

# 8 The Effectiveness of Organizational Absorptive Capacity on Green Innovation Performance among Event SMEs: a Comparative Study of Malaysia and Singapore

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## Introduction

In a competitive business environment, service firms struggle unceasingly to improve their services, competences and performance through creating, integrating and enhancing new and existing capabilities. With rapid technological advancements, the service-product life cycle is getting shortened, and the necessity for service innovation and organizational intelligence skills is becoming more evident to service-based businesses. Alongside the adaptation of innovative services, with the emergence of social pressure for reduced carbon footprints for events and mega-events, event service providers are forced towards becoming sustainability oriented. Absorptive capacity is defined as a firm's ability to identify and acquire external knowledge (new information) and use it or apply it to commercial ends in order to gain performance. Due to gained popularity, various event companies have started operating and organizing events on a large scale. These firms are mainly small and medium-sized

enterprises (SMEs). However, with due pressure from government bodies towards transforming operations with reduced carbon footprints, these SMEs are further trying to align their operations towards the national key areas and international Sustainable Development Goals (SDGs). Beside the pressure from the negative environmental impact caused by event operations, green innovation on products, services and process have become an important business strategy for a firm to achieve sustainable development (Agbejule *et al.*, 2004; Chang, 2011). This is driven by customer requirements and competitive pressures. Due to the massive pollution problems, the public's awareness of environmental protection has been significantly enhanced and people are willing to buy environmentally friendly products and services with a higher price. As the green market is continually growing, developing green products and services is necessary for a firm to obtain brand differentiation and competitive advantage (Pujari *et al.*, 2003; Chang and Chen, 2013). If an event management firm fails to adopt green practices, it

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may cause the firm to lose current and potential customers and it may become hard for the firm to survive in hypercompetitive scenarios (Butler, 2008).

Fukey and Issac (2014) highlighted that event staff do not have sound and complete knowledge of and expertise in environmental management. However, innovating environmentally friendly operations is not an easy task, given the capacity of the firm and their internal resources. Previous research on Malaysian event management firms' green practices found that employees are aware of environmental responsibility and are willing to perform green practices (Bouchon *et al.*, 2017). However, environmentally friendly practices would not be performed well due to the lack of a supporting system. SMEs located in Kuala Lumpur and Singapore generally lacked knowledge of environmental management (Kasim, 2009). Yusof and Jamaludin (2014) found that the main barriers for Malaysian enterprises to go green are lack of green experts, and lack of resources in terms of manpower and green equipment. Additionally, a number of studies (De Marchi, 2012; Cainelli *et al.*, 2015; Marzucchi and Montresor, 2017) indicated the relevance of environmental innovations through public-private collaborations in the event SMEs. However, it is less known how those firms could acquire knowledge based on their internal capabilities to absorb the external knowledge, and transform such relevant knowledge into offering services or products that meet the environmental concerns. Hence, this chapter focuses on carrying out a comparative study of the green innovation performance of event management firms in Malaysia and Singapore, as previous researchers have highlighted environmental management practices and green practices are closely linked to a firm's innovativeness and this is still considered new for the event management industry in these two countries.

## **Theoretical Background and Hypothesis Development**

### **Green innovation performance**

From any organizational perspective, innovation is defined as introduction of new services or

products which bring changes to the organization to a certain degree (radical or incremental) (Ashok *et al.*, 2016; Hussain *et al.*, 2016). In the environmental era, there is constant pressure from internal bodies that firms should integrate such ideas to protect the environment. Thus, green innovation within services and products has become quintessential for a firm's business management. As Chang and Chen (2013) highlighted, efficient management can increase a firm's performance, competitive advantage, and create value for the long term. In order to avoid environmental damage and lead the way for future sustainability, green innovation is crucial for any firm, as it defines the new and improved green practices, processes, techniques and systems (Beise and Rennings, 2005). Such important changes within the operations of any SMEs in the event industry could significantly transform their current operations towards green operations. These practices could include, for example: (i) energy-saving initiatives while organizing events; (ii) pollution prevention measures reducing environmental damage; (iii) use of biodegradable materials; (iv) green production designs; (v) use of recyclable materials; and (vi) waste management facilitation. The event management firms could utilize such changes to attract environmentally conscious customers, as presently customers around the world want and expect to purchase more environmental services and products during events.

From the supplier's perspective, such demand from customers can be fulfilled by implementing green innovation practices in their service operations. Authors such as Hart (1995) and Porter and Reinhardt (2007) suggested that green innovation performance may increase a firm's performance through maximizing productivity of their used resources. Attracting new customers and increased service yields will further promote the corporate image and provide competitive advantage. SMEs in the event industry across Malaysia and Singapore are aligned with the government direction towards GoDigital by 2022 and have been advised to boost green-tech within the services they provide. This initiative also includes other countries in the Association of Southeast Asian Nations (ASEAN) region under the development plan. Such initiatives can certainly boost their green innovation

services while reducing environmental impacts dramatically. Sustainable core services related to innovation and different strategies to implement them should be a firm's aim in greening their activities. However, the green initiatives adopted by these event management firms are very ordinary in nature rather than innovative, and many researchers have highlighted that lack of absorptive capacity could be the reason for such slackness (Duchek, 2013; Duan *et al.*, 2020). Meaningful collaboration and the ability to learn from each other could play a crucial role in elevating the pace of innovation in new green technologies.

### Absorptive capacity

The concept of 'absorptive capacity' has been preliminarily defined by Cohen and Levinthal (1990) as the ability of a firm to identify the valuable knowledge, assimilate the knowledge and exploit it from its dynamic environment. Absorptive capacity has been further highlighted as a company's ability not only to gain knowledge, but also to make use of such knowledge effectively in order to innovate and gain competitive advantage in the dynamic market (Lichtenthaler, 2009). Chen *et al.* (2009) also highlighted that absorptive capacity is essential for organizations to enhance their innovation performance as absorptive capacity has a positive relationship with the innovation performance. In terms of the influence towards a firm's performance, it has been confirmed that absorptive capacity could, directly and indirectly, positively influence the organization's performance and assist it to create a competitive advantage (Lane *et al.*, 2001; Chen *et al.*, 2009). Therefore, if a company wants to prove successful and viable in the long run in terms of being a green operation, it is very important that they have the absorptive capacity to go green as such absorptive capacity shows positive results in relation not only to green innovation performance, but also to total firm performance (Chen *et al.*, 2015).

Chen *et al.* (2014) proposed that green absorptive capacity should be measured by five items: (i) the organizational structure's ability to understand, analyse and interpret information from the external environment; (ii) the organization's ability to recognize, value

and select suitable external environmental knowledge which matches its operation; (iii) the ability for the environmental knowledge to be communicated across the organization; (iv) the organization's ability to combine existing environmental knowledge with new environmental knowledge; and (v) the organization's ability to commercialize new environmental knowledge.

### Absorptive capacity and green innovation performance

Service innovation affects a firm's performance, or put another way how well a firm performs indicates how good the firm is at innovation in services (i.e. how good the firm is at developing new and improved services which are valuable for their customers). Service innovation can be studied from the macro aspect and the micro aspect. In the macro view, the focus is on the impact of service innovation on the firm's performance as a whole; while in the micro view, the focus is on the impact of service innovation on detailed measurement of the firm's performance (Lin, 2013; Chong and Zhou, 2014). More researchers have conducted studies of the macro view. Based on the impact of green innovation on a firm's performance, previous researchers have different opinions. One group of researchers believe that green innovation performance has a positive influence on a firm's performance (Chen *et al.*, 2015; Lee and Min, 2015; Huang and Li, 2017). Table 8.1 provides a summary of findings from the literature on the positive relationship between absorptive capacity, green (service) innovation and a firm's performance.

Zhang *et al.* (2019) measured a firm's performance using sales growth and net profit as variables. In terms of operational performance, Pujari (2006) found that enough and effective green integration practices positively assist an organization to achieve resource optimization and reliable production, which save time. Hence given the background knowledge described above we propose the following hypothesis, H1: absorptive capacity positively relates to green innovation performance.

**Table 8.1.** Summary of findings from the literature on the relationship between absorptive capacity, green (service) innovation and a firm's performance.

| Findings                                                                                           | Reference                   | Type of industry                                  | Overall summary of findings                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Positive relationship between (green) absorptive capacity and green (service) innovation           | Hashim <i>et al.</i> (2015) | Construction industry                             | All the authors' studies found that absorptive capacity is positively related to organizational service innovation. Chen <i>et al.</i> (2015) further stated that green absorptive capacity indirectly influences green innovation performance.                                                                                                                                                                  |
|                                                                                                    | Chen <i>et al.</i> (2009)   | Manufacturing industry                            |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                    | Chen <i>et al.</i> (2015)   | Electronics industry                              |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Positive relationship between (green) absorptive capacity and a firm's performance                 | Chen <i>et al.</i> (2009)   | Manufacturing industry                            | All the authors' studies found that absorptive capacity improves a firm's performance. Lin <i>et al.</i> (2017) demonstrated that absorptive capacity improves a firm's green competitive advantage. Chen <i>et al.</i> (2015) stated there is an indirect and positive effect from green absorptive capacity on a firm's performance through either green dynamic capabilities or green innovation performance. |
|                                                                                                    | Lane <i>et al.</i> (2001)   | International joint ventures                      |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                    | Chen <i>et al.</i> (2015)   | Electronics industry                              |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                    | Lin <i>et al.</i> (2017)    | Education                                         |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                    | Chen <i>et al.</i> (2015)   | Electronics industry                              |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Positive impact of green (service) innovation in relation to a firm's performance taken as a whole | Huang and Li (2017)         | Information and communication technology industry | All the authors supported that green innovation performance positively influences firm performance.                                                                                                                                                                                                                                                                                                              |
|                                                                                                    | Lee <i>et al.</i> (2016)    | Firms in Korea                                    |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                    | Chang (2018)                | Service and manufacturing companies               |                                                                                                                                                                                                                                                                                                                                                                                                                  |

## Research Methodology

### Data collection and sampling

This research focuses on the event management industry, specifically SMEs located across Malaysia and Singapore. Highly dependent on tourism,

hospitality and events, these two countries have created a significant impact within the ASEAN region over the past decade. This current study's targeted population was limited to the employees, owners and other related stakeholders working with SME firms located in Singapore and Malaysia. The data collection for this survey was undertaken

based on non-parametric purposive sampling, where the samples were self-selected working at different levels in firms which started providing sustainable and green services during organizing events. With the rigid criteria set for data collection, combining two countries, we managed to collect 213 valid responses from 237 completed survey questionnaires. With the valid response rate of 89.5%, the data analysis was performed for both measurement and structural model using WarpPLS 7.0 software.

### Measurements made from the questionnaire

In the questionnaire the research instrument items for the absorptive capacity were adapted from Albort-Morant *et al.* (2018) and Chaudhary and Batra (2018) while the green innovation firm performance items were adapted from Albort-Morant *et al.* (2016, 2018). The study used a five-point Likert scale with a score ranging from 1 (for strongly disagree) to 5 (for strongly agree) to measure the questionnaire items. The absorptive capacity (AC) dimension was represented by potential absorptive capacity (PAC) using nine items to assess it, and another construct, realized absorptive capacity (RAC), used ten items, assessing the firm's newly acquired knowledge. The green innovation performance (GIP) includes seven measurement items, as overall the model of this study is represented in first-order construct levels. Considering the measurement items were obtained mainly from two sources and self-reported methods are subject to common method bias (CMB) (Podsakoff *et al.*, 2003), a priori and post hoc strategies were performed by us to minimize this potential issue. This study used partial least squares (PLS) path modelling to test the hypothesis.

### Data analysis

The data analysis for this study was divided into a measurement model and a structural model. Using PLS path modelling, variance-based structural equation modelling (SEM) was performed to get the results for data analysis. Assessing the measurement model enables examination

of the validity and reliability of the measures of theoretical constructs – the outer model – and estimation of the relationship among the studied constructs – the inner model.

## Results

The demographics of the respondents to the questionnaire showed that 62.2% were male and 37.8% were female with combined responses from Malaysia and Singapore. In regards to their age, the majority of the respondents were aged between 19 and 35 years (61.3%), followed by 27.5% aged between 36 and 49 years, and 11.2% aged 50 years and above. In respect of the department of the event management firm in which respondents worked, the majority of the respondents belonged to the operational department (53.2%), but those from the administrative department (18.8%) and marketing department (19.4%) were well represented.

### Measurement model

In order to ensure the reliability and validity of the constructs in the model, measurement model evaluation was carried out first. The following evaluation followed the rule of thumb for a reflective measurement model as summarized by Konar *et al.* (2018): (i) internal consistency reliability; (ii) convergent validity; and (iii) discriminant validity. Internal consistency reliability requires Cronbach's alpha ( $\alpha$ ) > 0.7, Jöreskog's  $\rho_c$  > 0.7, and Dijkstra-Henseler's  $\rho_A$  > 0.7 (Henseler *et al.*, 2016). The measurement model shows  $\alpha$ ,  $\rho_A$  and  $\rho_c$  for all constructs were above 0.7, with the reliability value ranging from 0.857 to 0.959 (see Table 8.2). Thus, the results indicate that all the constructs used have satisfactory internal consistency reliability. Convergent validity has mainly been evaluated by measuring the outer loading of indicators and average variance extracted (AVE). The outer loading of indicators represents the variance of the items according to the latent variable, which requires a latent variable able to explain at least 50% variance of each indicator, and requiring that the indicator's outer loading should be above 0.708 (see Table 8.3).

**Table 8.2.** Internal consistency reliability.

| Construct                     | Alpha ( $\alpha$ ) | Rho ( $\rho_A$ ) | Rho ( $\rho_c$ ) |
|-------------------------------|--------------------|------------------|------------------|
| Potential absorptive capacity | 0.857              | 0.903            | 0.902            |
| Realized absorptive capacity  | 0.870              | 0.919            | 0.897            |
| Green innovation performance  | 0.949              | 0.951            | 0.959            |

**Table 8.3.** Indicator's validity and reliability.

| Items                               | AVE <sup>a,b</sup> | CR <sup>a</sup> | Loadings <sup>b</sup> |
|-------------------------------------|--------------------|-----------------|-----------------------|
| Potential absorptive capacity (PAC) | 0.518              | 0.887           |                       |
| PAC1                                |                    |                 | 0.912                 |
| PAC2                                |                    |                 | 0.675                 |
| PAC3                                |                    |                 | 0.879                 |
| PAC4                                |                    |                 | 0.856                 |
| PAC5                                |                    |                 | 0.735                 |
| PAC6                                |                    |                 | 0.743                 |
| PAC7                                |                    |                 | 0.764                 |
| PAC8                                |                    |                 | 0.856                 |
| PAC9                                |                    |                 | 0.879                 |
| Realized absorptive capacity (RAC)  | 0.589              | 0.859           |                       |
| RAC1                                |                    |                 | 0.856                 |
| RAC2                                |                    |                 | 0.879                 |
| RAC3                                |                    |                 | 0.900                 |
| RAC4                                |                    |                 | 0.851                 |
| RAC5                                |                    |                 | 0.824                 |
| RAC6                                |                    |                 | 0.895                 |
| RAC7                                |                    |                 | 0.907                 |
| RAC8                                |                    |                 | 0.810                 |
| RAC9                                |                    |                 | 0.856                 |
| RAC10                               |                    |                 | 0.879                 |
| Green innovation performance (GIP)  | 0.612              | 0.899           |                       |
| GIP1                                |                    |                 | 0.856                 |
| GIP2                                |                    |                 | 0.735                 |
| GIP3                                |                    |                 | 0.743                 |
| GIP4                                |                    |                 | 0.764                 |
| GIP5                                |                    |                 | 0.856                 |
| GIP6                                |                    |                 | 0.879                 |
| GIP7                                |                    |                 | 0.900                 |

<sup>a</sup>AVE, Average variance extracted; CR, composite reliability.

<sup>b</sup>Critical values: AVE = 0.50; indicator loadings = 0.708.

**Table 8.4.** Discriminant validity – the heterotrait-monotrait (HTMT) ratios for this study.<sup>a,b</sup>

|     | PAC   | RAC   | GIP |
|-----|-------|-------|-----|
| PAC |       |       |     |
| RAC | 0.869 |       |     |
| GIP | 0.891 | 0.871 |     |

<sup>a</sup>Use of the shaded boxes is the standard procedure for reporting HTMT ratios.  
<sup>b</sup>PAC, potential absorptive capacity; RAC, realized absorptive capacity; GIP, green innovation performance.

In order to ensure the constructs in the model are empirically distinct from each other, discriminant validity must be evaluated. In this study, two measures were used to assess discriminant validity: (i) heterotrait-monotrait (HTMT) ratio; and (ii) cross-loading. An HTMT ratio < 0.85 means 95% confidence to consider the reflective constructs used in the study have a true correlation with conceptually different constructs (Henseler *et al.*, 2015). For cross-loading, an indicator's loading on the respective construct should be greater than the loading value shown on all other constructs in the row and column (Hair *et al.*, 2019). Table 8.4 shows the HTMT ratios for this study: the highest HTMT ratio is for construct 'green innovation performance' at 0.891, which is lower than the critical value 0.90. Therefore, the results indicated that the constructs used in this study have a true correlation.

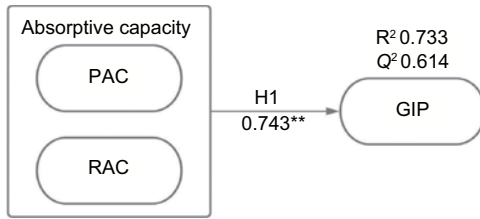
**Structural model**

The coefficient is considered to be statistically significant at a certain level which is measured by the *t*-value and *p*-value. The critical values are: (i) a *t*-value equal to 1.65, a *p*-value equal to 0.1 indicate significance at the 90% level; (ii) a *t*-value equal to 1.96, a *p*-value equal to 0.05 indicate significance at the 95% level; and (iii) a *t*-value equal to 2.57, a *p*-value equal to 0.01 indicate significance at the 99% level. Path coefficients were considered as significant when the level was at 95% and above (Hair *et al.*, 2019).

In order to test the significance level of the mentioned hypothesis across two contexts, a multi-group analysis (MGA) was conducted to identify the difference between Malaysia and

Singapore; it is further important to check the *p*-value and *t*-value among the two models. The results show: (i) the *t*-value = 2.695 in the Malaysian context, which is the lowest value when compared to *p*-value = 0.005; (ii) the *t*-value = 2.983 which belongs to 'absorptive capacity > green innovation performance' in the Singapore context, which was significant at the 99% level; and (iii) the *p*-value and *t*-value for the rest were significant at the 99% level. Therefore, this study has at least 95% confidence and above to state that all independent variables have a positive effect on its respective dependent variable, according to both the *f*<sup>2</sup> value and *Q*<sup>2</sup> values. In terms of *f*<sup>2</sup> effect size, the minimum effect size value is 0.141 and the largest effect size value is 1.327; based on the rules of thumb, the results could be summarized as: 'absorptive capacity' has a medium effect size on 'green innovation performance'. In terms of *Q*<sup>2</sup> value, the minimum effect size value is 0.614 (Fig. 8.1) and the largest one is 0.653 (Fig. 8.2), which means that the *Q*<sup>2</sup> values for all endogenous constructs are above 0.35. Therefore, the results indicate that the items in each exogenous construct have large predictive relevance on the respective endogenous construct.

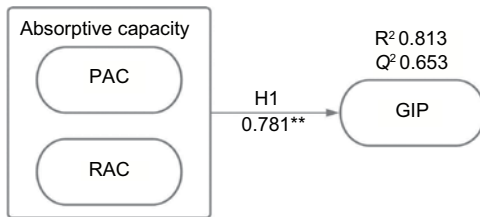
This study has used four criteria to test model fit, which are: (i) the standardized root mean square residual (SRMR); (ii) the unweighted least squares discrepancy (*d*<sub>ULS</sub>); (iii) the geodesic discrepancy (*d*<sub>G</sub>); and (iv) the normal fit index (NFI) to test model fit (Konar *et al.*, 2018). The rule of thumb is SRMR < 0.08, *d*<sub>ULS</sub> < 95% bootstrap quantile (H195 of *d*<sub>ULS</sub>): (critical value < 0.05) (Henseler *et al.*, 2016), *d*<sub>G</sub> < 95% bootstrap quantile (H195 of *d*<sub>G</sub>): (critical value < 0.05) (Henseler *et al.*, 2016), and NFI value > 0.90 (Byrne *et al.*, 2008). Table 8.5 shows that the structural model of this study demonstrated an SRMR value of 0.061 and 0.060, which are both less than the critical value 0.08, which indicates that the structural model of this study has a perfect model fit. In terms of *d*<sub>ULS</sub> and *d*<sub>G</sub>, the results for the saturated model were 0.0001 (*d*<sub>ULS</sub>) and 0.0038 (*d*<sub>G</sub>), and for the estimated model 0.0002 (*d*<sub>ULS</sub>) and 0.0064 (*d*<sub>G</sub>), which are all less than the critical 0.05. Thus, it also confirmed that the structural model is considered as 'well fitting' based on the obtained values of *d*<sub>ULS</sub> and *d*<sub>G</sub>. The value of NFI was 0.93, which is above the critical value 0.90. Therefore, it also



**Fig. 8.1.** Green innovation performance (GIP) in the Malaysian context. H1, hypothesis; PAC, potential absorptive capacity; RAC, realized absorptive capacity.

Critical values \*\*2.57 \*1.96.

R<sup>2</sup> Coefficient value; Q<sup>2</sup> Predictive relevance.



**Fig. 8.2.** Green innovation performance (GIP) in the Singaporean context.

Critical values \*\*2.57 \*1.96.

R<sup>2</sup> Coefficient value; Q<sup>2</sup> Predictive relevance.

confirmed that the structural model of this study is well fitting. Based on the above analysis, it could be confirmed that the structural model of this study is well fitted. The results of first order constructs demonstrate that green absorptive capacities positively influence green innovation performance. Therefore, hypothesis H1 (that absorptive capacity positively relates to green innovation performance) for the overall model and contextual models are both supported.

## Discussion and Conclusion

This research has referred to the measurement of absorptive capacity by Albort-Morant *et al.* (2016, 2018) and Chaudhary and Batra (2018), identifying the absorptive capacity of event management-based SMEs towards green innovation performance, as the ability: (i) to identify, value and obtain suitable external green knowledge which matches the daily

**Table 8.5.** Exact fit tests.

| Criteria <sup>a</sup> | Saturated model | Estimated model |
|-----------------------|-----------------|-----------------|
| SRMR                  | 0.061           | 0.060           |
| d <sub>ULS</sub>      | 0.0001          | 0.0002          |
| d <sub>G</sub>        | 0.0038          | 0.0064          |
| NFI                   | 0.93            | 0.93            |

<sup>a</sup>SRMR, standardized root mean square residual: critical value (< 0.08); d<sub>ULS</sub>, unweighted least squares discrepancy: critical value (< 0.05); d<sub>G</sub>, geodesic discrepancy: critical value (< 0.05); NFI, normal fit index: critical value (> 0.90).

operation of the firm; (ii) to combine the newly obtained green knowledge with existing green knowledge; (iii) to commercialize the green knowledge; and (iv) to communicate the green knowledge across each department in the event management firm. According to the framework proposed in existing studies, absorptive capacity has been used many times as a measure of green innovation performance. For event SMEs in the service industry across Singapore and Malaysia, therefore, service performance is always considered as a key measure for any service innovation. Based on the information above, this study proposed a conceptual framework that green absorptive capacity has a positive influence on green innovation performance. The results from this study demonstrated a confidence level of 99%, confidence to state that green absorptive capacity has a positive influence on green innovative performance. This finding is consistent with the findings of Chen *et al.* (2009) and Lane *et al.* (2001), which confirmed absorptive capabilities positively influence a firm's performance and competitive advantage. In relation to the 'green' component, this finding is further supported by Chen *et al.* (2015) and Ali *et al.* (2017), who confirmed absorptive capacity positively influences a firm's performance and helps firms to gain a green competitive advantage. This is aligned with Homburg and Pflesser (2000) and Gabler *et al.* (2015) who confirmed the positive influence of absorptive capacity on organizational performance, marketing performance and financial performance.

In conclusion, event management SMEs located in Malaysia and Singapore have the knowledge for conducting green innovation



performance; however, the firms could not utilize the existing knowledge to go green well due to the lack of a related professional workforce, resources and technology to support it. More than that, the event management firms

currently performed well with regard to their green absorptive capacity but they also need to continually identify, obtain, combine and communicate green knowledge in the firms in order to support dynamic green service development.

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