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The Mediating and Moderating Effects of Top Management Support on the Cloud ERP Implementation–Financial Performance Relationship

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Abstract: Cloud enterprise resource planning (ERP) is one of the most sought-after information technology (IT) solutions for improving business performance due to its affordability, scalability, and pay-per-use subscription model. The impact of cloud ERP implementation on business performance, on the other hand, remains inconclusive. Additionally, an important factor that transverses all organizational processes, including IT implementation, is top management support (TMS). However, the TMS's role in the latter stage (business value realization) of cloud ERP implementation is unclear. The purpose of this paper is to examine the mediating and moderating impacts of top management support (TMS) on the relationship between cloud ERP implementation and financial performance. A total of 204 small and medium enterprises (SMEs) in Malaysia were surveyed, and data analysis was conducted using partial least square structural equation modelling (PLS-SEM). The results demonstrate that TMS plays a partial mediating role in the relationship between cloud ERP implementation and financial performance and that this relationship is significantly stronger in SMEs with low TMS levels. As a result, it is concluded that top management should provide the required support following successful cloud ERP implementation in order to achieve positive financial results. However, such support must be adjusted in order to avoid the deterioration of the firm's financial performance.

Keywords: cloud ERP implementation; financial performance; top management support; mediate; moderate; SMEs

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Citation: Jayeola, O.; Sidek, S.; Abdul-Samad, Z.; Hasbullah, N.N.; Anwar, S.; An, N.B.; Nga, V.T.; Al-Kasasbeh, O.; Ray, S. The Mediating and Moderating Effects of Top Management Support on the Cloud ERP Implementation–Financial Performance Relationship. *Sustainability* **2022**, *14*, 5688. https://doi.org/10.3390/su14095688

Academic Editor: Leandro Ferreira Pereira

Received: 12 April 2022
Accepted: 2 May 2022
Published: 8 May 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

Cloud enterprise resource planning (ERP) is a critical component of a lengthy list of services offered in the cloud that also includes internet data storage for individuals, business services (for example, modules accessible via the cloud), virtual machines for the cloud, and other services built on the cloud computing (CC) structure [1,2]. A cloud-based ERP solution allows a company to centralize all of its core business functions in order

to increase productivity and preserve a competitive advantage. Cloud ERP is critical for information interchange, product development, and knowledge management between businesses and their clients [3,4]. Significant cost savings are one of the primary benefits, particularly for small and medium-sized organizations (SMEs), because cloud vendors assume responsibility for hardware and infrastructure, as well as application maintenance, management, integration, and development [5–7]. Additionally, the cloud solution eliminates the need for SMEs to maintain an IT team, and it eliminates the need for upfront costs because it is based on a pay-as-you-go model [8].

Due to the fact that the majority of cloud ERP clients are small firms, SMEs adopt cloud ERP primarily for its adaptability, ease of control, and, most importantly, its low license, maintenance, and overall investment costs [9]. Despite the benefits of cloud ERP, its limitations include security, privacy, a lack of trust, a lack of industry-specific standards, and data loss [10,11]. Nonetheless, ERP has been widely deployed by organizations of various sizes in a variety of sectors and nations in order to achieve competitive advantages and thus improved performance [12]. Without successfully integrating a cloud ERP system, the anticipated benefits of increased efficiency and competitive advantage will not materialize [13,14]. However, research indicates that using cloud ERP to harness its benefits might be a double-edged sword for firms. For instance, some studies have demonstrated that cloud ERP can have a significant impact on firm performance [15–18], whereas others have concluded that cloud ERP has a relatively insignificant impact on firm performance [8,19,20]. However, many of these studies focused exclusively on the direct relationship between cloud ERP implementation and performance, and Gupta et al. [8] suggested that the relationship between CC services and performance is not simply linear. The aforementioned contradictory findings underscore the importance of considering other reasons for the impact of cloud ERP implementation on firm performance. On the other hand, top management support (TMS) is widely recognized as the most critical success factor in all organizational processes and activities [21]. From the perspective of cloud ERP, the literature demonstrates that TMS is a significant predictor of cloud ERP implementation [22–24].

Additionally, TMS is critical, not only during the implementation phase, but also during the post-implementation (business value realization) phase, when top management is involved in defining IT initiatives, formulating goals, selecting budgets, and allocating human, material, and technical resources [25]. However, there are few studies examining the role of TMS in the post-implementation period of cloud ERP [26,27], and their findings are inconclusive. TMS was proven to be insignificant as a direct predictor of firm performance by Ooi et al. [26]. One could criticize this study for excluding the CC implementation effect from its model. That is, it considered TMS as a direct predictor of cloud ERP implementation success, a notion dubbed deterministic by Dong [28]. On the other hand, Shee et al. [27] explored and discovered the moderating influence of TMS on the link between cloud-enabled supply chain integration and supply chain performance. This study is supply chain centered and does not focus on either the internal or external operations of the firm.

Due to the crucial impact of top leadership throughout the life of an IT project [29], prior research has demonstrated a limited understanding of the influence of TMS on cloud ERP post-implementation (e.g., [26,27]). Thus, this study aims to shed light on the relevance of TMS in the post-implementation phase of cloud ERP by simultaneously examining its mediating and moderating effects in order to gain a better understanding of the cloud ERP implementation–performance relationship that has been beset by inconsistencies. In general, this study is in line with the work of [30,31] on the necessity of investigating mediating and moderating influences to fully grasp the IT innovation and financial performance relationship. The questions this study aims to answer are: Does cloud ERP implementation influence the financial performance of SMEs through TMS? Does TMS help to achieve a stronger relationship between cloud ERP implementation and financial performance of SMEs?

The remainder of the article is structured as follows: a literature review is presented in the next section. Section 3 reveals the materials and methods used, and Section 4 summarizes the results. Section 5 discusses the findings, and Section 6 presents the conclusions.

2. Literature Review

2.1. Theoretical Background

According to Barney [32], organizations can gain an advantage over their competitors by utilizing their resources and capabilities in novel ways [8]. According to Grant [33], there is a distinction between resources and capabilities. Grant defines resources as accessible and manageable factors. Capabilities refer to an organization's capacity to utilize business processes and resources to accomplish its goals. While an individual resource may be ineffective on its own, when combined with other resources to accomplish a certain objective, it becomes a capability [34]. These resources and capabilities are applied to a particular situation and are influenced by a range of contingent factors [35]. The resource-based view (RBV) hypothesis delves into the concept of valuable, rare, imperfectly imitable, and non-substitutable (VRIN) resources [32]. However, in the long run, the imitation of products may result in any company losing market share owing to competition, hence diminishing its profitability [35]. Due to RBV's "insensitivity to context," it can be challenging to identify resources or skills that belong under the VRIN framework, as Ling-yee [36] noted. The final attainable output of these capabilities, according to the contingency theory, is further influenced by unpredictable factors that are both internal and external to businesses [37]. Finally, contingent RBV enables a firm to have a better understanding of the context in which its resources and capabilities are utilized, which has an effect on its performance [38]. We propose a contingent resource-based framework for conceptualizing the impact of cloud ERP on financial performance, with TMS serving as a contingent contextual factor. Additionally, in the context of this study, cloud ERP services comprise the resources and capabilities of SME, and thus their impact on their performance is critical for determining the services' effectiveness.

2.2. Top Management Support, Cloud ERP Implementation, and Firm Performance

The extent to which the top management of a business provides direction, expertise, and resources during and following the acquisition of ERP systems is referred to as "top management support." [39]. Commitment from top management is critical to ensure that an organization's objective is realized to the point of increasing company performance. Top management support is a critical factor in overcoming barriers and boosting an organization's technological capacity to efficiently utilize new technological services or products [40]. Cloud ERP is one of the new technologies that businesses have recently embraced, and TMS is vital to its successful implementation. Cloud ERP is intended to resolve communication issues between functional area information systems (IS), to unify all of an organization's units and departments, and to automate all of the organization's procedures and operations [41,42]. Cloud ERP systems are more cost-effective, take up less time, consume less energy, and operate through the internet. Payment for cloud ERP software services is made via subscriptions that must be remunerated on a monthly basis, for example, for each user [43]. Therefore, it is the best alternative for SMEs who have limited resources. As a result, an increasing number of SMEs are implementing cloud ERP systems to increase their competitiveness, efficiency, and customer base [44].

The literature on cloud ERP systems has identified top management support as a significant success factor. For example, some studies have examined and confirmed the importance of TMS in deploying cloud ERP [5,24,44–46]. However, these studies were focused only on the adoption/implementation stage. On the other hand, other studies have devoted attention to the value and benefits of cloud ERP in the post-implementation stage. These studies have primarily sought to uncover the impact of cloud ERP on firm performance. Since, a company's primary goal is to outperform its rivals in terms of better performance [47], firms use competitive IT, such as cloud ERP, in achieving this goal. How-

ever, the findings of these studies are overly inconsistent. For example, some studies have shown that cloud ERP can have a significant impact on firm performance [15–18], while others have found that cloud ERP has an insignificant effect on firm performance [8,19,20]. Nonetheless, a number of these research examined the direct relationship between cloud ERP implementation and performance, and Gupta et al. [8] argued that the relationship between CC services and performance is not linear.

Meanwhile, top management support (TMS) is widely recognized as the single most important determinant in the success of all organizational processes and activities [21]. Based on this perspective, it has been proposed that TMS should be incorporated throughout the ERP implementation process [48]. Al-Mashari [49] submitted that TMS should not end at the initiation and facilitation stages, but should extend throughout the ERP implementation process. Indeed, TMS is critical for the software's overall performance during the post-implementation stages as well [50]. In clear terms, the explicit and active TMS toward the use of a new IS is crucial for CC assimilation, and the purpose during the post-implementation stage is to integrate the practical aspects of CC services into business processes so as to gain the anticipated business benefits of CC [51]. Nonetheless, a handful of studies were found that investigated the role of TMS in the post-implementation phase of cloud ERP [26,27]. Ooi et al. [26] found that TMS is insignificant as a direct predictor of business performance. This study is faulted for failing to include the cloud implementation effect in its model. Additionally, Shee et al. [27] examined TMS's role as a moderator in cloud-enabled supply chain integration and supply chain performance, and a positive moderating role was confirmed. Due to the study's supply chain bias, it is difficult to extrapolate their findings to cloud ERP implementation that spans both internal and external collaborations, as well as overall company performance, as this study examines. Therefore, since the literature has shown the importance of TMS at the initial adoption/implementation stage, and the TMS role in the post-implementation phase remains unclear, this study proposes to examine TMS in the post-implementation stage to contribute to resolving the inconclusive findings at this stage. In this instance, the novel simultaneous mediating and moderating roles of TMS are examined on the cloud ERP implementation and financial performance relationship. This is consistent with [30,31] regarding the importance of examining the mediating and moderating effects in order to properly understand the relationship between IT innovation and financial performance.

2.3. Mediation of Top Management Support

The mediating effect of TMS is described as a situation where TMS entirely or partially mops up the effects of cloud ERP implementation on the financial performance of an enterprise [52]. Because top management plays such a crucial role in organizational performance, SMEs, whose owners are often also managers, require a strong TMS in the successful implementation of cloud ERP if they are to gain the economic benefits of the technology. The role of top management has always been to support employees, assist them with solving problems, foster amicable interactions and coexistence between various job functions, encourage bottom-up innovativeness and incentives, and guide managers to advocate IT innovation by transmitting clear and unwavering messages that lay a clear foundation [53]. CEOs and other members of top management must first understand the benefits of innovation, such as CC, and how they contribute to the company acquiring a competitive edge and enhancing its performance [3,54]. As a result, top management will be urged to devote all necessary resources in implementing CC successfully and increasing its use [23,55], which will improve the organization's performance.

According to Ha and Ahn [56], TMS is particularly important after the ERP go-live stage, as shown in a set of surveyed companies. According to their study, organizations having TMS demonstrated improved operational, strategic, and administrative performance as a result of top management's role in encouraging active participation and securing necessary resources throughout this stage. Top management has a big impact on how effectively cloud technology is used for better organizational performance, as it allocates resources,

integrates services, and re-engineers business processes [57]. Khayer et al. [11] showed that the performance of Bangladeshi SMEs improved when top management allotted significant resources and became involved in the whole process of CC diffusion. The TMS is a catalyst for firms to realize better performance from ERP implementation, and it also provides credibility to the operational managers who are in charge of the implementation and use of ERP [54]. By delivering rewards/incentives to improve user motivation and by changing performance targets, top management operates as a mechanism for improving firm performance through the use of IT [58]. The foregoing discussion indicates that the presence of TMS after the successful cloud ERP implementation is a precursor to the realization of full business benefits. Therefore, the first hypothesis of this study is the following:

Hypothesis 1 (H1). *Top management support mediates the relationship between cloud ERP implementation and the financial performance of SMEs.*

2.4. Moderation of Top Management Support

Memon et al. [59] define the moderating effect of top management support as a condition in which it intensifies or weakens cloud ERP implementation's influence on the financial performance of businesses. TMS may have differential impacts on IT implementation [29], and thus, on firm performance. Dedication from the top of an organization's hierarchy to IT implementation is critical because it has a substantial impact on the organization's entire strategic direction, which includes establishing a competitive advantage, as well as increasing performance [60]. A business enterprises' performance can be improved by top management's attitude toward and support for innovation, according to Fernandes et al. [61]. The perceptions of senior management, according to Salwani et al. [62], have a significant impact on the potential of technical innovation to create value in organizations, as well as their ability to do so. Purnomo and Nastiti [63] discovered that when TMS in the form of commitment and assurance of e-learning advantages is high, employees' desire to use e-learning improves, particularly for those who have prior experience with technology-based devices. This enables the company to survive market competition while being more profitable. Support from top management, according to Kagoya and Mbamba [64], plays a positive moderating role in sustaining users' participation characteristics in e-government implementation success. In the relationship between organizational factors and e-procurement usage, Marei et al. [65] found a positive moderating role of TMS. The higher the top management participation and involvement, the higher the ERP utilization [66], and consequently, the higher the enhancement of the firm's performance through better coordination, fast decision making, and improved customer satisfaction. Suffice it to say that when top management's commitment to cloud ERP usage and application is high, it is logical to anticipate that cloud ERP will improve the financial performance of the company in which it is implemented. The role of top management in strengthening the cloud ERP implementation–performance relationship include assisting users by communicating the importance of intensive usage, training employees who are falling behind, and motivating employees who use the cloud ERP efficiently through monetary and non-monetary incentives. In sum, we propose that the positive effect of cloud ERP implementation on financial performance is more evident for SMEs with a high level of TMS. Based on the following discussions, the following hypothesis is proposed:

Hypothesis 2 (H2). *The positive relationship between cloud ERP implementation and financial performance is strong when the top management support is high.*

The research model is presented in Figure 1.

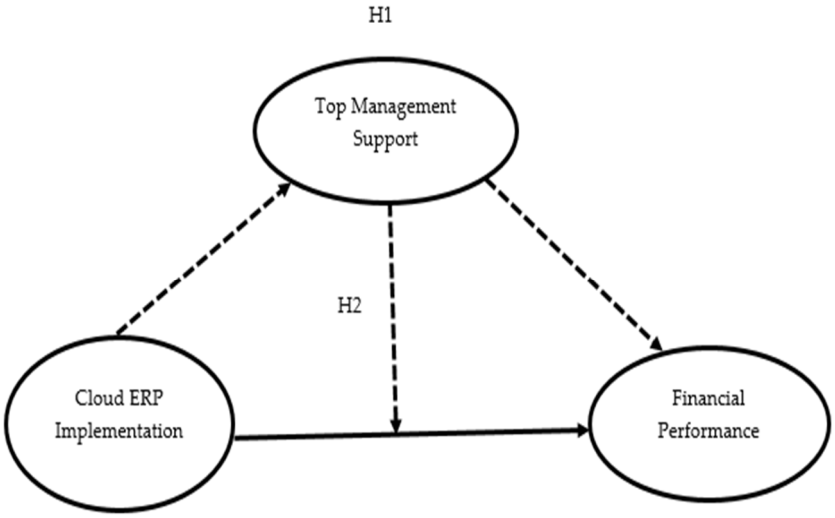

Figure 1. Research Model.

3. Materials and Methods

3.1. Data Collection and Sampling

Manufacturing SMEs constitute the sample of this study because manufacturing SMEs have long been considered as strong ERP users [24]. The manufacturing SMEs were chosen from two of Malaysia's states (Selangor and Johor), as well as one federation territory (Kuala Lumpur), since they are hosts to the highest population of SMEs [67]. Three top-level managers and one IT researcher pre-tested the study questionnaire before it was used to collect data to confirm its understandability and usefulness. To make the questionnaire more understandable based on the recommendation of the pre-testers, some items were revised. Pilot testing with 30 companies, which were then excluded in the original survey to avoid learning effects, was subsequently conducted [68]. The results confirmed the instrument's validity and reliability. An online survey was then conducted in which Google Forms were sent to the email addresses of the manufacturing SMEs between February and May of 2021.

The SME Corporation Malaysia and the Federation of Malaysian Manufacturers (FMM) directories were used to obtain the names of registered SMEs. Survey participants were restricted to top management and small-business owners due to their greater role in strategy formulation and decision making [69]. The survey included only firms that have implemented cloud ERP in their businesses. Prior to online distribution, the questionnaire was translated from English to Malay in order to ensure broad coverage and comprehension. As a result, a back-to-back translation in Malay and English was conducted by language experts. Following this step, errors in the language and uncertain terms were rectified. A random sampling technique was used in which 1020 online questionnaires were sent to manufacturing SMEs. In total, 208 responses were recorded, indicating a 20% response rate, out of which 4 were eliminated because they were from large companies. Therefore, 204 responses were found useable for analysis, which is adequate for any research using PLS-SEM [70]. The Google Form forced-answer approach ensured that no data were missing because all questions had to be answered. For the main constructs, a Likert scale 1–5 was used, as follows: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree.

There are various possible sources of common method biases (CMB) in studies that use self-reported data [71]. Researchers are expected to exert the greatest amount of control over CMB, which is somewhat difficult to manipulate [71]. Harman's one factor technique was employed in this investigation to account for the likelihood of CMB.

All of the constructs' items were subjected to a factor analysis using a principal component analysis. According to the data, the first component was responsible for 44.8% of the total covariance. It is clear that CMB is not an issue in this data set because no single

general factor explains more than 50% of the covariance between the measurements. The majority (48.5%) of the 204 respondents were owners, and most (69.6%) were between the ages of 21 and 50, according to the descriptive analysis. Out of those surveyed, most (39.7%) had a bachelor's degree, the majority (54.4%) were female, and the bulk (49.0%) worked for a small-sized business. The largest percentage (17.6%) of the respondents were from the food, beverage, and tobacco (FBT) industry, and a majority (76%) of them had been using cloud ERP for less than three years, with the highest percentage (80.4%) using public cloud ERP.

3.2. Measurement

There are three constructs measured in this study: cloud ERP implementation, top management support, and financial performance. Prior studies' measurements of the constructs were adapted to suit this research. A number of prior studies were explored in the development of the measuring items and the construct's sub-constructs (dimensions). Cloud ERP implementation (2 dimensions) included: strategic alignment, 9 items [72]; usage, 3 items [16]; top management support, 7 items [73,74], and financial performance, 5 items [75]. The two dimensions of usage and strategic alignment were selected for cloud ERP implementation due to criticisms that IT is a commodity that benefits organizations, not necessarily through adoption, but rather through usage [16] and/or strategic alignment with company goals [76]. Thus, efficiently utilizing and strategically aligning an organization's IT use to strengthen its distinct advantages leads to the firm's success [77]. For top management support and financial performance, the items were adapted, since they are relevant and adequately assess the constructs.

3.3. Data Analysis Procedure

For several reasons, the data was analyzed using variance-based partial least square structural equation modelling (PLS-SEM) using Smart PLS 3.3.2 software. First, the data distribution is not normal, since the skewness and kurtosis values exceed +1 and −1, respectively [78]. Second, the study is exploratory in scope because it entails estimating the significance of top management support's moderating–mediating effects [78]. Third, there is a requirement to generate latent variable scores for subsequent analyses [79]. Finally, the model is complex, since it includes moderators and mediators in addition to independent and dependent variables [80]. We used PLS-SEM to first confirm the reliability and validity of the constructs. Next, the model's goodness of fit was assessed, after which the variance inflation factor (VIF) was examined. The structural model was assessed to test the proposed hypotheses. Lastly, the coefficient of determinations R^2, predictive relevance Q^2, and prediction oriented analysis (PLSpredict) were examined.

4. Results

4.1. Measurement Model Assessment

Confirmatory factor analysis (CFA) was used to develop a measurement model for evaluating the reliability, indicator reliability, convergent validity, and discriminant validity of the constructs. TMS and FP are lower-order constructs (LOCs), while CERPIMPL, which includes the LOCs "usage" and "strategic alignment," are higher-order constructs (HOCs). As per the literature, the LOCs were modelled reflectively. Based on literature review and conceptual logic, it was decided to designate the HOCs as reflective-reflective in order to reflect the LOCs' direct effects on them [81,82]. In addition, we followed Sarsdedt et al. [82] in specifying and evaluating the HOCs using a disjoint two-stage approach. The disjoint two-stage method is as follows: the antecedent paths to the LOCs of the HOCs are built directly, with the HOCs being excluded in stage 1, and the LOCs' latent variable scores are saved and utilized to assess the HOCs in stage 2.

The first-order measurement model that includes the scale items is depicted in Table 1. Considering that Hair et al. [80] proposed that rho A may be a good approximation of construct reliability, this study employed it to evaluate the constructs' reliability. Cronbach's

alpha and composite reliability are believed to be unnecessarily conservative and liberal, respectively [80]. According to Hair et al. [83], the reliability scores for the constructs are all greater than the threshold of 0.7. These findings confirmed the internal consistency of the constructs. Because the indicators have loadings larger than 0.7, we can conclude that these constructs are reliable [70]. Additionally, the AVE scores used to quantify the common variance in a specific construct range from 0.748 to 0.810, demonstrating values greater than the recommended threshold of 0.5 [84], assuring the convergent validity of the constructs during the process. HTMT, a new, robust, and more specific criterion than the Fornell and Larcker methods, or cross-loadings, was used to determine the discriminant validity [85]. According to Kline [86] the discriminant validity of the HTMT scores in Table 2 is not a concern, as all values are less than the 0.85 threshold. Next, Table 3 presents the HOC measurement model (CERPIMPL). Internal consistency is demonstrated by the CERPIMPL's rho A value of 0.858. The factor loadings for ERP usage and strategic alignment, the LOCs of CERPIMPL, indicate values over the 0.7 threshold, proving the reliability of the LOCs, as recommended by Hair et al. [70]. The AVE value of 0.858 supports the claim that CERPIMPL has convergent validity. As Sarstedt et al. [82] suggested, the discriminant validity of all constructs was examined, and the HTMT values are less than the 0.85 criterion specified by Kline [86], which is consistent with our findings (see Table 4). Therefore, all the constructs used to further analyze the structural model have been found to be both reliable and valid.

Table 1. First order measurement model.

Construct	Indicator	Scale Items	Loadings	AVE	Rho A
Cloud ERP Implementation					
Cloud ERP Usage	CERPUSE1	We use cloud ERP very intensively for our main functions	0.920	0.780	0.873
	CERPUSE2	We use cloud ERP very frequently for our supporting functions	0.895		
	CERPUSE3	We use cloud ERP very innovatively to aid our strategic functions	0.831		
Strategic Alignment of Cloud ERP	STRALIGN1	We align cloud ERP to strengthen customer services	0.870	0.748	0.958
	STRALIGN2	We align cloud ERP with our business strategies	0.840		
	STRALIGN3	We align cloud ERP to improve process management	0.832		
	STRALIGN4	We align cloud ERP to enhance product/service offerings	0.874		
	STRALIGN5	We align cloud ERP to devise strategic plan	0.879		
	STRALIGN6	We align cloud ERP to consolidate business goals	0.899		
	STRALIGN7	We align cloud ERP with our objectives	0.868		
	STRALIGN8	We align cloud ERP for opportunity recognition	0.851		
	STRALIGN9	We align cloud ERP to adapt to strategic changes	0.868		
Top Management Support	TMS1	Top management provides administrative assistance in cloud ERP implementation	0.849	0.754	0.949
	TMS2	Top management encourages staff to use cloud ERP	0.879		
	TMS3	Top management is aware of cloud ERP benefits	0.982		
	TMS4	Top management provides adequate resources for implementation and continued usage of cloud ERP	0.831		
	TMS5	Top management is aware of the risks involved in cloud ERP implementation	0.885		
	TMS6	Top management is committed to ensuring that the firm achieves a competitive advantage through the use of cloud ERP.	0.859		
	TMS7	Top management considers the use of cloud ERP as strategically important	0.881		
Financial Performance	FP1	In the last two years, our company's revenue has grown	0.913	0.810	0.943
	FP2	In the last two years, our company's market share has increased	0.856		
	FP3	In the last two years, our company's profit has improved	0.897		
	FP4	In the last two years, our company's return on investment has increased	0.924		
	FP5	Overall, our financial performance is better	0.910		

Table 2. Discriminant validity of first-order constructs: HTMT.

Construct	CERPUSE	FP	STRALIGN	TMS
Cloud ERP Usage				
Financial Performance	0.401			
Strategic Alignment of Cloud ERP	0.793	0.478		
Top Management Support	0.463	0.641	0.518	

Table 3. Second-order measurement model.

Construct	Indicator	Loading	AVE	Rho A
Cloud ERP Implementation	CERPUSE	0.912	0.858	0.858
	STRALIGN	0.941		

Table 4. Discriminant validity of all constructs: HTMT.

Construct	CERPIMPL	FP	TMS
Cloud ERP Implementation			
Financial Performance	0.496		
Top Management Support	0.553	0.641	

4.2. Goodness of Fit

It is usual to use the standardized root mean squared residuals (SRMR) as a measure of model fit in PLS-SEM. It is the standardized variance between the observed and projected correlations that provides a complete measure of fit [87]. It is preferred that the SRMR value be less than 0.08, while values less than 0.10 are regarded as acceptable [88]. With an SRMR score of 0.046, the model used in this study is well-fitted to the data.

4.3. Variance Inflation Factor (VIF)

To ensure that the model findings are not compromised, collinearity must first be analyzed before evaluating the structural relationships [80]. Before assessing the structural model, the multicollinearity of the constructs was examined using the variance inflation factor (VIF). The VIF of the constructs is 1.33. The result is well below the 3.3 threshold, indicating that multicollinearity is not present in the constructs tested [83].

4.4. Structural Model

The significance of the hypothesized mediating and moderating relationships between the constructs was evaluated using path coefficients. T-statistics were utilized to analyze the significance of the paths coefficients in SMARTPLS, which used a complete bootstrapping technique with 5000 subsamples. Hence, the t-statistic of $t \geq 1.96$ suggests a significance level of 0.05 [83]. The path coefficient, coefficient of determination R^2, and Q^2 are common metrics for evaluating structural models [83], and more recently, PLSpredict, which measures the model's out-of-sample predictive capacity, has been introduced [80]. Hence, the aforementioned analyses were conducted under the structural model.

4.4.1. Mediation Analysis

To evaluate the mediating effect, besides the path coefficient being significant, the result of the bootstrap test of the bias corrected confidence interval must not include a zero value in between [83]. According to Table 5, the path coefficients for CERPIMPL→TMS→FP are significant (β = 0.257, t-value = 4.470, $p < 0.001$). Additionally, the bootstrap test's bias-corrected confidence interval values (lower level [LL] = 0.150, upper level [UP] = 0.378) do not include a zero value in the interval, supporting the presence of a mediating effect and H1. To ascertain the type of mediation, it is necessary to consider the significance of the direct effect [52,89]. In the meantime, the direct effect (β = 0.189, t-value = 2.760, $p < 0.01$) is

significant. Thus, top management support partially mediates the relationship between cloud ERP implementation and financial performance.

Table 5. Mediation result.

No	Hypothesis	β	t-Value	LL	UL	Result
H1	CERPIMPL → TMS → FP	0.257 ***	4.470	0.150	0.378	Supported
	Total effect	0.446 ***	5.653			
	Direct effect	0.189 **	2.760			Partial Mediation

*** $p < 0.001$, ** $p < 0.01$, β = Standard Beta.

4.4.2. Moderation Analysis

To test the existence of the moderating effect, one-tailed *p*-value assessment and cloud ERP implementation (predictor) and top management support (moderator) were multiplied to create an interaction construct (CERPIMPL * TMS). This approach is the product indicator approach in SMARTPLS. Based on Table 6, the path CERPIMPL*TMS→ FP (β = −0.094, t-value = 1.957, $p < 0.05$) is negatively significant, confirming a negative moderating effect in this path, thus rejecting H2. Using the effect size parameter from Kenny [90], the moderating strength was evaluated, where 0.005, 0.01, and 0.025 are small, medium, and large effect sizes, respectively. The f^2 value of 0.028 indicates large effect size. In Figure 2, the results of the moderating effects are presented in a slope analysis graph in order to simplify their explanation. The figure shows a significant negative moderating effect of TMS between cloud ERP implementation and financial performance.

Table 6. Moderation result.

No	Hypothesis	β	t-Value	f^2	Result
H2	CERPIMPL*TMS→ FP	−0.094 *	1.957	0.028	Rejected

* $p < 0.05$, β = Standard Beta.

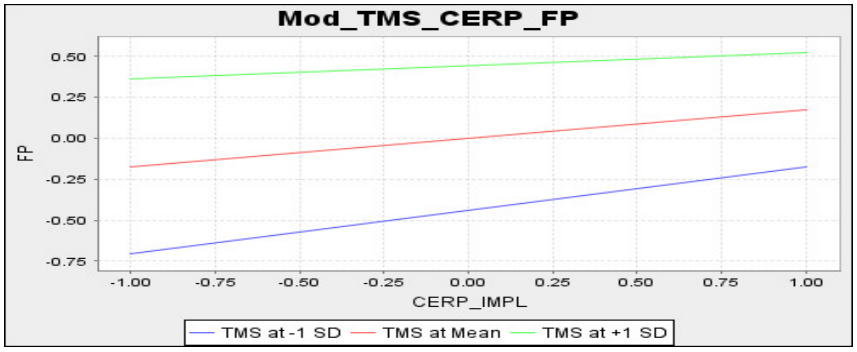

Figure 2. Moderating effect of top management support.

It appears that cloud ERP implementation has a greater impact on financial performance in SMEs, with a lower TMS than in those with a high TMS, based on the fact that the slope of the CERPIMPL→ FP relationship is steeper on the low TMS line (lowest line) than on the high TMS line (highest line). Cloud ERP implementation has a significant negative impact on the financial performance of SMEs with a high TMS, according to this study. As a result of the negative sign, H2 is rejected.

4.4.3. Assessment of R^2, Q^2, and PLSpredict

Exogenous variables can explain up to a certain percentage of an endogenous variable's variance, which is known as the determination coefficient R^2 [83]. When it comes to predictive relevance (Q^2), blindfolding is used to decide the predictive power of indepen-

dent over dependent variables [91,92]. PLSpredict assesses the predictive power of the PLS path models outside of the sample [93].

Cohen [94] argued that R^2 values of 0.26, 0.13, and 0.02 indicate strong, moderate, and weak explanatory power, respectively. The R^2 values for TMS (R^2 = 0.246, t-value = 2.969, $p < 0.001$) and FP (R^2 = 0.423, t-value = 5.440, $p < 0.01$) indicate that these constructs explain a significant amount of variance. According to Hair et al. [83], a Q^2 value greater than zero suggests that endogenous constructs have predictive relevance in the structural model. The Q^2 values for endogenous constructs are greater than zero, the TMS is 0.174, and the FP is 0.325, according to the statistical result. These findings imply a level of predictive significance that is sufficiently moderate, supporting predictive accuracy [95].

According to Hair et al. [80], researchers should incorporate out-of-sample prediction as a critical component of model assessment in PLS-SEM and as a means of evaluating their model's practical applicability. To conclude the structural model assessment, this study examined the model's out-of-sample predictive power on tenfold and ten replications of the hold-out sample data for the major target construct FP using the PLSpredict technique [80]. This permits comparison of the root mean squared error (RMSE) values in the PLSpredict output for the PLS-SEM and the naive linear benchmark linear model (LM). Because all PLS-SEM RMSE values are lower than the LM RMSE, resulting in all negative differences in the final column of Table 7, this indicates that the model has a high predictive capacity [95]. As a result, the significant out-of-model prediction power of the financial performance construct is established.

Table 7. Prediction-Oriented Analysis (PLSpredict).

	PLS-SEM		LM	PLS-SEM-LM
Item	**RMSE**	**Q^2predict**	**RMSE**	**RMSE**
FP1	0.715	0.168	0.754	−0.039
FP2	0.736	0.157	0.794	−0.058
FP3	0.681	0.213	0.697	−0.016
FP4	0.658	0.214	0.716	−0.058
FP5	0.698	0.149	0.725	−0.027

5. Discussion

TMS has a direct effect on financial performance, as well as moderating and mediating effects on the cloud ERP implementation–financial performance relationship, according to the results of this research.

First, the findings reveal that TMS partially mediates the relationship between cloud ERP implementation and FP, supporting H1. Considering the total effect, SMEs with an extra unit of cloud ERP implementation are predicted to achieve a 0.446 (45%) unit higher financial performance than other enterprises. Nevertheless, when top management supports the cloud ERP post-implementation, such as by providing usage, training, resources, and incentives, SMEs with an extra unit of cloud ERP implementation are predicted to achieve a 0.257 (26%) unit greater FP, since TMS absorbs part of the effects of cloud ERP implementation on FP. This result typically indicates the significance of TMS as a mediator and confirms previous research conclusions [54,56] that TMS is critical in increasing technology integration into business for better overall firm performance. This finding further demonstrates that when TMS fosters a supportive environment for cloud ERP users in SMEs, operational tasks are performed more efficiently, and financial metrics, such as profit, return on investment, and gross earnings, are improved. In addition, because top management minimizes resistance to change by providing essential resources and training their personnel to become more skilled at using cloud ERP [26], this, in turn, has a favorable impact on the firm's performance. Top management also acts as a mechanism for enhancing firm performance through the use of cloud ERP by implementing new performance control systems (e.g., offering rewards/incentives) to boost user motivation and change perfor-

mance targets (e.g., giving assistance, especially during a prolonged period of performance decline) [58].

Second, it is found that SMEs with low TMS have a greater impact on the cloud ERP implementation–financial performance link than do enterprises with high TMS, which contradicts our hypothesis and rejects H2. Thus, SME's with a low TMS are found to benefit more financially from implementing a cloud ERP system. According to scholars, top management should be fully involved in all phases of ERP implementation [48], including the post-implementation period devoted to achieving economic benefits. However, the finding of the negative moderating effect of TMS in the cloud ERP implementation–FP relationship negates this proposition. On the other hand, our finding supports the proposition that although TMS is frequently advocated as intrinsically beneficial [96], there is substantial evidence that excessive TMS can be dysfunctional and result in failure [97]. Furthermore, this finding lends credence to the dynamic perspective of TMS, as advocated by Dong [28]. The dynamic view of TMS explains that ERP implementation success requires that top management adjust its support level and content based on varying implementation conditions [28]. In another word, during cloud ERP implementation, TMS is not always static, but dynamic, which means that top management support varies in response to ERP implementation project requirements [48], and this dynamism will also affect firm performance. For example, Mähring [96] pointed out that excessive use of TMS can have a negative influence on employee enthusiasm and absorption capacity, as well as interfere with the routine operations of project managers [56]. Additionally, Somer and Nelson [98] discovered that following the initial implementation period of ERP, project participants' evaluations of the importance of TMS continue to decline, which when continued, will dampen firm performance.

6. Conclusions

The goal of this study is to examine whether TMS has a mediating or moderating influence on the relationship between cloud ERP implementation and financial performance. The study establishes that TMS partially mediates the relationship between cloud ERP implementation and financial performance, and that SMEs with a low TMS have a strong positive influence on the cloud ERP implementation–financial performance relationship. Thus, TMS mechanisms, such as resource provision, administrative aid, training, and reward systems, all contribute to the success of cloud ERP implementation. Additionally, an excessive amount of TMS is detrimental and results in failure in terms of negative financial performance. As a result, our study is able to demonstrate the value of TMS while also defining its boundaries in the cloud ERP post-implementation stage.

6.1. Theoretical Contributions

The contingent RBV theory was utilized to explain the impact of cloud ERP on the financial performance of SMEs, with TMS serving as a contextual influencing variable. Theoretically, the findings contribute to the ongoing discourse about how important TMS is in the post-implementation stage of IT implementation by examining the distinctive mediating–moderating effects of TMS on the cloud ERP implementation–financial performance link. For the first time, this study examines the mediating as well as the moderating effects of TMS post-implementation of cloud ERP to better comprehend the subject matter, supporting [30,31] viewpoints on the value of investigating mediating–moderating effects concurrently. Thus, our study establishes an indirect influence of TMS on the success (e.g., higher performance) of IT implementation, and provides evidence for the postulations regarding how TMS modifies the effects of CC implementation on various performance dimensions of firms [27]. Specific to SMEs' financial performance, our findings provide statistical support for the strong effects of low TMS and the partial mediation role of TMS in the cloud ERP implementation–financial performance relationship, which were previously unknown. Additionally, the study's findings establish a new mediating–moderating model for enhancing the success of cloud ERP implementations in SMEs via TMS. This

study is one of the first to shed light on the contradictory findings regarding cloud ERP implementation and performance, as well as the TMS role in the post-implementation stage, by assessing not only the TMS mediation effect, but also its moderating effect. In conclusion, because businesses must be capable of responding efficiently in the face of a continually changing business environment, the contingent RBV theory was employed to describe the conceptual model in this study. Because the study's results corroborate the dynamic perspective of TMS [28], this theory can be used to mitigate the static aspect of the RBV theory, as demonstrated by the findings of the study.

6.2. Practical Contributions

The following section discusses the findings' managerial implications and practical significance. First, the findings highlight a critical necessity to ensure equilibrium of cloud ERP implementation with TMS in order to optimize the benefits of TMS and achieve a strong cloud ERP–financial performance relationship. Now, more than ever, business organizations, particularly SMEs, are seeking to boost their cost efficiency and overall performance. With the implementation of cloud ERP, a cost-effective method of synchronizing business operations and increasing labor efficiency [99], the outcomes of this study demonstrate that TMS is a powerful mechanism for achieving improved financial performance. Therefore, SMEs managers, owners, and executives should first be aware of the general benefits of cloud ERP in order to be receptive towards the technology. After successful implementation, top managers should provide administrative assistance in the post-implementation stage of cloud ERP, encourage employees to use cloud ERP, provide adequate resources, train and retrain employees in effectively using the IT, and provide rewards/incentives to bolster the motivation of employees. Additionally, without proper assimilation, adopted IT is incapable of enhancing corporate operations, assisting in strategic decision making, and in ultimately improving firm performance [100]. SMEs managers should provide a conducive learning environment for users to learn and also encourage employees with fast assimilation to share their knowledge with others to improve the efficiency of the technology, which will subsequently enhance the firm's financial performance.

Furthermore, the finding that a high level of TMS negatively affects the cloud ERP implementation–financial performance relationship implies that excessive support from top management is a recipe for organizational failure. Therefore, top managers need to be dynamic in order to minimize the detriments of TMS to achieve a strong cloud ERP implementation–financial performance link. Top management should provide support as earlier explicated; however, it should adjust its support level and content based on unfolding conditions and users' feedback or body language. There should be less meddling from top management during employees' and other members' usage of the cloud ERP, which could have a negative impact on the firm's success. Users should be allowed to be free and creative in order to boost their confidence. Hence, top management needs to control the level of resources, incentives, administrative assistance, and training, and then change the management support it offers after the ERP go-live stage in order to ensure a positive firm performance.

6.3. Limitations and Future Research Directions

While the current study sheds light on an important aspect of cloud ERP implementation and the financial performance of SMEs, it has some shortcomings that can be addressed in future research. First, because we carried out the study in Malaysia, a place where the potential of cloud ERP has not yet been fully realized, our findings may represent both the perceived utility of this technology and the particular circumstances of the country. As a result, caution should be applied when extrapolating the findings to other geographical regions. Second, the sample size is small (204); increasing the sample size in future studies may also result in more significant results. Third, TMS is a multidimensional construct [21] consisting of top management support for change (TMSC), top management support for vision sharing (TMSV), and top management support for resource allocation (TMSR). Fur-

ther research should be conducted to determine the mediating and moderating impacts of TMS dimensions in order to fully grasp the dynamics of TMS impact on the cloud ERP implementation–financial performance link. Fourth, additional variables may act as mediators and moderators in the relationship between cloud ERP implementation and financial performance; future research should shed light on this possibility.

Author Contributions: Conceptualization, O.J. and S.S.; methodology, O.J., Z.A.-S., N.N.H. and S.A.; formal analysis, O.J., N.B.A., and V.T.N.; writing—original draft preparation, O.J., S.S., O.A.-K. and S.R.; writing—review and editing, Z.A.-S., V.T.N. and S.A.; visualization, O.J., S.R., N.B.A., N.N.H. and O.A.-K.; supervision, S.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Participants were informed that their responses to the questionnaire would be treated entirely anonymously and confidentially.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

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