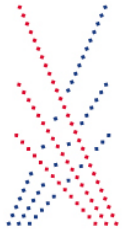

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Qualitative Case Study Of The Effective Use Of Mobile Technologies For Entrepreneurial Learning And Human Capital Development.

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Summary:
This paper looks at the use of mobile technology to drive entrepreneurial learning and develop entrepreneurial skills amongst palm oil small holders in Sabah, Malaysia. Entrepreneurial Learning is a learning process to recognize and act on opportunities, and interacting socially to initiate, organize and manage ventures to help entrepreneurs to develop and grow. Most of the literature on entrepreneurial learning in agriculture has focused on farmers of developed countries (McElwee, 2008; Sueneke, 2013), and we have very little understanding of small farmers in emerging countries, particularly in relation to poor and less educated farmers. This paper aims to explore the effectiveness of using mobile technology for entrepreneurial learning in rural areas and how this can enhance human capital development with the aim of developing sustainable innovation. It is based on a study of 38 palm oil smallholders, with data collated over a 12 month period through a training programme specifically designed for the study.

Key words: Entrepreneurial Learning, Mobile Technology, Human Capital Development, Sustainable innovation

Background:
Sabah is located on the north of the island of Borneo and has an estimated population of 3,870,000 (Department of Statistics, Malaysia, 2017)**.**
The poverty rate in Sabah is the highest among all 13 of the Malaysian states (19.7%) with the oil palm featured in many government backed economic empowerment schemes as a means of raising the incomes and standards of living of rural people (Majid Cooke et al., 2011). There are various modes of palm oil production for small holders in Malaysia including the managed and assisted smallholding. The managed schemes involve resettlement in which state land is developed by the government for landless or land- poor settlers, and in situ schemes for existing landholders, who each contribute a portion of their land which a government agency then integrates into a single block (Cramb & Curry 2012)**.** Aside from the government assisted groups, the independent smallholders constitute another group of palm oil farmers in the area. A majority of this group in Sabah are of the Kadazan-Dusun, Murut and Bajau ethnic groups and they constitute 50% of the population. In the mid-2000s, the area managed by these independent smallholders in Sabah was small (93,000 ha- 8% of the 1.24 million hectares) of oil palm land. However, the expansion has been relatively rapid (a five-fold increase) considering that land under smallholders was only 16,700 ha in 1995, while the land managed by large estates doubled from 509 000 ha in 1995 to 1.1 million hectares in 2005(Majid Cooke, 2012). This indicates that the smallholding model is increasingly growing more popular as a mode of palm oil cultivation.

Challenges within the Palm oil industry in Malaysia

While the palm oil industry in Malaysia produces huge returns as evidenced by its share of the GDP, there are many challenges faced by different elements within the supply chain, particularly the small holders. Palm oil farmers are connected by poorly maintained roads to distant mills and ports (Martin et al. 2015). A major challenge also involves the need to remain innovative whilst maintaining sustainable practices**.** This points to the need for ecological conservation which has to be balanced with the economic aspects of oil palm cultivation and processing. This is significant as there is a need for sustainability in addition to success in the oil palm business. In Sabah, many ethnic communities have strongly held beliefs about the concept of conservation of ecological areas and other natural resources. Indeed, almost all ethnic groups in the area observe practices with the aim of ensuring that natural resources are handled sustainably. Examples of these beliefs and practices include prayer rituals by the Bonggi indigenous group, which has helped to preserve forest sites considered sacred, and the *tagal* system of sustaining fisheries and conserving rivers practiced by indigenous communities across Sabah (Vaz & Agama 2013)**.** Gaining entrepreneurial skills will not only foster success in business but could potentially lead to sustainable innovation.

Research questions

To what extent can entrepreneurial learning enhance human capital development using mobile technology amongst rural palm oil farmers in Sabah, Malaysia?

How can visual methods be employed to analyse the farmers' human capital development achieved through entrepreneurial learning?

Entrepreneurial learning

Entrepreneurial learning is described as an experiential approach where an entrepreneur's individual experience is transformed into knowledge, which can then be utilized to select new experiences (Politis, 2005). It could also be learning that informs the search for new opportunities by an entrepreneur (Franco and Hasse, 2009). In order to drive business success and growth amongst these palm oil smallholders, there is a need for entrepreneurial learning to develop entrepreneurial skills. There has been lot of focus on Entrepreneurial learning within entrepreneurship research (Bagheri and Pihie, 2011). This growing interest is due to the notion that experience, entrepreneurship education and training programs can enhance the learning and development of entrepreneurial competencies and entrepreneurial leadership in particular (Kempster and Cope 2010; Lans et al. 2008).

The lack of entrepreneurial and business skills is a major impediment to innovation thereby hindering potential investment among the 38 palm oil smallholders in Sabah, Malaysia (Martin et al, 2015). In order to develop these important entrepreneurial and business cognitive skills, learning by doing method has been shown to be more effective through entrepreneurial learning approach (Cope & Watts, 2000; Chang & Rieple, 2013).

However, the critique of still remains of the dominance of entrepreneurship research within North America and Europe, with very limited research outside these two areas, particularly with regards to entrepreneurship research in countries which are experiencing rapid economic growth such as emerging economies(Bruton et al. 2008). They suggest that there is a need for a contextualisation of theory building within entrepreneurship which is applicable to emerging economies. This would ensure a clearer comprehension of how small and medium business owners in these developing countries engage in entrepreneurship, thus giving a clear conceptualization of their demand for developing or learning entrepreneurial skills.

Human Capital Development and Entrepreneurial learning

The main principle behind human capital theory is that more education and training leads to higher earnings and individuals develop human capital by investing in education, health and experience (Rae and Wang eds., 2015). The human capital perspective can be applied to entrepreneurship since individuals' formal education and labour market, managerial and entrepreneurial experience have a significant effect on their choice of entering and exiting entrepreneurship, as well as on their performance as entrepreneurs (Amaral et al, 2009). Becker (1964) distinguished between general and specific human capital, and as Hickie (2011) explains, education and general work experience constitutes an entrepreneur's general human capital, while the experience gained from business ownership as well as entrepreneurial and technical knowledge and skills acquired in the same sector as their venture make up their specific human capital.

While there has been research conceptualizing human capital and entrepreneurship (Hickie, 2011; Jayawarna et al 2014; Ucbasaran et al., 2008; Unger et al 2011) these have focused on entrepreneurship in the West with a limited emphasis on entrepreneurs in emerging economies, particularly rural based business owners with less access to formal education.

Teece (2011) point out that there is a strong relationship between human capital and entrepreneurship. Thus, there is a need to fill this gap in the knowledge by gaining some insight on human capital development for individuals with little formal education. For our study, human capital theory provides a means of investigating evidence of learning including the type of knowledge that was acquired during the training programme and the link between a priori (known without prior experience) and posterior knowledge (gained by experience).

The aim of this paper is to look at the effectiveness of using mobile technology for entrepreneurial learning and development of entrepreneurial skill for a group of farmers with very little formal education. It is predicated on the concept of entrepreneurial learning by doing. The programme employed an action research approach which promoted action and reflective practices among the sample of small holders, thereby fostering entrepreneurial learning by experience and doing. Indeed**,** learning from experience, through reflection and reflexivity can potentially enable an entrepreneur to develop human capital, thereby providing opportunities for the translation of experience into innovation (Jayarwarna et al in Rae and Wang eds, 2015). Bagheri and Pihie (2011) suggests that it is through reflection that entrepreneurs learn to inquire into meaning of events in various occasions such as their past experiences and social interactions. It is this need for reflection that drives the action research methodology of our study as it seeks to engender effective learning for the group of palm oil smallholders participating in the study. In employing an action research methodology, (Pillay & Mitra 2015)stress the need for collaborating with the participants and building a network of relationships in the development of social entrepreneurship projects based on information technology.

While the palm oil smallholders in this study did not learn in a formal education setting, the entrepreneurial skills acquired from the informal coaching sessions based on mobile phone application during which they were encouraged to take action and engage in reflection, has the potential to enable them to develop their human capital. The data indicates that for individuals with little formal education such as the rural small business owners in this study, entrepreneurial skills can be gained through learning by doing, as the coaching sessions using the mobile phone allows them to also develop digital entrepreneurial skills, thereby expediting human capital development.

Methodology
Data was collected using two methods including visual methods such as photographs and self-assessment compliance forms.

While society's use, production and transmission of visual forms of communication have grown, the application of visual research methods has also become increasingly widespread throughout the social sciences (Knoblauch et al, 2008). However, it is still developing as a research tool within the social sciences. As Silverman (2011) asserts, written, not visual analysis dominates the field.

Zanotti et al (2010) cite photo elicitation as most effective when used as a combination with different methodologies; While Knoblauch, et al (2008) point out that although several visual analysis researchers have indicated the difficulties of establishing boundaries between the production and analysis of visual data, many of them have employed innovative use of multi-method approaches, which are centred on the visual in combination with "traditional" qualitative methods. They address the cultural meaning of visual data and relate to the ways in which actors themselves interpret visual data(Knoblauch, et al, 2008).

The analysis will be based on data from photos of participants. Rose (2007) suggests two methods of analysis. Firstly, photographs will be analysed by examining the production processes that resulted in the visual data as the processes are also data which provide crucial information about the participants' socio-cultural approaches**.** Secondly, analysis will be carried out by reviewing the contents of the photographs as a portrayal of specific local spaces. The latter is particularly pertinent to this paper as empirical data from the field suggests the grouping of the photos into different categories depicting different spaces within the community. Grouping the photos provides an overview of the visual data and clues to answering research questions concerning places and activities in the neighbourhood. The contents of the photographs will enable viewers to understand the problems and challenges the neighbourhood and town face on a daily basis (Kolb 2008). Thus, the photos could reveal both the positive and negative issues faced by the farmers with regards to their environment.

Additionally, the photographs were taken to represent the key issue and focus of the project, which was to coach the participants in entrepreneurship using mobile apps on smartphones. As Emmel and Clark (2011) note, there are two types of image. One is a kind of macro-scale or panoramic view that captures the moment. The others are more micro in scale and try to document the key issues for the field. Furthermore, the visual data will be analysed sequentially depicting the beginning of the project, and the end results of the project. These positions will indicate clearly, the difference between the entrepreneurial skills of the participants before and after the entrepreneurial learning project.

Future plans:
We plan to develop a strong theoretical underpinning for this paper, undertake a thorough analysis of the available data and delineate its exact contribution to entrepreneurial learning and human capital development.

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