Government financial support and financial performance of SMEs: A dual sequential mediator approach

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ABSTRACT

Government financial support (GFS) is an important factor for firms in developing countries, particularly small and medium enterprises (SMEs), to be competitive and perform better. Nonetheless, studies on the relationship between GFS and firm performance have yielded inconclusive results. Researchers’ efforts to resolve the inconclusiveness led to an examination of competitive advantage (CA) as a simple mediator. This study contends that CA should not be the first mediator but rather a resource acquired with GFS, such as cloud ERP, which has CA-enabled qualities, as opposed to GFS, which lacks the ability to offer CA to firms. Hence, using 204 Malaysian manufacturing SMEs as a sample, this study investigates the dual sequential mediation of cloud ERP implementation (CERPI) and CA in the GFS-financial performance (FPER) relationship. PLS-SEM was employed as a data analysis method and for hypotheses assessment. Findings reveal that the GFS is not directly associated with FPER. However, GFS is positively related to CERPI, which subsequently enhances CA positively. CA is also positively associated with FPER, and CERPI and CA sequentially mediate the GFS and FPER relationship positively. This study makes a contribution to the literature by providing a more holistic understanding of the complex relationship between GFS and FPER. This study could assist SMEs and policymakers in gaining a better understanding of the process and requirements for realising valuable benefits from GFS.

1. Introduction

Economic growth is a primary objective of governments throughout the world, and entrepreneurship promotion is a critical component of achieving this objective. One of the best ways to spur economic growth, innovation, and create new jobs is through entrepreneurship (Pergelova and Angulo-Ruiz, 2014; Wong et al., 2005). This has resulted in a plethora of government support, particularly government financial support (GFS), aimed at fostering entrepreneurship and assisting SMEs in surviving and growing, specifically in emerging economies (Jayeola et al., 2020). As a result, scholarly attention has been focused on how GFS affects firm performance. However, the results of these studies are inconclusive. A number of studies discovered a positive association (e.g., Ismail and Othman, 2014; Peter et al., 2018; Xiang and Worthington, 2017), while others discovered a negative association (e.g., Luo et al., 2021; Wang et al., 2021) in the GFS-performance relationship. To contribute to better understanding and resolving the conflicting findings, some studies (e.g., Anwar and Shuangjie, 2021; Pergelova and Angulo-Ruiz, 2014; Songling et al., 2018) have taken into consideration the mediating influence of competitive advantage (CA). We argue that CA should not be the first outcome construct (first mediator), but rather the resources acquired through GFS that are valuable, rare, inimitable,
and non-substitutable (VRIN) in nature, as postulated by the resource-based view (RBV) theory of Barney (1991), in order to assist firms in achieving a competitive edge and subsequent improved performance.

GFS in any form, including subsidies, grants, and guarantees, lacks the characteristics that could herald CA for firms. GFS is essentially an external resource and an indirect input that is used to acquire additional tangible and intangible resources such as new machinery, product/process innovation, and information technology (IT) that can be bundled together to achieve CA based on the proposition of the RBV theory (Barney, 1991). Innovative IT, such as cloud ERP, is one of the many resources that, when procured through GFS, can provide firms with CA. Cloud ERP is a compendium of enterprise-wide information systems comprised of a diverse set of software modules designed to integrate critical logistics into business operations involving multiple functional units and divisions of an organisation via the use of a centralised repository (Rezaei et al., 2016). Typically, cloud ERP is deployed through the cloud computing (CC) platform, which makes IT resources available to users on a pay-per-use model without incurring huge capital expenses on traditional IT resources such as servers, storage facilities, software, hardware, and many more (Jayeola et al., 2022a).

Implementing a cloud ERP system enhances cooperation across many functional units within an organisation, allowing for more efficient resource strategizing and management (Al-Shboul, 2018). Thus, cloud ERP has numerous advantages for small businesses, such as quick data access and processing, inexpensive licensing fees, low maintenance expenses, and lower overall investment costs (Lenart, 2011). Governments of developing countries typically establish favourable policies and funds for information technology (IT) services offered on the CC platform, such as cloud ERP. For instance, the twelfth five-year plan of China for software and IT improvement provides financial support for CC services, including cloud ERP (Wang et al., 2019). Additionally, in the context of this study, Malaysia, the government provides numerous financial incentives for SMEs to implement cloud ERP. The Malaysian government provides financial support in the form of a six-month subscription cost reimbursement or a refund of around $355 for the aggregate cost of various types of Software-as-a-Service (SaaS), which includes cloud ERP (Hassan et al., 2017; Jayeola et al., 2022b). Besides, over a five-year period, SMEs would receive a 50% matching grant allocation of around US $1180 apiece to acquire cloud ERP plus additional related services (Singh, 2019). SMEs that obtain GFS can successfully acquire and implement cloud ERP through intensive use and strategic alignment, resulting in a CA and improved performance. In addition, cloud ERP has the potential to predict future pattern of business activities, allowing firms to overcome high levels of uncertainty and gain CA more quickly than their competitors in an ever-changing market (Gupta et al., 2018), leading to enhanced business performance. The fact is that, the GFS acquired by SMEs and used to purchase an internal competitive resource (cloud ERP) could first help them to achieve CA before resulting in improved performance for example, increased revenue, profit, and return on investment. Therefore, a novel dual sequential mediation in respect of cloud ERP implementation (CERPI) and CA is proposed to provide a more holistic insight of the relationship that exists between GFS and financial performance (FPER), and to highlight the realistically complex mechanism underlying these associations, in contrast to the simple mediation of CA explored in previous research.

The fundamental research question this study intends to answer is: Do CERPI and CA sequentially mediate the relationship between GFS and FPER?

The remainder of the study is organised as follows: literature review of relevant studies and the construction of hypotheses are presented in section 2, following this current section. Section 3 covers the methodology, while section 4 focuses on the data analysis. Section 5 presents the study’s discussion and conclusion.

2. Literature review and hypotheses development

2.1. Definition of financial performance

Two of the most important aspects of a company’s performance are financial and non-financial (Seo and Lee, 2019). Non-financial performance pertains to the performance of a company that cannot be characterised in terms of financial worth and is contrasted with FPER, which refers to the performance of a company that can be quantified in the form of money value and financial activities (Nguyen et al., 2021). For the purpose of this study, FPER is selected to assess firm performance as IT performance is generally quantified in financial terms (Ooi et al., 2018). In addition, the focus of this study is on manufacturing SMEs, and FPER has been and continues to be the primary concern of manufacturers in developing nations (Zhu and Sarkis, 2007), such as Malaysia. Finally, FPER is objective and easily observed and measured, making it a more appropriate indicator for SMEs who are continually pressed to analyse their revenue in relation to their expenditure.

2.2. Government financial support and financial performance

Firms’ ability to acquire competitive resources and thus improve performance is often attributed to GFS (Huong and Cuong, 2019), and when used to acquire competitive resources for the firm, it can bolster the capabilities of the firm and subsequently enhance firm performance. In Korea and China, Joo and Suh (2017) examined the correlation between government support and the performance of SMEs. Measured in terms of profit and market share, there was a positive correlation between tax incentives, a type of GFS, and performance. The FPER of private manufacturing SMEs was examined by Nguyen et al. (2018), who found that GFS had a significant association with FPER. Huong and Cuong (2019) found a statistically significant and positive relationship between GFS and the FPER of Vietnamese SMEs. The research shows that tax exemptions or reductions and preferential interest loan rates from the GFS boosted the SMEs’ FPER. Al-tamimi (2014) evaluated the relationship between government support and the FPER of Iraqi SMEs and concluded that there was a positive relationship. Furthermore, they concluded that government support significantly explained the profitability and competitiveness of SMEs. Research by Ismail and Othman (2014) in Malaysia examined the impact of several government support programmes on SMEs in the manufacturing and service industries. According to their findings, government financial assistance was a significant factor in the growth of SMEs. Guo et al. (2016) also discovered a significant influence of government funding on the output of technology-based SMEs in China. The authors investigated the impact of the Innovation Fund for SMEs on their performance and concluded that firms with GFS outperformed their counterparts who did not receive such assistance. Based on the above conjectures, the following hypothesis is proposed:

H1. Government financial support is positively associated with financial performance.

2.3. Government financial support and cloud ERP implementation

Previous research has consistently emphasised the critical role of government support for innovative technologies, predominantly in developing nations (Amini et al., 2014; Gangwar, 2017). According to the research findings of Haji Salum and Abd Rozan (2016), SMEs in Malaysia are more likely to employ cloud ERP as a result of government support. Wilson et al. (2016) found that small businesses in Tamil Nadu state, India adopted CC because of the government support they received. Non-financial government support (NFGS) and GFS are both components of government support, but studies in the CC adoption domain have
extensively studied it as a unidimensional construct, obscuring the specific effect of both dimensions. The focus of this study is on GFS because the Malaysian government offers a plethora of financial incentives to SMEs interested in implementing cloud ERP. GFS provides additional funding to SMEs in order to encourage them to adopt front-line technologies like cloud-based services (Huong and Cuong, 2019; Sandu and Gide, 2018). According to Alsafi and Fan (2020), with no government support in terms of CC financing, Saudi Arabian SMEs confront significant difficulties in the global economy. Chang et al. (2019a) and Kuan and Chau (2001) have argued that GFS is essential for IT innovation and that firms can only gain from CC if they have the economic resources to adopt and put them into innovative use (Ifinedo, 2011). In the context of Malaysian SMEs, a recent study has demonstrated the positive relationship between GFS and CERPI success (Jayeola et al., 2022b). Therefore, GFS enhances SMEs’ ability to implement a cutting-edge technology such as cloud ERP, which is a determinant of their competitiveness and better performance. In relation to the above discussion, the GFS can be a good predictor of how well small businesses will be able to successfully implement a cloud ERP service. As a result, this study develops the next hypothesis as follows:

**H2.** Government financial support is positively associated with cloud ERP implementation.

### 2.4. Cloud ERP implementation and competitive advantage

CA can be achieved through a shift in business practises brought about by the use of CC (Chen et al., 2016). By delivering on-demand computing power, CC helps organisations reduce their IT expenditures by enabling rapid adoption; fewer IT workers; little maintenance; and lower total IT costs (Lin and Chen, 2012; Yang and Tate, 2012). Through the use of a great quantity of IT resources as well as pooled resources, CC improves the scalability and flexibility of the IT infrastructure (Zhang et al., 2010). Furthermore, CC improves IT accessibility (Zissis and Lekkas, 2012). A variety of devices, such as cell phones, computers, and notebooks, can be used to connect to the CC systems, and users can access them from any location by connecting to the internet. A study revealed that the usage and absorptive ability of the cloud resulted in the accumulation of knowledge and subsequently had a favourable and significant effect on the CA of businesses of various sizes and industries worldwide (Chang et al., 2019b). Scholars, on the other hand, have argued that IT is a commodity that cannot provide firms with CA because other firms can purchase the IT as well (Breznik, 2012). To gain CA, businesses must incorporate resources and capabilities that are VRIN into their operations, according to Barney’s (1991) RBV model. Therefore, CERPI is conceptualised in terms of “usage” and “strategic alignment” in this study. According to the literature, achieving CA is nearly impossible until IT is intensively used and strategically aligned with the goals of the firms (Gangwar, 2017; Rainer and Cegielski, 2018). Therefore, according to the RBV, CERPI constitutes the resource, while combined usage and strategic alignment serve as the capabilities that will enable firms to gain CA that other competitors may find difficult to imitate based on this study’s typology. Drawing on the foregoing theoretical discussion, the next hypothesis is developed:

**H3.** Cloud ERP implementation is positively associated with competitive advantage.

### 2.5. Competitive advantage and financial performance

The primary goal of businesses is to increase their level of financial benefits. Therefore, achieving a sustainable CA is critical to achieving this fundamental goal (Ma, 2006; Majeed, 2011). Hence, the majority of strategic management scholars’ assumption is that the sufficient condition for firms to realise improved business performance is to achieve CA (Sigalas and Papadakis, 2018). Saedi et al. (2015) define sustainable CA as the ability to achieve superior organisational performance over time. Many businesses strive to achieve this goal. Logically, if a company achieves better performance, that is, if it obtains economic gains that are higher than the average, then the firm has attained CA, which confirms the reciprocal association between firm performance and CA (Breznik, 2012). There is a positive relationship between CA and the performance of companies, according to studies. A recent study conducted in Korea by Lee (2015) demonstrated the presence of a statistically significant relationship between CA and the firm market performance of female entrepreneurs operating small enterprises. After doing a thorough assessment of previous studies, Majeed (2011) came to the conclusion that there is a positive association between CA and business performance. According to Ismail et al. (2010), organisations that benefit from cost-based CA in comparison to their competitors typically display greater overall performance. Research on manufacturing SMEs in Pakistan found that sustainable CA positively impacted the revenue and profitability of these firms (Anwar, 2018). A study conducted by Potjanajarwut (2018) explored the relationship between CA and firm performance, specifically in the context of SME start-ups in Thailand. The study found that the CA of SME start-ups significantly and positively improved their performance. According to the author, digital technology was discovered to lower operating costs, which caused a substantial growth in the financial performance of start-ups. Thus, the next hypothesis is proposed:

**H4.** Competitive advantage is positively associated with financial performance.

### 2.6. Sequential mediation of cloud ERP implementation and competitive advantage

Government support and financial performance of businesses cannot be explained exclusively by a causal relationship (Nguyen et al., 2018, 2021). An argument that suggests FPER has a connection to government support but not directly. Additionally, in a developing country such as China, associating with the government and its affiliated political ties has no direct relationship to firm performance; rather, internal factors mediate the relationship between the two variables (Guo et al., 2014). Furthermore, there has been inconclusive evidence regarding the relationship between GFS and FPER. In the existing research, some researchers have reported a positive relationship between GFS and FPER (Huong and Cuong, 2019; Joo and Suh, 2017; Nguyen et al., 2018); others have reported a negative relationship (Luo et al., 2021; Wang et al., 2021); and others have reported an insignificant relationship (Guan and Yam, 2015; Vu and Tran, 2021). Hence, considering the presence of intermediate variables that transmit the effect of GFS to performance becomes theoretically imperative. The mediating effect of CA has been extensively studied (e.g., Anwar and Shuargjie, 2021; Perghofer and Angulo-Ruiz, 2014; Songling et al., 2018). However, GFS is rarely allocated for direct injection into business and, as an external resource available to all firms, it is unlikely to possess the VRIN characteristics and herald CA. Therefore, these studies fail to highlight the resources acquired with GFS that lead to CA and, ultimately, performance. On the one hand, some studies have highlighted that GFS is supposed to be used to acquire other internal resources for firms, such as cloud ERP (Jayeola et al., 2022b), sustainable technologies such as the internet of things (IOT) (Bakar et al., 2020), and precise agricultural technologies such as data sensors and GPS (Soto et al., 2018). If these resources are bundled together with other internal capabilities and resources, they should give CA to the firms (Barney, 1991). On the other hand, some studies have also reported the positive impact of CA gained from using tangible and intangible internal resources to achieve better performance (Handoko et al., 2015; Jayeola et al., 2020). As a result, according to this research, a specific resource that has VRIN qualities and is obtained with GFS should precede CA, resulting in improved performance. In this case, the dimensions selected to gauge cloud ERP implementation are usage and strategic alignment to holistically embed the VRIN features, which, in conjunction with CA, should mediate the GFS.
and performance relationship sequentially. Thus, the following hypothesis is proposed:

**H5.** The relationship between government financial support and financial performance is sequentially and positively mediated by cloud ERP implementation and competitive advantage.

Figure 1 shows the relationships between the constructs of the research model.

## Methodology

### 3.1. Sample and data collection

The sample of this study was selected from manufacturing SMEs since they are the highest users of cloud ERP (Usman et al., 2019). The respondents were top-level managers and owners of SMEs because of their knowledge of decision-making and strategic development (Tajeddini and Mueller, 2012). According to the Department of Statistics, Malaysia (2016), the three geographical locations with the highest number of SMEs in Malaysia are two states, Johor and Selangor, and one federating territory (Kuala Lumpur). Cumulatively, these 3 locations account for about 45% of all SMEs in Malaysia. In addition, these locations are highly industrialized. Therefore, the population of this study is comprised of manufacturing SMEs operating in Kuala Lumpur, Selangor and Johor which is 4580 in total (SME Corp Malaysia, 2022a). The emails and phone numbers of manufacturing SMEs in the three locations were obtained from the SME Corporation Malaysia and Federation of Malaysian Manufacturers directories (FMM). According to Hair et al. (2016), a sample size of 200 can be adequate for conducting robust and reliable structural equation modelling (SEM). With this in mind, and to increase the representativeness of our sample, 1020 manufacturing SMEs were randomly contacted from these directories, and the meaning of cloud ERP, as well as the purpose of the study, was explained to them. Based on purposive sampling technique, only SMEs that had deployed cloud ERP were considered for this study. Furthermore, managers, owners, or other IT-related management professionals with direct experience in implementing cloud ERP systems at their companies were purposively targeted as participants.

In order to conduct an online survey, Google Forms were employed. Prior to sending the online questionnaire to the manufacturing SME companies, it was pretested by 3 managers and 1 faculty member specialising in IT research to ensure its comprehension and usability. Based on the recommendations of these experts, some revisions were made to the questionnaire to improve its clarity. In order to prevent previous knowledge effects, a pilot study was conducted with a sample size of 30 companies, which were not involved in the actual study (Joo and Suh, 2017). In the light of the results, the study instrument’s reliability and validity were confirmed. The Google Form was then sent to the email of each company that consented to participate in the survey. The emails also made it clear that the participants’ involvement was fully optional and that they could exit the study at any time. In light of this, it was clarified that respondents agreed to take part in the study by filling out the questionnaire. Two reminder emails were sent to the companies in the fourth and eighth weeks after the initial questionnaire. However, 208 responses were completed between November 2020 and February 2021, making a 20% response rate. SMEs were adversely affected by the COVID-19 pandemic during the data collection period, resulting in extended data collection and a low response rate. Four of the questionnaires were completed by large firms and were thus removed, leaving 204 for further analysis.

We made all questions on the Google Forms mandatory to avoid missing data; hereafter, no missing data was recorded. A five-point Likert scale was used to measure the constructs. This scale ranges from 1 indicating ‘strongly disagree’ to 5 indicating ‘strongly agree’. Common method bias (CMB) is usually a potential issue in research where the same respondent answers the independent and dependent variables’ questions (Podsakoff et al., 2003). It has been suggested that manipulating CMB is time-consuming and scholars should ensure it is toned down in their research (Podsakoff et al., 2003). In addition, lateral collinearity issues should be checked to ensure that two or more variables do not measure the same construct (Hair et al., 2011, 2019). For CMB and collinearity evaluation, the complete collinearity test was performed, as proposed by Kock (2015). The complete collinearity test reveals that all VIFs associated with the latent constructs fall within the range of 1–1.051, which is less than the 3.3 threshold value. Consequently, it can be concluded that the research model is devoid of collinearity concerns and CMB (Kock, 2015).

### 3.2. Measurement and data analysis procedure

The measurement of the constructs in this study is reflective in nature since the latent variables cause the observed variables (indicators/items) (Hair et al., 2019). For instance, the CERPI construct causes its indicators to “usage” and “strategic alignment” of cloud ERP in the firm (Jayeola et al., 2022c). Measurements for the constructs (dimensions and indicators) were obtained from previous related studies and revised according to the context of this current study. For GFS, four indicators were adapted from Hassan (2017) and Singh (2019). The CA was assessed with 3 dimensions: differentiation, alliance, and focus. Differentiation and alliance dimensions were adapted from Teo and Pian (2003) with 12 indicators. Focus was adapted from Hlavacka et al. (2001) with 3 indicators. CERPI was measured with 2 dimensions of usage and strategic alignment. Originally derived from the study of Gangwar (2017), three usage dimension indicators were adapted. Nine indicators assessing the strategic alignment dimension were adapted from the study of Chiu and
The five indicators of the FPER construct were adapted for this study but were originally from the study of Wang et al. (2008). The structural equation modelling (SEM) technique was applied in analysing the data.

There are generally two approaches to SEM. The first is the partial least square method (PLS-SEM), and the second is the covariance-based method (CB-SEM) (Hair et al., 2011). In contrast to the CB-SEM, which omits the variance explanation in order to duplicate the theoretical covariance matrix, the goal of the PLS-SEM is to make use of the explained variance of the endogenous variable (Jayeola et al., 2022d). Nevertheless, there are a few criteria to evaluate before deciding which statistical method (PLS-SEM or CB-SEM) is appropriate for a study. The PLS-SEM method was selected in this study, using version 3.3.2 of the Smart PLS software based on four reasons. First, the distribution of the data is not normal, as the skewness and kurtosis values exceed −1 and −1, respectively (Hair et al., 2014). Second, the study is exploratory in nature (Hair et al., 2011) because it attempts to evaluate dual sequential mediators of CERPI and CA in the relationship between GFS and FPER. Third, it is necessary to construct latent variable scores in order to conduct additional analyses in subsequent stages (Ringle et al., 2020). Finally, the objective of this study is the development of theory and prediction (Dash and Paul, 2021).

Furthermore, as proposed by Hair et al. (2014), two stages of assessment are followed when using PLS-SEM, namely the measurement model and the structural model. Basically, the measurement model is focused on the confirmatory factor analysis (CFA) in cases where constructs are adapted from previous studies. The measurement model is focused on the establishment of the construct reliability, indicator reliability, and the constructs’ validity. Cronbach’s Alpha, composite reliability and Rho A are the popular construct reliability tests. Indicator reliability is measured with the loadings of the indicators, which should be above 0.7 (Hair et al., 2019). For validity, the convergent and discriminant validity tests are conducted. Hair et al. (2011) suggest convergent validity to indicate that the items must correlate strongly and represent only one factor, while discriminant validity is a test to establish distinctive conditions of the constructs. Convergent validity can also be evaluated through average variance extracted (AVE), which when equal to or higher than 0.5 indicates higher convergent validity (Fornell and Larcker, 1981). The Fornell and Larcker criterion, cross-loading, and the heterotrait-monotrait (HTMT) ratio of correlations are the three types of measurements typically employed to assess discriminant validity in PLS-SEM. When an indicator has a higher loading for its designated construct relative to all other constructs, this is referred to as cross-loading. A latent variable meets Fornell and Larcker’s criterion if it assigns a larger proportion of the total variance to its specific indicators than that of any other latent variable (Fornell and Larcker, 1981). Based on the multitrait-multimethod matrix, the heterotrait-monotrait (HTMT) ratio of correlations is used to assess the discriminant validity (Henseler et al., 2015). Finally, the structural model is evaluated using criteria such as the path coefficient (for accepting or rejecting hypotheses), the coefficient of determination (R²) for the model’s explanatory power of included sample, the predictive relevance (Q²), and the out-of-sample predictive power (PLS-Predict).

### 3.3. Respondents’ profile

The profile of the respondents in Table 1 shows that 48.5% were owners, which is the largest proportion of the respondents, and the largest percentage (39.7%) was aged between 41 and 50. 39.7% had a bachelor’s degree, while females made up the highest (54.4%) percentage of the respondents. The majority (49%) of the firms were in the small-sized category, and the bulk (17.6%) worked in the food, beverage, and tobacco industries. In less than a year, the largest quantity (39.7%) implemented cloud ERP systems, while a sizable proportion (80.4%) utilised the public cloud ERP subscription method.

| Table 1. Respondents’ profile. |
|--------------------------------|
| Characteristics | Number | Percentage |
| Position in the company | | |
| CEO | 24 | 11.8 |
| CFO | 10 | 4.9 |
| Director | 14 | 6.9 |
| IT Manager | 9 | 4.4 |
| Owner | 99 | 48.5 |
| Other management position | 48 | 23.5 |
| Age | | |
| 21–30 | 33 | 16.2 |
| 31–40 | 61 | 29.9 |
| 41–50 | 81 | 39.7 |
| 51–60 | 19 | 9.3 |
| 61 above | 10 | 4.9 |
| Education Level | | |
| Master/PhD | 30 | 14.7 |
| Bachelor Degree | 81 | 39.7 |
| A Level | 47 | 23.0 |
| O Level | 17 | 8.3 |
| Primary school | 17 | 8.3 |
| None of the above | 12 | 5.9 |
| Gender | | |
| Male | 93 | 45.6 |
| Female | 111 | 54.4 |
| Firm Size | | |
| Micro | 70 | 34.3 |
| Small | 100 | 49.0 |
| Medium | 34 | 16.7 |
| Product Category | | |
| Electrical and electronics | 19 | 9.3 |
| Food, beverage and tobacco | 36 | 17.6 |
| Medical, precision and optical | 10 | 4.9 |
| Paper, printing and publishing | 19 | 9.3 |
| Textiles, apparel and leather | 22 | 10.8 |
| Chemicals, including petroleum | 11 | 5.4 |
| Rubber and plastics | 20 | 9.8 |
| Machinery and hardware | 12 | 5.9 |
| Non-metallic minerals | 7 | 3.4 |
| Basic and fabricated metals | 10 | 4.9 |
| Wood and furniture | 10 | 4.9 |
| Others | 28 | 13.7 |
| Cloud ERP Usage Period | | |
| Less than a 1 year | 81 | 39.7 |
| 1–3 years | 74 | 36.3 |
| 4–6 years | 31 | 15.2 |
| 7 years above | 18 | 8.8 |
| Types of Cloud ERP Subscription | | |
| Used by any other business (public) | 164 | 80.4 |
| Used only by our company (private) | 18 | 8.8 |
| Used by a particular industry (community) | 9 | 4.4 |
| Which is a combination of any of the above (Hybrid) | 13 | 6.4 |

### 4. Results

#### 4.1. Descriptive statistics and measurement model

Table 2 depicts the mean and standard deviation (SD) scores obtained from the composite values of the first-order constructs. The mean scores range from 3.919 to 4.295, which is high. Most standard deviation scores are less than 1, ranging from 0.538 to 1.043. This is a limitation worth
mentioning since it indicates that the data cluster around the mean. Both the reliability of the indicators and the constructs themselves, as well as the validity (convergent and discriminant) of the measurement model were evaluated. The constructs’ level of abstraction (Hair et al., 2019) includes higher-order constructs (HOCs), namely CERPI and CA. The latent construct, CERPI, consists of lower order constructs (LOCs) of “usage” and “strategic alignment”, while CA consists of LOCs of “alliance”, “differentiation”, and “focus”. All the constructs of this study are basically reflectively measured based on the extant literature. Regarding the modelling of the HOC, studies suggest four variants: formative-formative, formative-reflective, reflective-reflective, and reflective-formative (Sarstedt et al., 2019). Based on the theoretical reasoning that HOCs are a direct outcome of LOCs (Mikulic and Ryan, 2018), the reflective-reflective modelling technique was adopted to measure the HOCs (Jayeola et al., 2022c; Sarstedt et al., 2019). Further, the two-stage (including the disjoint two-stage and embedded two-stage) and extended repeated indicators approaches are proposed for specifying and evaluating HOCs in PLS-SEM (Sarstedt et al., 2019). In this study, the HOCs were specified and evaluated using a disjoint two-stage approach because it allows for an enhanced parameter recovery of paths to be illustrated (Jayeola et al., 2022c; Sarstedt et al., 2019). Only the LOCs of the HOCs are considered in a disjoint two-stage method, removing HOCs from the path model. The LOCs are theoretically linked to all of the other theoretical constructs that the HOCs are associated with in the first stage, while the scores of the latent variables of the LOCs are saved and used as the measurement of HOCs in the second stage (Sarstedt et al., 2019).

All the constructs’ CR scores range from 0.914 to 0.975 in Table 2. These results confirm the reliability of the constructs, as they are higher than the 0.7 requirement specification by Hair et al. (2014). Every indicator for each construct has a loading of at least 0.7, as recommended by Hair et al. (2019), implying that no indicators were dropped. Therefore, the constructs’ reliability is affirmed. The AVE scores in Table 2 indicate that they all surpass the 0.5 (0.748–0.895) minimum threshold for all constructs based on the criterion of Fornell and Larcker (1981). Consequently, it may be determined that the constructs pass the convergent validity test. Although the discriminant validity can be evaluated with the Fornell and Larcker (1981) criterion, cross loading, and HTMT, we opted for the HTMT. This is because it is a robust, new, and more precise criterion than the other two criteria (Henseler et al., 2015). In Table 3, the HTMT scores are below the 0.90 threshold (Gold et al., 2001), suggesting that all the constructs are measuring distinct concepts. Hence, discriminant validity is not a problem in the constructs. The measurement model of the HOCs-second-order constructs (CERPI and CA) are displayed in Table 4. The 0.923 and 0.957 CR values for CERPI and CA, respectively, confirm the reliability of these constructs. The loadings of the LOCs of the HOCs, usage and strategic alignment (CERPI), and alliance, differentiation, and focus (CA), exceed the 0.7 threshold proposed by Hair et al. (2019). Therefore, the LOCs are reliable. Next, the CERPI and CA, which are HOCs, need to meet the convergent validity threshold. As shown in Table 4, the AVE of these two constructs (0.857 and 0.882) ensures that their indicators converge excellently to accurately measure them because they are above 0.5 (Fornell and Larcker, 1981). According to Table 5, all the constructs show discriminant validity values of HTMT of less than 0.90 (Gold et al., 2001), implying no discriminant validity issues with all measured constructs in this study. In sum, the acceptable reliability and validity test scores indicate that the constructs are suitable for assessing the structural model.

4.2. Structural model and hypotheses assessment

The structural model was examined following the suggestions of Hair et al. (2019). First, the path coefficients were evaluated to accept or reject the hypotheses. Second, the R² (coefficient of determination), which determines the extent to which the variance in an endogenous construct is explainable by an exogenous construct, was assessed. Third, the Q², which measures the predictive relevance of the endogenous variable in the research model, was evaluated. Finally, the model’s out-of-sample predictive power, as measured by the PLSpredict, was examined.

4.2.1. Path coefficient assessment

The first assessment in the structural model is the path coefficient. The path coefficient is significant when the t value is less than or equal to 1.96, indicating a 5% level of significance (Hair et al., 2014). Both direct and mediated relationships were taken into account while assessing path coefficients. The path coefficients’ significance was estimated using the bootstrapping method of 5000 subsamples (Hair et al., 2019). As shown in Table 6 and Figure 2, GFS does not significantly influence FPER (β = 0.101, p > 0.05), H1 is thus not supported. The hypothesis is supported in H2 because GFS proves to significantly explain CERPI (β = 0.401, p < 0.001). H3 is supported because CERPI is statistically significant in explaining CA (β = 0.573, p < 0.001). A positive and statistically significant relation between CA and FPER was found (β = 0.627, p < 0.001), providing support for H4. The sequential mediation of CERPI and CA between GFS and FPER was examined in H5. Hair et al. (2014) argued that two important criteria must be met for a mediating effect to be present. The path coefficient must first be significant. Second, zero cannot be between the bootstrapping test values and the bias-corrected confidence level. The path coefficients for the hypothesised

| Constructs | Mean | SD  | Indicators | Loadings | CR  | AVE  |
|------------|------|-----|------------|----------|-----|------|
| Government Financial Support | 3.919 | 1.043 | GFS1 | 0.966 | 0.972 | 0.895 |
| ERP Usage | 4.183 | 0.591 | CERPU1 | 0.914 | 0.914 | 0.780 |
| ERP Strategic Alignment | 4.222 | 0.538 | CERPSA1 | 0.870 | 0.964 | 0.748 |
| Alliance | 4.295 | 0.694 | ALL1 | 0.962 | 0.975 | 0.888 |
| Differentiation | 4.168 | 0.603 | DIF1 | 0.848 | 0.955 | 0.754 |
| Focus | 4.096 | 0.669 | FOC1 | 0.918 | 0.924 | 0.803 |
| Financial Performance | 4.116 | 0.691 | FPER1 | 0.913 | 0.955 | 0.811 |
The relationship between GFS → CERPI → CA → FPER (β = 0.135, p < 0.001), as shown in Table 7 are significant. Further, the lower level value (LLV) of the bootstrapping test of the bias corrected confidence level is 0.072, while the upper level value (ULV) is 0.214. The absence of a zero value between the LLV and ULV provides support for the existence of a mediating relationship between the constructs and hypothesis 5. Thus, the LLV and the ULV do not fall between positive and negative values. Nevertheless, the mediation category (partial or full) is yet unidentified. Partial mediation arises when both the direct and mediating effects are significant, whereas full mediation arises when the direct effect is insignificant but the mediating effect is significant (Cepada-Carrion et al., 2018; Jayeola et al., 2022c; Yusof et al., 2021). The indirect (mediating) effect is significant and the direct effect is insignificant, as earlier explained and as indicated in Table 7. Therefore, a full mediation can be established between GFS and FPER through the sequential mediation of CERPI and CA.

4.2.2. R^2, Q^2 and PLSpredict assessment

The coefficient of determination (R^2) measures how much of the variation in an endogenous construct can be attributed to its corresponding exogenous construct (Hair et al., 2014). Meanwhile, the predictive power of an exogenous construct over the endogenous construct known as predictive relevance (Q^2) uses a blindfolding technique for analysis (Geisser, 1974; Stone, 1974). PLSpredict evaluates the out-of-sample predictive power of PLS path models (Hair et al., 2020). The R^2 values of the endogenous constructs (CERPI, CA, and FPER) are 0.160, 0.288, and 0.431 correspondingly, see Figure 2. These results show that GFS accounts for 16% of the CERPI’s variance, and CERPI accounts for 29% of the CA’s variance. In addition, 43% of the variance in FPER is jointly explained by GFS and CA. Cohen (1988) specified that R^2 values must fall within the ranges of 0.02, 0.13, and 0.26 for the model’s explanatory power to be categorised as low, medium, or high. Therefore, these constructs have the explanatory power in the medium-to-high range. Given that researchers expect their study model to have predictive relevance, Hair et al. (2014) suggested that Q^2 should be higher than 0 to fulfill this condition. The Q^2 results indicate that the endogenous constructs (CERPI, CA, and FPER) have respective values of 0.127, 0.244, and 0.338. Thus, the predictive relevance of the research model is sufficiently strong.
affirmed. According to Hair et al. (2019), out-of-sample prediction should be included by researchers as a vital element of assessing the PLS-SEM model as well as a way to assess the practical utility of the model in their study and generalisation.

To finalise the assessment of the structural model, the PLSpredict method is employed on ten folds and ten iterations of the hold-out sample data on the primary target endogenous construct, FPER. This technique focuses on establishing the out-of-sample predictive power of the model (Hair et al., 2019). To evaluate PLSpredict, the root-mean-squared error (RMSE) results of the PLS-SEM are compared to the PLSpredict output of the naive linear benchmark linear model (LM). Table 8 demonstrates that PLSpredict yields lower RMSE values than LM. Thus, the negative numbers in the "PLS-SEM minus LM" column imply that the endogenous construct FPER, possesses high predictive power in the model. Therefore, the proposed model in this study has the ability to predict out-of-sample data, making it suitable for generalisation and practical utility.

5. Discussion and conclusion

5.1. Discussion

Governments provide financial support to SMEs so that they can ultimately improve their performance and positively impact the economy (Jayeola et al., 2022b). These companies are expected to implement the most advanced and innovative technologies using GFS. However, using GFS to implement cutting-edge technologies such as cloud ERP rarely guarantees instantaneous better firm performance. This study examined how GFS affects the financial performance of SMEs through the dual sequential mediation of CERPI and CA, as well as other direct relationships. This study found that GFS exhibits an insignificant relationship with FPER. This finding is supported by several past studies (Guan and Yam, 2015; Vu and Tran, 2021). This result indicates that GFS is allotted to SMEs for the precise purpose of implementing cloud ERP in Malaysia (Hassan, 2017). As a result, it is the responsibility of entrepreneurs and managers to use government financial resources (CC matching grants, annual incentives, and subscription fee refund) to successfully deploy cloud ERP and combine it with other available resources in the organisation in a way that results in improved performance (Pergelova and Angulo-Ruiz, 2014). This finding supports the proposition that only internal resources that have the VRIN qualities are capable of improving firm performance (Barney, 1991). Therefore, it is implausible for GFS to improve the FPER of SMEs directly. The study has identified that CERPI is positively related to GFS. This finding is corroborated by earlier studies (Doh and Kim, 2014; Jayeola et al., 2022b). These studies show that the government’s technology growth assistance funds, such as matching grants, subscription fee refunds, etc., are critical for the successful implementation of new technologies.

In particular, the results show that GFS is important for SMEs to use cloud ERP effectively, even though the technology is affordable, with a minimum initial fee of about $1357 and monthly fees of $99 (BetterBuys, 2021). As a kind of social capital, financial assistance offered by the government to enterprises in developing countries is used to overcome resource insufficiency, which supports the hypothesis that it is more significant for firms in emerging economies than in advanced countries (Cai et al., 2010). In the developing country context of this study (Malaysia), GFS enables SMEs to purchase IT resources (cloud ERP) that they could not previously afford on their own. The reason could be explained by the sample of this study that comprises of over 83% micro and small businesses which generally have little financial resources as opposed to about 17% medium-sized enterprises that are financially stronger. An indication that confirms more micro and small businesses dominate SMEs in Malaysia (SME Corp Malaysia, 2022b) and need robust GFS to adopt innovative and affordable technology such as cloud ERP.

The results of this study further indicate that CERPI significantly explains CA. This result corresponds with prior studies’ findings (Chang et al., 2019a, 2019b; Fuzes, 2018; Shehata and Montash, 2019). The finding implies that implementing cloud ERP affords manufacturing SMEs a competitive advantage over their competitors because they are able to differentiate their product offerings at lower prices and higher quality. Furthermore, SMEs could use cloud ERP to collaborate and integrate with their supply chain partners, resulting in benevolence, credibility (Acar et al., 2017), smooth informational relations and exchanges that firms that do not implement cloud ERP lack. In addition, they deploy cloud ERP to focus on a niche market to satisfy the customers efficiently and enhance their market share. Therefore, by utilising cloud ERP as a production management and planning solution, manufacturing SMEs gain a competitive advantage by being more responsive to changes.

Also, CA was found to positively correlate with FPER in this study. This result is consistent with others (Lee, 2015; Potjanjaruwit, 2018; Handoko et al., 2015). According to these studies, the capacity of businesses to compete with rivals in a highly sensitive market depends on the availability of unique internal resources, which in turn gives them a boost in sales and profits. In addition, extant literature argues that the relationship between CA and firm performance is mutual (Breznik, 2012), and since the primary goal of business is to gain financial benefits, gaining CA is a prelude to achieving this crucial objective (Ma, 2000; Majed 2011). Therefore, firms that use cloud ERP to gain CA through integrated data and fast decision-making will have more financial gains. Finally, this study found that CERPI and CA sequentially mediate the GFS and financial performance relationship. Although this sequential mediation of CERPI and CA is novel, however, some related studies have confirmed the separate mediation of IT implementation (Gillani et al., 2020) and CA (Correa et al., 2021). This finding suggests that external resources (GFS) need to be used to acquire internal resources such as cloud ERP that possess the VRIN qualities, as explicated in the RBV theory of Barney (1991), which when used and strategically aligned with the organisational objectives, gives CA and subsequently better FPER.
5.2. Theoretical implications

The literature on the relationship between GFS and firm performance is extensive. Nonetheless, these studies’ findings are riddled with inconsistencies. For example, some research reported a positive relationship between GFS and firm performance (e.g., Ismail and Othman, 2014; Peter et al., 2018; Xiang and Worthington, 2017), whereas others found a negative relationship (e.g., Luo et al., 2021; Wang et al., 2021). A handful of studies that attempted to provide better clarity in this relationship (Anwar and Shuangjie, 2021; Pergelova and Angulo-Ruiz, 2014; Songling et al., 2018) merely focused on a simple mediation of CA. This study proposes that an internal resource (cloud ERP) acquired using GFS should precede CA, such that both cloud ERP and CA sequentially mediate the GFS-financial performance relationship using the RBV theory. In explaining how IT can be used to realise business value such as CA and improved firm performance, the RBV has been used extensively in the information systems research (Chang et al., 2019b; Chen et al., 2022). The RBV highlights that enterprises with VRIN resources will sustain their agility throughout a predetermined time frame (Elazhary et al., 2022). According to the RBV proposition, this study contends that GFS as an external resource may not accurately confer CA on firms, resulting in better FPER like an internal resource that could be combined with other resources. This is because, despite the fact that GFS is valuable, it is not rare, inimitable, or non-substitutable. Therefore, previous studies failed to explain the complexities of using GFS to acquire an internal resource that has the VRIN qualities explicated by the RBV theory of Barney (1991) to assist firms in gaining the CA and, subsequently, better performance. In this regard, the CERPI was introduced as the internal resource derived from the GFS and conceptualized as “usage” and “strategic alignment” to roundly capture the VRIN characteristics. The results show that CERPI and CA are important dual sequential mediators between GFS and financial performance. Therefore, this study has contributed to the existing empirical literature and the RBV theory by being among the first to investigate dual sequential mediators (CERPI and CA) in order to clearly and holistically clarify the intricacies involved in the relationship between GFS and the FPER of firms, particularly in a developing country context. In addition, the PLSpredict approach, which is novel in PLS-SEM, was used in this study to evaluate the out-of-sample predictive ability of the research model. This was conducted in contrast to previous studies, which measured only the in-sample explanatory power of the model based on the $R^2$. This research has proved, through the use of the PLSpredict outputs, that the research model is able to highly predict values of new data sample that were not incorporated into the estimating process. This contributes to the research model’s enhanced practical usefulness and reliability (Shmueli et al., 2019).

5.3. Practical implications

This study offers valuable insights for SME practitioners and policymakers. According to the findings of the study, GFS cannot directly improve the FPER of SMEs. Instead, SMEs must use GFS to acquire cloud ERP, then successfully implement it through intensive usage and strategic alignment with their objectives in order to gain CA and achieve higher FPER. SMEs must only use the GFS for its intended purpose (cloud ERP). As a result, the successful implementation of cloud ERP through operational, tactical, and strategic use will catalyse the strategic alignment with their objectives in order to gain CA and achieve higher FPER. SMEs must only use the GFS for its intended purpose (cloud ERP). In other words, this study’s findings hold true for all SMEs in Malaysia. Given the importance of GFS in successful CERPI, contributing to CA, and the FPER of SMEs, policymakers should continue to provide financial assistance to SMEs in order for them to acquire an important competitive IT resource (cloud ERP), which will enable them to improve their performance and contribute to GDP and economic growth. Policymakers, on the other hand, must ensure that the GFS is used for its intended purpose. To avoid wasting tax payers’ money, GFS given for cloud ERP implementation should be monitored from money disbursement to final acquisition of the IT resource by SMEs. Relevant government agencies should be tasked with ensuring that SMEs utilize GFS in procuring cloud ERP and integrating it fully into their operations.

5.4. Limitations and future research directions

Despite our methodological efforts, this research is not devoid of limitations. The cross-sectional design does not reveal causality among the various constructs. Researchers may use a variety of methods in future studies, such as the longitudinal design and control variables. This study’s generalizability to other countries will be limited because we only gathered data from Malaysia. Investigating how the GFS can influence FPER in countries other than Malaysia through the sequential mediators of CERPI and CA would be interesting given the unique institutional environments shaped by history, political systems, and economies in each country. A self-report was used in this study, and one issue with self-reports is that they have the potential to lead to CMB. Based on the full collinearity test conducted (Rock, 2015), CMB is not a major problem, but this issue should be considered when interpreting the findings. Big data analytics, customer relationship management (CRM), and autonomous robots can all be acquired using GFS. These technological resources could be used in future research.

6. Conclusions

The primary goal of this research was to shed more light on the relationship between GFS and FPER by using the RBV as an underpinning theory. Therefore, this study developed a model that set out to examine the complex relationship between GFS, FPER, CERPI, and CA with an emphasis on the novel sequential mediation of CERPI and CA. The study found that GFS does not explain FPER directly but through the acquisition of a competitive resource (cloud ERP) that, when rightly used and aligned with the strategic goals of the organisation, allows SMEs to gain CA and, consequently, better FPER. In addition, it is found that the proposed model is internally consistent and reliable, with strong predictive power. This research has improved theoretical knowledge by taking into account the complexities involved in the relationship between GFS and FPER through examining two mediators’ influence sequentially. We hope that this study gives a clear picture of how GFS can improve the financial capabilities of SMEs in developing countries. This is especially important since governments are trying to encourage economic growth by giving SMEs financial support to help them perform better. Hence, this study provides valuable insights for academics, practitioners, and policymakers.

Declarations

Author contribution statement

O. Jayeola: Conceived and designed the experiments; Performed the experiments; Analysed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Shafie Sidek: Conceived and designed the experiments; Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Shouvik Sanyal: Conceived and designed the experiments; Contributed reagents, materials, analysis tools or data;

Syed Inamul Hasan: Analysed and interpreted the data; Contributed reagents, materials, analysis tools or data.

Nguyen Binh An; Samuel-Soma Mofoluwa Aijibade: Performed the experiments; Contributed reagents, materials, analysis tools or data.
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