and the workshops were as follows. What problems are encountered concerning development on the main streets of the commercial area? Who exactly is managing the stores in the street area? What problems are there for stores in the street area regarding hiring, retaining, and managing a workforce? What are the expectations of the residents for the

street area and its surroundings? What demands do stores face from residents in the street area? What are the empowerment courses needed for store managers and workers in the street area? What suggestions do residents have regarding government policies?

Based on an expanded model (University Politehnica of Bucharest, 2015), we propose a collaborative and knowledge-driven framework, including strategies, working tasks, and an evaluation system. The TW university research team cooperated with the T company to implement the strategies at the three stages as follows:

- (1) An inventory of the needs of the residents and evaluation of issues for the street area
- (2) A collaborative network consisting of interested members of the community, members of the industry-academia group, and the greater community
- (3) Research outcomes and impact evaluation

TW University has abundant internationalization capabilities, cross-disciplinary design talents, and talent cultivation experience, plus a branch campus in Matsu. Company T specializes in digital technology and mobile payment and has been engaged in Matsu civic planning for many years. To efficiently combine resources, the research team of University TW opted to conduct industry-academia collaboration with Company T.

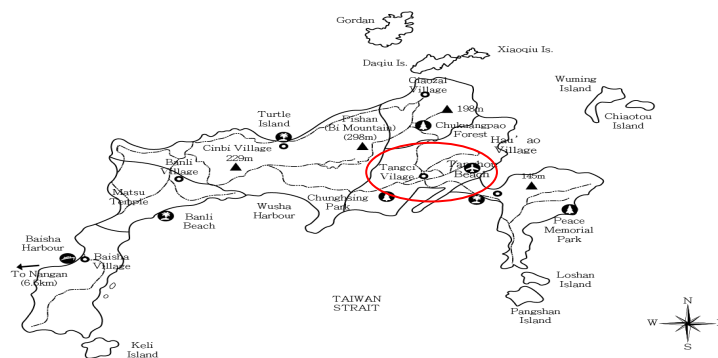


Fig. 2. Location of Tangci Village in Beigan Township.

4. Results

This section provides a concise and precise description of the experimental results, their interpretation, as well as conclusions, are drawn.

4.1. Inventory of the Needs of the Residents and Evaluation of Issues for the Street Area

The research team collected opinions from the residents, made literature reviews, held civil community meetings, and carried out interviews. The needs of residents in the street area were analyzed as follows:

- (1) A low childbirth rate and an aging population: There was a clear decline in the workforce devoted to business activities and the aging people who provided service in the hospitality industry worried that the owners of stores would not be capable to manage sustainably. In addition, there was a short supply of professional talent needed to support economic and social activities in the street area.
- (2) The business model was seasonable with lows and highs: The fluctuation of the population density between the high and low seasons and the changes in the business model resulted in excessive differences in income for stores between the seasons and seriously impacted sustainable management.
- (3) The consumption pattern and mobile technology: The number of foreigners visiting the Matsu Islands has been steady at about 1000 throughout the year. However, an internationally friendly environment has been lacking. There are no bilingual illustrations in Chinese and English in stores, guided tours of the street areas, and catalogs of products generally. The absence of mobile technology-based guided tours and mobile payment equipment presents foreign visitors and young people with a somewhat unfriendly transaction interface in the street area.

The existing business model for the street area is set out in Table 1. Based on an inventory and evaluation of the needs of the residents, The table shows that issues pending a solution during the high seasons include mobile APP guided tours in Chinese and English, an international business environment, mobile payment equipment, and a diverse economy. Issues during low seasons, on the other hand, include the mobile APP guided tours in Chinese and English, an international business environment, mobile payment equipment, a diverse economy, and in-depth guided tours on ecology and the cultural environment. During the low seasons, in particular, due to the reduction in bird life, in-depth guided ecological tours and local life and culture are needed for visitors from Mainland China and Taiwan.

4.2. Collaborative Network Including Talent Training, Industry-academia, and the Community

To help address the issues for the street area as shown in Table 1, we used particular strategies to fulfill the tasks for Stage 2 such as training new workers, industry-academia collaboration, and links with collaborative networks in the community. In talent training, the TW university study team has worked with a professional consulting company to organize training courses on four topics: ecological guided tours, cultural heritage, micro-film production, and mobile e-commerce (see Figure 3 and Figure 4). This boosted the competencies of the residents, the faculty, and students at the university as well as the stores in the street area. In Industry-academia collaboration, to facilitate business innovation for the street area, the members of the TW university faculty and students worked with the professional consulting company to configure mobile apps that provide a visual impression and image of the main street area. The APP also provides bilingual (Chinese/English) introduction to stores and commodity catalogs as well as information about handicrafts. We also provide vendors with mobile payment equipment and produce micro-films as marketing tools that encourage business owners to rehearse their interactions. In a collaborative community network, industry-academia collaboration goes smoothly to ensure that new personnel was discovered and trained. The TW university study team and the consulting company combined their efforts with collaborative community partners, the local government, community associations, stores in the street area, the shopping district association, the guided tour association, and elementary schools. This collaboration created an open channel of communication and participation to enrich social capital in and around the street area and assisted in shaping a local learning network.

4.3. Research Outcomes and Impact Evaluation

After the efforts were made during the first two stages, the accomplishments of the project were elaborated in two ways: changing the consumption pattern and transforming the community.

4.3.1. Change in Consumption Pattern

The change in the consumption pattern for the street area in Tangqi stems from encouraging international visitors as well as introducing a mobile payment system to vendors. In front of each store, there is a new Chinese/English billboard that looks like a Matsu wind lantern. Inside the store, there is a catalog of ten specialized products (labeled in both Chinese and English). All of these things make the street area in Tangqi township an attractive place for international visitors to spend money. Staff from eighteen stores were recruited and trained under the auspices of T company to offer a system for mobile payments. Visitors from Mainland China, Taiwan, and other countries use the following to buy merchandise: Alipay, Apple Pay, Google Pay, or Taiwan Pay. There is also free Wi-Fi that is readily accessible for visitors from outside Matsu Islands.

4.3.2. Change of Street Area

Thirty-four stores in the main streets took part in an action to transform the business area. The change involved rebranding the image of the street area using digital platforms to display handicrafts, events, and the gradual integration of English as part of the business culture. There is a large map at the entrance to the street area that has become a significant landmark with place names in both Chinese and English (Figure 5). An owner of a local lodge said this about the new map: “People like the big Chinese and English map. Many visitors stop at the map, either to take a photo with it or to find a store. It is very convenient. As far as mobile payment is concerned, however, it is mostly used by Mainland Chinese and young people.” (Interview data MB1110). An owner of a Matsu delicacy DIY store also commented about the changes: “I feel very happy to see university students and Internet celebrities visiting our store to try local delicacies and it is also my hope that through the DIY event, the delicacies of Matsu will be seen by the world.” (Interview data MB1115). Several store owners pointed out that parents and kids learn the names of the products through the Chinese/English bilingual catalog. There have been community discussions about the suitability and choice of English words for specialty Matsu products. This dialogue helps build community experience and a positive attitude toward learning about the project (Interview data MB426). It was found that the gradual change in the business model has had a clear and positive influence on the street area economy and the life of the residents in various ways.

Table 1. Street business model for the current stage. Source: This study.

Season	High	Low
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Table 1. cont.

Duration	April through October	January through March/November and December
Main source of customers	Taiwanese (groups/backpackers), Mainland Chinese (groups/backpackers), Foreigners (backpackers)	Mainland Chinese (groups/backpackers), Taiwanese (groups/backpackers)
Guided tour	Insufficient number of Chinese tour guides to help introduce a sightseeing spot	Chinese-speaking tour guides to introduce sightseeing spots
Main products and services	Lodging, dining, shopping (special products and daily necessities), filming of birdlife (Tangwo Beach next to the street area)	Lodging, dining, shopping (special products and daily necessities)
Payment method	Cash, credit card (a few stores)	Cash, credit card (a few stores)
Issues that need to be addressed	Mobile APP guided tours in Chinese and English, an international business environment, mobile payment equipment, experience economy	Mobile APP guided tours in Chinese and English, an international business environment, mobile payment equipment, experience economy, and in-depth guided tours on ecology and local life



(a) Training courses for cultural heritage.



(b) Training courses for ecological guided tours.

Fig. 3. Empowerment programs for store owners.



(a) Shooting microfilms for local marketing.



(b) "I see Matsu, Smart NTOU" APP.

Fig. 4. Shooting microfilms and "I see Matsu, Smart NTOU" APP.



(a) DIY event at store.

(b) A large map at the entrance to the street area.

Fig. 5. Hands-on activities and street map in several languages.

5. Discussion and Conclusion

We analyze the influences of the USR project implemented by the TW university on the street business transformation project through action research in Beigan Township, Lienchiang County (Matsu Islands). Sponsorship from the Ministry of Education USR Projects and the industry-academia collaboration project allowed TW university to implement three strategies and fulfill their social responsibilities. The three activities include the establishment of (1) an inventory of the needs of the residents and evaluation of issues for the street area, (2) a collaborative network including training key personnel and bringing together industry-academia staff and the community, and (3) research outcomes and evaluation of the impact (Figure 6).

The conclusion and discussion of this study are as follows:

- (1) The University, which specializes in several areas of the development of talent, Research & Development, and international outreach has expanded the scope of the social responsibility of universities to include the following: interactive dialog with society (Esfijani et al. 2013), social work (Kiezel et al, 2021; Navarrete et al., 2012), community involvement and development (Chen et al., 2015; University Politehnica of Bucharest, 2015), economic development (Kiezel et al, 2021; Navarrete et al., 2012), and consumer protection (Chen et al., 2015; University Politehnica of Bucharest, 2015). With these goals, the University established a starting point for a model about how to change the commercial town center in a small island town.
- (2) Training local personnel is essential for industry-academia collaboration and linking traditional business partners in the street area change agents. This process is consistent with the goal of the USR Projects of the Ministry of Education to drive local prosperity and development (Center for University Social Responsibility, Ministry of Education, 2017).
- (3) Re-constructing the street area and enhancing residents' awareness is a progressive and continuous long-term project. According to the analysis in Table 1, one project is yet to be addressed at the current stage: designing ecotourism for the off-season. We expect that training tour guides on the mobile app assists them to teach visitors about the local ecology and cultural heritage. Eventually, this APP enables the building of eco-cultural tourism during the off-season. Secondly, in addition to Chinese and English, other languages can be added to guided tours and product catalogs to meet the needs of prospective visitors such as Japanese, Korean, Thai, and Indonesian. A consensus needs to be reached among the university and collaborative partners in the community over the establishment of a multi-language environment and building talent for this development. This is also one of the projects that the TW university may try to fulfill in the future.
- (4) Greater investment of resources is needed for the planning of eco-cultural tours, training personnel, and configuring a multi-language environment. From the perspective of sustainable development, it is suggested that the community, the university, and the stores discuss how to set up a community development fund. Stores need to be guided to give back systematically a certain portion of their proceeds to the fund to facilitate autonomous management and allocation by the community organization to train new employees and share the ideals of the community for rebuilding the street area. The aim is to create a win-win situation for the stores and residents alike and to promote the revitalization of local industries and sustainable development of the overall economy.
- (5) In the research, we had the following reflections. First, the cornerstone of neighborhood development projects needs to be trustable. Only through trusting relationships, can one accurately perceive the community's needs. Secondly, decent communication equipment is the basis of the successful transformation of business models. Various targets in this study are

implemented in a well-established wireless communication environment set up by the local government. Thirdly, accomplishing the university's social responsibilities goals is only possible for an outlying island with insufficient resources due to the university's international perspective and ability to cultivate talent. Lastly, we wonder whether or not this new operating model is sustainable without the government's financial support. It is a major challenge for this street area to sustain without governmental assistance. Therefore, all stakeholders must ponder how to sustain a viable business model and support system operated only by community leaders and residents.

This study focuses on qualitative interviews and civil community meetings for preliminary data collection, and yet the data collection is still limited. Future research may need before-and-after evaluations by using quantitative research questionnaires, supplemented by in-depth interviews and observation records. This approach effectively improves the reliability and validity of the research.

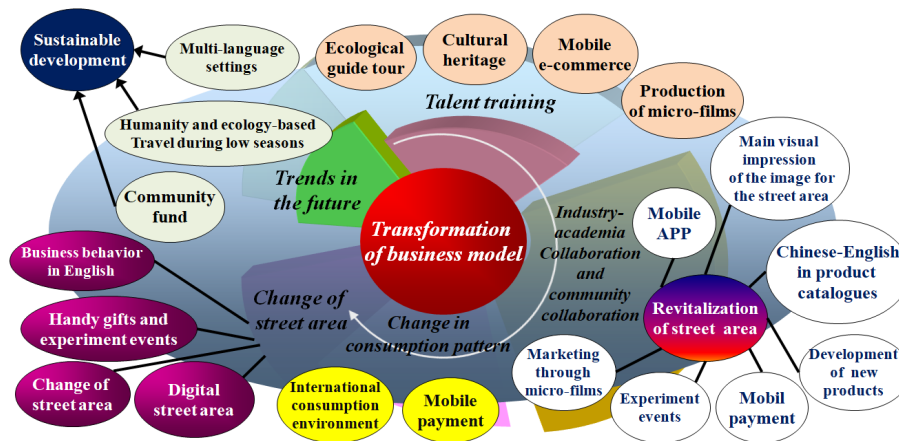


Fig. 6. Transforming the street business model in Tangqi Village, Beigan Township in Matsu Islands.

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Conflicts of Interest: The authors declare no conflict of interest.

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