

Implementation of Shared Service Centre on Financial Performance of Publicly Listed Malaysian Companies

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Abstract: *Cost reduction and efficiency are one of the company's primary motives in implementing the shared service center, an internal outsourcing business model that centralizes back-office support functions for operating business units. This research aims to examine the effect of introducing the shared service center on productivity, as experienced by publicly listed Malaysian companies. This research has analyzed, using comparative techniques, whether substantial changes in cost structure, return on investment, efficiency, productivity, competitiveness, and profitability have occurred due to developing shared service centers. The relationship between these financial performance metrics is evaluated for five years using regression methods. Secondary data has been collected from financial reports and other publicly accessible documents such as business gadgets. The study also aims to recognize the advantages of shared service center implementation for financial results. The study has clearly indicated that SSC implementation is not always for the better, however. The increasing cost structure ratio indicates that the growth of total revenue due to SSC implementation is not as fast as the growth of operating expenses. Asset turnover is observed to be generally decreasing after SSC implementation. The graphical trending has rejected the claim that all the variables or financial performance indicators have improved after establishing SSC. The results of the ordinary least squares regression method have corroborated 4 out of 5 hypotheses – only the asset turnover ratio has revealed a relationship that is different from what has been predicted. The payback period can be included as an additional variable or determinant to further corroborate the time-specific benefits regarding future research*

Keywords: *Shared Service Centre (SSC), Business Unit, Comparative Techniques, Financial Performance, Regression Method.*

1. INTRODUCTION

Nowadays, companies face a changing world than ever before. Globalization and international trade also made it possible for businesses to operate across boundaries. Technological advances allow firms to integrate and unify non-

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core functions and focus on core operations. Rising demand drives firms to pursue and maintain a competitive advantage. Affirmative action measures of competitive advantage have led to firms seeking cost-effectiveness and cost-reduction initiatives. One such initiative is to focus on core operations and to restructure support, non-core and back-office activities. These have resulted in the growth of the shared service center (SSC) in recent years. Firms implementing shared service centers believe in their capacity to deliver economic benefits, generate new capabilities, and strengthen their competitive advantage (Richter and Bruhl 2017). A business model optimizes the availability of resources by enhancing processes, reduces costs, and increases (internal and outside) customer service satisfaction (Barjaktarovic, et al., 2017). A joint strategy that focuses a subset of the current business functions on a separate, semi-autonomous company entity with a management structure to facilitate performance, revenue generation, cost reduction, and improved services for the internal customers of the parent company such as an open-market company (Bergeron, 2003). Shared Service Centre is an independent institution, either as a separate group, affiliate, or associate faction, as a distinct entity or organizational unit. Within an enterprise, centralized divisions or departments for accounting, human resources, and IT are not generally called SSC. In short, SSC is called "a type of internal outsourcing (Richter and Bruhl (2017), in which the general and administrative roles in the back office are used for the operations. A separate entity of SSCs has responsibilities to internal customers at their level of operation and are paid by shared resources or management fees (Knol et al. 2014). It serves domestic clients or other business divisions in the organization-SSC also belongs to the larger organization and is accountable to the parent company, unlike traditional outsourcing. Its customers include the Group's corporate divisions, service groups, and operating segments (Knol et al., 2014). One of the major reasons for businesses to set up SSCs is savings in terms of cost-effectiveness, standardization, quality enhancement, and optimization. Besides, Paagman, et al. (2014) reviewed a variety of SSC kinds of literature to identify the reasons for SSC implementation into the business. Studies have found, with 51 out of 206 mentionings, that cost-saving is the key reason for SSC implementation. SSC's Management Approach is seen by Knol et al. (2014) that companies achieve their goal of revenue generation while standardizing and enhancing support service by emphasizing core businesses and reducing back-office functions. Other benefits of SSC have been stated by Miller (1999). SSC includes business regarding access to trained staff at the central site, enhanced knowledge and quality of service, and increased community autonomy control.

1.1 History of Shared Service Centre

SSCs started in the U.S. in the early 1990s by centralizing their accounting roles to support corporations by firms such as General Electric, Digital

Equipment, Johnson & Johnson, and American Express. Throughout the mid-1990s, firms including AT&T, Electrolux, Polaroid, Exxon, and Whirlpool funded independent branches throughout Europe (Miller, 1999). Since then, the SSC achievements have been recorded in companies, saving Siemens, Reuters, and DHL up to cost savings of 50 percent (Richter and Bruhl 2017). German enterprises Henkel merged their 37 national financing systems into one support network across Europe (Barjaktarovic et al. 2017) in 1999, which enhanced cost efficiency and corporate performance.

In Malaysia, SSC's relatively mature operations are a prominent industry compared to other countries in Asia, with 75 percent of firms over four years of age. At least 229 SSCs in the country, mostly multinationals and mainly based in Kuala Lumpur, Selangor, and Penang, have been operating since 2018. This reflects a 15% rise compared to 2017 (SSON Malaysia, 2018). Many Malaysian SSCs represent international/ regional customers and foreign companies, not just domestic customers. In reality, several SSCs have coined their organization for a new word, Global Business Services, or GBS, which is a global focus (SSON Malaysia, 2018). In the Easy Business Ranking of the World Bank, Malaysia has jumped from 24th to 15th place. Indeed, the growth of the information and communication technology industry in the country, which is driven by the proliferation of SSCs from multinational and local Malaysian companies. The SSC's share in the industry has risen by 13.4% from MYR 40,000,000 in 2007 to MYR 165,000,000 by 2017 (PIKOM.org, 2018).

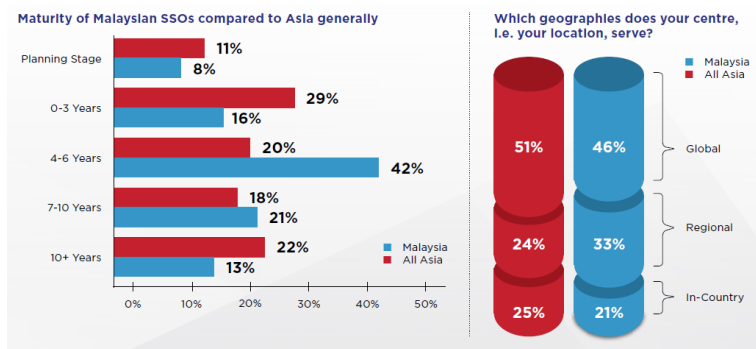


Figure 1: Malaysian SSC Industry (SSON Malaysia 2018)

1.2 Research Gap

While there is no shortage of SSC literature, only a few have focused on outcome-oriented research or the investigation of the effects of implementing or establishing shared service centers. For instance, Richter and Bruhl (2017) examined 113 peer-reviewed SSC-related journals and classified their research questions into one of 4 perspectives and orientation:

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- Determinant – the what and why of implementing SSC
- Process – structures and types of SSC
- Control – SSC coordination and governance
- Outcome – financial and non-financial consequences

Results-oriented only 11 peer-reviewed studies were found by Richter and Bruhl (2017). Just three academic areas address SSC implementation's financial effects from the five publications that have reviewed performance. The other papers collected primary data through perception by managers of the impact of developing SSC. Researchers identified accounting gains, cost advantages, liquidity, and other financial metrics that increased following the SSC's introduction in the literature relating to financial performance (Richter and Bruhl 2017). There is also a research gap in many publications that cited cost reduction as a prime reason for SSC, but very few linked the reason for cost reduction to the financial impact. In turn, the IOFM (2011) acknowledged many businesses are aware of the possible cost savings and economic growth of SSCs. Nevertheless, because of these obstacles, these organizations are hesitant to adopt the SSC:

- High initial investment costs – The development of SSC does not immediately realize cost savings, and the organization would have to fork out major labor and infrastructure investments. SSCs are known to have to rely on a long-drawn-out payback period as a non-revenue generating unit. A basic 9% of the respondents acknowledged the reduction in costs as an immediate benefit to implementing SSC in their inquiry (IOFM 2011).
- Diversity of criteria for consumers and business units — multinational consumers with their own culture and experience environment challenge standardization and optimize benefits. A uniform SSC service approach could impact local operations and lead to the loss of good relationships among local stakeholders (IOFM 2011).

This research study will attempt to answer the following objectives:

- To evaluate the profitability, operating efficiency, asset utilization, leverage, productivity, and return on investment of companies with SSC.
- To analyze the impact of financial performance indicators of companies before and after the SSC implementation.
- To investigate the relationship between performance indicators and profitability before and after the SSC implementation.

1.3 Problem Statement

In recent years, Malaysian companies have been searching for ways to gain competitive advantages, concentrate on critical activities, and search for productivity initiatives. Companies understood that SSC's introduction has a positive impact on cost-effectiveness, process management, standardization,

and increased service quality. SSCs are the country's increasing business model, but many countries are far too early to evaluate their financial success (PIKOM.org 2018). Therefore, the advantages must be assessed, positive statements corroborated, and the effect of SSCs on the financial results of companies calculated. The study will address the gap between SSC implementation factors and financial results in the shortage of financial result-oriented surveys, based on joint-service centers with a minimum two-year age base in 2018 by Bursa Malaysian-listed companies.

1.4 Significant of the Study

Business globalization, mixed market, and intensified competition, industry analysts believe that the future of support organizations would be the shared service model or the outsourcing of business processes. However, most of the latest SSCs are either in operation or still in an early stage for objective evaluation. Many decision-makers are either in the dark about the real benefits or are simply instinctively springing into the SSC car while rivals on the left or the right do the same (Kris, 2018). SSON Malaysia (2018) surveyed several Malaysian Shared Service Center and found that the costs of SSC implementation, behind process optimization and standardization, are one of the top three advantages. This report would identify financial and organizational metrics to assess the benefits of the SSC. The metrics are ratios and facts readily observable and obtainable from the financial statements issued by the companies. The aim is to evaluate these SSC benefits and their effect on the company's financial results and profitability in assessing these metrics. The work will also seek to add to limited SSC literature, focusing on financial results and the implications of the development of SSCs. This paper hopes for more publicly listed Malaysian businesses to understand and accept the long-term advantages of SSCs and to reorganize their back office and support functions into a shared service center model.

2. LITERATURE REVIEW

2.1 Financial Performance and Profitability

Although the results focused on the shared service center were limited, several kinds of literature were able to establish positive correlations with financial performance. The productivity ratios (operating income and sales revenues) have built a favorable association with the independent quantitative variable (absolute cost-effectiveness reduction) and independent qualitative variables (service enhancement and satisfaction for customers) (Barjaktarovic et al., 2017). For a productive partnership to and return on assets between SSC services, Steigenberger (2014) used a resource-based vision system. One of his remarkable findings is that the correlation between SSC and market value (market value to book value ratio) is negligible.

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Giustiniano and Clarioni (2013) have assessed output variables in a five-year cycle by analyzing secondary data: two years before, one year before, and two years after the execution of outsourcing. To calculate the excess amount, the authors did not use a categorical component. The study showed a most successful relationship with outsourcing, except for equity returns, in the financial performance measurements (total income, earnings before income tax, return on assets, and value for the business). In the meantime, Pandian and Narendran (2015) analyzed the return, the Indian SSCs' expenditure, as well as their strong association with the liquidity ratios.

2.2 Cost Structure

In many kinds of literature, the cost-reduction advantage of establishing SSC is evident as it is one of many corporations' proven motives in implementing SSC. Giustiniano and Clarioni (2013) used a five-year time frame (2 years before outsourcing, year start of outsourcing, and two years after outsourcing) and defined positive relationships to cost structure reflected in total and administrative ratio expenses to variable costs. Many of the literature surveyed have utilized qualitative and quantitative metrics to identify them, using secondary sources and primary data from the implementers interviewed. Ramphal (2011) used variables like general and administrative expenditure reduction, cost-sharing across business units, and time savings from focused work to quantify operational costs for business units. Kroll (2007) calculated cost reduction due to lower workforce, process simplification, and scale saving, and recorded cost savings of about 10 percent -20 percent following SSC implementation. The former has a negative link between overall operating costs and SSC costs. The latter has a strong link between overall operating costs and the workforce.

2.3 Return on Capital Employed

Rudzioniene and Sakalauskiene's (2014) study considered initial capital or investment costs. The authors measured the impact of return on investment, return on assets, and return on employed capital, calculated as earnings ratio before income tax and non-current liabilities plus equity. As independent variables, both gross revenue and net profit (the latter is already net of initial SSC investment cost) are identified. The authors said the return would often be negative in the early years of establishing SSC, so studies should consider the short-term and long-term comparison. Excluding the effect of SSC expenditure, the author observed a 20-30% return due to positive SSC implementation. In another study, Wanyande (2015) used the six years (three-year before and three-year after SSC implementation) in her study but found minimal sample available in Kenya's Nairobi stock market. This resulted in insignificant results between SSC expenditure and capital return.

2.4 Productivity

Ramphal (2011) witnessed a strong SSC-productivity correlation. He assumed that increasing profitability benefited from concentrated and skilled work, allowing service providers to accomplish tasks faster. In effect, business units provide a quick and concentrated service, resulting in higher levels of internal customer satisfaction and profitability in core operations. Meanwhile, Steigenberger (2014) used a resource-based approach to developing a positive relationship between SSC capital and productivity. In outsourcing literature, Janssen et al. (2009) observed a decrease in total working hours, operating costs, and service lead time after outsourcing in shared government service centers – indicating a productivity improvement.

2.5 Asset Utilization

According to Santosuosso (2014), usage ratios (such as asset turnover, inventory turnover, and receivable turnover accounts) are good efficiency proxies. These ratios demonstrate how each company's resources are used to produce sales and benefits. The author analyzed secondary Italian stock exchange data and noted a positive relationship between turnover ratios and earnings before income tax to total asset ratio. Looking at outsourcing literature, Lahiri and Kedia (2009) reviewed Indian business process outsourcing firms' capacity metrics and noted a favorable relationship to net profit margin. The capabilities include companies' ability to produce value from capital that can be expressed in asset utilization ratios (asset turnover, inventory turnover, and receivable turnover). Beinabaj, et al. (2013) surveyed secondary data from Iranian stock exchange companies in Tehran to examine human and non-human resource use and optimization. They identified a positive correlation between SSC productivity and asset turnover.

2.6 Leverage

Giustiniano and Clarioni (2013) used a five-year time frame (two years before outsourcing, the year starting outsourcing, and two years after outsourcing) and identified a negative gearing ratio. Pandian and Narendran (2015) investigated Indian SSCs and observed a positive correlation between investment returns, net asset ratio, and leverage ratio. In non-SSC literature, Ramli et al. (2018) investigated several publicly listed Malaysian and Indonesian companies on the relationship between leverage and financial performance (return on assets and return on equity). The result is a positive relationship between gearing and performance ratios for Malaysian samples, but not for Indonesian companies. The authors noted that this was due to Malaysian companies' propensity to use debt financing, resulting in higher debt-to-equity ratios. They estimated that below a leverage ratio of 45%, the performance correlation would be negative due to a higher denominator (asset and equity).

JUJBR**3. RESEARCH METHODOLOGY****3.1 Hypothesis and Framework Development**

H0: The financial performance indicators will improve after the implementation of SSC.

A few of the reviewed publications used multi-year time-span studies spanning cycles before, after, and after outsourcing or joint service centers (Giustiniano and Clarioni 2013, Rudzioniene and Sakalauskiene 2014, Verwaal 2017, Wanyande 2015). A very short time-span will limit SSC's stabilized status impact observation. Long-term samples will be reduced and will have limited post-implementation analysis as many Malaysian SSCs have only recently been established.

H1. Cost structure ratio (total operating cost excluding the cost of goods to total revenue) has a negative relationship to profitability (net profit margin).

Focusing on Giustiniano and Clarioni (2013) and Ramphal (2011), overall and administrative (G&A) expenditure is the best metric for SSC expenditure. True enough – finance, HR, IT, and other back-office support expenditures are typically reported in G&A. Unfortunately, the study met a constraint because not all financial reports have full transparency of overall G&A spending. To compare the independent variable across sampled Malaysian publicly listed companies, this study will use total operating expenses, excluding goods costs and other identifiable variable costs, as a proxy for G&A expenses. The variable is expressed as a ratio to total sales to eliminate differences in absolute value caused by firm size. In line with Transaction Cost theories (Williamson 1981) and Resource Dependencies (Pfeffer and Salancik 1978), cost structure ratio is critical for adequately calculating SSC implementation components. This work aligns with Kotabe and Mol (2009) in suggesting cost structure has a negative correlation with the value-added return.

H2. Return on capital employed ratio (earnings before income tax divided by the sum of equity and non-current liabilities) has a positive relationship to profitability (net profit margin).

Many of the studies examined used asset returns and equity returns as variables in their investigation. However, sampled annual reports may not provide information on where and how the financial statements record the shared service expense. Using the equity return is unacceptable if the organization used debt funding to develop SSC. Asset return is also irrelevant if the group has not capitalized the initial SSC investment cost. Therefore, this study will comply with Rudzioniene and Sakalauskiene (2014) and Wanyande (2015) studies by using capital gains used as an

independent variable to catch the initial expenditure element in SSC establishment. The ROCE ratio measures both cash and non-current liabilities, and it is guaranteed to catch the original SSC investment expense irrespective of the company using debt or equity funding. Meanwhile, this study would use Pandian and Narendran (2015) results to hypothesize a causal association between ROCE and profitability.

H3. Asset turnover ratio (total revenue to total assets) has a positive relationship to profitability (net profit margin).

Asset turnover is a favorite variable (Beinabaj, et al., 2013; Santosuosso 2014). The choice to use asset turnover as an independent variable is due to its suitability as a measure of use, ease of calculation and derivation from the financial statements, and its relationship to the dependent variable (net profit margin) DuPont analysis. The theory is based on Santosuosso's (2014) results in a strong association between asset turnover and profits before income taxes.

H4. Productivity ratio (total revenue to total manpower cost) has a negative relationship to profitability (net profit margin).

Kotabe and Mol (2009), Lahiri and Kedia (2009), Ramphal (2011), and Steigenberger (2014), efficiency is one of the significant variables in studying outcomes of SSC implementation. All of them have used either sales or income as numerator interest, while headcount or number of workers is used as the denominator. Headcount data is never published in the annual reports, so collecting headcount data from secondary sources can be inaccurate or unreliable when the interview is done. Hence, a surrogate should be used in place of headcount. Total manpower cost, labor cost, or employee benefits expense is always disclosed in Malaysian annual reports – and is, therefore, a reliable metric to use in calculating productivity as an independent variable. This research aligns with the study of Beinabaj, et al. (2013), defining productivity as a ratio of output (total sales) to input (labor cost). This work further aligns with Kotabe and Mol (2009) on the context of the hypothesis that efficiency has a negative association with return on value-added.

H5. The gearing/leverage ratio (total liabilities to total equity) has a negative relationship to profitability (Net Profit Margin).

This research uses the ratio formula for a standard definition of ratios (Table - 1) from Proctor's book (2012). Financial data are obtainable from the face of the financial statements.

- Cost structure – is the relative proportion of fixed and variable costs incurred by the firm. Since SSC is a back-office function, its costs primarily sit in operating fixed costs in the general and administrative expense portion. To operationalize the variable, this research uses the

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ratio of total operating cost, excluding the cost of goods sold (which is a variable cost) to total revenue (Proctor 2012).

- Return on capital employed (ROCE) – The rate at which the company is earning profit relative to the amount of investment. Expressed as the ratio of earnings before income tax and total capital employed, which is the sum of share capital or equity and loan capital or non-current liabilities.
- Asset turnover – This is a ratio that shows how efficient the assets of the company are being utilized to generate revenue. Expressed as the ratio of total revenue to total assets (Proctor 2012).
- Productivity – It is the ratio of output per unit of input. For the purpose of this research, a proxy for labor productivity will be used, where output is total revenue while input is total manpower cost (Proctor 2012).
- Gearing / Leverage – Leverage shows how the company is financed, whether by debt financing or equity financing. The gearing ratio is expressed as loan capital or total liabilities divided by share capital or total equity (Proctor 2012).
- Net profit margin is a profitability ratio expressed as net profit divided by total revenue (Proctor 2012). In a study, the variable's main objective is power, one of the least explored in the SSC literature studied. The gearing or debt-to-equity ratio is used in Giustiniano and Clarioni (2013), and Ramli (2018) reports. Assessing the leverage-to-profit relationship is tricky since it is not always clear from secondary sources whether the company used debt funding or equity financing in developing SSC. Ramli, et al.'s (2018) analysis will be used as a framework for studying the adverse association between debt-to-equity ratio and productivity levels.

Table 1: Operationalization and Measurement of Variables

Variable	Measurement	Metrics / Ratio	Data Sources
Independent	Cost Structure	Total Operating Cost (excluding Cost of Goods Sold)	Five-year Financial Statements <ul style="list-style-type: none"> • 2 years before implementation. • 1 year of implementation. • 2 years after implementation Notes to Financial Statements Annual Reports Company Website
		Total Revenue	
	Return on Capital Employed	Earnings Before Income Tax	
		Equity + Noncurrent Debt	
	Asset Turnover	Total Revenue	
		Total Assets	
	Productivity	Total Revenue	
		Total	

Variable	Measurement	Metrics / Ratio	Data Sources
Dependent	Gearing / Leverage	Manpower Cost	Company News and Announcements
		Total Liabilities	
		Total Equity	
	Net Profit Margin	Net Profit	
		Total Revenue	

3.2 Sampling Method

Due to the specialized nature of the research scope, a non-probability selective sampling method has been used. Only publicly-listed Bursa Malaysia companies will be considered in the sampling. As of writing, there are 229 shared service centers in the country (SSON Malaysia 2018). However, the majority of these are multinational companies that are not listed on the Malaysian stock exchange. This research will only consider in the sample those companies that are currently listed in the stock exchange and whose status is not included in the PN 17 list of companies in financial distress.

3.3 Data Collection

Based on the data gathering, 28 companies (Table - 2) have been identified as suitable samples. With each company having available financial statements for the five-year time frame, a total of 140 observations have been collected.

Table 2: List of Companies and Their SSCs

No	Industry	Name	Shared Service Center Name	Year
1	Bank	AmBank	AmBank Group Shared Services	2016
2		CIMB	iCIMB (MSC) Sdn. Bhd.	2007
3		Hong Leong	HLB Trade Services	2006
4		Maybank	Maybank Shared Services Sdn. Bhd.	2013
5		OCBC	E2 Power Sdn Bhd.	2005
6		Public Bank	Public Holdings Sdn Bhd.	2008
7		RHB	RHB Finexasia.com Sdn Bhd.	2015
8	Consumer	Amway	Amway Business Services Asia Pacific Sdn. Bhd.	2013
9		BAT	BAT ASPAC Service Centre Sdn Bhd.	2006
10		Dutch Lady	Friesland Campina Service Centre Asia Pacific Sdn. Bhd.	2008
11	Hospitality	Nestle	Nestle Business Services	2008
12		AirAsia	AirAsia Global Shared Services Sdn Bhd.	2013
13		MAHB	Malaysia Airports Consultancy Services	2009
14		Shangri-La	Shangri-La Shared Services Sdn Bhd. (CEPT-KL)	2015
15	ICT	Sunway	Sunway IT Shared Services Sdn Bhd.	2011
16		Cuscapi	Cuscapi Outsourcing Sdn. Bhd.	2008

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No	Industry	Name	Shared Service Center Name	Year
17		Digi	Telenor Global Shared Services AS	2013
18		HeiTech	HeiTech Managed Services (HMS) Sdn Bhd.	2009
19		N2N	N2N Global Solutions Sdn. Bhd.	2006
20		Rexit	Rexit International Sdn Bhd.	2008
21		Telekom	VADS Business Process Sdn Bhd.	2006
22	Industrial	DKSH	DKSH Corporate Shared Services Center Sdn Bhd.	2005
23		Lafarge	Lafarge Shared Services Sdn Bhd.	2013
24		Petronas	PETRONAS ICT Sdn Bhd.	2013
25		Sime Darby	Sime Darby Global Services Centre Sdn. Bhd.	2009
26		Tenaga	TNB Global Business Solutions	2015
27	Insurance	Allianz	Allianz Managed Operations & Services SE	2012
28		Manulife	Manulife Technology and Services Sdn Bhd.	2005

4 DATA ANALYSIS AND RESULT

The GRETL system uses for understanding the descriptive statistics analysis for five years consisting of 140 observations. The results are shown in Table 3

- There is a high standard leverage difference, which indicates that the level of liabilities varies across companies and industries compared to equities.
- Productivity also demonstrates a high degree of data observations, indicating that an enterprise's workforce costs are immaterial to the income they can generate.
- Cost structure and productivity are anticipated to fall below 1 because sub-line products below the sales on face-to-face account are both administrative cost and net income, which therefore thus not supposed to be over the level.
- Capital gains are rather distorted with severe kurtosis, which suggests serious outliers. In comparison, the absolute value for ROCE is often found to be very high and well away relative to its 95% percentile.

Table 3. Descriptive Statistics Using GRETL System

	Mean	Median	Minimum	Maximum
Leverage	4.4629	1.6470	0.0167	18.9510
Cost Structure	0.4209	0.3048	0.0597	0.9849
Return on Capital Employed (ROCE)	0.2231	0.0882	0.0014	2.5510
Asset Turnover (Asset TO)	0.7828	0.4100	0.0331	3.0031
Productivity	13.1480	9.5847	3.3693	39.2070
Profitability	0.1667	0.1574	0.0015	0.6458
	Std. Dev.	C.V.	Skewness	Ex. Kurtosis

	Mean	Median	Minimum	Maximum
Leverage	5.1746	1.1595	1.1257	0.0061
Cost Structure	0.2816	0.6691	0.6310	-0.9926
Return on Capital Employed (ROCE)	0.3719	1.6668	3.7128	16.3890
Asset Turnover (Asset TO)	0.8537	1.0906	1.2330	0.1448
Productivity	9.0753	0.6903	1.1350	0.2336
Profitability	0.1096	0.6576	1.2258	2.9642
	5% perc.	95% perc.	IQ range	Missing obs.
Leverage	0.1132	15.5340	7.0697	0.0000
Cost Structure	0.0796	0.9310	0.4557	0.0000
Return on Capital Employed (ROCE)	0.0257	0.9379	0.1554	0.0000
Asset Turnover (Asset TO)	0.0394	2.6443	0.8599	0.0000
Productivity	4.1285	31.7950	11.4340	0.0000
Profitability	0.0154	0.3718	0.1415	0.0000

Descriptive statistical analysis has been used for each of the six sectors in the study because firms in related industries are likely to have more comparable measures of financial success in themselves. Each segment displays the five-year graphic pattern of the mean or combination of each of the independent and dependent variables taken into consideration in this study. The overall combined survey is seen in Table 4.

Table 4. Observed Trends in the Mean of Financial Performance Indicators for the Five years.

Industry	Cost Structure	ROCE	Asset TO	Productivity	Leverage	Profitability
ALL	increasing	increasing	decreasing	decreasing	increasing	decreasing
Banks	increasing	increasing	decreasing	decreasing	decreasing	increasing
Consumer	increasing	increasing	increasing	decreasing	increasing	decreasing
Hospitality	increasing	decreasing	decreasing	decreasing	increasing	increasing
ICT	increasing	increasing	decreasing	decreasing	increasing	decreasing
Industrial	increasing	decreasing	decreasing	decreasing	decreasing	decreasing
Insurance	decreasing	increasing	decreasing	decreasing	increasing	increasing

The correlation analysis observed the correlation of all of the variables (Cottrell and Lucchetti, 2019). After studying full of the GRETL framework correlation matrix instruction, the results and observations are noted below:

- Cost Structure and Leverage usually have a negative correlation compared with other independent variables.

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- Asset turnover and return on capital employed have a generally positive correlation with productivity while the negative correlation with leverage and cost structure.
- The coefficients of independent variables to profitability have a mostly similar relationship as the results of the Ordinary Least Squares method in the later section. A negative correlation to net profit margin is observed for cost structure, asset turnover, and productivity, while a positive correlation is observed for return on capital employed and leverage.
- No observations indicate a strong correlation or a coefficient approaching a value of 1. a moderate correlation is observed among asset turnover, productivity, and return on capital employed. A weak correlation is observed for the rest of the pairing of variables.

Table 5. Correlation Matrix for Five-Year Data

Leverage	Cost Structure	ROCE	Asset TO	Productivity	Profitability	
1.0000	-0.2481	-0.1136	-0.3013	-0.1284	0.1804	Leverage
	1.0000	-0.2272	-0.3173	-0.4662	-0.2524	Cost Structure
		1.0000	0.5378	0.4531	0.1425	ROCE
			1.0000	0.4869	-0.3621	Asset TO
				1.0000	-0.1491	Productivity
					1.0000	Profitability

The correlation matrix can be used to perform a test of collinearity. In Table 4 above, there are no observations higher than +/-0.80; hence, it can be concluded that there is no multicollinearity. As indicated from the results, all variables are less than 10, well within the range that does not indicate a collinearity issue. Thus, it can be concluded that there are no unnecessary or redundant independent variables employed in the research model (Table 6).

Table 6: Collinearity using Variance Inflation Factors

Variance Inflation Factors	
Minimum Possible Value = 1.0	
Values > 10.0 may indicate a collinearity problem	
Leverage	1.549
Cost Structure	1.519
ROCE	1.803
Asset TO	1.671
Productivity	
VIF(j) = 1/(1 - R (j)^2), where R (j) is the multiple correlation coefficient between variable j and other independent variables	

Analyzing all of the 140 observations over the entire five-year period, it is noted that leverage, cost structure, asset turnover, and productivity are negatively related to profitability. Only capital gains working has a positive correlation coefficient. It is also observed that the independent variables are highly significant at the 1 % level, except for leverage, which is only significant at the 10 % level (Table 7).

Table 7: Ordinary Least Squares Using Five-Year Data

Model 1: OLS, using observations 1-140				
Dependent variable: Profitability				
Heteroscedasticity - robust standard errors, variant HC1				
	coefficient	std. error	t-ratio	p-value
const	0.355395	0.0382740	9.286	3.81e-016 ***
Leverage	-0.00312145	0.00187815	-1.662	0.0989 *
Cost structure	-0.210240	0.0335792	-6.261	4.82e-06 ***
ROCE	0.154943	0.0303050	5.113	1.07e-06 ***
Asset TO	-0.0909014	0.0109604	-8.294	1.03e-013 ***
Productivity	-0.00378293	0.000872673	-4.335	2.84e-05 ***
Mean dependent var	0.166661	S.D. dependent var		0.109590
Sum squared resid	0.855083	S.E. of regression		0.079883
R-squared	0.487787	Adjusted R-squared		0.0468675
F(5. 134)	45.24559	P-value (F)		3.59e-27
Log-likelihood	158.226	Akaike criterion		-304.4451
Schwarz criterion	-286.7953	Hanna – Quinn		-297.2728

Two years before the SSC implementation (period: t-2), the correlation coefficients are similar to the five-year observation. Except for the return on capital employed, the rest of the independent variables are negatively correlated with profitability. As to the level of significance, ROCE and asset turnover are significant at 1% level, cost structure at 5% level, and productivity at 10% level. The leverage result is not significant (Table 8).

Table 8: Ordinary Least Squares Using T-2 Data

Model 1: OLS, using observations 1-28				
Dependent variable: Profitability				
Heteroscedasticity - robust standard errors, variant HC1				
	coefficient	std. error	t-ratio	p-value
const	0.289253	0.0615145	4.702	0.001 ***

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Leverage	-0.000983848	0.00321339	-0.3062	0.7624
Cost structure	-0.126206	0.0552212	-2.285	0.0323 **
ROCE	0.305205	0.0824794	3.700	0.0012 ***
Asset TO	-0.0985586	0.0246540	-3.998	0.0006 ***
Productivity	-0.00352982	0.00184773	-1.910	0.0692 ***
Mean dependent var	0.168556	S.D. dependent var	0.090377	0.060247
Sum squared resid	0.079853	S.E. of regression	0.555619	0.000059
R-squared	0.637912	Adjusted R-squared	-72.61309	-70.16948
F(5, 22)	9.558774	P-value (F)		
Log-likelihood	42.30655	Akaike criterion		
Schwarz criterion	-64.61986	Hanna – Quinn		
Excluding the constant, the p-value was highest for variable 1 (Leverage)				

A year before the SSC implementation (period: t-1), the correlation coefficients are still similar to the five-year observation. Except for the return on capital employed, the rest of the independent variables are negatively correlated with the net profit margin. As to the level of significance, ROCE and asset turnover are significant at 1% level, and cost structure at 5% level. Leverage and productivity results are not significant (Table 9).

Table 9: Ordinary Least Squares Using T-1 Data

Model 1: OLS, using observations 1-28				
Dependent variable: Profitability				
Heteroscedasticity - robust standard errors, variant HC1				
	coefficient	std. error	t-ratio	p-value
const	0.330269	0.0758601	4.354	0.0003 ***
Leverage	-0.00351167	0.00377015	-0.9314	0.3617
Cost structure	-0.153744	0.0625568	-2.458	0.0223 **
ROCE	0.211121	0.0724800	2.913	0.0081 ***
Asset TO	-0.105639	0.0317408	-3.328	0.0031 ***
Productivity	-0.00319233	0.00200473	-1.592	0.1256

Mean dependent var	0.170148	S.D. dependent var	0.097987
			0.076928
Sum squared resid	0.130193	S.E. of regression	0.383654
R-squared	0.497792	Adjusted R-squared	0.000031
F(5, 22)	10.44400	P-value (F)	-58.92581
Log-likelihood	35.46291	Akaike criterion	-56.48220
Schwarz criterion	-50.93259	Hanna – Quinn	
Excluding the constant, the p-value was highest for variable 1 (Leverage)			

During the year of SSC implementation (period: t-0), the correlation coefficients are still similar to the five-year observation. Except for the return on capital employed, the rest of the independent variables are negatively correlated with the net profit margin. As to the level of significance, ROCE and asset turnover are significant at 1% level, and cost structure at 5% level. Leverage and productivity results are not significant (Table 10).

Table 10: Ordinary Least Squares Using T-0 Data

Model 1: OLS, using observations 1-28				
Dependent variable: Profitability				
Heteroscedasticity - robust standard errors, variant HC1				
	coefficient	std. error	t-ratio	p-value
const	0.421778	0.130109	3.242	0.0037 ***
Leverage	-0.00571493	0.00638757	-0.8947	0.3806
Cost structure	-0.259640	0.107712	-2.410	0.0247 **
ROCE	0.193234	0.0451494	4.280	0.0003 ***
Asset TO	-0.118462	0.0354106	-3.345	0.0029 ***
Productivity	-0.00444798	0.00269803	-1.649	0.1134
Mean dependent var	0.178968	S.D. dependent var	0.128012	
			0.099935	
Sum squared resid	-0.219714	S.E. of regression	0.390558	
R-squared	0.503417	Adjusted R-squared	0.000055	
F(5, 22)	9.655207	P-value (F)	-44.27313	
Log-likelihood	28.13656	Akaike criterion	-41.82952	
Schwarz criterion	-36.27990	Hanna – Quinn		
Excluding the constant, the p-value was highest for variable 1 (Leverage)				

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A year after the SSC implementation (period: t+1), the correlation coefficients are still similar to the five-year observation. Except for the return on capital employed, the rest of the independent variables are negatively correlated with the net profit margin. As to the level of significance, ROCE is significant at 1% level, while cost structure and asset turnover at 5% level. Leverage and productivity results are not significant (Table 11).

Table 11: Ordinary Least Squares Using T+1 Data

Model 1: OLS, using observations 1-28				
Dependent variable: Profitability				
Heteroscedasticity - robust standard errors, variant HC1				
	coefficient	std. error	t-ratio	p-value
const	0.394630	0.136425	2.893	0.0084 ***
Leverage	-0.00464778	0.00676552	-0.6870	0.4993
Cost structure	-0.285131	0.115977	-2.459	0.0223 **
ROCE	0.168890	0.0517591	3.263	0.0036 ***
Asset TO	-0.0984665	0.0349761	-2.815	0.0101 ***
Productivity	-0.00410618	0.00264130	-1.555	0.1343
Mean dependent var	0.160994	S.D. dependent var	0.131898	0.104809
Sum squared resid	-0.241667	S.E. of regression	0.368579	0.000035
R-squared	0.485509	Adjusted R-squared	-41.60659	-39.16299
F(5, 22)	10.29136	P-value (F)		
Log-likelihood	26.80330	Akaike criterion		
Schwarz criterion	-33.61337	Hanna – Quinn		
Excluding the constant, the p-value was highest for variable 1 (Leverage)				

Two years after the SSC implementation (period: t+2), results have slightly changed. The correlation coefficients are still similar to the five-year observation. Except for return on capital employed and leverage, the rest of the independent variables are negatively correlated with profitability. As to the level of significance, all variables are significant at a 1% level, except for leverage, whose result is not significant (Table 12).

Table 12: Ordinary Least Squares Using T+2 Data

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Model 1: OLS, using observations 1-28				
Dependent variable: Profitability				
Heteroscedasticity - robust standard errors, variant HC1				
	coefficient	std. error	t-ratio	p-value
const	0.332916	0.0708051	4.702	0.0001 ***
Leverage	-0.00121131	0.00351298	-0.3448	0.7335
Cost structure	-0.216229	0.0693581	-3.118	0.0050 **
ROCE	0.108662	0.0269006	4.039	0.0005 ***
Asset TO	-0.0631202	0.0178503	-3.536	0.0019 ***
Productivity	-0.00538567	0.00162917	-3.306	0.0032
Mean dependent var	0.154639	S.D. dependent var	0.099594	0.065625
Sum squared resid	0.094746	S.E. of regression	0.565817	
R-squared	0.646221	Adjusted R-squared	9.11e-06	-67.82465
F(5, 22)	12.28970	P-value (F)	-65.38104	
Log-likelihood	39.91232	Akaike criterion		
Schwarz criterion	-59.83142	Hanna – Quinn		
Excluding the constant, the p-value was highest for variable 1 (Leverage)				

In this research, the Ordinary Least Squares (OLS) method is used to run the multiple linear regression model for the five independent variables and their relationship to the dependent variable (Cottrell and Lucchetti 2019). The proposed OLS estimation formula is expressed:

$$NPM = \beta_0 + \beta_1 CS + \beta_2 ROCE + \beta_3 ATO + \beta_4 Prod + \beta_5 Lev + e$$

NPM	Net profit margin, the dependent variable
B ₀	Constant coefficient
B ₁ to β ₅	Coefficients of the independent variables
CS	Cost structure ratio
ROCE	Return on capital employed ratio
ATO	Asset turnover ratio
Prod	Productivity ratio
Lev	Leverage or gearing ratio
E	Margin of error
***	p < 0.01
**	p < 0.05
*	p < 0.10

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OLS model is run using the GRETL system for the totality of the 140 observations (covering the five years) and each year to see whether there is any change in the relationship before, during, and after the SSC implementation. In the next section, we see the OLS output from GRETL.

The result shows from the analysis:

- The cost structure is negatively correlated with profitability. After SSC implementation, total operating cost (excluding the cost of goods sold and other variable costs) will increase due to the higher cost in general and administrative expense, resulting in lower net profits.
- Return on capital employed is negatively correlated with profitability. Whether before or after SSC implementation, ROCE will always positively correlate to profitability since both ratios are using a similar numerator (net profit). A higher return on capital employed in establishing the SSC translates to higher profitability for the company as well.
- Productivity is negatively correlated with profitability. The increase in manpower cost due to the establishment of SSC is faster than the impact of improving revenue and profitability, primarily because the headcount increase is in non-revenue generating functions. As to the ratio technicality, the revenue in productivity ratio is in the numerator, whereas revenue in net profit margin is in the denominator – thus, the two ratios have an inverse correlation.
- Leverage is negatively correlated with profitability. In general, increased leverage due to higher debt translates into higher financing cost and lower net profits, thus validating the two variables' negative relationship. On the other hand, a change in leverage due to a change in equity will not directly affect net profits since dividends are not recorded in the income statement. Also, SSC's establishment may be financed either by debt (increases gearing ratio) or equity (decreases gearing ratio). Therefore, the movement in the ratio is mostly irrelevant to the resulting improvement in profitability, thus validating the non-significant result of the regression.
- Asset turnover is positively correlated with profitability. The research results show otherwise, indicating a negative correlation. The increase in assets due to SSC's establishment has not immediately translated to profitability because SSC assets are used in back-office functions and are, therefore, non-revenue generating (Jannsen, et al., 2009). As to the technicality, the revenue in asset turnover ratio is in the numerator, while the same revenue in net profit margin is in the denominator – thus, the two ratios have an inverse correlation.

5 SUMMARY OF FINDINGS

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The statistical method of description shows the following key observations:

- For the combined data of 28 firms, a general improvement for the average cost structure and return on capital employed has been identified on an annual basis. Asset turnover means productivity and profitability tend to be similar – up to the year of implementation then decreased immediately two years after introducing the SSC. The average leverage is inaccurate but usually rising over five years, but the lowest leverage is observed during the year of implementation.
- Most sectors are in line with the pattern of all sectors is in cost structure (except insurance), asset turnover (excluding consumer goods), and productivity.
- Profitability shows varying trends across industries – generally decreasing except for banks, airline and hotels, and insurance companies.
- The leverage shows a varied pattern in various sectors, with banks and businesses decreasing while the rest have a rising trend. Capital returns also show a similar trend of contrast, with accommodation and industry decreases while the rest grow.
- The year of implementation for most variables is a turning point. For the two years, pre-SSC, profitability alone is generally growing but has become a downward trend since SSC implementation.

In the correlation analysis, the study found that there is no coefficient is close to 1, and among all of the variables, only three of them have a moderate correlation. In the multicollinearity test, the analysis stated that all of the variables are within the coefficient range, indicating that there is no collinearity among them. The analysis indicates that the cost structure, return on capital employed, asset turnover, productivity, and leverage do not redundancy.

The correlation matrix revealed no coefficient close to 1, and that only three variables exhibited moderate correlation. The multicollinearity test resulted in coefficient ranges that are well within the ranges to indicate that no collinearity exists among the variables. It has established that our choice of independent variables: cost structure, return on capital employed, asset turnover, productivity, and leverage have no redundancy with one another

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and are therefore valid independent determinants of profitability in our research model.

As to the results of the ordinary least squares regression model, the findings are summarized below, compared with the hypothesis raised earlier in this research (Table 13):

Table 13: Summary of Hypothesis and Findings

	Independent Variable	Dependent Variable	Hypothesis	Findings
H1	Cost Structure	Net Profit Margin	Negative	Negative
H2	Return on Capital Employed	Net Profit Margin	Positive	Positive
H3	Asset Turnover	Net Profit Margin	Positive	Negative
H4	Productivity	Net Profit Margin	Negative	Negative
H5	Leverage	Net Profit Margin	Negative	Negative (not significant)

6 CONCLUSION

The study is aimed to analyze the profitability, operating efficiency, asset utilization, leverage, productivity, and return on investment of companies with SSC. The collinearity test's satisfactory result revealed that the choice of variables is non-redundant and that each one is important in the understanding and evaluation of the financial performance of companies who have chosen to establish a shared service center. The concise statistical approach and graphical representation of patterns in each of the six variables provide significant evidence that shared service centers' establishment influences financial performance. For example, productivity and profitability were generally growing two years before SSC implementation, then suddenly decreasing after SSC establishment. Asset turnover generally decreases, then suddenly increases in the year of implementation, and thereafter steadily increases. Both the cost-structure ratio and the return on capital employed generally show increasing trends for most industries.

Meanwhile, after implementing SSC, the increase deepened in the last two years for cost structure. Finally, leverage shows a sudden dip during the SSC

implementation year, then returns to the previous level the following years. The growing cost structure ratio shows that the growth of overall revenue due to SSC implementation is not as quick as the growth of operating expenditure. Asset turnover is observed to be generally decreasing after SSC implementation. This does not necessarily mean that the assets have been underutilized to generate revenue. Instead, it could denote that the additional assets acquired for the SSC have not immediately produced an impact on revenue – which is understandable given that SSC functions are non-core back-office activities that do not directly impact revenue-generating operations.

Another variable that became worse off after SSC implementation is productivity – the additional manpower cost brought by more headcount in finance, HR, and IT has not immediately resulted in higher revenues. The study generally showed that patterns in return for capital employed indicate that SSC expenditure was not wasted. Half of the observations showed increasing trends in profitability, especially for banking, hospitality, and insurance. While the other companies showed a declining net profit margin, it cannot be immediately understood that SSC has negatively impacted profitability. Rather, it means the two-year post-SSC research period is insufficient to show significant improvement in net profit. Promising return and productivity outcomes, where it counted, show that SSC remains a successful strategic investment choice a business may make to boost its financial performance. This research has shown that significant improvements in return and profitability result from the establishment of a shared service center. Regardless of the outcome, SSCs will continue to flourish in Malaysia's business environment and globally due to their generally favorable impact on cost minimization and process improvement and standardization (Kris, 2018).

The observed trend in financial performance indicators did not show a generally favorable trend as SSC investments in back-office functions did not directly and immediately affect revenue and profit generation within two years. Future studies will thus expand the study period to the number of years before completely understanding SSC benefits. As an additional variable or determinant, the payback period may be included to further corroborate the time-specific benefits. The leverage ratio was a non-significant variable in determining profitability. Therefore, further experiments are suggested using independent variables closer to SSC implementation. Suggested variables could include SSC costs, SSC cost savings, internal customer service satisfaction factor, and other qualitative variables.

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