Fostering Digital Entrepreneurship Capabilities at Rural Schools: A Malaysian Case Study

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Abstract

Malaysia is gearing towards becoming a digital nation. As such, many aspects have been transformed to implement digitisation, including entrepreneurship. However, studies on digital entrepreneurship are limited, especially in rural areas in which a promising potential can be seen to market local products and services. Entrepreneurship is a common activity in Malaysian secondary schools through cooperatives (co-op) and it serves as a starting point of nurturing the younger generation's knowledge in business; therefore, it would be meaningful to understand how information technology (IT) is accepted as part of the driver to digital entrepreneurship and cooperative competence. To explore the state of readiness in accepting digital entrepreneurship and the potential barriers, the study was conducted in the setting of rural school. Qualitative research was then conducted to answer the question of how digital entrepreneurship could be nurtured at rural schools. The corresponding results were drawn from semi-structured interviews with the school administration, co-op advisor, and co-op members, in addition to observations made on the co-op shop and the school surroundings. Therefore, the findings suggested four main themes playing important roles in nurturing the innovative digital entrepreneurship capabilities, namely school administration, technology capabilities, environment, and student factor. It is recommended that schools should be more innovative in simplifying the internal co-op policy while working together with other systems, as well as work on motivating the school children for their involvement in the entrepreneurship and digital business.

Keywords: Digital entrepreneurship; entrepreneurship; teaching entrepreneurship; entrepreneurship in Malaysia; innovation and information technology; industrial revolution (IR) 4.0; digital divide

1.0   Introduction

21st-century education is facing a major challenge currently, wherein globalisation, Industrial Revolution 4.0, digital nation, and open economy have transformed the education ecosystem (World Economic Forum, 2017). A good education is a solid foundation for any child's success, following which producing school children who are at par with the global standard is the Malaysian national aspiration (Malaysia Education Blueprint 2013-2025, 2013). Therefore, equipping them with the appropriate talent competencies is a concern, which is reflected in one of the strategies, namely to promote entrepreneurship capabilities via school cooperative involvement (Ismail, 2004). Various studies have shown the benefits of school cooperation for the students (Hassan, Aman, Aziz & Senin, 2018); for example, Dhalan and Muhamat (2014) have stated that being involved in the school cooperation activities allows students to improve on their leadership skills. Similarly, the involvement could inculcate student motivation for entrepreneurship and business engagement in the future (Dahlstedt & Fejes, 2017). Interestingly, school cooperation is also providing values to the schools at the macro and micro levels both (LinDar & Tay, 2011). At the micro-level, LinDar and Tay (2011) have concluded that students reap the values by learning various entrepreneurship skills. The macro level, in contrast, reveals the school is at the benefit of receiving monetary injection as cooperation is the engine and source of school's financial income.

Currently, Malaysia is moving towards a digital nation. Through gradual diffusion and efforts, many aspects have been transformed to implement digitisation, including entrepreneurship (Zainuddin, Ismail, Ahmad, Sharif, Mazalan, Kadir, & Sufian, 2017) and IT usage at schools (Hassan et al., 2018) despite some challenges (Hamid et al., 2018). Since the school cooperative is the foundation and platform for inculcating future business talents, understanding how IT is accepted as part of the driver to digital entrepreneurship and cooperative competence will serve as the starting point in shaping for the digital direction. However, in the school context, studies on IT are rather limited and many challenges have emerged as obstacles to digital practices and IT acceptance (Hassan et al., 2018). Furthermore, others have also indicated how digital practices and IT acceptance differ across areas, either urban or rural (Hamid et al., 2018). The condition of the digital divide creates challenges to the potential of IT and digital practices in terms of school cooperation for the rural population despite

the possibilities of values creation. Hence, the current study is conducted to answer the question of how digital entrepreneurship via school cooperation engagement can be nurtured in rural schools. The objective of this study is to explore the readiness of school children in accepting digital entrepreneurship and understand the potential barriers to the element.

2.0   Review of Literature

Historically, human and economic development commencement occurs in the rural areas and has thus contributed significantly to human resource and production fields (Zaremohzzabieh, Samah, Muhammad, Omar, Bolong and Shaffril, 2016). However, these areas are facing some challenges such as inadequate human and economic resources and climate change (Nemes, 2005). Therefore, many researchers have suggested entrepreneurship as one of the solutions to address the economic problems in the rural areas (Bruton, Ketchen & Ireland, 2013.

In 2003, the Malaysian government initiated the One District-One-Industry (ODOI) programme to boost income and facilitate the growth of small enterprises ran by rural families. This programme aims to encourage rural entrepreneurs in creatively using the available resources and producing at least one product that has commercial value (Kader, Mohamad & Ibrahim, 2009). In 2004, under the ODOI programme, 78 out of 134 districts in Malaysia successfully produced craft products, food products, rural industry products, and certain services (MDEC 2004). In the country, many youths live and work in rural parts and are likely to be engaged in activities that in one way or another utilise local natural resources. At early age, many rural youngsters work to support the needs of their families in a broad range of farming and non-farming productive activities (Zaremohzzabieh et al., 2016). Therefore, the Malaysian government has invested in information communication technology (ICT) to support and encourage entrepreneurship, especially among these self-employed young entrepreneurs.

Fostering digital entrepreneurship is important as it can boost economic growth, encourage the emergence of new industries, and create employment opportunities. "*Digital entrepreneurship is broadly defined as creating new ventures and transforming existing businesses by developing novel digital technologies and/or novel usage of such technologies*" (European Commission, 2015, 2173p). According to the

Malaysian Communications and Multimedia Commission (MCMC, 2017), the internet penetration level for rural households is only at 32.8%, whereby merely 56.9% of the rural residents have access to the internet. This shows a significant divide in terms of internet adoption between urban and rural residents. Therefore, it is a challenging task to transform and innovate digital technologies among the children in the rural areas.

Moreover, many studies have highlighted the barriers of entrepreneurship such as the lack of courage, lack of self-efficacy, or lacking confidence; they can lead to personality constraints to one's engagement in entrepreneurship (Sitaridis, & Kitsios, 2017). Moreover, in other studies on entrepreneurship barriers, scholars have found that the lack of educational skills and competence (Sitaridis, & Kitsios, 2017); constraints in resources (Sandhu, Sidique & Riaz, 2011), including human resources and infrastructures (Ledyaeva et al., 2008); lack of social network (Sandhu et al., 2011); and lack of market-based knowledge (Shinnar et al., 2009) are critical and can contribute to the failure of business start-ups.

According to Zhao and Collier (2016), the digital entrepreneurial capacity can move forward if the government, industry, business, and educational institutions and non-government organisations (NGOs) all work together and support the innovation ecosystem of digital entrepreneurship. Besides, to inculcate digital entrepreneurship among rural school children, school administrators can provide digital technologies such as mobile technologies, tablets and smartphone application in school education. Here, it is believed that these technologies can enhance the student's learning process (José Sousa et al., 2019; Verni, Efendy Zain & Zulihar, 2015). Besides, it can help to prepare the students towards thinking critically; they will then solve complex problems, work collaboratively, communicate efficiently, and be more independent. Moreover, these tools will help them to create their own business and become professional entrepreneurs. This is supported by Ismail et al. (2015), who have stated that for students to be successful entrepreneurs, they should have the capability to use digital technology.

3.0 Methodology

The fundamental problem of this study was towards exploring the innovative digital entrepreneurial capabilities among rural school students. The result was drawn from semi-structured interviews with

school administrators, teachers, and schoolchildren, whereby the process was highlighted as one of the main questions in this study. Furthermore, Yin (2009) has added that the unit of analysis involves addressing the questions arising from the study. In illustrating a case study, Merriam (2009) has provided some examples on the types of the phenomenon: "The case study can be as varied as a second-grade classroom, the training department of a company, a system-wide model science program or a patient education clinic at a local hospital" (p. 81). Therefore, the case study of this research was underpinned by the process of nurturing innovative entrepreneurial skills.

The initial stage of the data collection involved selecting a sample by using snowball sampling method to choose the informants involved in this study. Typical sample is one which employs purposive sampling strategy which provides an opportunity for the researchers to select the best sample that can describe a phenomenon and reflects the average person, situation or instance of the phenomenon of interest (Merriam, 2009). For this reason, the main informants involved were two schools administrators (i.e. the headmaster and his assistant), two co-op teachers, and six school children. They were believed to have wide knowledge and experience on the process of organising a sustainable business event. Altogether, ten respondents were involved in this study and thematic analysis was used to identify the themes developed, which was done via face-to-face and semi-structured interviews. All of the sessions were were tape-recorded, whereby each interview lasted between 15 and 20 minutes. The main question positioned to the respondents was: how could digital entrepreneurship via school cooperation engagement be nurtured? The data were simultaneously gathered and analysed; when the themes were achieved and data reached saturation, the interviews were stopped (Jahani, Abedi, Elahi, & Fallahi-Khoshknab, 2016)

4.0 **Findings and Discussion**

This study took place at one of the rural schools located in one of the east coast states in Malaysia. The distance to the nearest town is about 65 kilometres. The demographic background information of the participants is outlined in Table 1, which is also the case classification sheet to the study equipped with attributes and values.

Table 1 : Description of the informants

Code name	Designation/Role	Gender	No of years in the respective role	Main responsibility
IA1	School Principal / School Co-op Patron	M	4 years	Head the school; monitor, advise and administer the school, including the co-op operations
IA2	Assistant Principal	M	2 years	Assist with the school administration, including the co-op operations
IA3	School Teacher / Co-op Secretary/ Co-op Advisor	M	10 years	Assist with the school administration, including the co-op operation, and liaise with the respective agency (Agency A)
IT1	School Teacher/ Co-op Treasurer and Advisor	F	8 years	Propose strategies for the co-op; run and monitor the operation; and assist in liaising with Agency A
IS1	Student / Co-op Assistant	F	2 years	Assist the co-op operations, but only for selling items and counter operations
IS2	Student / Co-op Assistant	F	2 years	
IS3	Student / Co-op Assistant	F	2 years	
IS4	Student / Co-op Assistant	F	2 years	
IS5	Student / Co-op Assistant	F	2 years	
IS6	Student / Co-op Assistant	F	2 years	

(note: F= female; M= male)

The school was established in 2009 and in 2018, the number of teachers and students were 40 and 400, respectively. Due to the small population, only one school session was held. More than 95% of the students were from the B40 group, namely the bottom of the household income level. The demographic background information in Table 1 outlines the classifications of the informants, consisting of the school administrators, the co-op management team, and the students as the co-op assistants. Three different interviews were conducted separately

to obtain a comprehensive understanding of co-op operations, issues, and opportunities from different stakeholders.

4.1 Analysis of Research Findings

The study aimed to explore and attain insights on the potential capabilities of fostering digital entrepreneurial skills at rural schools. The main question was how digital entrepreneurship via school cooperation engagement could be nurtured. In an attempt to obtain answers, several questions were asked to different groups of the school population. This was started by asking general questions, followed by specific queries. Kruger and Casey (2000) have suggested that researchers use focused questions that can incite the participants to be involved actively in an interview. Therefore, probing questions were given during the interview. Following the suggestion, the main questions are prepared as shown in Table 2. The questions were posed to explore the capabilities and map the readiness towards digital innovation.

Table 2 : General interview questions

Group Classification	Interview Questions
School Administration	What is the main objective of the school co-op? How do you administer the school co-op? How do you see utilising technology in the co-op operation can nurture student entrepreneurship capabilities?
Co-op Advisor	What is the main objective of the school co-op? How do you manage the school co-op? How do you see utilising technology in the co-op operation can nurture student entrepreneurship capabilities?
Co-op Assistants	Why did you participate as co-op members? How would you like to use technology in the co-op operation to nurture student entrepreneurship capabilities?

Based on the recommendation made by Corbin and Strauss (1990), the interview responses were reviewed and written in sentences or paragraphs. Then, each sentence and paragraph were first assigned with low-level labels, which were next re-categorised into medium-level labels. Finally, the medium-level labels were matched against high-level themes. This technique is parallel with the open

coding, axial coding, and selective coding procedures used by previous researchers (Corbin & Strauss, 1990; Attride-Stirling, 2001).

4.2   The objective of the school cooperative

Based on the interviews, the main objective of the study was to set the school cooperative following the Malaysian cooperative movement, namely to provide the educational and support services. Almost similar responses were thus obtained from the school administration and co-op advisor. However, interestingly, school administration had a different idea on educating school children regarding how the money should be invested and returned to the students as investors. This was not possible; according to them, the school must get approval from ANGKASA (Angkatan Koperasi Kebangsaan Malaysia Berhad) for every decision. This is quoted by IA1 and agreed upon by IA2 and IA3 both:

> *"The establishment of co op is because of the students. Therefore we want the profit (money) to be used by the students. Unfortunately, due to regulation and procedures, it is quite tedious to use of the money according to school preferences."*

When managing the school co-op, the school principal would monitor the operations on the surface. Meanwhile, all other significant responsibilities and most of the decisions were made by the co-op Secretary and Treasurer. This is quoted by IA1 and agreed upon by IA2 and IA3:

> *"I would like to explain the school co-op operation. Normally, the more knowledgeable people (about the operation) are the secretary and treasurer. As the advisor, I just monitor…..and as the advisor, I just approve (how the co-op is run). All suggestions are from the secretary. I am very seldomly involved."*

Allocated the responsibilities to make plans and strategies for the school co-op, the co-op advisor had once ventured into making the unutilised hostel as tourist accommodation. This showed that the school, through the advisor, had the capability to make a risky yet potentially lucrative business decision. However, due to some unforeseen issues and lack of support, the operation ceased. Otherwise, the daily operations of the school-coop was very basic;

during school session, the operation was only available during recess hour and the items sold comprised of basic stationery goods. All inventories and record-keeping were documented manually.

4.3 Digital entrepreneurial capabilities and readiness

In this section, findings for the following questions can be seen accordingly: "How do you see utilising technology in the co-op operation can nurture student entrepreneurship capabilities?" and "How would you like to use technology in the co-op operation to nurture student entrepreneurship capabilities?". These two questions were identical in the sense that they would assess the perspective of utilising technology for nurturing and fostering student entrepreneurship capabilities. A summary of the findings is shown in Table 4. The generation of digital capability themes and their exploration was derived from the Technology-Organisation-Environment Framework (Tornatzky, Fleischer & Chakrabarti, 1990). Additionally, another theme of the student/co-op member capability was further explored. Each category is assessed based on its capability as low, medium, or high, whereby the rubric assessment on the quantification is adopted based on the work of Abdul Rahman and Hassani (2011). The rubric assessment for assessing the capabilities is shown in Table 3.

Table 3 : Rubric for Capability Assessment

High Capability	Medium Capability	Low Capability
The school has the capability of delivering a relevant and timely response to digital entrepreneurship, which can encourage sharing and collaboration within the school	The capability exists but is not widespread that it allows for relevant and timely response to digital entrepreneurship, which can encourage sharing and collaboration within the school	The capability is not available or very minimum so as to allow for relevant and timely response to digital entrepreneurship, which can encourage sharing and collaboration within the school

Table 4 : Digital Entrepreneurship Capabilities for School Children

Theme	Categories	Capabilities (Low/Medium/High)
Technology	• Computer facility	• Low
	• Internet connection	• Low
	• e-process or e-documentation	• Low
School and Management	• School management support	• Medium
	• Innovativeness and creativity	• Low
	• IT experience and competency	• Low
Environment	• Ease of policy and regulation	• Low
	• Mentorship	• Low
	• Demand and purchasing power	• Low
Individual / School Children	• Attitude and learnership	• Low to medium
	• Digital technology exposure and know-how	• Low to medium
	• Motivating factor	• Low

1. Technology Capability

The first theme was technology, whereby the overall capability was considered low. Computer facility and internet connection were the essence of digital technology diffusion and adoption, whereby their absence would cause digital technology to not function. Here, poor provision of computer facilities, poor internet connection, and basic manual operation were highlighted by IA3 and IT1 and agreed upon by IA1:

"There is no computer for school co-op operation. We use manual records and books (record)."

"Our (co-op) operate manually… all using logbook to record the inventory"

Besides, on the issue of internet access, the responses given by IA1 are as follows:

"…our operation is limited because the internet is very slow.. It is very difficult to be connected to the internet… Even for (other) school administration (purposes), we use files. We don't use the computer system. Sometimes we have to delay (keying in the data) because of no line. So, sometimes we get very stressed."

2. School and Management Capability

The second theme was school and management-related. While the school management was in support in encouraging the use of digital technology, the lack of innovativeness and creativity on what and how digital technology could be used for could be seen. This is highlighted by IA1 below:

"We could do the training (on digital entrepreneurship). You just need to write a letter to us. As usual .. because this is learning… During the school session, we could have it (the training) here (at the school)."

Using digital technology does not necessarily require the internet and network connections. However, many oftentimes think that it is a must. Similarly, when asked about the possibility of using digital technology for the co-op, the immediate response implied that it would be impossible.

"If the idea is implemented at urban schools, it is good. But here, it is limited because of the internet…" [what about just for inventory and automation?] "It might be possible".

The school also had limitations in terms of human resources with adequate IT capabilities in advising and monitoring digital technology.

3. Environment Capability

The third capability was the external support system, which was also known as the environmental factor. Three categories were assessed, namely ease of policy and regulations, mentorship, and demand and purchasing power of the buyers or school population. Thus, a low level of ease of policy and regulations is seen, as depicted by IA1 and agreed upon by IA2 and IA3.

"We cannot do as we wish. It becomes a constraint. We want to implement some changes but they must go through meetings… We have to abide by the policy. Until now, we cannot do anything."

Furthermore, the school received lacking support and mentorship from Agency A compared to other schools in a similar district. This is highlighted by IT1 and IA1 both:

"When people are asking about the service (referring to the hostel), Agency A will offer information about school B (referring to the other school that offers similar service) instead of us".

"The school does not receive any support from other bodies (i.e. agencies or other third parties)."

"We cannot make the changes; in the meetings, the representative from ANGKASA must attend. But no one has attended..."

Besides, the demand and purchasing power was very limited and created a challenge to the co-op and future digital entrepreneurship purposes.

"The co-op is usually packed during the early school session. After that, business is very slow"

"Our school co-op (business) is very slow..."

4. Individual/ Students Capability

The fourth capability detailed student attitude and learner-ship, digital technology exposure and know-how, and motivating factors towards entrepreneurship. When asked about the possibility of using digital technology and social media for entrepreneurship, the students were quite excited even though they seemed unsure about the likelihood.

"[With IG], we could do online business..."

When explained further about how social media could assist in buying and selling, their reactions, facial expressions, and smiles clearly depicted their excitement and eagerness to use the technology. However, even though some limitations might be seen regarding the know-hows, they possessed an adequate understanding of how social media would work. This provided a good indication of cognitive capability.

"I don't really know how to use computers… [But] I have IG."

"I have a friend (schoolmate) who promotes using IG."

When asked if they received any motivation for becoming a better co-op assistant or venturing into business in the future, the response was simply no.

In encouraging entrepreneurship among school children in rural areas, seeking motivation and support from various sources are essential. However, encouraging and motivating these students is not an easy task, whereby one of the key challenges in nurturing such skills among them is digital readiness.

4.4 Summary of research finding and conceptual model development

The co-op exists to provide entrepreneurial education and support the learning process undertaken by students. Based on the findings, four criteria emerged relating to the digital entrepreneurship capabilities for school children. Firstly, technology capabilities were rated low due to the lack of computer facilities and poor internet connection, thus resulting in the documentation for co-op transactions that were recorded manually. Secondly, little support from the school and management on digital entrepreneurship capabilities could be seen and the school suffered from the lack of IT support capabilities and equipment. Thirdly, environment capabilities consisting of lacking external support system, uneasy policy and regulation, lack of mentorship and demand, and low purchasing power of the school population were noted; as such, digital entrepreneurship capabilities were rated low. For the last factor of individual and student capabilities, the respondents showed an interest in using digital technology and social media for entrepreneurship but were generally unsure about the possibility. Previous studies have argued that school administrator plays an important role in enhancing entrepreneurial skills among students (Ezeani, 2012). Therefore, students would also be motivated to be entrepreneurs through proper entrepreneurship education.

Although the findings revealed the low level of readiness for digital entrepreneurship capabilities, the outcomes were significant for understanding the factors that could promote digital practices and IT deployment at schools via cooperation. The strategy and potential determinants are illustrated in Figure 1 below.
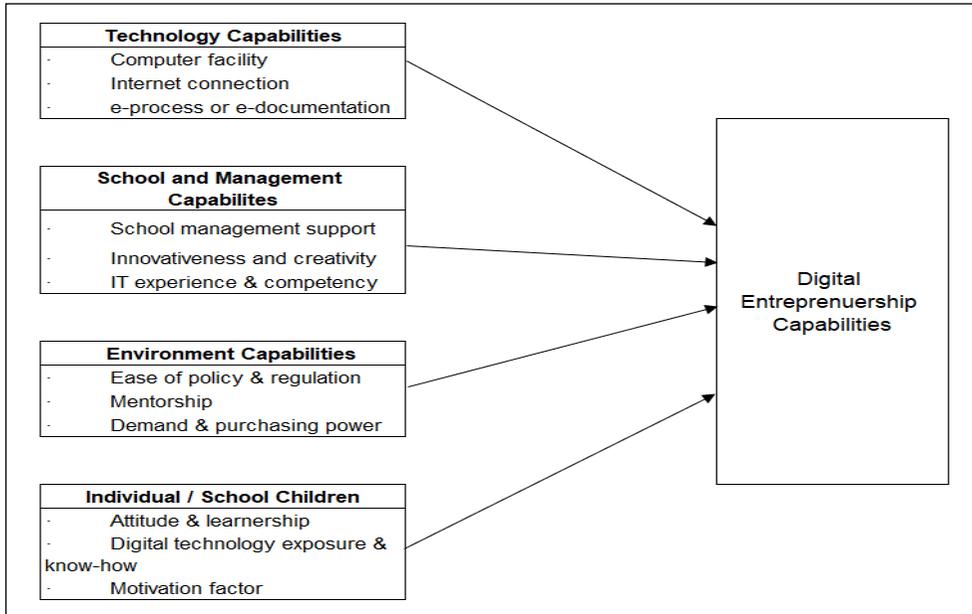
Figure 1 : Proposed conceptual model of digital entrepreneurship

5.0   Conclusion

The current study was conducted to explore the state of readiness in accepting digital entrepreneurship and its potential barriers at rural schools. The findings suggested technology capabilities, school and management capabilities, environment capabilities, and student capabilities as the driving factors for a successful deployment of digital entrepreneurship and IT usage for school cooperative practices (Sitaridis & Kitsios, 2017). Therefore, this study offers rich insight into the potential development of a new Digital Entrepreneurial Skill. However, schools are oftentimes left unmonitored to establish the right programmes or activities in enhancing the student talents. Thus, the Malaysian Education Development Plan 2013 – 2025 is strategising on the social cooperation between schools and the community, including private organisations and other entities. Therefore, an imperative need to establish a link for this aspiration is obvious, specifically by a partnership between the school and the communities and including additional guidance from higher learning institutions.

In addition, the government and private agencies both should work together to minimise the barriers and develop strategies on improving school facilities, as well as build digital readiness among

teachers and students so that they can embrace the technology. The more encouraging educational approach can be possibly developed to instil entrepreneurial characteristics in school children. For instance, the schools in the rural region can establish networking with other higher educational institutions outside their region. By doing this, experts from various areas can be invited to the school for them to share and stimulate ideas and innovative skills for the young entrepreneurs (Ferrari, Cachia, Punie, 2009). Another suggestion thus posed is for the school administrators to invite business practitioners for a mentoring and coaching programme in the school, hence enhancing the student entrepreneurship skills. Concurrently, an alternative suggestion for further research is the development of a measurement tool that can comprehensively measure the standard entrepreneurial skills among students in rural areas. Encouraging entrepreneurship among them in school should be thoroughly explored. Besides, future researchers may want to consider testing the conceptual model for the purpose of attaining more comprehensive findings.

Acknowledgement

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