

On-Shelf Availability (OSA) and Firm Performance: The Moderating Effects of Lean Practices in Retail Industry

(Ketersediaan Stok di Rak dan Prestasi Syarikat: Kesan Moderasi Amalan Lean di Industri Peruncitan)

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ABSTRACT

This study addressed the problem of retailers struggling with store operations, which negatively affects customer satisfaction, sales, and overall firm performance. The objective was to investigate the relationship between on-shelf availability and firm performance in Malaysian retail small and medium enterprises. The study examined the impact of operational and managerial factors as determinants of on-shelf availability, as well as the moderating effect of lean practice on these relationships. A survey was conducted among retail Small and Medium Enterprises owners in the central region of Peninsular Malaysia, resulting in 151 usable responses. Data analysis was performed using Partial Least Squares Structural Equation Modeling. The main findings revealed that operational factors had a significant positive effect on firm performance, whereas managerial factors did not show a significant effect. Furthermore, the study demonstrated that lean practice moderated the relationships between operational factors and firm performance, as well as between managerial factors and firm performance. These findings have significant practical implications for retail small and medium enterprises owners, researchers, and policymakers. Retail small and medium enterprises, should invest in efficient operational practices, incorporating lean practices cautiously, emphasizing bottleneck and constraint management to boost firm performance.

Keywords: On-shelf availability; operational; managerial; retail SMEs performance; lean practices.

ABSTRAK

Kajian ini menangani masalah peruncit yang bergelut dengan operasi kedai, yang memberi kesan negatif terhadap kepuasan pelanggan, jualan dan prestasi firma secara keseluruhan. Objektifnya adalah untuk menyiasat hubungan antara ketersediaan stok di rak dan prestasi firma perusahaan kecil dan sederhana runcit Malaysia. Kajian ini mengkaji kesan faktor operasi dan pengurusan sebagai penentu ketersediaan stok di atas rak, serta kesan penyederhana amalan lean ke atas hubungan ini. Satu tinjauan telah dijalankan dalam kalangan pemilik Perusahaan Kecil dan Sederhana runcit di wilayah tengah Semenanjung Malaysia, menghasilkan 151 maklum balas yang boleh digunakan. Analisis data dilakukan dengan menggunakan Pemodelan Persamaan Berstruktur Kuasa Dua Terkecil Separa. Penemuan utama menunjukkan bahawa faktor operasi mempunyai kesan positif yang signifikan terhadap prestasi firma, manakala faktor pengurusan tidak menunjukkan kesan yang signifikan. Tambahan pula, kajian menunjukkan bahawa amalan lean menyederhanakan hubungan antara faktor operasi dan prestasi firma, serta antara faktor pengurusan dan prestasi firma. Penemuan ini mempunyai implikasi praktikal yang ketara untuk pemilik perusahaan kecil dan sederhana runcit, penyelidik dan penggubal dasar. Perusahaan kecil dan sederhana runcit, harus melabur dalam amalan operasi yang cekap, menggabungkan amalan lean dengan berhati-hati, menekankan pengurusan kesesakan dan kekangan untuk meningkatkan prestasi firma.

Kata kunci: Ketersediaan stok di rak; pengoperasian; pengurusan; prestasi PKS runcit; amalan lean

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INTRODUCTION

The retail sector plays a crucial role in the development and competitiveness of emerging economies, acting as a vital link between manufacturers and consumers (Torres et al. 2022). Additionally, it serves as a significant source

of employment, particularly in labour-intensive industries like retail (Hamim et al. 2021; Nizam 2019). However, despite its economic effect, the retail sector has received limited attention from researchers in the past, indicating a need for more comprehensive frameworks and in-depth analysis (Marques et al. 2022; Mohd, et al. 2019).

The outbreak of the COVID-19 pandemic has caused substantial disruptions to retailers worldwide. Measures such as movement control orders, border closures, and trade restrictions have presented challenges to retailers, especially Small and Medium-sized enterprises (SMEs) (Salas-Musso 2022; Guthrie 2021). SMEs face difficulties in accessing markets, securing funds for disease prevention, and dealing with production delays, leading to disruptions in national and global supply chains. As a result, retailers need to develop strategies to adapt to the new norms, address short-term disruptions, and prepare for long-term impacts.

Previous research has primarily explored distinct constructs in isolation, mainly within the context of supply chain integration performance in manufacturing, rather than combining them into a single predictive model for firm performance (FP) (Gama et al. 2022; Hanninen et al. 2021; García-Arca et al. 2019; Song et al. 2019). Furthermore, this study was to explore whether the presence of lean practice (LP) strengthened or weakened the relationships between these constructs. On-shelf availability (OSA) is considered an outcome of efficient retail supply chain performance and a determinant of firm performance (FP) in retail firms (Wainaina & Odari 2023; Marques & Carvalho 2022). The efficiency of on-shelf availability OSA can be enhanced by a supportive organizational culture, such as lean practice (LP).

While many retailers have transitioned to virtual outlets, SMEs struggle to cope with the unpredictable changes in demand. The inability to accurately predict and manage demand has resulted in significant out-of-stock (OOS) situations and supply disruptions, negatively affecting customer relationships (Mohamud & Mwangi 2021). Therefore, it becomes essential for SME retailers to understand the drivers of on-shelf availability (OSA), which was the main focus of this study. Accordingly, the following research questions were developed:

- RQ₁ What is the relationship between operational (OPS) factors and firm performance (FP)?
- RQ₂ What is the relationship between managerial (MGR) factors and firm Performance (FP)?
- RQ₃ Does lean practice (LP) moderate the relationship between operational (OPS) factors and firm performance (FP)?
- RQ₄ Does lean practice (LP) moderate the relationship between managerial (MGR) and firm performance (FP)?

Hence, the study aimed to examine the key constructs of on-shelf availability (OSA), Operational (OPS) and Managerial (MGR) factors influencing the firm performance (FP) of SMEs in the retail subsector, and specifically explored their relationship with lean practice (LP) capability. It sought to develop a predictive model for firm performance (FP) by combining these constructs and investigate whether LP strengthened or weakened their relationships. The study also aimed to understand the role of OSA and LP in enhancing the performance and sustainability of retail SMEs within the Malaysian context.

This study makes a significant contribution to the existing literature by combining multiple constructs into a comprehensive conceptual model to understand how OSA and LP impact firm performance (FP) within the context of Malaysian retail SMEs. It complements existing models by incorporating OSA and LP as predictors of FP. The findings of this study will benefit owner and managers of small and medium-sized retailers by providing insights into the role of OSA and LP in enhancing firm performance and overall sustainability.

The findings of this study will offer valuable insights into the critical impact of OSA on retail firm performance, as well as the potential moderating effect of LP. This information will be useful for retail SME owners, researchers, and policymakers in enhancing the performance of SMEs in the retail sector.

In the subsequent sections, this paper will present the theoretical framework, methodology, data analysis, and results. It will conclude with a discussion of the findings, implications, and recommendations for future research.

LITERATURE REVIEW

MALAYSIAN RETAIL SME FIRM PERFORMANCE

Malaysian SMEs at rural and suburban areas continue to be dominated by conventional stores. Malaysia's micro, small, and medium enterprises (MSME) grew by 11.6 percent in 2022, outpacing the national GDP growth of 8.7 percent, according to the Department of Statistics Malaysia (DOSM). The service and manufacturing sectors continue to be the largest contributors to MSMEs' GDP, accounting for 84.6 percent of the overall (Chong 2023).

A precise definition of MSME Categorisation is provided by the National SME Development Council (NSDC) Malaysia. It has become a model for many nations where the multi-sectoral breakdown of SMEs is a good example (Anuar et al. 2022; Sefiani & Bown 2013). The updated concept is based on sectors and turnover of a company as shown in Table 1.

TABLE 1. Malaysian SME categorisation

Sector	Micro size	Small size	Medium size	
Services (Including Retail) & Other sectors	Yearly income less than RM300,000 and less than 5 permanent employees.	Yearly income from RM300,000 but not exceed RM3,000,000 or 5 until 29 permanent employees.	Yearly income from RM300,000 but not exceed RM3,000,000 or 5 until 29 permanent employees.	Yearly income from RM3,000,000 but not more than RM20,000,000 or 30 until 74 permanent employees.
Manufacturing	Yearly income less than RM300,000 and less than 5 permanent employees.	Yearly income from RM300,000 but not more than RM15,000,000 million or 5 until 74 permanent employees.	Yearly income from RM300,000 but not more than RM15,000,000 million or 5 until 74 permanent employees.	Yearly income from RM15,000,000 but not more than RM50,000,000, or permanent employees from 75 until 200.

Source: www.smecorp.gov.my 2023

The definition in Table 1 has been enforced since 1 January 2014. Any business that satisfies the requirements for income or the number of permanent workers indicated in the table above is recognised as a Small Medium Enterprise SME (Hamim 2021; Chin & Lim 2018). The category of SMEs has also been redefined and divided into three broad categories of micro, small and medium enterprises. The 3 main factors that determine whether an enterprise is an SME are as follows; Staff headcount, Annual sales turnover, and Paid-up capital. Services, industry, agriculture, construction, mining, and quarrying are some of the industries that make up a SME.

Despite the growth of the retail industry, modern retailing in Malaysia is still in its infancy. The new shopping format was first established in Europe in 1959 but did not become widely accepted in the Malaysian market until the early 1990s. It includes numerous features including self-service, a large selection of groceries and household goods, discounted rates, and free parking (Babin 2021; Madhani 2020; Mohd et al. 2019). In terms of development, Malaysia has lagged behind Europe in retail for thirty years. Malaysia's retail sector struggled with poor growth and failed to achieve the required global retail growth rate between 2013 and 2017 (see Figure 2). Retail is a fragmented industry where rural areas are still dominated by traditional shops.

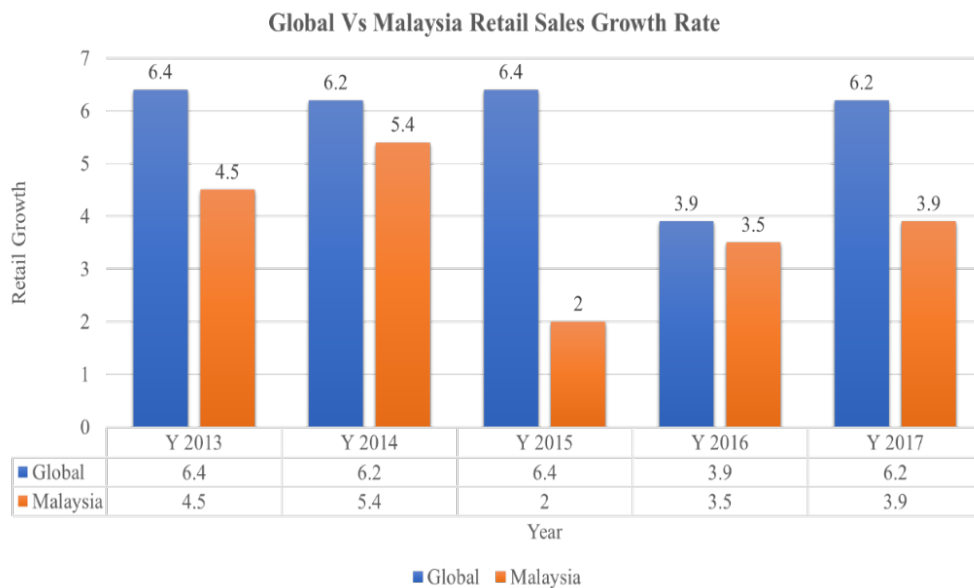


FIGURE 2. Global vs. Malaysia Retail Sales Growth Rate 2013 to 2017

Source: Statista.com (2018)

Generally, both internal and external factors influence retail success (Cusumano et al. 2021; Patel et al. 2019). Consequently, ineffective internal resource is to be blamed for business failures which contribute to about 65% of firm failures (Ushakov & Shatila 2021; Amit et al. 2020; Lightelm & Cant 2002). Furthermore, effective management of internal factors, especially in the area of 'people', can improve performance (Marques et al. 2022; Illanganthilake & Wickramarachchi 2021; Madhani 2020).

ON-SHELF AVAILABILITY (OSA)

On-Shelf Availability (OSA) is a crucial aspect of retail store performance, representing the number of products available to customers when they intend to make a purchase. It is a measure of inventory management efficiency and directly affects retailer performance (Marques et al. 2022; Mohamud & Mwangi 2021; Bottani et al. 2017).

OSA ensures that products sought by consumers are present on the shelf and in a saleable condition, whereas out-of-stock (OOS) refers to the unavailability of specific products (Marques & Carvalho 2021; Bottani et al. 2017). In this study, OOS was considered as an indicator of poor OSA.

Phantom stock, a negative form of OSA, occurs when the inventory tracking system indicates the presence of a product that is no longer physically available. The reasons for a product not being visible on the shelf include being in a consumer's cart but not purchased, out of stock, or stolen (Marques & Carvalho 2021; Milella et al. 2020). Previous research has identified various dimensions of stock availability, OSA as determinants of retailer firm performance (FP) (Schleper et al. 2021; Tarigan et al. 2020; Avlijas et al. 2018; Moussaoui et al. 2016). This study focused on two dimensions, namely operational (OPS) and managerial (MGR) factors. These two dimensions were chosen due to their significant effects on OSA and SMEs Performances (FP) in retail shops, aligning with the study's objectives and efficient resource allocation. These two primary dimensions, hence, ensured a focused and impactful investigation.

The majority of OSA drivers are operational, accounting for approximately 72% of OOS instances in retail shops. Some estimates suggest that operational errors contribute to as much as 98% of OOS incidents (Schleper 2021; Benrqya 2021; Grubor et al. 2017). Operational factors encompass nine namely forecasting, ordering, backroom work, shelf space allocation, pack size, replenishment frequency, inventory records, errors in upstream operations, and inaccurate master data (Benrqya 2021; Moussaoui et al. 2016).

This study specifically focused on four main determinants within the OPS dimension: forecasting, ordering, shelf space allocation, and inventory records. These factors were selected because they had a big influence on out-of-stock (OOS) incidences in retail stores, matched the goals of the study, and allowed for effective resource use. They are recognised as the main causes of OSA cases, resulting in a targeted and impactful investigation. The management attention given to OSA is a crucial determinant of high-performing retail stores. Effective management (MGR) practices are essential in ensuring OSA. Factors such as employees' knowledge about the impact of their actions on store operations and stock levels, as well as management team stability, influence OSA performance (Cusumano et al. 2021; García-Arca et al. 2019; Bottani et al. 2017). Lack of leadership emphasizing the importance of OSA and management team turnover are identified as two main drivers of MGR related issues (Benrqya 2021; Grubor et al. 2017; Raman et al. 2001).

The success of Malaysian retail is significantly impacted by effective on-shelf availability (OSA) by MGR considerations. The OSA is at its best due to crucial organisational processes and MGR, which also support consistent MGR and staff comprehension of operational impact. Team turnover and leadership voids that highlight the significance of OSA create MGR problems. On the other hand, successful Malaysian retailers credit their achievements to persistent leadership that supports MGR continuity and values OSA. Theoretical and empirical studies have highlighted the significance of OSA and its determinants, but limited research exists specifically focusing on the Malaysian retail SME context. This study aimed to bridge this gap by investigating the relationships between OSA, retail firm performance, and the moderating effect of lean practices (LP) within Malaysian retail SMEs.

ON SHELF AVAILABILITY AND LEAN PRACTICES

Several researchers have studied the effect of lean practises (LP) in line with Shah and Ward (2003) on operational efficiency over a five-year period, dividing lean practises within 4 subgroups: Just in Time (JIT), Total Quality Management (TQM), Total Preventive Maintenance (TPM) and Human Capital Management (Nath & Agrawal 2020). These groups are associated with operational efficiency, lead time measurement, price, and quality compliance. They relate their lean groups to plant size, plant age and union density of the companies studied and found that the combined lean practises have a huge effect on operational efficiency, leading to FP. Nevertheless, some practises differ significantly depending on the size of the facility, its development stage, and its unionisation. According to Shah and Ward (2003) there are many LPs in literature including the 22 methods (Cadden et al. 2020; Nath & Agrawal 2020). This study focused on five prevalent methods deemed more important and practical for retail organizations namely cellular layout, 5 S (related to good housekeeping practices), visual management related to the visualization element, teams, and lean organizational structure. The selected "Lean Practices" (LP) directly affects on-shelf availability (OSA) by enhancing operational efficiency, organization, communication, collaboration, and responsiveness. Accordingly, Marques et al. (2022) state that putting these practices into practice can result in less waste, improved processes, and eventually better on-shelf availability (OSA) in retail organisations. This, in turn, will surely result in higher sales for retail organisations.

Considering this, some academics proposed combining basic constructs and lean methods (Marques et al. 2022; Cusumano et al. 2021; Shah & Ward 2003). The current study served as a helpful resource for lean methods because its main goal is to reduce waste and strengthen the waste reduction philosophy in order to continuously improve firm performance. Lean practices (LP) may lead to effective retail SMEs operations particularly in OSA, in response to market competition and environmental intensity, hence, improving the overall FP (Marques et al.

2022; Mohamud & Mwangi 2021; Chuang et al. 2019; Song et al. 2019). Therefore, it is interesting to study more about LP's significance in the relationship involving OSA and FP.

This study focused on two presented hypotheses that highlighted the direct relationship between OSA dimension and its two independent variables with regard to FP. The hypotheses for LP moderation were expanded by another two. These hypotheses have been constructed in order to evaluate their applicability to the requirements, goals, and research questions of this study. According to Marques et al. (2022) and Grubor et al. (2017), the majority of OSA drivers are OPS in nature, and retail store OPS inefficiencies account for nearly 72 percent of out-of-stocks. Previous empirical studies, for example Benrqya (2021) and Moussaoui et al. (2016), discovered that OPS factors namely forecasting, ordering, shelf space allocation and inventory record accuracy have significant impact on FP. Numerous studies have shown that OPS has a substantial positive effect on performance of SMEs, as the efficient use of systems and technologies in inventory management influences the performance of organisations (Mohamud & Mwangi 2021; Arasa & Achuora 2020; Grubor et al. 2017; Moussaoui et al. 2016).

However, this is not unchallenged as research suggests that the impact of operational (OPS) on organisational performance is not effective, especially when demand uncertainty is high, and the smaller the organisation, the lower the operational efficiency is likely to be (Chuang et al. 2019). The significant relationship between operational (OPS) factors and SME performance (FP) numerous empirical research has proven this at the organization level. It is deemed apparent that the implementation of OPS would have a profound effect upon retail SMEs FP. Therefore, the hypothesis of this study was as follows:

H₁ There is a relationship between operational (OPS) and SMEs performance (FP) of retail firms in Malaysia.

From a different angle, managerial instability, product accessibility, and employees' lack of awareness of how their actions affect business operations contribute to out-of-stock (OOS) or adversely affected shelf availability (OSA) (Marques et al. 2022; Avlijas et al. 2018; Grubor et al. 2017). Lack of leadership emphasising OSA's significance and management group turnover are two (2) factors cited as driving MGR (Benrqya 2021; Grubor et al. 2017; Raman et al. 2001).

Additionally, the studies by Rasib et al. (2020), Chebet and Kitheka (2019) and Ahmad and Zabri (2018) have shown that there is a significant direct influence of Managerial (MGR) factors on Firm Performance (FP). In contrast, in relation to manufacturing firms, numerous earlier research has revealed no correlation between MGR factors and FP (Li et al. 2021; Astuty & Sinaga 2021). The findings can be attributed to the fact that more resources are available to larger organisations than to smaller businesses (Ushakov & Shatila 2021; Ahmad & Zabri 2018). Therefore, from the above discussion, another hypothesis emerged as follows:

H₂ There is a relationship between managerial (MGR) factors and SMEs Performance (FP) of retail firms in Malaysia.

Lean Practices (LP) is a popular practise in many industries and countries that involves minimising unnecessary processes while improving Operational (OPS) efficiency and quality from a consumer perspective (Pozzi et al. 2021; Cadden et al. 2020; Womack & Jones 2003). Previous research by Wainaina and Odari (2023), Marques et al. (2022) and Hardcopf et al. (2021). For large companies, particularly, Lean Practices (LP) have a significant, moderating effect on the relationships between Operational (OPS) factors and Firm Performance (FP). However, there is a significant reverse or negative correlation effect, as evidenced by earlier research (Mohamud & Mwangi 2021; Stoeber & Yang 2010).

Chuang et al. (2019), who examined US public retailers between 2000 and 2013 to determine a relationship between lean practise (LP) inventory management and operational performance, contend that the relationship is primarily controlled by firm size and demand volatility, which reflects retailers' internal resources and external dynamics (Wainaina & Odari 2023; Hardcopf et al. 2021; Cusumano et al. 2021). From these considerations, the following hypothesis was derived:

H₃ The relationship between OPS and FP is moderated by lean practices (LP).

Managerial (MGR) corporate attention to the significance of OSA has indeed been regarded as the key distinction between high and low performing OSA shops (Benrqya 2021; Hasan et al. 2020; Garca-Arca et al. 2019). Previous studies showed a significant effect of the moderating role of LP on the relationship between MGR factors and FP (Wainaina & Odari 2023; Hardcopf et al. 2021). Consequently, several researchers support contingency theory and (LP), which acts as a moderator to address crucial inquiries about the effects of (MGR) on firm performance (FP) (Wainaina et al. 2023; Hardcopf 2021; Benrqya 2021). Organisations also need to create a 'fit' between their internal and external environments in order to optimise their operations and achieve greater efficiency (Wainaina & Odari 2023; Hardcopf 2021). By adopting and being aware of this principle, MGR shows

how the effective use of a strategy or approach in one context can lead to success in another. Therefore, this study implied that:

H₄ The relationship between MGR and FP is moderated by lean practices (LP).

METHODOLOGY

In general, this study was initiated in 3 stages, namely the development, implementation, and analysis/validation stage. The deduction technique was adapted for this quantitative research based upon Sekaran's, (2003) model. The theory was determined through observations and a literature review, that served as the foundation for developing the hypothesis. The data were gathered by using the questionnaire created during the development stage to examine the hypothesis on the causal link between the constructs of OSA and FP. By extrapolating the data analysis, recommendations were made to solve the research problem or to assess reliability.

The samples of the study comprised Small and Medium Enterprises (SMEs). The SMEs were selected from the Malaysian SME Corp database in the trade category. In 2015, the identified population in the central region of Malaysia was 13,685 registered enterprises. The sample size of respondents representing the population was 373, in line with Dillman's method (2007). The stratified random sampling technique was utilised, where the population was determined by using the proportion of retail establishments to Malaysian states and a cross-sectional approach.

This study therefore employed disproportionate sampling to avoid unrepresented samples during the data collection, which could result from non-returned feedback to ensure that each state represents enough respondents (Sekaran & Bougie 2010), reflecting few studies that asserted, where any stratum or strata are too small or too large, a disproportionate stratified sampling is preferred (Arasa & Achuora 2020; Sundram et al. 2013). This study then, chose respondents of the registered retail firms under the Distributive Trade category 471 under Malaysia Standard Industrial Classification [MSIC], 2008 of SME Corp (Malaysia's government agency that regulates SMEs).

The instrument used for data collection in this study was a structured questionnaire. The questionnaire was developed during the initial stage of the study and designed to examine the hypothesized causal link between on-shelf availability (OSA) and firm performance (FP), as well as the moderating effects of lean practices (LP) in the retail industry. The questionnaire included items related to the measurement of OSA, FP, LP, and other relevant variables.

The majority of the measurement items used in this study were modified to fit the samples. Both the content's relevance and the measurement items' clarity were assessed. Academics and industry experts took part in a panel discussion to gain insights on how to improve these measurement items. Participants also assessed the usefulness and clarity of the survey questions and assessment items. This was carried out to help the instrument get better. The measuring items were modified considering the expert's judgement. There were 40 different metrics used in all to evaluate the study's variables. The measurement items used in this study are listed in Table 2.

TABLE 2. Number and sources of measurement items.

Variable	Number of items	Source	Likert Scale
Firm Performance	8	Suliyanto & Rahab (2012); Abdallah & Matsui (2007)	1 – 7
Operational	12	Shah & Ward (2007); Moayed & Shell (2009)	1 – 7
Managerial	8	Fullerton et al. (2003); Gladys (2017)	1 – 7
Lean Practices	12	Ketokivi & Schroeder (2004); Shah & Ward (2007)	1 – 7
Total	40		

The questionnaire was distributed to retail SMEs owners through an online Google Survey form. It was sent to the owners over a period of approximately 90 days, and a total of 151 valid responses were received and considered for analysis and regression. In fact, 41% of respondents to this survey were valid. The data were tested and regressed using path modelling analysis via the PLS-SEM (Partial Least Square Structural Equation Model). The PLS-SEM (Variance-Based SEM) would be suitable in exploratory variables and works effectively with both small and large groups of respondents (Gama et al. 2022; Hair et al. 2014).

Multiple variation regressions using PLS-SEM were utilised to evaluate the theoretical framework and hypothesis. PLS-SEM has attracted the interest of current researchers because it is easy to use, useful and flexible in assessing and interpreting research findings (Gama et al. 2022; Hair et al. 2014). Furthermore, PLS-SEM allows users to regress many variables (independent, moderating, mediating and dependent variables) concurrently. Hair et al. (2017) recommend three (3) approaches for analysing the moderating effect namely direct interaction model, moderating effect model, and shift in R² score. These three procedures were used to determine the interaction effect of LP. The moderating interaction effect assessment was used to determine and evaluate the intensity of LP's moderating impact on the relationship between OSA and FP by using a product indicator method (Hair et al. 2017; Henseler et al. 2015).

If a moderating variable is continuous, the interaction term of the product indicator is deemed appropriate (Rigdon et al. 1998). To ascertain the interaction impact utilising the product indicator, the product terms (calculation methodology) between the latent variable indicators and the latent moderator variable indicators must be addressed. According to Hair et al. (2017) and Imam and Hengky (2015) the moderating impact exists if the interaction term is significant.

RESULTS

For all constructs, SEM-PLS tests individual reliability (Astuty & Sinaga 2021; Duarte & Raposo 2010). It is crucial that the individual outer charge value is above 0.708 (Das et al. 2022; Hair et al. 2017), so that AVE is greater than 0.50. (0.7082 corresponds to just under 0.500 AVE). Hair et al. (2017) stated that an external charge value between 0.40 and 0.70 is appropriate provided that the charge for the item raises the AVE value above 0.50. Hence, every item in the present study was reliable according to the criteria (External Loadings & AVE).

Cronbach's alpha should be replaced by composite reliability, to measure the internal consistency reliability of each construct (Das et al. 2022; Imam & Hengky 2015). The reason for this is that all items are thought to be equally reliable as per Cronbach's alpha, which leads to the reliability values being calculated incorrectly. Comparatively, according to Hair et al. (2017) and Imam and Hengky (2015), composite reliability, on the other hand, looks at each item individually, with values above 0.70 considered appropriate in confirmatory studies. The test found that the composite reliability of all items ranged from 0.907 to 0.922, indicating that they all measured the same constructs and consistently yielded results above the 0.70 value. As a result of the findings being consistent with the general guidelines suggested by Hair Jr. et al. (2014) all variables utilised in this study were therefore found to be reliable.

Furthermore, by contrasting the outer loadings (item loadings) of the indicator and the AVE, convergent validity can be determined (Hair et al. 2017; Duarte & Raposo 2010). How closely the phenomenon resembles the latent construct is indicated by its outer charge. According to Hair et al. (2017), the higher the external charge, the stronger the indicator correlates with the construct and more reliable the latent construct shall manifest. The measurement model's external loadings were between 0.562 to 0.866. The study met the requirement that the acceptable AVE value be more than 0.50 (Ramayah et al. 2018).

As a result, all relevant tests were performed to assess the reliability and validity of the items and constructs. The results of the tests for item reliability, internal consistency and convergent validity are summarised as per Table 3. Accordingly, two items were deleted, namely LPS12 (0.562) and LPS6 (0.572). It can be concluded that convergent validity was fulfilled for this study.

TABLE 3. Results of convergent validity

Variable		Factor Loading	AVE
Operational	OPS	0.577 - 0.797	0.500
Managerial	MGR	0.628 - 0.859	0.581
Lean Practices	LP	0.624 - 0.802	0.518
Firm Performance	FP	0.595 - 0.866	0.553

"Discriminant validity" is the ability of items to discriminate between several conceptions or assess distinct concepts (Henseler et al. 2015). Table 4 illustrates the evaluation of discriminant validity by using the HTMT criterion. This study has confirmed the validity of these conceptions by showing that they exhibit discriminant validity.

TABLE 4. Results of HTMT

	FP	LP	MGR	OPS
FP				
LP	0.311			
MGR	0.337	0.541		
OPS	0.458	0.444	0.742	

Note: FP: Firm Performance; LP: Lean Practices; MGR: Managerial; OPS: Operational

Hair et al. (2014) stated that the function of effect size f^2 is used by adjusting R^2 if it is removed from the model to determine how strong a particular exogenous construct contributes to an endogenous construct. In other words, f^2 examines the strength of an exogenous construct that represents an endogenous construct in R^2 terms. For the assessment of impact size, the rule of the thumb is 0.35 (as a substantial effect), 0.15 (medium) and 0.02 (small) (Cohen 1988). The outcome of the exogenous latent variables' effect size on the endogenous variable is shown in Table 5.

TABLE 5. Effect size of exogenous variables

Latent constructs		f^2	Effect Size
Exogenous constructs	Endogenous constructs		
Operational (OPS)	Firm Performance (FP)	0.122	Small
Managerial (MGR)	Firm Performance (FP)	0.003	Small
Lean Practices (LP)	Firm Performance (FP)	0.011	Small
Moderating of Lean Practices (OPS*LP*FP)	Firm Performance (FP)	0.034	Small
Moderating of Lean Practices (MGR*LP*FP)	Firm Performance (FP)	0.025	Small

Table 5 shows the Effect size of exogenous variables. Operational (OPS) had a small effect (0.122) on the Firm Performance (FP). Meanwhile, the Managerial (MGR) too provided a small effect toward Firm Performance (FP) with 0.003. However, Lean Practices (LP) showed a small effect (0.011) towards Firm Performance (FP). In addition, the results revealed that moderating Lean Practices (LP) with Operational (OPS) and Managerial (MGR) had a small effect towards Firm Performance.

This study used a typical bootstrapping technique via PLS-SEM by using regression for large subsamples (5000, one-tailed test type, and 0.05 significant threshold for path coefficient significance) (Hair et. al. 2017). The whole structural model evaluations, including the moderator variable LP are shown in Figure 3.

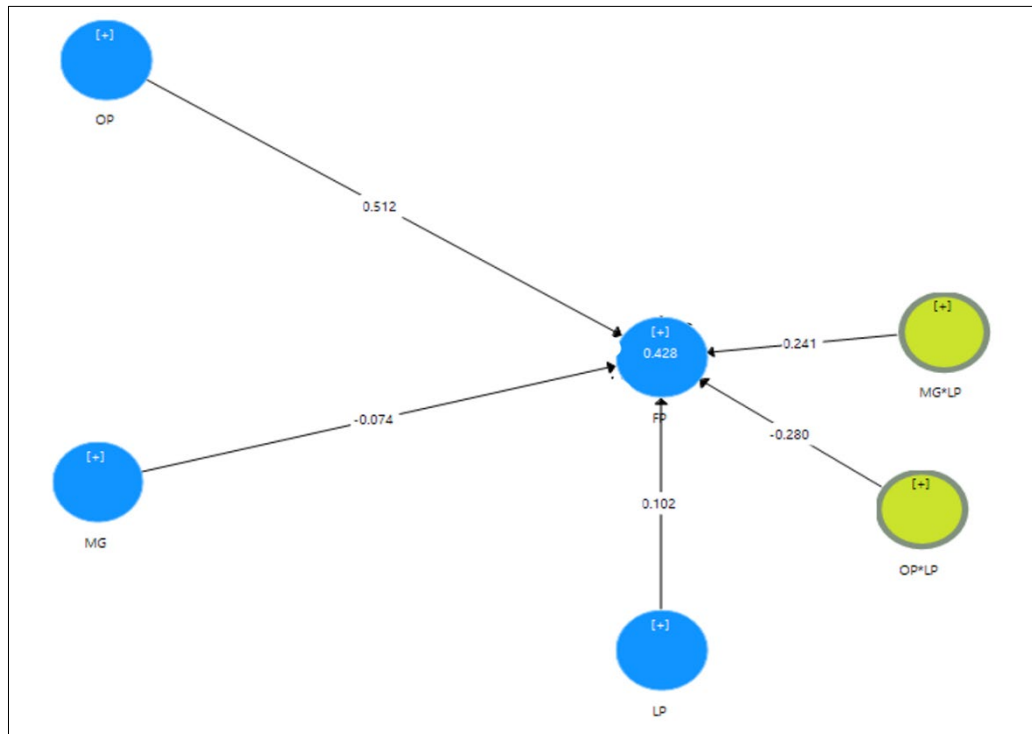


FIGURE 3. Model 2: Path coefficient results (With moderators)

Additionally, Table 6 features the results of operational (OPS) showing a significant relationship with firm performance (FP) ($\beta = 0.362$, $t = 3.415$, $p < 0.01$). This finding validates Hypotheses 1 (H_1), hence, H_1 was accepted. The next hypothesis 2 (H_2), which predicted the MGR and FP's relationship, was not supported. ($\beta = -0.04$, $t = 0.416$, $p > 0.01$). In summary, the results of the path coefficient analysis of the structural model (direct effect) show that OPS significantly affected company performance, whereas MGR and FP's relationship did not have a similar effect.

TABLE 6. Structural model assessment (Direct relationship)

Hypothesis	Path Coefficient	Standard Error	T values	P values	Results
H_1 There is a relationship between operational (OPS) and firm performance (FP). (OP \rightarrow FP)	0.362	0.106	3.415	0.001	**Supported
H_2 There is a relationship between managerial (MGR) and firm Performance (FP). (MG \rightarrow FP).	-0.04	0.095	0.416	0.678	Not Supported

**denotes statistical significance at 0.01 level

TABLE 7. Structural model assessment (Moderating effect)

Hypothesis	Relationship (Moderating effect)	Original Sample (β)	Standard deviation	T Values	P Values	Results
H ₃	Lean Practices (LP) * Operational (OPS) → Firm Performance (FP)	-0.28	0.152	1.848	0.032	**Supported
H ₄	Lean Practices (LP) * Managerial (MGR) → Firm Performance (FP)	0.241	0.14	1.723	0.042	**Supported

**Significant at $p < 0.05$ (one tailed)

Next, Hypothesis 3 (H₃) predicts the relationship between OPS and FP is moderated by LP. As shown in Figure 3 and Table 7, the Hypothesis findings supported the hypothesis ($\beta = -0.28$, $t = 1.848$, $p < 0.05$), indicating the relationship between OPS and FP. The interaction effect of LP significantly moderates the relationship between OPS and FP, as seen in Figure 4.

When both operational (OPS) and lean practices (LP) were high, the firm performance (FP) was the highest, indicating that the combination of high operational and effective lean practices resulted in the greatest improvements in firm performance. Overall, the graph highlights the importance of both operational performance and lean practices in driving firm performance, with the highest performance achieved when both factors are optimized.

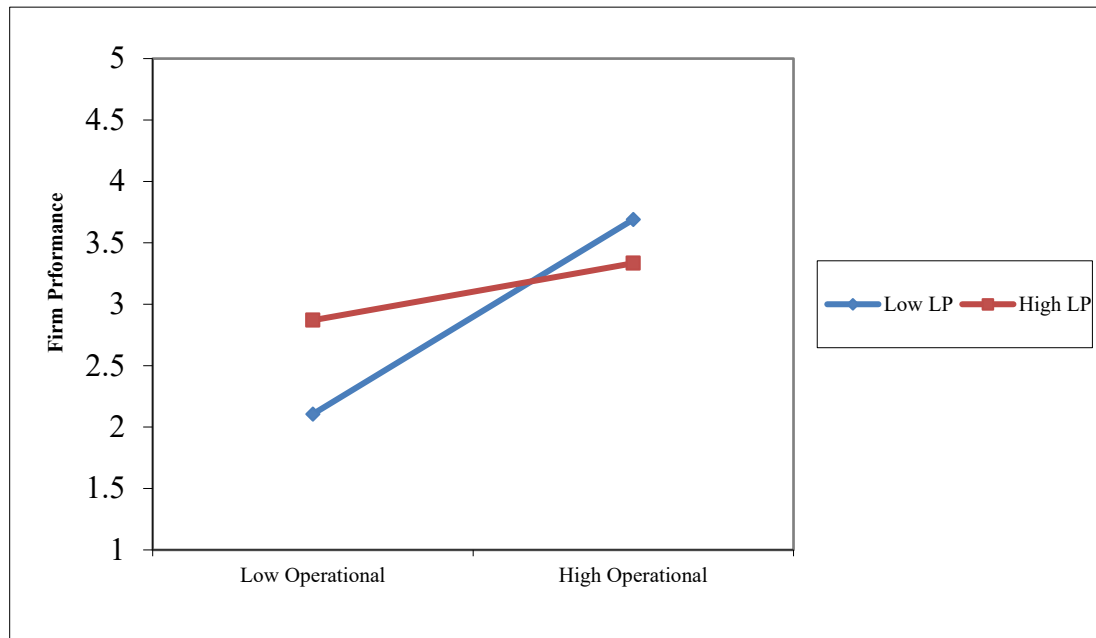


FIGURE 4. The interaction effect of LP in the relationship between OPS and FP

Hypothesis 4 (H₄) indicates that LP moderates the relationship between MGR and FP. Findings on this hypothesis, appearing in Table 7 and Figure 5, supported the hypothesis ($\beta = 0.241$, $t = 1.723$, $p < 0.042$), indicating a significant relationship between MGR and FP. Figure 5, displays the interaction effect of LP, which had a significant and positive moderating influence on the MGR and FP relationship. The graph demonstrates that the relationship between managerial ability and firm performance was contingent upon the level of LP exhibited within the organization. The effect of managerial ability on firm performance is stronger in organizations with high LP when managerial ability was low, but weaker when managerial ability was high.

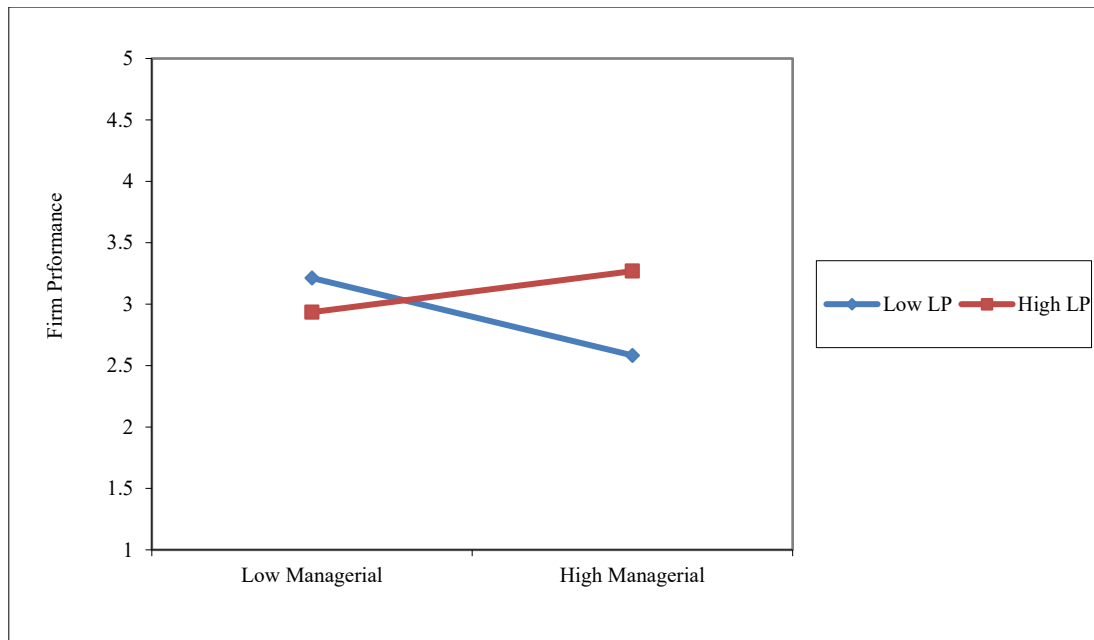


FIGURE 5. The interaction effect of LP on the relationship between MGR and FP

DISCUSSION

The findings of this research for Hypothesis 1 (H_1) demonstrate a significant and positive relationship between operational (OPS) practices and firm performance (FP) in the context of Malaysian retail SMEs. This conclusion aligns with the views of Illanganthilake and Wickramarachchi (2021), Hardcopf et al. (2021) and Chebet and Kitheka (2019), who also emphasized the impact of operational performance on firm performance. Efficient use of systems and technologies in inventory management has been identified as a key driver of firm performance within the food retail industry. Additionally, the operational (OPS) practices of the SME retailers in Malaysia positively influence their firm performance (FP), being consistent with the theory of constraints proposed by Wainaina & Odari (2023), McCleskey (2020) and Goldratt (1990). Thus, retailers should prioritize managing bottlenecks and constraints in their processes, allocating resources accordingly.

On the other hand, the study found that managerial (MGR) ability has no significant effect on the firm performance (FP) of retail SMEs in this context. This finding contrasts with some earlier research that show a significant impact of MGR on FP (John & Robert 2020; Arasa & Achuora 2020; Chebet & Kitheka 2019; Ahmad & Zabri 2018). However, it should be noted that the relationship between MGR and FP can vary based on different measurement approaches and testing contexts. Moreover, the size of the organization and the variety of products and services offered by retail SMEs can also contribute to the lack of a significant association in this study.

Furthermore, the analysis revealed that Lean Practices (LP) play a moderating role in the relationship between OPS and FP. Lean Practices (LP), which focuses on eliminating inefficiencies while enhancing operational quality, reinforces the inverse relationship between OPS and FP in the context of retail SMEs. The study suggests that lean LP may have a weakening effect on OPS for smaller retailers, whereas larger retailers might experience operational improvements. Retail managers of SMEs are advised to carefully consider LP implementation, considering the size of their businesses and volatility of demand.

The research underscores a vital role played by lean practices (LP) in shaping the intricate interplay between operational (OPS) and firm performance (FP) within the domain of Malaysian retail SMEs. In essence, the effect of OPS on FP is not fixed but rather moulded by the presence and application of LP. These LP are rooted in a methodical approach to identify and eliminate inefficiencies, waste, and non-value-added elements from OPS processes. The study initially establishes a positive correlation between OPS and FP, elucidating that effective OPS strategies contribute to enhanced FP, encompassing increased revenue, profitability, customer contentment, and competitive advantage.

However, the standout revelation is the moderation effect brought about by LP. When introduced, they act as a discerning factor, either amplifying or attenuating the influence of OPS practices on FP, contingent on multifaceted factors. Smaller retailers might find LP potentially counterproductive due to resource limitations and complexities in implementation. On the contrary, larger retailers stand to gain OPS refinement through the integration of LP, capitalizing on their robust resources and capacity. This effect unveils a nuanced insight on the impact of LP hinges upon variables like business size and demand volatility. In essence, the efficacy of LP in altering the OPS and FP relationship rests on the adaptability of businesses to their implementation, enriching comprehension of performance optimization through strategic deployment of LP.

CONCLUSION

This study provides a basis for the impact of on-shelf availability (OSA) and two of its variable dimensions, namely operational (OPS) and managerial (MGR) factors, specifically on the environment of FP retail sub-sectors in a developing country. From a theoretical perspective, the findings support the theory of constraint and contingency theory. Retailers should focus on the use of resources on managing bottlenecks and constraints in their processes, and beyond a certain point should not allocate further resources to non-constraining elements. Besides, this study also discloses the importance of moderating LP in the transformation of MGR that is not supportive or significant to FP in the outcome of Hypothesis two (H₂), yet, to become relevant and strongly significant in the ultimate result of Hypothesis four (H₄) in relation to the contingency-based theory towards FP. Nevertheless, retail organisations do not have to adhere to all lean practices tools as SMEs have many constraints such as size, resources and demand uncertainties. This study has also successfully added to the current literature by providing insights into the implementation of LP and its effect on business performance in a developing country, Malaysia.

Cultural differences and business climate may have a different effect on the LP and OPS of SMEs in other study locations. Additionally, this study only takes into consideration the moderating role of LP in the relationship with both OSA and FP. It should be noted that the relationship between OSA and FP may be strengthened by other unexplored moderators or mediators. In addition, future studies can investigate other constructs of strategic alignment, as well as other variables of organisational performance, such as technology, innovation, learning, relationships, management that can be integrated into the current framework.

The study focuses on the effect of operational practices (OPS) and managerial (MGR) ability on the firm performance (FP) of retail SMEs in Malaysia. Additionally, the study explores the moderating role of Lean Practices (LP) in these relationships. The primary objective of this research is to examine how OPS and MGR influence the FP of retail SMEs in Malaysia, while also investigating the moderating role of LP in these relationships. The findings of this study reveal that operational (OPS) practices have a significant and positive effect on the firm performance (FP) of Malaysian retail SMEs. However, the study fails to detect a significant relationship between managerial (MGR) ability and FP. On the other hand, Lean Practices (LP) are identified as a moderator, reinforcing the inverse relationship between OPS and FP for retail SMEs in Malaysia.

This study contributes to the understanding of factors affecting organizational effectiveness in the context of retail SMEs. It highlights the importance of operational practices in driving firm performance (FP) within the retail industry. Moreover, the findings emphasize the significance of considering LP when implementing OPS strategies, as it can influence the outcomes differently based on the size of the business and demand volatility. The study's theoretical implications lie in supporting the contingency theory, as LP acts as a moderator that shapes the relationship between OPS and FP, depending on the circumstances of the retail SMEs. Additionally, this research pioneers the exploration of LP as a construct for organizational performance in the retail sector, specifically for SMEs in Malaysia, which contributes to the body of existing literature.

From a practical standpoint, the results suggest that retail managers of SMEs should prioritize efficient operational (OPS) practices, particularly focusing on managing bottlenecks and constraints. Careful consideration should be given to the implementation of LP, depending on the specific characteristics and demands of the business.

While this study sheds light on important relationships between OPS, MGR, LP, and FP in the context of retail SMEs, it has some limitations. One limitation is that the study is conducted in the setting of a developing nation, Malaysia, which might limit its generalizability to other regions or countries. Additionally, the study mainly focuses on SMEs, and future research can explore these relationships in larger retail organizations. Furthermore, the research model utilizes specific measurements for OPS, MGR, and LP. Future studies could employ alternative or more comprehensive measurements to gain deeper insights into these constructs. Moreover, considering the dynamic nature of the retail industry, longitudinal studies could provide a better understanding of how these relationships evolve over time.

This study's limitations are observed, firstly it is a cross-sectional study where the data are gathered at a specific time period. In addition, since non-verbal communication data can also be gathered via a qualitative strategy or a mixed methodologies approach, the study's solely quantitative methodology demonstrates the need for additional in-depth responses. Thus, some of the information gaps that quantitative case studies have are thought to be resolved by qualitative techniques like observation and in-depth interviews (Daniel 2016). Moreover, as the samples are limited to Malaysians, the findings of this study cannot be generalised in a broader cross-cultural context.

In a nutshell, this study provides valuable insights into the relationships between OPS, MGR, LP, and FP in the context of retail SMEs in Malaysia. The findings emphasize the importance of effective operational practices and the potential moderating role of Lean Practices in driving organizational performance. By recognizing these factors, retail SMEs can enhance their performance and competitiveness in the market.

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