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INNOVATIVE VALUE CHAIN: SOLUTION TO ENHANCE COMPANY PERFORMANCE DURING COVID-19 PANDEMIC MCO IN SABAH

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ABSTRACT

When technology leaps forward, the internal "capability gap" between new technology requirements and what incumbent companies/ industries can implement is often an issue. Misalignment between technology requirements and an organization's ability to meet them can also exist outside a company's boundaries. Digital adoption, especially among local companies are barely touching 20 per cent, and most manufacturing companies apply less than 50 per cent of automation. Malaysia has always scored among the highest in the region in terms of digital readiness, according to global surveys. Critical challenges include the lack of awareness, especially among local companies in terms of the impact of and benefits of keeping up with new technologies. It shows the level of technology usage is still very low within business operations especially in the supply chain that discourages the firm to digitalise their business. Thus, this study identified innovative value chain factors affecting company performance among local companies in Sabah particularly. This paper use Diffusion of Innovation (DoI) theory to introduce three variables that were proposed to help predict innovative value chain among local companies in Sabah namely: idea generation, idea conversion, and diffusion of innovation. This study employed a quantitative method approach by using a questionnaire as a tool to answer the study aims. Data was collected from local companies in Sabah regardless in manufacturing, services and agriculture

industry was analysed using Structural Equation Modelling (SEM) via Partial Least Squares (PLS). The results and implications included in our study contribute to an expanded understanding of the innovation factors that influence company performance among local companies in Sabah.

INTRODUCTION

The current COVID-19 pandemic affects people worldwide and also give an impact on global economic growth. To prevent the virus from spreading and become more worst, most of the countries affected implemented lockdown or Movement Control Order (MCO) including Malaysia. Most business operations were badly affected due to the COVID-19 pandemic outbreak and MCO. Even the worst is, some of the businesses had to shut down their operations because there is no demand and supply during this pandemic (Mohamed Farid Noh, 2020). Many initiatives from Malaysia's government had been implemented to give support for the businesses to help them in facing bankruptcy or shout down their operations such as PENJANA and Moratorium In Sabah, the implications of MCO directly or indirectly affect entrepreneurial and business activities.

This pandemic brings challenges to the marketers or business players in which they need to find new ways in facing this COVID-19 pandemic or MCO. When technology leaps forward, the internal "capability gap" between new technology requirements and what incumbent companies/ industries can implement is often an issue. The players need to adopt new technologies as their new way of running their business operations. Adopting new technology as an alternative in running a business may help the businesses to survive in the market (Ramalho et al., 2019) especially during this pandemic. They have the benefit of size, which can generate economies of scale. They also have experiences in various situations and challenges. These include the great depression, economic downturn and disease outbreak. Hence, they need to look for other alternatives for the act of survival such as using the Internet as a medium of business transaction. New technology can be leveraged to enable performance along a chain of related parties in this industry, particularly during the COVID-19 pandemic outbreak. Misalignment between technology requirements and an organization's ability to meet them can also exist outside a company's boundaries.

Digital adoption, especially among local companies are barely touching 20 per cent, and most manufacturing companies apply less than 50 per cent of automation. Malaysia has always scored among the highest in the region in terms of digital readiness, according to global surveys. Critical challenges include the lack of awareness, especially among local companies in terms of the impact of and benefits of keeping up with new technologies. It shows the level of technology usage is still very low within business operations especially in the supply chain that discourages the firm to digitalise their business. Thus, this study identified innovative value chain factors affecting company performance among local companies in Sabah particularly.

LITERATURE REVIEW

Innovative Value Chain

Gaining a competitive advantage is dependent not only on realizing the value of a company but also on how the company connects into the chain's overall value-adding functions (value system) and reacts to it and also meets the needs of its customers (Hastings et al., 2016). As asserted by Micu et al.(2009), a specific business relationship formed with the customer would bring various value to the companies. From the perspective of value chain management strategy, the companies need to utilize all contact channels with customers in an appropriate combination: suppliers, customer care services, online portal and other customer relationship management strategies to ensure customer satisfaction (Micu et al., 2009).

To create a better value for the consumer, an efficient value chain needs collaboration and cooperation within the chain (Slater & Narver, 1994). This is because the study by Bonney et al. (2007) and Matopoulos et al. (2007) proved that the implementation of the value chain strategy is difficult due to the customers are not product-focused.

The concept of an innovation value chain is relatively new. Hansen and Birkinshaw (2007) proposed that innovation be seen as a value consisting of three phases which are idea generation, idea conversion and diffusion of innovation in describing the value-creating processes in company innovation activities. They proposed that company innovation activities are seen as a phase of converting ideas into commercial products, which is more like the value chain of Porter (1985) in processing raw materials into finished goods. The generation of ideas is the sensing of opportunities, and idea conversion and diffusion of innovation are ways of capturing opportunities. The concept of innovation value chain offers extra insights into the situation in which in an innovation phase value can be generated (Dong & Wu, 2015). Hence, different components of the strengths and weaknesses in the process of innovation must be defined (Chen et al., 2018).

In the current COVID-19 pandemic situation, most of the employees were ordered to work from home (WFH). Science and technology's rapid development has allowed people to continuously change their traditional production and lifestyle (Bai et al., 2019). Now, with technology employees can do their jobs at home and communicate with their colleagues online. Via digital platforms, online information gathering, and sharing can help the employees strategize and organize plans, exchange strategies or develop mutual demands. Employees can use online communication to coordinate preparation for offline mobilization and resistance (Helmerich et al., 2020).

Diffusion of Innovation (DoI) Theory

In social science, the Diffusion of Innovation (DoI) Theory has been widely used for a general viewpoint (Brown et al., 2014). In general, DoI Theory clarified how to spread new ideas, products or systems across a particular population (Chen et al., 2002). To be specific, innovation diffusion from the point of DoI Theory view is a communication process whereby new ideas in a specific social group are transferred from one party to another party (Yi et al., 2006).

This theory, first introduced by Rogers (1962), has made great contributions to other researchers, especially in the field of innovation diffusion (Faisal & Idris, 2019). According to Rogers (2003), four critical elements which were communication channel, social system, features of innovation and time were discussed in DoI Theory. A study by Aizstrauta et al. (2015) stated that the innovation that Rogers had been defined could also be referred to as technology.

Based on Taherdoost (2018), there are five important phases in technology adoption which are knowledge, persuasion, decision, implementation and confirmation stage. Every phase has a distinct process of diffusion of innovation. Knowledge is a process of acquiring technology's information, persuasion is a process of being convinced in adopting the technology, a decision is a process to determine either to adopt or reject the technology, implementation is a process in which technology is introduced and used, and lastly, confirmation is a process of deciding the outcome of the technology's use (Kamaruddin & Udin, 2009). Chang (2010) stressed that innovative ideas, products or systems could affect the different levels of community, individual and organization. Hence, every phase has a distinct process of innovation diffusion.

As discussed above, companies usually gain knowledge and turn it into technologies and products, and then use their innovation to earn revenue (Chen et al., 2018). Therefore, this paper uses DoI Theory to introduce three variables that were proposed to help predict innovative value chain among local companies in Sabah namely: idea generation, idea conversion, and diffusion of innovation.

Supply Chain Technology (SCT)

Bakar et al. (2015) asserted that improving the effectiveness and efficiencies of supply chain needs helps from technology and at the same time technology can become a competitive weapon to the company's strategy. Companies often want to be innovative along with the development of technology by creating a new product, systems, services and others. With the development of Industrial Revolution 4.0 (IR 4.0) by the Malaysian government, companies can expand and improve their operations from traditional methods to new viewpoints such as innovation (Faisal & Idris, 2020).

Innovation, however, may be a catalyst of change as the company that is aware of innovations are rapid to adapt them can therefore build a competitive advantage for the company by improving what they do and how they do it. Contrarily, innovation may also be seen as an outcome of change instead of only being the catalyst for change, so it is beneficial to differentiate between innovation adoption and innovation generation (Smit, 2014).

As asserted by Deitz et al. (2009), supply chain technology is recognized in supply chain management as it can affect the productivity, competitiveness, and flexibility of the company. It was stressed that supply chain technology has a significant impact on enhancing company performance when the effectiveness of this type of technology meets company objectives (Collins et al., 2010). This was endorsed by Jadhav (2015) in which technology plays an important role in the decision-making process of the supply chain, thereby achieving the key supply chain goals will improve the supply chain profitability (Faisal & Idris, 2020).

SCT Adoption

The adoption of supply chain technology is important to survive and remain competitive in the industry (Gunasekaran & Ngai, 2004). According to Damanpour (1991), the word "adoption" was used to describe the introduction of new ideas or behaviours. Companies know that they need to depend on an effective and efficient supply chain (Njoku & Alexanda, 2015). If the company adopt supply chain technology, an effective and efficient supply chain can be achieved (Collins et al., 2010).

In this context, putting together some significant relationships is important. Waghmare and Mehta (2014) noted that supply chain management is a range of methods that are efficiently applied to connected suppliers, producers, warehouses and products to produce and disseminate the products in appropriate quantities, to the right place based on time request, to minimise system-wide costs while fulfilling the demands of facility level, multinational companies to leverage their philosophy to sustain this climate of globalisation by adopting information technology.

Idea Generation

Idea generation is important which refers to a process that encourages the responsive in creating and sourcing new ideas and inspirations from the internal and external environment (Hansen & Birkinshaw, 2007; Roper et al., 2008), and idea generation will be observed and critical analysis will be made to achieve a company's competitive advantage in a marketplace. Furthermore, interactions between internal and external parties in the innovation process are crucial as they can be a

source for a wider selection of ideas (Ramalho et al., 2019). It is, however, a requirement for a company to be decentralised to pursue such activities in the innovation process (Taghizadeh et al., 2014). Instead of converting raw materials into finished product value chains according to Michael Potter, managers need to convert ideas into commercial production to boost innovation (Lin et al., 2018).

Before hitting the market as new products, services, processes, business models or a combination of two or more businesses, ideas generated within the company and ideas that originate from an external relationship, alliances and interactions must go through the selection, development and implementation procedures (Goffin & Mitchell, 2005). This is because, not all ideas valid, there is some idea that might not be relevant to be used. Ideas that are more likely to fulfil the market needs are chosen through an innovation funnel to continue in the process until the implementation stage (Wheelwright & Clark, 1992).

Idea Conversion

Managers must know how to deal with good ideas after generating them. Conversion is sub-categorized by selecting and screening the best idea and developing them to the practice which the managers need to take into account the budget criteria (Hansen & Birkinshaw, 2007). The conversion requires the transformation of information to create innovation, such as new processes, services, products, or organisational modes. According to Roper et al. (2008), this phase may involve the use of multi-skill teams and various types of external parties in the process of developing innovations. This phase, on the other hand, refers to the screening of new ideas chosen based on their importance and relevance so that they can be incorporated into products (Ramalho et al., 2019), and translating it into an innovation.

Diffusion of Innovation

The final phase is also called diffusion of the idea, which relates to the marketing of products based on new ideas within the organization as well as outside the organization (Smit, 2015). The diffusion of the idea through the organization dictates how well the company can disseminate the ideas generated. To promote and distribute the company's new product, services, process and practices through geographic areas, customer segments and channels, the company can find the appropriate communities inside the organization (Hansen & Birkinshaw, 2007). This phase involves various aspects of customer engagement, as well as internal expenditure on branding and the use of intellectual property rights as a reputation (Roper et al., 2006).

RESEARCH METHODOLOGY

The target population of analysis for this study was the local companies running business activities on the West Coast of Sabah. This study employed a quantitative method approach by using a questionnaire as a tool to answer the study aims and the respondents were the local companies on the West Coast of Sabah. Five Likert Scale was employed, and the questionnaire was prepared in English and then translated to Bahasa Malaysia. Data was collected from various companies in these three districts regardless of manufacturing, services and agriculture industry. The data was analysed using Structural Equation Modelling (SEM) via Partial Least Squares (PLS). There were 63 usable questionnaires successfully collected for data analysis. The response rate was thus 76.83%. Sample profiles are shown in below Table 1.

Table 1 Profile of the respondents

Variable	Description	No. of respondents	%
Size of company			
	Large	10	15.9
	Medium	28	44.4
	Small companies	25	49.7
	Total	63	100.0
Types of products/ service			
	Services	29	46.0
	Consumer Goods (including fishery and livestock item)	12	19.0
	Manufacturing	10	16.0
	Others	12	19.0
	Total	63	100.0
Year of operations			
	Less than 5 years	44	100.0
	6 – 10 years	19	100.0
	Total	63	100.0

RESULTS AND DISCUSSION

Measurement Model Results

According to Hair et al. (2016), the item with outer loading values of at least 0.70 is acceptable. Hence, due to the outer loadings being lower than the accepted value, which is 0.70, items IG5 and IG6 were deleted, and the rest remained as the loadings were above the accepted value of 0.70 (Table 1). Furthermore, the AVE and CR were introduced to test the convergent validity and internal consistency reliability. The results show that all AVEs and CRs values were more than 0.50 and 0.70 respectively and it is indicated sufficient convergent validity and reliability (Fornell & Larcker, 1981; Gefen et al., 2000). Other than that, discriminant validity was then checked by comparing the square root of AVE with its corresponding relation with all variables in the model (Table 2). The square root of AVEs exceeds the inter-construct associations in all cases, supporting the validity of discriminants (Fornell & Larcker, 1981).

Table 2 Measurement model evaluation

Construct	Measurement Items		Factor Loadings		AVE	CR
Financial Performance	FP1	0.730	0.733	0.956		
FP2	0.766					
FP3	0.783					
FP4	0.921					
FP5	0.913					
FP6	0.891					
FP7	0.928					
FP8	0.891					
Idea Generation	IG1	0.724	0.585	0.849		
IG2	0.768					
IG3	0.782					
IG4	0.783					
Idea Conversion	IC1	0.751	0.643	0.878		
IC2	0.808					
IC3	0.829					
IC4	0.816					
Diffusion of Innovation	ID1	0.864	0.749	0.899		
ID2	0.878					
ID3	0.853					
Note: CR, Composite Reliability; AVE, Average Variance Extracted						

Discriminant validity is established at HTMT0.85 (Diamantopoulos & Siguaw, 2006)
Source: Gold et al. (2001)

Table 3 Discriminant validity coefficient (HTMT Criterion)

	Financial Performance	Idea Conversion	Idea Generation	Innovation Diffusion
Financial Performance				
Idea Conversion	0.520			
Idea Generation	0.570	0.575		
Innovation Diffusion	0.527	0.582	0.509	

Discriminant validity is established at HTMT0.85 (Diamantopoulos & Siguaw, 2006)
Source: Gold et al. (2001)

Structural Model Results

In this analysis, three structural relationships that consist of three direct relationships were developed. Based on the analysis shown in Table 3 suggested that all relationships are H_1 ($\beta = 0.284$, $t = 2.662$, $p < 0.01$), H_2 ($\beta = 0.219$, $t = 1.841$, $p < 0.05$) and H_3 ($\beta = 0.252$, $t = 1.988$, $p < 0.05$) were supported which directly influenced the financial performance. Thus, hypotheses H_1, H_2 and H_3 were supported.

Table 4 Structural relationship

Direct Effects	Beta	S.E.	t-value	p-value	LLCI	ULCI	Decision	
Idea Generation -> Financial Performance	0.284	0.104	2.722	0.003	0.078	0.428	Supported	
Idea Conversion -> Financial Performance	0.219	0.124	1.769	0.038	0.006	0.398	Supported	
Innovation Diffusion -> Financial Perform	0.252	0.127	1.975	0.024	0.024	0.438	Supported	
Path Coefficient 0.01, 0.05 (Hair et al., 2017)								
Notes: Path Coefficient: 1-tailed/Mediation 2-tailed/ Moderation 1-tailed								
Path Coefficient: 1-tailed based on researcher's hypotheses								
Direct Effects	f2	R2	VIF	Q2				
Idea Generation -> Financial Performance	0.094	0.360	1.337	0.251				
Idea Conversion -> Financial Performance	0.051			1.464				
Innovation Diffusion -> Financial Performance	0.071		1.392					
f2 ≥ 0.35 consider Substantial (Cohen, 1988)								
R2 ≥ 0.26 consider Substantial (Cohen, 1989)								
Lateral Collinearity: VIF ≤ 3.3 (Diamantopoulos & Siguaw, 2006) or ≤ 5.0 (Hair et al., 2017)								
Q2 > 0.00 consider large (Hair, 2017)								
$0.02 \leq Q^2 < 0.15$: weak predictive power								
$0.15 \leq Q^2 < 0.35$: moderate predictive power								
$Q^2 \geq 0.35$: strong predictive power								
Note: *p<0.05, **p<0.01, Bias Corrected, LL=Lower Limit, UL=Upper Limit								

DISCUSSION

Based on the result, it found that idea generation, idea conversion and diffusion of innovation have significantly influenced the financial performance of the company. This is because generating a good idea from the internal and external organizations can make them innovative. Besides that, the company manages or handles well the ideas that they have which transform them into valuable products provided to the customer as well as provides good insight on how well the company can disseminate the ideas generated.

This study extends our knowledge on the issues relating to value chain importance especially among businesses in Sabah. The research also improves our understanding, by uncovering the internal important factors in terms of managing chain and technology adoption. Consistent with prior empirical works, this study lends weight to companies and technology readiness in supporting supply chain technology either functional or integrated supply chain technology adoption in the business operations among the companies in Sabah.

CONCLUSION AND RECOMMENDATIONS

In a conclusion, this study would like to investigate in-depth for adopting the new technology in making the manager of the company be creative and do some innovation for their survival in the market. Besides, the results and implications included in our study contribute to an expanded understanding of the innovation factors that influence company performance among local companies in Sabah especially in the current challenging time during the Movement Control Order (MCO) of the COVID-19 pandemic.

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