THE INFLUENCE OF SUPPLY CHAIN INTEGRATION (SCI) ON OPERATIONAL PERFORMANCE (CASE STUDY: MSMEs IN YOGYAKARTA)

UNDERGRADUATE THESIS

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AUTHENTICITY STATEMENT

"I hereby declare that in this thesis there is no work that has been submitted by another person to obtain a bachelor's degree at a university, and to the best of my knowledge, there is also no work or opinion that has been written or published by another person, except those referred to in writing. in this manuscript and mentioned in the references. If it is later proven that this statement is not true, I can accept any punishment/sanction according to the applicable regulations."

Yogyakarta, July 20, 2022

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PREFACE

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Muhammad Iqbal Maulana

ABSTRACT

This study aims to empirically examine the effect of two dimensions of Supply Chain Integration (SCI), namely the Internal and External dimensions on the Operational Performance of MSMEs in Yogyakarta. This analysis uses two independent variables, namely Internal Integration (II) as X1 and External Integration (EI) as X2, while the dependent variable is Operational Performance (OP) as Y which then results in a simultaneous and partial effect. The sample of this research is MSMEs in Yogyakarta that have applied the concept of Supply Chain Integration (SCI) and the sample was taken by purposive sampling method by distributing 100 questionnaires. Statistical method using Multiple Linear Regression Analysis, with hypothesis testing statistical test t.

The results of this study show 1) from F test results obtained by F test of 7,741 and p-value of 0.000, so 0.000 0.05, and it can be inferred that internal and external integration variables have a positive and simultaneous influence on the operational performance of MSMEs in Yogyakarta, 2) the significance test results show that the Internal Integration (II) variable (X1) has a value of 3.826 and a p-value of 0.000, which means 0.000 < 0.05, indicating that the Internal Integration (II) variable partially has a positive and significant influence on the operational performance in MSMEs in Yogyakarta, 3) the significance test results show that the External Integration (EI) variable (X2) has a value of 0.2905 and a p-value of 0.000, which means 0.000 < 0.05, indicating that the External Integration (EI) variable partially has a positive and significant influence on the operational performance in MSMEs in Yogyakarta.

Keywords: *Supply Chain Integration (SCI), Internal Integration (II), External Integration (EI), Operational Performance (OP), Yogyakarta's MSMEs*.

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CHAPTER I
INTRODUCTION

1.1 Background

The high level of business competition between business units requires companies to carry out the right business strategy in the face of a volatile business atmosphere. The basis is indicated in the continuous innovation process and the high level of change in consumer tastes. Companies that want to survive in the market will try their best to improve efficiency, productivity, ease, and always create innovation (Fitrianto and Sudaryanto 2016). So, it is not surprising that today many businesses offer the advantages of their products. This also happens to micro, small and medium enterprises (MSMEs) that offer culinary, clothing, and handicraft industries.

Market demands regarding product quality, reducing costs to a minimum, and company performance that must remain high, so that customer satisfaction continues to increase must be met. The implementation of Supply Chain Management (SCM) is one of the methods used. Supply Chain Management (SCM) is a holistic approach to demand sourcing, production, and logistics process management (Min et al., 2019; Minculete 2018). Supply Chain Management (SCM) is an essential, and organizational network that involves upstream and downstream relationships in different processes and activities that produce value embodied in goods and services in the hands of the ultimate customer. Upstream relationships are forward, namely the chain of relationships from suppliers to consumers, while downstream relationships are backward from consumers to suppliers. Companies need to manage their supply chain well to create a unique competitive advantage in the business system (Haizer and Render, 2015). The network consists of all parties involved (e.g. manufacturers, suppliers, retailers, customers, etc.) both upstream and downstream flows, directly or indirectly, for manufacturing and delivering products or services to final customers (Wei et al., 2021). Networks combine various subsystems, activities, relationships, and operations (Chandra, 2020) to connect forward and reverse the flow of information, materials, services, and finances (Causer et al., 2020) to improve the organization and supply of overall network performance, and also to bring high value according to customer demand in terms of quality, cost, speed, and flexibility. Thus, it is

time for companies to consider this issue so that Supply Chain Management (SCM) supports their business strategy (Heizer & Render, 2015). The company's strategy is needed to develop the company's business so that it can dominate its position in the market and be more competitive. The company's competitive strategy is expected to be able to maintain a competitive position against competitors and be able to achieve targets on the appropriate company performance.

Discussing Supply Chain Management (SCM) will not be separated from the term integration. Supply Chain Integration (SCI) refers to the extent to which strategic organizations cooperate with supply chain partners and manage intra and inter-organizational processes to achieve an effective and efficient flow of products, services, information, money, and decisions, to provide maximum value to customers (Zhao et al. al. 2020). Supply Chain Integration (SCI) is very important for Supply Chain Management (SCM), however, there are doubts about the implementation of Supply Chain Integration (SCI) practices. (Frohlich 2021) show that Supply Chain Integration (SCI) practices vary, depending on the type of company strategy, and different aspects of supply chain integration are affected by certain circumstances.

The relationship between Supply Chain Integration (SCI) and operational capabilities is based on a network perspective theory. Network perspective theory focuses on interactions between organizations on several sides. Through the coordination of efforts and strategies, the network can increase each company's resources, competencies, and capabilities (Ganbold et al., 2020). This Supply Chain Integration (SCI) approach allows MSMEs, based in various industries, to use this approach to increase industry competitiveness. Good relationships between companies, suppliers, and customers will lead to efficiency and trust. This direct approach to Supply Chain Management (SCM) provides a competitive advantage for creative industry players, impacting business performance (Rahmasari, 2019). Supply chain integration is defined as the degree to which all activities within an organization and the activities of suppliers, customers, and other supply chain members are combined (Khanuja et al., 2019).

Performance measurement is an important factor for effective Supply Chain Management (SCM). In general, performance is defined as the extent to which an operation meets performance objectives, and the main steps to meet customer needs.

Afum (2020) explains that performance is a result achieved by work in his work according to certain criteria that apply to a job. Companies need capabilities from all parts of the operation, including collaboration and reconfiguration (Flynn et al., 2018). A capability to protect companies against uncertainty and gain a competitive advantage by providing responsive networks is a must. Operations include all aspects of a company's activities that are directed at producing a product or service. This capability allows individual manufacturing systems to be highly responsive in terms of equipment, materials, and labor (Tuptuk et al., 2018). Therefore, improving organizational performance requires identifying the variables that influence it and measuring them accurately. Measurement of operational performance or quality performance is very important for an organization, to achieve efficiency and optimal business performance (Abdallah et al., 2019).

To know a performance that will determine a company to achieve optimal and efficient performance, therefore this research discusses operational performance. Previous research has found a relationship between the implementation of Supply Chain Management (SCM) and operational performance (Sofijanic et al., 2021). For example, Graham (2020) proposed an overarching framework for the supply chain's downstream, internal, and upstream parts. They find that organizations achieve better performance when they embrace higher levels of Supply Chain Management (SCM) practices. However, this framework does not apply in the context of Micro, Small, and Medium Enterprises (MSMEs), as there are inconsistent results regarding the direct relationship between the implementation of Supply Chain Management (SCM) and business performance in large companies and MSME practices. Supply Chain Management (SCM) in MSMEs is more relevant to operational performance and directly relates to the implementation of Supply Chain Management (SCM) and company performance. As pointed out by Cousins et al. (2019), the implementation of Supply Chain Management (SCM) practices has a significant impact on the operational efficiency of small producers in developing countries. This means that the actual contribution of implementing Supply Chain Management (SCM) to company performance may not be direct; may be mediated by several competencies whose goals are interrelated (Asamoah et al., 2021). But in some studies that do not explore the relationship between Supply Chain Integration (SCI) and

operational capabilities for MSMEs in Yogyakarta, this study aims to fill the research gap.

Thus, several metrics have been selected and adapted to measure Supply Chain Integration (SCI) from this discussion. The concept of Supply Chain Integration (SCI) is identified in several different dimensions, namely internal and external integration. The practice of Supply Chain Integration (SCI) aims to determine a certain role in predicting the quality of performance. This research is to find quality performance and product innovation that require different types and adjustments of Supply Chain Integration (SCI) strategies for certain situations. This theme is quite important to be raised so that MSME owners and managers in Yogyakarta can survive in the face of increasingly fierce business competition, it is hoped that through increasing Supply Chain Integration (SCI) and leading to competitive advantage and being able to develop performance processes so that MSMEs will survive in the future in Yogyakarta can be improved.

Based on this, the researchers are interested in conducting research entitled **"The Influence of Supply Chain Integration (SCI) on Operational Performance (Case Study: MSMEs in Yogyakarta".**

1.2 Problem Formulation

The formulation of the problem to be studied in this study is as follows:

1. Does Supply Chain Integration (SCI) on internal integration and external integration simultaneously affect operational performance in MSMEs in Yogyakarta?
2. Does internal integration affect the operational performance of MSMEs in Yogyakarta?
3. Does external integration affect the operational performance of MSMEs in Yogyakarta?

1.3 Research Objective

Based on the problems that have been formulated, the objectives of the research are to:

1. Knowing the influence of Supply Chain Integration (SCI) on internal integration and external integration simultaneously on the operational performance of MSMEs in Yogyakarta.
2. Knowing the influence of internal integration on the operational performance of MSMEs in Yogyakarta.
3. Knowing the influence of external integration on the operational performance of MSMEs in Yogyakarta.

1.4 Research Limitations

This research contributes to the theoretical and practical knowledge, but there are some limitations to it:

1. The sample population of this study focuses on MSMEs in Yogyakarta in several locations and may not represent all MSMEs in Yogyakarta.
2. This study only collects one resource person for each MSME.

1.5 Research Benefit

The benefits that will be obtained from this research are:

1. The results of this study are expected to provide new contributions and ideas for the leadership and management of MSMEs in Yogyakarta to take policies in terms of Supply Chain Integration (SCI) and to improve the company's operational performance and the performance of each employee.
2. The results of this study are expected to expand knowledge and be used as a repertoire of literature as a guide in improving company performance in MSMEs in Yogyakarta through the Supply Chain Integration (SCI) strategy.

CHAPTER II
LITERATURE REVIEW

2.1 Related Studies

In this research, the researcher refers to previous research conducted by Supriyanto & Rahmasari, (2020) under the title "Analysis of the Effect of Supply Chain Integration (SCI) and Innovation on Company Performance (Case Study on a Freight Forwarding Company in Semarang)". This study aims to determine the effect of Supply Chain Integration (SCI) and innovation on company performance. The study used a sample of 100 companies with a purposive sampling technique. While the data analysis uses multiple linear regression analysis. The results of the study found that Supply Chain Integration (SCI) has a significant positive effect on company performance. Meanwhile, innovation has no significant effect on company performance.

The second research by Shou et al., (2018) with the title "Supply chain integration and operational performance: The contingency effects of production systems". This study contributes to the Supply Chain Integration (SCI) literature by examining the contingency effect of an internal production system on the relationship between supplier integration, customer integration, and operational performance. The test results using the Structural Equation Model empirically reveal how the integration of suppliers and customers has a significant effect on operating performance on quality, flexibility, delivery, and cost performance.

The third research by Ayoub et al, (2017) with the title "The Effect of Supply Chain Integration on Technical Innovation in Jordan The Mediating Role of Knowledge Management" examines the effect of Supply Chain Integration (SCI) on technical innovation and knowledge management as a mediating variable. The object of this research is a manufacturing company in Jordan which has a population of 350 manufacturing companies for the electrical, electronic, mechanical, and mechanical equipment industries. This research was conducted using the Structural Equation Modeling (SEM) method used to test the hypothesis and Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to assess construct validity. The results of the analysis show that supplier integration and customer integration have a positive

effect on knowledge management and technical innovation, while internal integration has no positive effect. In addition, knowledge management has a positive effect on technical innovation. Then knowledge management mediates the supplier-technical innovation integration and customer-technical innovation integration relationship but does not mediate the internal integration-technical innovation relationship.

The fourth research by Wong et al., (2013) with the title "The Combined Effects of Internal and External Supply Chain Integration (SCI) on Product Innovation" examines the individual and combined effects of internal integration (II) and external integration (EI) on product innovation. The object of this research is an automotive company in Thailand with a population of 799 automotive first-tier suppliers and carmakers. This study uses Structural Equation Modeling (SEM) to test the hypothesis and Confirmatory Factor Analysis (CFA) to measure unidimensional. Analysis of survey data on the Thai automotive industry determined that EI and complementary integration were positively related to product innovation, but II and balanced integration were not related to product innovation.

Last by Sriyakul, (2019) with the title "Internal Supply Chain Integration (SCI) and operational performance of Indonesian fashion industry firms: A supplier to buyer approach". The variables studied are the dependent variable in the form of product features, product innovation, and quality, and the independent variable in the form of supply chain integration (supply chain upstream integration, supply chain downstream integration, and internal integration). This study aims to examine the relationship between Supply Chain Integration (SCI) in the form of supply chain upstream integration, supply chain downstream integration, and internal integration with product features in the form of innovation and product quality. The research method is a survey method using a five-point scale for three independent variable constructs (internal integration, supply integration, and customer integration).

2.2 Deductive Study

To support and strengthen the theory used in this research, knowledge is used related to this research to explain the basic theory and guidelines that come from the book. The theoretical basis to be discussed is Supply Chain Integration (SCI), Supply Chain Management (SCM), Operational Management, and Company Operational Performance.

2.2.1 Supply Chain Integration (SCI) Theory

In theory, Supply Chain Integration (SCI) uses a systematic approach to view the supply chain as an integrated whole, not as a collection of fragments that operate independently (Wiengarten et al., 2019 in Munir et. al. 2020). Supply Chain Integration (SCI) is also defined as the degree to which all activities within an organization and its suppliers, customers, and other supply chain members are integrated (Erboz et al., 2021). Supply Chain Integration (SCI) is considered a formal process of partnership or collaboration and views Supply Chain Integration (SCI) as a set of practices that involve the sharing of resources and information between internal departments and external organizations (Thai, 2017).

In other words, Supply Chain Integration (SCI) theory extends the concept of multi-enterprise integration to manage the total flow of goods from suppliers to key customers. So, Supply Chain Integration (SCI) is a set of beliefs that each company in the supply chain directly or indirectly affects the performance of all other supply chain members and ultimately affects the performance of the supply chain as a whole (Shou et al., 2018).

According to Khanuja et al., (2019), There are several indicators in Supply Chain Integration (SCI), namely:

a) External Integration, about suppliers and customers, can replace the technology and logistics role of Supply Chain Integration (SCI) capabilities that interact with innovative marketing, differentiation, and customer service capabilities for performance improvement.
b) Internal Integration, in a company this integration can replace the structural and administrative roles of Supply Chain Integration (SCI) capabilities which have an interactive relationship with cost leadership capabilities for

performance improvement. Internal integration includes cross-functional integration consisting of the purchasing function, marketing function, and sales function.

Supply Chain Integration (SCI) is a reference for a company in integration and synergy between company lines, both operational and strategic capabilities to be used as a competitive force and spur innovation in the context of competition for a broad market share. Balakhrisnan et al., (2021), conclude that the pinnacle of supply chain management is customer value through synchronizing supply chain activities. Lastly, before any company or function can successfully implement Supply Chain Integration (SCI), it must demonstrate a willingness to integrate its processes, which is reflected in its relationship commitment (Novais et al., 2019).

As a result, Supply Chain Integration (SCI) depicts the supply chain management boundaries, which include the flow of products and all other services inside the organization and between enterprises in the supply chain that contribute to customer value and pleasure. To put it in another way, supply chain management promotes supply chain participants to work together synergistically and methodically.

2.2.2 Supply Chain Management (SCM) Theory

Supply Chain Management (SCM) was first used in 1980 and has attracted attention since 1990. According to Luthra et al., (2018), Supply Chain Management (SCM) is defined as the act of sharing material, information, and financial information within an organizational unit so that it can meet the needs of the organization. customer. Nimeh (2018), Supply Chain Management (SCM) aims to reduce costs and resources involved in product creation and increase efficiency and effectiveness. Supply Chain Management (SCM) also focuses on reducing inventory levels and costs, increasing revenue, and improving collaboration (Aslam et al., 2021).

Supply Chain Management (SCM) is value chain oriented, driven by consumers where the needs and intricacies of consumer value are a source of differentiation and competitive advantage for the company. (Craighead et al. 2020).

In this situation, products and the entire chain of business activities from raw materials to final consumers must be managed effectively on an ongoing basis to add competitive value.

Heizer et al., (2015) state that Supply Chain Management (SCM) is the integration of the activities of purchasing materials and services, turning them into intermediate and final products, and delivering them to consumers. Supply Chain Management (SCM) includes:

1. Determination of transportation vendors.
2. Credit and cash transfers.
3. Suppliers.
4. Distributors.
5. Payables and receivables.
6. Warehousing and inventory.
7. Order fulfillment
8. Share customer, forecast, and production information.

The goal is to build a supply chain focused on maximizing value for the end customer.

Hugos (2018) also mentions that effective Supply Chain Management (SCM) requires simultaneous development, both in terms of the level of customer service and the internal operating efficiencies of companies in a supply chain. Some things that must be considered from the level of customer service are the level of order fulfillment, on-time delivery, and the rate of product returns by consumers for various reasons. Meanwhile, from an internal perspective, whether an organization in a supply chain is getting good returns from investing in inventory and other assets and finding ways to reduce operating and sales expenses. Or in other words, how to manage the supply chain to be responsive and efficient.

According to Frazelle (2020), successful supply chain management (SCM) requires an integrated system. Each unit in the supply chain becomes a single unit and does not stand alone as is the case with traditional supply chains. The integrated supply chain management (SCM) includes the following 7 processes:

1. *Customer Services*

   Serves as an information center for consumers, providing the information needed in real-time regarding delivery schedules, product availability, product availability, prices, and others.

2. *Customer Relationship*

   It is the management of good relations with consumers, starting with identifying who our customers are, what their needs are, and what specifications are desired by consumers. Thus, periodic evaluations can be made to the extent to which the level of customer satisfaction has been met.

3. *Demand*

   Serves to balance consumer needs with the company's capacity to provide the required product or service. This includes determining what consumers need and when they are needed.

4. *Customer Order Fulfillment*

   The main goal is to create a smooth demand fulfillment process from raw material suppliers to final consumers.

5. *Returns*

   Management of return products is an important process and can be used as one of the company's competitive advantages. The performance of the returned product management can be measured by the "Return to Available" parameter, which is the time it takes to replace the returned product with a product that can be reused.

6. *Business Development*

   Starting with an evaluation of consumer needs and existing complaints from existing products. New product development requires good cooperation with suppliers to ensure the availability of the required raw materials. In addition, it is necessary to prepare technology in the field of production that can support the development of this product.

7. *Production Flow*

   The production process is pursued in such a way that as quickly as possible it can provide the required product with a minimum level of inventory. For this reason,

adequate preparation and suitability of demand with production capacity are required.

2.2.3 Operational Management Theory

A company needs a system for managing resources to produce something following company goals. With operations management, the company can manage its resources properly and correctly. Operations management is not only concerned with the processing of various goods (manufacturing) but also with the service sector. So, in essence, operations management is a production system that can convert resource inputs into goods and services that are beneficial to society. Thus, Production/Operations Management is defined as the management (planning, organizing, directing, coordinating, and controlling) of all activities that are directly related to goods and services. (Volkova et al, 2021)

Feng and Shantikumar, (2018) emphasize that production and operations management is an activity to effectively and efficiently manage and coordinate the use of human resources, resources, and financial and material resources to create and increase the utility of goods or services. Then according to Lu et al. (2018), operations management is the design, operation, and development of systems that create and distribute basic products and services produced by the company. Luiz et al., (2019) added that operations management is an effort to manage optimally the use of resources (or often called factors of production) of labor, machinery, equipment, raw materials, and so on in the process of transforming raw materials. and labor into various products and services. Meanwhile, according to Heizer (2017) operations management is a series of activities that produce value in the form of goods and services by converting inputs into outputs.

From the definitions of these experts, it can be seen that operations management has several functions, including planning and controlling functions. In addition, it is a system used for the conversion process from input to output that produces products or services that are of interest to consumers.

The scope of operations management according to Heizer (2015) is 10, namely:

1. *Quality Management*

   Quality management is the management of the entire organization in an integrated manner and covers all aspects of goods and services that are important to consumers.

2. *Service and Product Design*

   In carrying out this design, it is intended for groups that carry out the engineering of products and services that produce value and reliability in production.

3. *Process and Capacity Design*

   Additional processes are available for products and services. Decisions on the process relate to management's commitment to a specific technology, quality, use of human resources, and maintenance.

4. *Location*

   Location facilities provide decisions for manufacturing companies and service organizations that define success for the company.

5. *Layout Design*

   It is one of the decisions that determine the efficiency of the company's operations in the long term and the long term.

6. *Job Design*

   It is a person who is in it and a very special part of a total system design.

7. *Supply Chain Management (SCM)*

   Including the decision to determine which goods to buy from whom and under what conditions.

8. *Maintenance*

   Maintenance of facility capacity, production needs, and needs of employees who are trusted to maintain every production process.

9. *Inventory Management*

   Make decisions about how to transport and store inventory, while optimizing supplier capabilities and when inventory will be created.

10. Planning

Determination to determine medium- and short-term planning as well as effective and efficient use of manpower to meet consumer demand.

In Operations Management, decision-making is also intended to facilitate the process of selecting alternatives or using analytical tools, for decisions making, so that it can be seen how rational decisions must be taken and thus can be determined and drawn up logical plans from decisions taken based on equipment. science and mathematics or quantitative analysis as well as the reality that occurs. According to Demir (2019), there are five main decision responsibilities which can be described as follows:

1. *Capacity*

   This capacity decision is aimed at providing optimal production capacity (not too much and not too little). These decisions involve the development of long-term, medium-term, and short-term capacity plans, then decisions on schedule planning, and capacity monitoring.
2. *Process*

   This decision is intended to design a physical production process that includes technology selection, process flow analysis, facility location determination, and facility layout. Process decisions define how to make a product or how to provide a service.
3. *Inventory*

   In this decision, managers must make decisions about when to order and how much each time to order. Manage the logistics system from purchasing to the storage of raw material inventory, work in process, and final products.
4. *Labor*

   This decision is concerned with the planning and management of the workforce in operations management.

5. *Quality*

   Concerning the quality possessed by goods and services that are generated.

From the above definition, it can be concluded about the concept of operations management, is the science that studies a series of processes or activities to produce goods and services to achieve the goals and objectives of a company effectively and efficiently. Also, it can be seen that based on these 10 scopes, quality is included in one of the operational management decisions.

2.2.4 Company Operational Performance Theory

Performance can be defined as the level of achievement of the results or goals of the company. Performance is a result of optimal work performance by a person, group, or business entity (Trattner et al., 2019). Operational performance refers to measurable aspects of the results of an organizational process, such as reliability, production cycle times, and inventory turns. Operational performance has an impact on company performance indicators such as brand image and customer satisfaction. (Prajogo et al., 2018). The term performance refers to the output and something produced from the production process to then be compared with the productivity ratio of competitors and other organizations (Yu et al., 2018). Liu et al., (2021), define operational performance appraisal as an act of measurement carried out on various activities in the value chain that exist within the company.

Croom et al., (2018), also add the definition of operational performance appraisal as an act of measurement carried out on various activities in the value chain that exist within the company. The measurement results are then used as feedback that will provide information about the operational performance of the implementation of a plan and the point at which the company requires adjustments to its activities, planning, and control.

Operational performance appraisal is a periodic determination of the operational effectiveness of an organization, organizational chart, and employees

based on the standard targets and criteria that have been previously determined. Performance appraisal is at the implementation stage, while the measurement results are at the monitoring stage which is then communicated to provide feedback in decision making (Liu et al., 2021).

According to Battesini and Caten (2021), the key factors of operational performance assessment consist of:

1) *Cost reduction*
2) *Waste reduction*
3) *Improve product quality*
4) *Improve delivery performance*
5) *Product and service development*

When calculating production costs, there is a relationship between the raw materials and the technology used, and the level of product quality. Good raw materials certainly have a higher price per unit when compared to raw materials of comparable lower quality. In terms of raw materials, more expensive raw material prices can result in better product quality. But as a result, a good quality product means higher material costs. The measurement results are then used as feedback that will provide information about the operational performance of the implementation of a plan and the point at which the company requires adjustments to its activities, planning, and control. This shows that the price of a good-quality product will make the selling price more expensive (Battesini and Caten, 2021).

So it can be concluded that if the company's operational performance is increasing, the company is getting closer to the target that the company wants to achieve, and it is clearly illustrated the importance of the performance of Supply Chain Integration (SCI) in the company, this can be seen from the definitions put forward by experts.

2.3 Research Framework

The research framework that underlies this research is the influence of Supply Chain Integration (SCI) practices on the operational performance of MSMEs in Yogyakarta. Supply Chain Integration (SCI) practices cannot increase their efficiency individually, because efficiency can be achieved through the interaction of various supply chains. This shows that supply chain performance must be evaluated depending on how the practice of Supply Chain Integration (SCI) and its operational performance in MSMEs.

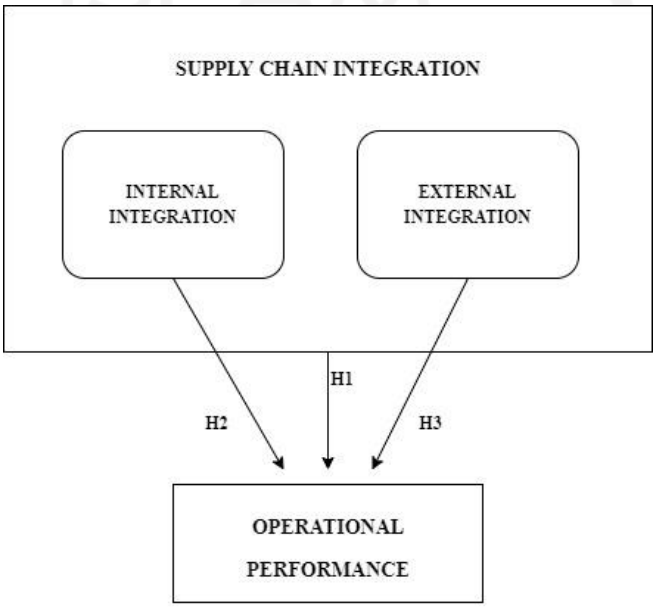

Figure 2.1 Research Framework

2.4 Research Hypothesis

2.4.1 The Influence of Supply Chain Integration (SCI) Dimensions of Internal Integration and External Integration on Operational Performance

Thai (2017) states that in general, a positive relationship between Supply Chain Integration (SCI) and operational performance has been put forward in the literature concerning various theories such as the resource-based view, the relational view, the knowledge-based view, the social exchange theory, the economics of transaction costs. , and information processing theory. The results of the study (Yu et al., 2018) found that simultaneously internal integration and external integration had a significant effect on operational performance mediated by supply chain flexibility.

The importance of Supply Chain Integration (SCI) in improving performance, and also found that Supply Chain Integration (SCI) has a direct effect on company performance (Ganbold et al., 2020). MSMEs performance can be improved by integration of various levels in the supply chain, Supply Chain Integration (SCI) has mostly positive impact on business and improves business performance in terms of profitability, financial stability, customer satisfaction, and, most importantly, achievement of business goals and objectives (Shou et al., 2018). Based on the description above, the hypothesis can be formulated:

H1: There is a positive influence of Supply Chain Integration (SCI) in the dimensions of internal integration and external integration dimensions on the operational performance of MSMEs in Yogyakarta.

2.4.2 The Influence of Supply Chain Integration Dimensions of Internal Integration on Operational Performance

Internal integration is the range in which internal functions work together. Internal integration enhances the organization's ability to utilize and coordinate internal resources. Internal integration is achieved by removing functional barriers and facilitating collaboration between internal features. This is key to enabling better coordination between techniques and common features to improve product development time, cycle time, and responsiveness (Yu et al., 2018). The results of the study (Shou et al., 2018) also found that internal integration had a significant effect on operational performance. They explained the influence of supply chain integration on the MSMEs' operational performance. Effective supply chain integration (internal integration, customers, and suppliers) leads directly to higher operational performance. Some of the results of this study are in line with previous research conducted in developing countries.

The results of the analysis show that the relationship between internal integration and operational performance is good for MSMEs that implement supply chains of products and services. Consistent with the theory of cumulative ability and organizational learning, the results of the study are consistent, showing that

companies with high cumulative learning abilities have a higher success rate of integration in coordinating, collaborating, and simplifying increased internal functional processes. Based on the description above, the hypothesis can be formulated:

H2: There is a positive influence of Supply Chain Integration (SCI) in the dimensions of internal integration on the operational performance of MSMEs in Yogyakarta.

2.4.3 The Influence of Supply Chain Integration Dimensions of External Integration on Operational Performance

External integration generally involves strategic coordination of business processes, information sharing, and collaboration between suppliers and consumers (Ganbold et al. 2020). In the context of new product development, external integration helps companies build a common understanding and receive information through network relationships. External integration gives businesses insight into their customers' needs. In addition, external integration supports early supplier involvement in the product development process and new product co-development (Yu et al., 2018), which allows companies to focus on extracting new products and technological know-how from suppliers that complement internal capabilities.

At the operational level, new ideas need to be integrated and transformed into real new products (Supriyanto and Rahmasari, 2020). This often involves solving problems between organizations. External integrations help you coordinate tasks and solve problems. This is very important in product development. In external integration, the new product development process is closely linked between suppliers and customers, with clear processes and procedures to communicate and coordinate key product design decisions (Supriyanto and Rahmasari, 2020). The ability to coordinate and work collaboratively with suppliers has been known to improve product quality, adding to success in operational performance (Thai, 2017), (Yu et al., 2018). The results of the study (Yu et al., 2018) found that the integration of

external information affected supply chain flexibility (reactive and proactive), which further improved operational performance.

The results of this survey are also supported by (Thai, 2017) which shows that external integration has a significant impact on the performance of a company. Contingency theory suggests that in an environment of high uncertainty and complexity, companies need to develop externally oriented strategies to deal with them effectively. In general, companies with strong external integration capabilities can integrate information technology between companies and coordinate and monitor the business activities of their partners so that they can obtain high-quality information from external sources more quickly. This capability is especially important in highly uncertain or complex environments such as service companies where there will be a need to make optimal decisions that are underpinned by quality information to meet the wide variability of customer demands and needs, and in a timely and appropriate manner. Supriyanto and Rahmasari, 2020). Based on the description above, the hypothesis can be formulated:

H3: There is a positive influence of Supply Chain Integration (SCI) in the dimensions of external integration on the operational performance of MSMEs in Yogyakarta.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Research Type

This is a survey-based type of quantitative research. Quantitative research aims to assess a subject's accuracy, which is usually a local phenomenon (Moises, 2020). Because data is typically collected through a series of interviews or questions asked directly or indirectly, the survey approach is used. The goal of this study is to collect data from selected samples and measure them to see if there are any similarities or differences (Moises, 2020). The goal of this research was to see how Supply Chain Integration (SCI) influences both internal integration dimensions and external integration affected MSMEs' operational performance.

3.2 Data Collection Techniques and Data Types

3.2.1 Data Collection Techniques

A questionnaire was utilized to collect data for this research. If the researcher knows what to expect from the variables being measured and the responses from the respondents, a questionnaire is an effective data gathering approach. Questionnaires might take the form of questions or written statements that are presented to respondents directly (Humble, 2020). The questionnaire was sent out to Yogyakarta MSME Managers via online and offline media.

3.2.2 Data Types

The type of data obtained from this survey is primary data. According to Humble (2020), primary data is data taken directly from the data source. In this study, the primary data used as reference are variables related to supply chain integration (SCI): internal and external integration, and company operational performance data.

3.3 Population and Sampling Techniques

3.3.1 Population

The sample is a small fraction of a well-selected population, whereas the population is a collection of items that hold the information needed for measurement in a study (Bauer, 2019). The population of this research is Yogyakarta's MSMEs, which reach 66.575 MSMEs.

3.3.2 Sampling Techniques

The sample is a subset of the population as a whole. The sample is made up of the number of people chosen from the population. To put it another way, the demographic constituents are not all the same (Campbell et al., 2020). In this work, a simple sampling technique was adopted, namely Purposive Sampling with particular criteria. The study's pattern criteria are Yogyakarta MSMEs that engage in Supply Chain Integration (SCI). A total of 100 MSMEs will be used as the survey for this research.

3.4 Indicator and Research Instrument

3.4.1 Supply Chain Integration (SCI) Indicator

Supply Chain Integration (SCI) is the integration of organizational management and supply chain activities through cooperative connections with MSME firms, effective business processes, and information sharing to create a high-performance value system that gives an organization a long-term competitive edge. Dimensions of Supply Chain Integration according to Khanuja (2019):

1. *Internal Integration (X1)*

   Internal integration is defined as the level of collaboration between functional groups within a company, as measured by the extent to which a company can develop strategies, practices, procedures, and organizational behavior into collaborative, synchronized, and manageable processes to meet the needs of its customers (Sriyakul et al., 2019). According to Khanuja (2019), the following are indicators of internal integration:

1. Ensure that all trading units in MSMEs have the same understanding to improve supply chain performance. (II 1 Equal Comprehension)
2. Invest in firm information systems to improve information accessibility, accuracy, and timeliness. (II 2 Investment IT)
3. Sharing operational data between departments. (II 3 Data Sharing)
4. Encourage unit integration through a system of remuneration, incentives, and rewards. (II 4 Cross-Unit Cooperation)
5. For process improvement, forming cross-functional teams between work units. (II 5 Cross-Functional Teams Cooperation)

2. *External Integration (X2)*

External integration, according to Sriyakul et al. (2019), is defined as the extent to which companies can collaborate with all members of the main supply chain (customers and suppliers) to develop strategies, practices, procedures, and behaviors that improve collaboration, synchronization, and processes that can be managed to meet the needs of their end-users. According to Khanuja (2019), the following are indicators of external integration:

1. Working with key partners to plan the development of demand predictions. (EI 1 Planned Demand)
2. Close collaboration with important partners on many operational operations. (EI 2 Extensive Coordination)
3. Order decision coordination with key partners. (EI 3 Order Decision)
4. Engineering change coordination with important partners. (EI 4 Engineering Coordination)
5. Coordinating the launch of new products/services with key partners. (EI 5 Product Launching Coordination)

3. *Operational Performance (Y)*

Munir et al., (2020) stated that the suitability of a process and evaluation of the performance of a company's internal operations on conditions or meeting requirements in terms of costs, customer service, product delivery to

consumers, quality, flexibility, and product/service process quality are all examples of operational performance. The following are indicators of company operational performance:

1. Lead time to fulfill customer orders (Delivery).
2. Production costs of products/services that can be reduced (Cost).
3. Product/service performance that can meet customer expectations (Quality).
4. Customizable products/services (Flexibility).

3.4.2 Research Instrument

The researcher employs a Likert scale to assess respondents' replies or sentiments. The measured variables are converted into variable indicators on the Likert scale. These indications are then utilized as a starting point for creating instruments, which can be statements (Taherdoost, 2019). The Likert scale is made up of five sections that correspond to the questions or statements posed by researchers in the questionnaire, as shown in the table below:

Table 3.1 Variable Measurement Scale

Score	Notation	Description
1	SD	Strongly Disagree
2	D	Disagree
3	N	Neutral
4	A	Agree
5	SA	Strongly Agree

3.5 Validity Testing and Reliability Testing

3.5.1 Validity Testing

The validity test was performed to see whether each question item could be deemed valid or not, ensuring that the research data was measured correctly. Pearson product-moment correlation analysis, often known as Pearson correlation, is used in

the analysis. The test is performed by comparing the calculated and table r values. The question items can be declared valid if the calculated r is greater than the r table value (Alghadir et al., 2018).

3.5.2 Reliability Testing

The instrument reliability test, often known as the validity test, is the next test of the items that have been deemed valid. According to Alghadir (2018), an instrument is dependable if it can be used by two or more researchers on the same object and generate the same results. According to Shou et al., (2018), the instruments used in their prior research were the same as those employed in this study, and the research outcomes were credible.

Cronbach's Alpha (α) was compared to a threshold value of 0.6 to determine the test criterion. The Cronbach's Alpha test was used to measure reliability with the SPSS 24.0 program. If Cronbach's Alpha is greater than 0.6, the instrument is considered dependable; if Cronbach's Alpha is less than 0.6, the instrument is considered unreliable (Park, 2021).

3.6 Data Analysis

3.6.1 Descriptive Statistical Analysis

The lowest value, maximum value, average, and standard deviation of the variables of internal integration, external integration, and operational performance are used in the descriptive analysis to describe the responses of respondents.

3.6.2 Classic Assumption Test

The classic assumption test is used to examine the regression model to avoid producing biased results. The normality test, autocorrelation test, multicollinearity test, heteroscedasticity test, and data test are all examples of classic assumption tests (Alita et al, 2021).

A. *Normality Test*

The normality test was performed to determine whether or not the data used in the independent variable and dependent variable had a normal distribution. Before proceeding with further analysis, the regression model must determine whether the data meets the normal requirements or not, for the regression to give accurate results (Alita et al., 2021).

Normality testing with the help of SPSS 24.0 software for windows with the One-Sample Kolmogorov Smirnov Test. Test criteria if the probability value:

i. (sig.) > 0,05 (data normal).
ii. (sig.) < 0,05 (data not normal).

B. *Multicollinearity Test*

The multicollinearity test was used to see if there was an excessively strong correlation between the independent variables. A decent regression model should not have signs of multicollinearity since the strong correlation between independents makes estimation in the regression model difficult. The Variance Inflation Factor (VIF) test was performed to determine whether or not the regression model has multicollinearity. According to Obite et al., (2020) the test criteria if the Variance Inflation Factor (VIF) value:

i. VIF>10 (the regression model exhibits multicollinearity symptoms)
ii. VIF<10 (the regression model does not exhibit multicollinearity symptoms)

C. *Heteroscedasticity Test*

The heteroscedasticity test aims to test whether there is an inequality of variance in the regression model from the residual of one observation to another observation. A good regression model is a regression model with data that does not occur heteroscedasticity (Flores and Ocana, 2018). This study tested heteroscedasticity using the Glejser test by regressing all independent

variables with absolute residual values to produce probability values. According to Flores and Ocana, (2018) the test criteria if:

i. (sig.) > 0,05 (no heteroscedasticity problem).
ii. (sig.) < 0,05 (there is heteroscedasticity problem).

3.6.3 Hypothetical Test

H1, H2, and H3 are the research hypotheses in this study employing Multiple Linear Regression Analysis. The following is the general formula for Multiple Regression in this study:

$$\mathbf{Y = \alpha + \beta 1X1 + \beta 2X2 + \varepsilon} \qquad (3.1)$$

Where,

Y = Operational Performance
α = Constant
β1, β2 = Regression coefficient
X1 = Internal Integration
X2 = External Integration

A. Model Analysis

1. F Testing

A multiple linear regression analysis model was utilized to investigate the stated hypothesis. The influence of an independent variable on the dependent variable is determined using regression analysis. The test is performed with a significance threshold of 0.05 (α= 5%). Hypothesis testing is as follows, based on multiple regression analysis:

a. The hypothesis is confirmed if the significance value is <0.05. (Significant regression coefficient). This implies that the implementation variables II and EI have a considerable impact on the MSMEs' operational performance when considered combined.

b. If the significance value is>0.05 then the hypothesis is not proven (regression coefficient is not significant). This indicates that the implementation variables II and EI together do not have a significant effect on the MSMEs' operational performance.

2. *Goodness of Fit (Adjusted R Square)*

   The Goodness of Fit test uses R^2 (Coefficient of Determination) to find out how much the independent variable can explain the dependent variable. The R^2 (Coefficient of Determination) value ranges between 0- and 1. The larger R^2 indicates the greater the ability of the independent variable in explaining the dependent variable (Meilan-Vila et al., 2020).

3. *t Testing*

   If the likelihood of the t-value or significance is less than <0.05, it can be assumed that the independent variables have a partial influence on the dependent variable. The t-test is used to test hypotheses, and it specifies that if the likelihood of the t-value or significance is 0.05, the hypothesis is accepted or rejected. If the probability t or significance is more than >0.05, however, it can be concluded that each independent variable does not affect the dependent variable. (Shou, 2018).

CHAPTER IV
RESULTS AND DISCUSSIONS

The research was performed by handing out questionnaires to 100 MSMEs in Yogyakarta. The following sections will explain the research's description, as well as some of the respondents' characteristics and the evaluation of the research variables, as well as the sequence in which the data analysis was provided. The numerous statistical analyses that were employed in this study were then discussed.

4.1 Characteristic Analysis

4.1.1 MSME Operational Age

The following table shows the descriptive results of the respondents' operational age of MSMEs:

Table 4.1 MSME Operational Age of Respondents

No	Operational Age	Frequency	
		Total	Percentage
1	1-10	35	35%
2	11-20	52	52%
3	21-30	13	13%
TOTAL		100	100%

Source: Primary Data, 2022

According to Table 4.1, 35 MSMEs (35%) are between the ages of 1 and 10, 52 MSMEs (52%) are between the ages of 11 and 20, and 13 MSMEs (13%) are between the ages of 21 and 30. This demonstrates that the average age of MSMEs in Yogyakarta is relatively high, indicating that these businesses are well-established.

4.1.2 SCI Implementation Time

The following table shows the descriptive results of the length of time MSMEs have been doing Supply Chain Integration (SCI):

Table 4.2 SCI Implementation Time of Respondents

No	Operational Age	Frequency	
		Total	Percentage
1	1-5	42	42%
2	6-10	45	45%
3	>10	13	13%
TOTAL		100	100%

Source: Primary Data, 2022

According to the descriptive data, the majority of MSMEs (45%) have been using SCI for more than 5 years, while 42 MSMEs (42%) have been using it for 1–5 years, and 13 MSMEs (13%) have been using it for more than 10 years. This demonstrates that the majority of them have been using Supply Chain Integration (SCI) for quite some time.

4.1.3 MSME Management Age

The following table shows the descriptive results of managing MSMEs:

Table 4.3 Management Age of Respondents

No	Management Age	Frequency	
		Total	Percentage
1	1-5	30	30%
2	6-10	27	27%
3	>10	43	43%
TOTAL		100	100%

Source: Primary Data, 2022

According to the descriptive results, the majority of MSMEs have been in business for more than 10 years, with 43 respondents (43%), 6-10 years with 27 respondents (27%), and fewer than 5 years with 30 respondents (30%). This demonstrates that the majority of owners or managers have extensive expertise in managing MSMEs.

4.2 Descriptive Analysis

A descriptive analysis of research variables is the result of respondents' evaluation of research variables. The researcher will offer a table with replies from owners or managers of Yogyakarta-based MSMEs to comments on the Supply Chain Integration (SCI) variable and the company's operational performance. The owner or manager of MSMEs in Yogyakarta was asked a series of questions.

The assessment criteria are as follows: (Munir et al, 2020)

Table 4.4 Assessment Criteria

Average	Criteria
1.00-1.79	Very Low
1.80-2.59	Low
2.60-3.39	Middle
3.40-4.19	High
4.20-5.00	Very High

4.2.1 Internal Integration Analysis

Internal integration in MSMEs is assessed using five questions, the frequency of which is indicated in the table below:

Table 4.5 Internal Integration

ITEM	INDICATOR	FREQUENCY					©	MEAN	CRITERIA
		STS	TS	N	S	SS			
II1	Equal comprehension.	7	11	13	30	39	100	3.83	High
II2	Invest in IT system.	3	10	11	26	50	100	4.1	High
II3	Share and communicate operational data between departments.	6	12	7	32	43	100	3.94	High
II4	Boost cross-unit cooperation.	8	8	14	26	44	100	3.9	High
II5	Build cross-functional teams between work units	8	8	20	30	34	100	3.74	High
Average		6.4%	9.8%	13%	28.8%	42%		3.90	High

Source: Primary Data, 2022

Table 4.5 shows that the majority of the responses from 100 MSME managers in Yogyakarta offered a agree or high rating of internal integration in their MSMEs, with the most common response being agreed (42%). This result is backed up by an average value of 3.90, which falls within the High category's typical interval of 3.40 – 4.19. Internal integration, such as integration with equal understanding, investing in information systems, sharing operational information between functions, and supporting unit integration, has been doing well, according to these results. When considered as a whole, however, it demonstrates that the company will invest in IT systems, earning the highest rating (4,1).

4.2.2 External Integration Analysis

External integration in MSMEs is assessed using five questions, the frequency of which is indicated in the table below:

Table 4.6 External Integration

ITEM	INDICATOR	FREQUENCY					©	MEAN	CRITERIA
		STS	TS	N	S	SS			
EI1	The development of demand projections is being planned.	6	12	13	28	41	100	3.86	High
EI2	Extensive coordination with key partners.	3	10	10	29	48	100	4.09	High
EI3	Order decision coordination with key partners.	6	15	8	31	40	100	3.84	High
EI4	Engineering change coordination with important partners.	7	10	12	25	46	100	3.93	High
EI5	Coordination with key partners for the launch of a new product or service.	7	8	22	28	35	100	3.76	High
Average		5.8%	11%	13%	28.2%	42%		3.90	High

Source: Primary Data, 2022

Table 4.6 shows that the majority of the 100 MSME managers in Yogyakarta offered a agree or high rating of external integration in their MSMEs, with the greatest response being 42% highly agree. This is confirmed by an average value of 3.90, which falls within the average interval limit of 3.40 - 4.19, indicating that it belongs to the High group. External Integration, such as planning the development of demand forecasts, extensive coordination with key partners, coordination with key partners on order setting, coordination with key partners for engineering changes, and coordination with key partners for the introduction of new

products/services, can all run smoothly as a result of these findings. However, when viewed as a whole, it reveals that the company coordinated extensively with its main partners (suppliers, retailers, and other partners) that received the highest rating (4.09) and that the company intends to order decision coordination with its main partners (suppliers, retailers, and other partners) received the lowest rating (3.84).

4.2.3 Operational Performance Analysis

Table 4.7 shows the impact of the owner's or manager's response to MSMEs in Yogyakarta on the company's operational performance characteristics.

Table 4.7 Operational Performance

ITEM	INDICATOR	FREQUENCY					©	MEAN	CRITERIA
		STS	TS	N	S	SS			
OP1	MSMEs develop items that are compliant with existing specifications.	5	8	29	27	31	100	3.71	High
OP2	Employees do product capability checks to ensure that product performance matches expectations.	1	4	16	28	51	100	4.24	Very High
OP3	Customer expectations have been met by product/service performance (Quality).	4	7	11	40	38	100	4.01	High
OP4	Employees and supervisors work together to plan the number of goods produced (Quantity).	5	5	11	29	50	100	4.14	High

OP5	The cost of employee salaries is by the portion of work in MSMEs.	5	5	19	43	28	100	3.84	High
OP6	Product/service production expenses that can be decreased (Cost)	6	9	11	34	40	100	3.93	High
OP7	The product is delivered on schedule.	0	4	11	32	53	100	4.34	Very High
OP8	Employees perform their duties by keeping track of the time.	4	8	6	36	46	100	4.12	High
Average		3.75%	6.25%	14.25%	33.62%	42.12%		4.04	High

Source: Primary Data, 2022

The results of Table 4.7 show that the responses of 100 respondents in Yogyakarta who are owners and managers of MSMEs provided a high rating, with an average of 4.04. The majority of "highly agree" responses, 42.12% of the questions on operational performance variables, support this. As a result, MSMEs' operational performance, such as products that meet specifications, product capabilities that match their performance, service performance that meets customer expectations, quantity planning, appropriate employee salaries, product costs that can be reduced, on-time delivery, and on-time product work, is improved. However, the partial assessment shows that the highest assessment occurs in the coordination between employees and managers in product delivery time with an average of 4.34, and the lowest assessment occurs in the product-developed items produced by MSMEs by existing standards and specifications. an average of 3.71.

4.3 Quantitative Analysis

Multiple regression analysis is used in this study's quantitative analysis. The influence of Supply Chain Integration (SCI), which includes both internal and external integration, on the company's operational performance, was studied using multiple linear regression analysis. The data quality test / classical assumption instrument test, the findings of multiple linear regression analysis, and hypothesis testing are all parts of this research.

4.3.1 Research Instrument Test

1. Validity Testing

Product moment correlation was employed as an analysis tool. The calculation is sped up with the use of the SPSS program package, which has a 5% significance threshold. The significance test is performed by comparing r count to r table, or r count > r table. Table 4.8 displays the results of the validity test.

Table 4.8 Validity Testing Result

Variable	Item	r count	r table	Notes
Internal Integration	II 1	0.607	0.196	VALID
	II 2	0.657	0.196	VALID
	II 3	0.800	0.196	VALID
	II 4	0.657	0.196	VALID
	II 5	0.698	0.196	VALID
External Integration	EI 1	0.647	0.196	VALID
	EI 2	0.673	0.196	VALID
	EI 3	0.782	0.196	VALID
	EI 4	0.635	0.196	VALID
	EI5	0.658	0.196	VALID
Operational Performance	OP 1	0.582	0.196	VALID
	OP 2	0.520	0.196	VALID

	OP 3	0.689	0.196	VALID
	OP 4	0.577	0.196	VALID
	OP 5	0.614	0.196	VALID
	OP 6	0.643	0.196	VALID
	OP 7	0.599	0.196	VALID
	OP 8	0.682	0.196	VALID

Source: Primary Data, 2022

The correlation coefficient of all items for the study variable has a correlation coefficient (r count) > r table, as shown in Table 4.8. (0.196). As a result, all of the study instrument's questions can be certified valid.

2. Reliability Testing

In each construct, the Reliability Test is used to assess the level of reliability of a research instrument. The Cronbach's Alpha test was used to measure reliability with the SPSS 20.0 program. If the Cronbach Alpha value is greater than 0.6, the instrument is considered dependable; if the Cronbach Alpha value is less than 0.6, the instrument is considered unreliable (Gollagi et al., 2020). Table 4.9 displays the results of the reliability test.

Table 4.9 Reliability Testing Result

Variable	Alpha Cronbach	Critical value	Notes
Internal Integration	0.714	0.6	Reliable
External Integration	0.707	0.6	Reliable
Operational Performance	0.761	0.6	Reliable

Source: Primary data, 2022

All variables, including internal integration, external integration, and operational performance, have Cronbach's Alpha coefficients over 0.6, according

to the reliability test results. As a result, all of the variables in this study may be considered Reliable.

4.3.2 Classical Assumption Test

The Classical Assumption test was used before the multiple linear regression model was used to evaluate the hypothesis. The normality, multicollinearity, and heteroscedasticity tests are utilized in the classical assumption.

1. Normality Testing

The normality test aims to test whether the data on the variables to be used in the study are normal or not because good and appropriate data for use in research are normally distributed data. Normality test using Kolmogorov Smirnov test. If the probability is greater than 0.05 then the data is normally distributed. The results of the normality test can be shown in the following table:

Table 4.10 Normality Testing with Kolmogorov-Smirnov

		Unstandardized Residual
N		100
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	4.82709105
Most Extreme Differences	Absolute	.080
	Positive	.046
	Negative	-.080
Test Statistic		.080
Asymp. Sig. (2-tailed)		.119[c]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Source: Secondary Data, 2022

The KS value is 0.080, and the probability (Sig) is 0.119> 0.05, according to the Kolmogorov Smirnov test. As a result, the data is distributed normally.

2. Multicollinearity Testing

The multicollinearity test was used to see if there was a link between the independent variables that were too strong. The regression model is regarded to be good if there is no extremely high connection between the independent variables. The tolerance value and variance inflation factor (VIF) are indicators of a model's multicollinearity test. The proposed regression model does not contain multicollinearity symptoms if the VIF value is less than 10 and the tolerance value is more than 0.1. Table 4.11 summarizes the findings of the multicollinearity test:

Table 4.11 Multicollinearity Testing Result

Variable	Tolerance	VIF	Notes
Internal Integration	0.578	1.729	No Multicollinearity
External Integration	0.578	1.729	No Multicollinearity

Source: Primary Data, 2022

The VIF score in this study's multicollinearity test is 1.729 and the Tolerance value is 0.578> 0.1, indicating that the regression model has no multicollinearity.

3. Heteroscedasticity Testing

Heteroscedasticity testing is used to eliminate interference from the regression model's confounding variable (error). There is no strong association between the confounding variables and the variables evaluated in this study since a good regression does not arise heteroscedasticity. The Glejser test, as stated in table 4.12, was used to conduct the test.

Table 4.12 Heteroscedasticity Testing Result

Model	t	Sig.	Notes
Constant	2.058	0.042	
Internal Integration	-1.146	0.255	No Heteroscedasticity
External Integration	1.426	0.157	No Heteroscedasticity

Source: Primary Data, 2022

The residual data in the regression model is not influenced by the independent variable, as indicated by the sig value > 0.05, as seen in the table above. As a result, heteroscedasticity does not arise in the regression model provided in this study.

4.3.3 Regression Analysis

Table 4.13 shows the results of the multiple linear regression analysis:

Table 4.13 Multiple Linear Regression Estimation

Variable	Coeff	t	P	Notes
Constant	29.629	11.553	0.000	
Internal Integration	0.588	3.826	0.000	Significance
External Integration	0.450	0.2905	0.005	Significance
Adj.R Square = 0.116 Multiple R = 0.365 F Test = 7.741 Sig F = 0.001				

Source: Primary Data, 2022

In Table 4.13 above, the calculation of multiple linear regression using a computer program obtained the following results:

$$\mathbf{Y = 29.629 + 0.588\ X1 + 0.450\ X2} \qquad (4.1)$$

1. Regression Interpretation

Based on the equation of the regression model, the meaning of each coefficient can be explained as follows:

a = constant is 29,629, indicating that the company's operational performance will be 29,629 units if the Internal Integration and External Integration variables remain unchanged. When all independent variables (X) are equal to zero, the company's operational performance (Y).

With a positive Beta coefficient of 0.588, b1 = Internal Integration Variable (X1) has an impact on the company's operational success. Because of this favorable influence, the greater the internal integration of MSMEs in Yogyakarta, the better the company's operational performance. With the premise that External Integration remains constant, each unit increase in Internal Integration will result in a 0.588 unit increase in operational performance.

With a positive Beta value of 0.450, b2 = External Integration Variable (X2) has an impact on the company's operational success. The presence of a positive influence suggests that the better the External Integration of MSMEs in Yogyakarta, the better the company's operational performance. If Internal Integration remains constant, each unit increase in External Integration will result in a 0.450 unit increase in operational performance.

2. F Testing

F test results obtained by F test of 7.741 and p-value of 0.000, so 0.000 0.05, and it can be inferred that internal and external integration variables have a substantial influence on the operational performance of MSMEs in Yogyakarta. The first hypothesis, H1. Supply Chain Integration (SCI) dimensions are based on these findings. Internal and external integration dimensions have a positive and simultaneous influence on MSMEs' operational performance in Yogyakarta, which **CAN NOT BE REJECTED**.

3. Coefficient of Determination

Table 4.13 shows the magnitude of the coefficient of Adjusted R square (range 0-1) = 0.116 or 11% which indicates that the independent variable used in this study can explain the dependent variable and the remaining 89% is influenced by other variables that are not included in the research model.

4. t Testing

According to Table 4.13, the significance test results show that the internal integration variable (X1) has a value of 3.826 and a p-value of 0.000, which means 0.000 < 0.05, indicating that the Internal Integration variable has a significant influence on the operational performance in MSMEs in Yogyakarta. These findings support the second hypothesis, which is H2 **CAN NOT BE REJECTED**. Hence, Dimensions of Supply Chain Integration (SCI) **internal integration partially has an acceptable positive and significant influence on MSMEs' operational performance in Yogyakarta.**

According to Table 4.16, the significance test results show that the external integration variable (X2) has a value of 0.2905 and a p-value of 0.000, which means 0.000 < 0.05, indicating that the External Integration variable has a significant influence on the operational performance in MSMEs in Yogyakarta. These findings support the third hypothesis, which is H3 **CAN NOT BE REJECTED**. Hence, Dimensions of Supply Chain Integration (SCI) **external**

integration partially has an acceptable positive and significant influence on MSMEs' operational performance in Yogyakarta.

4.4 Research Discussion

4.4.1 The influence of Supply Chain Integration (SCI) on internal integration and external integration simultaneously on the operational performance of MSMEs

It can be seen from the results of testing the first hypothesis that both internal and external integration have a simultaneous influence on the company's operational performance (Y). This implies that the more successful MSMEs' internal and external integration is, the better the company's operational performance will be. Meanwhile, these two factors contribute 0.116 or 11% to operational performance (range 0-1) and the remaining 89% is influenced by other variables that are not included in the research model.

Numerous theories such as the resource-based view, relational view, knowledge-based view, social exchange theory, transaction cost economics, and information processing theory have revealed a favorable association between Supply Chain Integration (SCI) and operational performance (Yu et al., 2018). Existing research shows that Supply Chain Integration (SCI) mechanisms such as investments in specialized assets and transactions can lead to stable long-term relationships and high switching costs, which reduces the threat of opportunism presented by supply chain partners, according to transaction cost economics (Ganbold et al., 2020).

Dedicated terminals, dedicated warehouses, joint ventures, and other pooled resources link supply chain participants in long-term relationships that need greater commitment and confidence. This can help improve operational performance by lowering transaction costs involved with searching, negotiating, and monitoring products or services for each transaction. According to the study's findings (Shou et al., 2018), simultaneous internal and external integration had a significant impact on operational performance, which was mediated by supply chain flexibility.

4.4.2 The influence of internal integration on the operational performance of MSMEs

Internal integration is defined as the level of collaboration between functional groups within a company, as measured by the extent to which a company can develop

strategies, practices, procedures, and organizational behavior into collaborative, synchronized, and manageable processes to meet the needs of its customers (Sriyakul et al., 2019). According to Khanuja (2019), the following are indicators of internal integration:

1. Ensure that all trading units in MSMEs have the same understanding to improve supply chain performance. (II 1 Equal Comprehension)
2. Invest in firm information systems to improve information accessibility, accuracy, and timeliness. (II 2 Investment IT)
3. Sharing operational data between departments. (II 3 Data Sharing)
4. Encourage unit integration through a system of remuneration, incentives, and rewards. (II 4 Cross-Unit Cooperation)
5. For process improvement, forming cross-functional teams between work units. (II 5 Cross-Functional Teams Cooperation)

The study's findings revealed that internal integration has a significant influence on the operational performance of MSMEs in Yogyakarta. This means that the better the Internal Integration, the better the operational performance of the organization, and the poorer the Internal Integration, the worse the operational performance of the company. The degree to which internal functions collaborate is referred to as internal integration (Jajja et al., 2018)

However, when viewed as a whole based on the data, all indicators show HIGH results. Therefore, MSME management must be able to make strategies, especially in terms of improving supply chain integration performance through internal integration and increasing cross-functional teams between work units (II 5), which according to respondents was the least effective with a mean of 3.74. According to Surung et al., (2020) one way to improve supply chain integration performance in terms of increasing cross-functional teams between work units is to use Enterprise Resource Planning (ERP) software. In addition, the use of ERP can reduce costs and waste company costs. Using an ERP system that has automated features and Supply Chain Management (SCM) functionality. This system can be programmed automatically to place orders with vendors when inventory levels drop

or are at a certain level. This is something that MSMEs need to do because the most important part of a supply chain strategy is the ability to maintain inventory levels preventively. With the ERP system, it will allow employees to do other things internally because of the automatic inventory purchasing system from the ERP.

Internal integration improves a company's ability to coordinate and leverage internal resources. Internal integration is achieved by removing functional barriers and fostering collaboration within internal functions, which is essential for enabling co-occurring techniques and improved coordination between functions to enhance product development time, cycle time, and responsiveness (Jajja et al., 2018). Internal integration also allows inter-departmental teams to generate and enhance product and process designs at the same time. Integration of operations into new product innovation processes aids in the speeding up of processes by removing steps and avoiding delays and spikes (Zhang et al., 2018).

Internal integration allows for knowledge sharing between functions and factories, which aids in product creation by collecting internal product development expertise on business activities and improving operational performance in areas such as marketing, R&D, and manufacturing. Internal integration has a considerable impact on operational performance, according to the study's findings (Erboz et al., 2021). The impact of supply chain integration on the company's operational success, they explained. Higher operational performance is directly linked to effective supply chain integration (internal integration, customers, and suppliers). Some of the findings of this investigation are similar to those of prior studies conducted in industrialized countries. Furthermore, this study adds to the growing body of data showing the greater integration, the better the performance.

4.4.3 The influence of external integration on the operational performance of MSMEs

External integration, according to Sriyakul et al. (2019), is defined as the extent to which companies can collaborate with all members of the main supply chain (customers and suppliers) to develop strategies, practices, procedures, and behaviors that improve collaboration, synchronization, and processes that can be managed to

meet the needs of their end-users. According to Khanuja (2019), the following are indicators of external integration:

1. Working with key partners to plan the development of demand predictions. (EI 1 Planned Demand)
2. Close collaboration with important partners on many operational operations. (EI 2 Extensive Coordination)
3. Order decision coordination with key partners. (EI 3 Order Decision)
4. Engineering change coordination with important partners. (EI 4 Engineering Coordination)
5. Coordinating the launch of new products/services with key partners. (EI 5 Product Launching Coordination)

External Integration has a favorable and significant influence on the company's operational performance, according to the results of hypothesis testing (Y). This means that the better the implementation of external integration (EI), the better the MSMEs' operational performance, and vice versa, the poorer the implementation of EI, the worse the MSMEs' operational performance. External integration, in general, entails the strategic alignment of corporate operations, the sharing of information, and constructive communication with suppliers and customers (Jajja et al. 2018).

However, when viewed as a whole based on the data, all indicators show HIGH results. Therefore, MSME management must be able to make strategies, especially about coordination with key partners to launch the latest products or services (EI5), which according to respondents was the least effective with a mean of 3.76. One way to improve it is by increasing the exclusivity of the product or service itself with key partners (Vendors & Suppliers). According to Balasyan (2018), people generally want something they cannot have. They want to know why they can't have the item, what factors keep them from doing it and how they might be able to get the product. This is called product exclusivity. Product exclusivity plays a role in the formation of a 'rare' mindset in a product. Fear of running out of

products can create a strong urgency to buy a product. Exclusivity is also helping increase the value of the product so that it is worth buying at high prices. Having a product that looks exclusive is much easier to reach a sale than offering a product using the usual way. The exclusivity of the product value is what spurs prospects to immediately purchase so as not to be left behind by others. One example of a company that uses this method is a technology company, Apple, Microsoft and, several other large companies. Their success in offering products in a way that looks exclusive also makes their customers willing to stand in long lines to become first owners (Kim et al., 2018)

External integration aids organizations in developing a shared understanding and obtaining knowledge through network interactions in the context of new product development. External integration enables businesses to obtain a better understanding of their customers' needs. External integration also facilitates early supplier involvement in the product development process and new product co-development (Rudyanto et al., 2021), allowing organizations to concentrate on extracting new products and technological know-how from suppliers to supplement internal capabilities. There is a need to integrate and develop new ideas into real new products at the operational level (Xian et al., 2018). This frequently entails inter-organizational problem-solving.

External integration aids task coordination and troubleshooting, both of which are critical in product development. The new product development process between suppliers and customers is strongly linked to external integration, and defined rules and procedures for communication and coordination of important product design decisions are in place (Rahmasari 2019). Product quality has been known to improve with the ability to coordinate and collaborate with suppliers, adding to operational success (Xian et al., 2018).

CHAPTER V
CONCLUSION AND SUGGESTION

5.1 Conclusion

The following conclusions are reached as a result of the data analysis and discussion:

1. The Supply Chain Integration (SCI) variables of dimensions Internal Integration and External Integration have a positive and simultaneous influence on the operational performance of MSMEs in Yogyakarta. The coefficient of determination for this study is (range 0-1) = 0.116 or 11% to operational performance and the remaining 89% is influenced by other variables that are not included in the research model. Thus, indicating that the independent variable (X) explains the dependent variable (Y).
2. In Yogyakarta, Dimensions of Supply Chain Integration (SCI) internal integration partially has an acceptable positive and significant influence on MSMEs' operational performance. This suggests that the better the internal integration, the better the MSMEs in Yogyakarta's operational performance.
3. In Yogyakarta, Dimensions of Supply Chain Integration (SCI) external integration partially has an acceptable positive and significant influence on MSMEs' operational performance. This suggests that the better the external integration, the better the MSMEs in Yogyakarta's operational performance.

5.2 Suggestion

Based on the results of the discussion and conclusions obtained, the authors can provide suggestions as follows:

1. For MSMEs Management

   MSME management must be able to strategize and implement ERP systems, especially in terms of expanding supply chain integration through internal integration and increasing cross-functional teams between work units (II5) which according to respondents is the least effective. The way to improve it is to build a team that has leaders with good communication skills and have the same vision and mission to achieve more effective collaboration for the operational performance of Yogyakarta MSMEs internally.

   MSMEs also need to improve their external integration through keeping exclusivity of the product, especially about coordination with key partners to launch the latest products or services (EI5). Proper coordination will ensure that MSMEs in Yogyakarta have the skills to develop their business in the next sales period. With good coordination, MSME business operations will be more efficient, customer service will be better, and the lead time for making or ordering products will be shorter.

2. For further research

   To provide a more particular contribution to this research, future researchers should focus the research on MSMEs operating in the same sector or type of company, such as MSMEs in the hospitality, manufacturing, or providing services industry.

   To make MSMEs stronger, more robust, and capable of competing at the national and international levels, it is vital to reexamine the factors that can enhance the operational performance of MSMEs.

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APPENDIX

1. RESEARCH QUESTIONNAIRES

KUESIONER PENELITIAN

THE INFLUENCE OF SUPPLY CHAIN INTEGRATION (SCI) ON OPERATIONAL PERFORMANCE (CASE STUDY: MSMEs IN YOGYAKARTA)

I. IDENTITAS UMKM

Mohon memberi Tanda Checklist (✔) sesuai dengan jawaban yang anda pilih.

1. Nama UMKM :.....
2. Usia UMKM :.....
3. Apakah saat ini UMKM anda telah menerapkan manajemen rantai pasokan (misalnya mengintegrasikan informasi dari pemasok, produsen dan pengecer)?
   : (1) Ya (2) Tidak
4. Sudah berapa lama UMKM anda menerapkan rantai pasokan tersebut?
   :.....Tahun…….Bulan

II. IDENTITAS RESPONDEN

1. Sudah berapa lama mengelola UMKM : .....Tahun…….Bulan
2. Usia :.....Tahun
3. Jenis Kelamin : ☐ Laki-laki ☐ Perempuan
4. Pendidikan Terakhir : ☐ SD ☐ S1
   ☐ SMP ☐ S2
   ☐ SMA ☐ S3
   ☐ Diploma ☐ Lainnya

Keterangan :

Semua pernyataan di bawah ini dimaksudkan untuk mengetahui penilaian Bapak/Ibu/Sdr/i tentang Pengaruh Integrasi Supply Chain terhadap Kinerja Operasional UMKM di Yogyakarta. Mohon Bapak/Ibu/Sdr/i memilih jawaban yang paling tepat dengan memberi **Tanda Checklist (✔)** pada kolom nomor yang tersedia di bawah ini.

Pengukuran Variabel Integrasi Supplay Chain.

1 = Sangat Tidak Setuju (STS)

2 = Tidak Setuju (TS)

3 = Netral (N)

4 = Setuju (S)

5 = Sangat Setuju (SS)

1. Integrasi Internal

No	Pernyataan	STS (1)	TS (2)	N (3)	S (4)	SS (5)
1	Manajemen perusahaan telah menyamakan pemahaman di berbagai unit dagang pada UMKM untuk mengoptimalkan kinerja rantai pasokan.					
2	Perusahaan berani berinvestasi dalam sistem informasi di perusahaan untuk meningkatkan aksesibilitas, akurasi, dan ketepatan waktu informasi.					
3	Perusahaan akan berbagi informasi operasional antar fungsi / unit (seperti unit produksi, unit pemasaran, unit keuangan, unit logistic, dan unit lainnya).					
4	Perusahaan menggunakan sistem kompensasi, insentif, dan penghargaan untuk mendorong integrasi antar unit.					
5	Perusahaan telah membangun tim lintas fungsional antar unit kerja untuk perbaikan proses.					

2. Integrasi External

No	Pernyataan	STS (1)	TS (2)	N (3)	S (4)	SS (5)
1	Perusahaan merencanakan pengembangan perkiraan permintaan dengan mitra-mitra utamanya (pemasok, pengecer, mitra lainnya).					
2	Perusahaan telah melakukan koordinasi secara ekstensif dengan mitra-mitra utama (pemasok, pengecer, mitra lainnya) sehubungan dengan kegiatan operasional yang berbeda.					
3	Perusahaan telah melakukan koordinasi dengan mitra- mitra utama (pemasok, pengecer, mitra lainnya) pada penetapan order.					
4	Perusahaan telah melakukan koordinasi dengan mitra- mitra utama (pemasok, pengecer, mitra lainnya) untuk perubahan rekayasa.					
5	Perusahaan telah melakukan koordinasi dengan mitra- mitra utama (pemasok, pengecer, mitra lainnya) untuk pengenalan produk/layanan baru.					

3. Kinerja Operasional

No	Pernyataan	STS (1)	TS (2)	N (3)	S (4)	SS (5)
1	Produk yang dihasilkan UMKM sesuai dengan spesifikasi yang ada					
2	Karyawan melakukan pemeriksaan kemampuan produk agar sesuai kinerja produk					
3	Kinerja produk / layanan sudah mampu memenuhi harapan pelanggan (Kualitas)					
4	Karyawan berkoordinasi dengan manajer dalam merencanakan jumlah yang diproduksi (Kuantitas)					
5	Biaya gaji karyawan sudah sesuai dengan pekerjaan di UMKM					
6	Biaya produksi produk / jasa yang dapat ditekan (Cost)					
7	Pengiriman produk dilakukan dengan tepat waktu					
8	Karyawan mengerjakan tugasnya dengan memperhatikan waktu					

2. DATA

NO	MSME Age	Management etd	Age	Gender	Educational Levels	SCI Implementation
1	11-20 Tahun	>10 Tahun	44	Laki-laki	S2	1-5 Tahun
2	1-10 Tahun	6-10 Tahun	39	Perempuan	S1	6-10 Tahun
3	11-20 Tahun	>10 Tahun	50	Perempuan	S1	1-5 Tahun
4	11-20 Tahun	>10 Tahun	40	Laki-laki	SMA	1-5 Tahun
5	21-30 Tahun	>10 Tahun	44	Laki-laki	SMP	>10 Tahun
6	11-20 Tahun	1-5 Tahun	61	Perempuan	S1	1-5 Tahun
7	11-20 Tahun	1-5 Tahun	42	Laki-laki	S1	1-5 Tahun
8	1-10 Tahun	6-10 Tahun	62	Perempuan	SMA	6-10 Tahun
9	11-20 Tahun	1-5 Tahun	38	Laki-laki	SMA	1-5 Tahun
10	11-20 Tahun	1-5 Tahun	30	Perempuan	S1	1-5 Tahun
11	11-20 Tahun	1-5 Tahun	28	Perempuan	SMA	1-5 Tahun
12	11-20 Tahun	1-5 Tahun	27	Perempuan	S1	1-5 Tahun
13	11-20 Tahun	1-5 Tahun	45	Laki-laki	SMA	1-5 Tahun
14	1-10 Tahun	1-5 Tahun	40	Perempuan	S1	6-10 Tahun
15	11-20 Tahun	1-5 Tahun	39	Laki-laki	SMA	1-5 Tahun
16	11-20 Tahun	1-5 Tahun	28	Laki-laki	S1	1-5 Tahun
17	21-30 Tahun	1-5 Tahun	35	Laki-laki	S1	>10 Tahun
18	11-20 Tahun	1-5 Tahun	39	Laki-laki	SMA	1-5 Tahun
19	11-20 Tahun	1-5 Tahun	55	Perempuan	DIPLOMA	1-5 Tahun
20	1-10 Tahun	1-5 Tahun	58	Perempuan	S1	6-10 Tahun
21	11-20 Tahun	1-5 Tahun	41	Perempuan	SMA	1-5 Tahun
22	1-10 Tahun	1-5 Tahun	37	Perempuan	S1	6-10 Tahun
23	11-20 Tahun	1-5 Tahun	29	Perempuan	S1	1-5 Tahun
24	11-20 Tahun	1-5 Tahun	61	Perempuan	SMA	1-5 Tahun
25	11-20 Tahun	1-5 Tahun	45	Laki-laki	S1	1-5 Tahun

26	11-20 Tahun	1-5 Tahun	25	Laki-laki	DIPLOMA	1-5 Tahun
27	21-30 Tahun	1-5 Tahun	42	Perempuan	S1	>10 Tahun
28	11-20 Tahun	1-5 Tahun	44	Laki-laki	SMA	1-5 Tahun
29	11-20 Tahun	1-5 Tahun	42	Perempuan	S1	1-5 Tahun
30	1-10 Tahun	1-5 Tahun	28	Perempuan	S1	6-10 Tahun
31	11-20 Tahun	1-5 Tahun	25	Perempuan	S1	1-5 Tahun
32	21-30 Tahun	1-5 Tahun	38	Laki-laki	S1	>10 Tahun
33	11-20 Tahun	1-5 Tahun	25	Perempuan	SMA	1-5 Tahun
34	11-20 Tahun	>10 Tahun	28	Perempuan	S1	6-10 Tahun
35	1-10 Tahun	1-5 Tahun	38	Perempuan	DIPLOMA	6-10 Tahun
36	11-20 Tahun	>10 Tahun	55	Perempuan	S1	6-10 Tahun
37	11-20 Tahun	>10 Tahun	39	Laki-laki	S2	6-10 Tahun
38	21-30 Tahun	>10 Tahun	49	Perempuan	SMA	>10 Tahun
39	11-20 Tahun	>10 Tahun	34	Perempuan	S1	6-10 Tahun
40	1-10 Tahun	1-5 Tahun	40	Laki-laki	SMA	6-10 Tahun
41	11-20 Tahun	>10 Tahun	31	Perempuan	S1	6-10 Tahun
42	1-10 Tahun	1-5 Tahun	51	Perempuan	S1	6-10 Tahun
43	11-20 Tahun	>10 Tahun	26	Perempuan	S1	6-10 Tahun
44	21-30 Tahun	>10 Tahun	41	Laki-laki	S1	>10 Tahun
45	11-20 Tahun	>10 Tahun	55	Perempuan	SMP	6-10 Tahun
46	1-10 Tahun	6-10 Tahun	26	Laki-laki	SMA	6-10 Tahun
47	11-20 Tahun	>10 Tahun	38	Perempuan	DIPLOMA	6-10 Tahun
48	1-10 Tahun	6-10 Tahun	26	Perempuan	S1	6-10 Tahun
49	11-20 Tahun	>10 Tahun	41	Laki-laki	S1	6-10 Tahun
50	21-30 Tahun	>10 Tahun	29	Perempuan	SMA	>10 Tahun
51	11-20 Tahun	>10 Tahun	55	Laki-laki	S1	6-10 Tahun
52	1-10 Tahun	6-10 Tahun	33	Perempuan	S2	6-10 Tahun

53	11-20 Tahun	>10 Tahun	29	Laki-laki	S1	1-5 Tahun
54	11-20 Tahun	>10 Tahun	35	Laki-laki	S1	1-5 Tahun
55	1-10 Tahun	6-10 Tahun	42	Perempuan	SMA	6-10 Tahun
56	21-30 Tahun	>10 Tahun	36	Laki-laki	S2	>10 Tahun
57	1-10 Tahun	6-10 Tahun	42	Perempuan	S1	6-10 Tahun
58	1-10 Tahun	6-10 Tahun	30	Laki-laki	S2	6-10 Tahun
59	11-20 Tahun	>10 Tahun	42	Perempuan	SMA	1-5 Tahun
60	21-30 Tahun	>10 Tahun	32	Perempuan	S1	>10 Tahun
61	11-20 Tahun	>10 Tahun	44	Perempuan	S1	1-5 Tahun
62	1-10 Tahun	6-10 Tahun	52	Perempuan	S2	6-10 Tahun
63	11-20 Tahun	>10 Tahun	47	Perempuan	SMA	1-5 Tahun
64	1-10 Tahun	6-10 Tahun	35	Laki-laki	S1	6-10 Tahun
65	1-10 Tahun	6-10 Tahun	45	Perempuan	SMA	6-10 Tahun
66	21-30 Tahun	>10 Tahun	38	Perempuan	S1	>10 Tahun
67	1-10 Tahun	6-10 Tahun	37	Laki-laki	S1	6-10 Tahun
68	11-20 Tahun	>10 Tahun	61	Perempuan	SMP	1-5 Tahun
69	1-10 Tahun	6-10 Tahun	28	Perempuan	S1	6-10 Tahun
70	11-20 Tahun	>10 Tahun	38	Laki-laki	S1	1-5 Tahun
71	21-30 Tahun	>10 Tahun	40	Laki-laki	SMA	>10 Tahun
72	11-20 Tahun	>10 Tahun	42	Perempuan	S1	1-5 Tahun
73	11-20 Tahun	>10 Tahun	53	Laki-laki	SMA	1-5 Tahun
74	1-10 Tahun	6-10 Tahun	45	Perempuan	S1	6-10 Tahun
75	1-10 Tahun	6-10 Tahun	40	Perempuan	S2	6-10 Tahun
76	11-20 Tahun	>10 Tahun	42	Laki-laki	SMA	1-5 Tahun
77	1-10 Tahun	6-10 Tahun	41	Laki-laki	S2	6-10 Tahun
78	1-10 Tahun	6-10 Tahun	36	Perempuan	S1	6-10 Tahun
79	1-10 Tahun	6-10 Tahun	30	Laki-laki	SMA	6-10 Tahun

80	11-20 Tahun	>10 Tahun	36	Perempuan	S1	1-5 Tahun
81	21-30 Tahun	>10 Tahun	40	Laki-laki	SMA	>10 Tahun
82	11-20 Tahun	>10 Tahun	38	Perempuan	SMA	1-5 Tahun
83	1-10 Tahun	6-10 Tahun	38	Perempuan	S1	6-10 Tahun
84	11-20 Tahun	>10 Tahun	28	Laki-laki	S2	1-5 Tahun
85	11-20 Tahun	>10 Tahun	41	Perempuan	SMA	1-5 Tahun
86	1-10 Tahun	6-10 Tahun	42	Laki-laki	S1	6-10 Tahun
87	11-20 Tahun	>10 Tahun	36	Perempuan	S1	1-5 Tahun
88	21-30 Tahun	>10 Tahun	60	Laki-laki	SMA	>10 Tahun
89	11-20 Tahun	>10 Tahun	41	Laki-laki	S1	1-5 Tahun
90	1-10 Tahun	6-10 Tahun	40	Perempuan	S1	6-10 Tahun
91	11-20 Tahun	>10 Tahun	41	Laki-laki	DIPLOMA	1-5 Tahun
92	11-20 Tahun	>10 Tahun	46	Laki-laki	S1	1-5 Tahun
93	1-10 Tahun	6-10 Tahun	33	Laki-laki	SMA	6-10 Tahun
94	1-10 Tahun	6-10 Tahun	50	Laki-laki	S1	6-10 Tahun
95	11-20 Tahun	>10 Tahun	44	Perempuan	S1	1-5 Tahun
96	1-10 Tahun	6-10 Tahun	39	Laki-laki	S2	6-10 Tahun
97	1-10 Tahun	6-10 Tahun	43	Perempuan	S1	6-10 Tahun
98	1-10 Tahun	6-10 Tahun	52	Laki-laki	S1	6-10 Tahun
99	1-10 Tahun	6-10 Tahun	36	Perempuan	S1	6-10 Tahun
100	1-10 Tahun	6-10 Tahun	35	Laki-laki	S1	6-10 Tahun

II 1	II 2	II 3	II 4	II 5	TOTAL	EI 1	EI 2	EI 3	EI 4	EI 5	TOTAL	OP 1	OP 2	OP 3	OP 4	OP 5	OP 6	OP 7	OP 8	TOTAL
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3. VALIDITY AND RELIABILITY TESTING

A. INTERNAL INTEGRATION

Correlations

		II1	II2	II3	II4	II5	TOTAL
II1	Pearson Correlation	1	.175	.409**	.197*	.271**	.607**
	Sig. (2-tailed)		.081	.000	.049	.006	.000
	N	100	100	100	100	100	100
II2	Pearson Correlation	.175	1	.451**	.329**	.343**	.657**
	Sig. (2-tailed)	.081		.000	.001	.000	.000
	N	100	100	100	100	100	100
II3	Pearson Correlation	.409**	.451**	1	.399**	.472**	.800**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	100	100	100	100	100	100
II4	Pearson Correlation	.197*	.329**	.399**	1	.297**	.657**
	Sig. (2-tailed)	.049	.001	.000		.003	.000
	N	100	100	100	100	100	100
II5	Pearson Correlation	.271**	.343**	.472**	.297**	1	.698**
	Sig. (2-tailed)	.006	.000	.000	.003		.000
	N	100	100	100	100	100	100
TOTAL	Pearson Correlation	.607**	.657**	.800**	.657**	.698**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	100	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.714	5

B. EXTERNAL INTEGRATION

Correlations

		EI1	EI2	EI3	EI4	EI5	TOTAL
EI1	Pearson Correlation	1	.240*	.407**	.229*	.304**	.647**
	Sig. (2-tailed)		.016	.000	.022	.002	.000
	N	100	100	100	100	100	100
EI2	Pearson Correlation	.240*	1	.465**	.330**	.305**	.673**
	Sig. (2-tailed)	.016		.000	.001	.002	.000
	N	100	100	100	100	100	100
EI3	Pearson Correlation	.407**	.465**	1	.356**	.414**	.782**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	100	100	100	100	100	100
EI4	Pearson Correlation	.229*	.330**	.356**	1	.217*	.635**
	Sig. (2-tailed)	.022	.001	.000		.030	.000
	N	100	100	100	100	100	100
EI5	Pearson Correlation	.304**	.305**	.414**	.217*	1	.658**
	Sig. (2-tailed)	.002	.002	.000	.030		.000
	N	100	100	100	100	100	100
TOTAL	Pearson Correlation	.647**	.673**	.782**	.635**	.658**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	100	100	100	100	100	100

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.707	5

C. OPERATIONAL PERFORMANCE

Correlations

		OP1	OP2	OP3	OP4	OP5	OP6	OP7	OP8	Total
OP1	Pearson Correlation	1	.142	.326**	.088	.222*	.617**	.169	.174	.582**
	Sig. (2-tailed)		.159	.001	.386	.026	.000	.093	.083	.000
	N	100	100	100	100	100	100	100	100	100
OP2	Pearson Correlation	.142	1	.251*	.219*	.317**	.088	.532**	.189	.520**
	Sig. (2-tailed)	.159		.012	.029	.001	.384	.000	.060	.000
	N	100	100	100	100	100	100	100	100	100
OP3	Pearson Correlation	.326**	.251*	1	.345**	.379**	.294**	.246*	.509**	.689**
	Sig. (2-tailed)	.001	.012		.000	.000	.003	.013	.000	.000
	N	100	100	100	100	100	100	100	100	100
OP4	Pearson Correlation	.088	.219*	.345**	1	.354**	.174	.252*	.374**	.577**
	Sig. (2-tailed)	.386	.029	.000		.000	.083	.011	.000	.000
	N	100	100	100	100	100	100	100	100	100
OP5	Pearson Correlation	.222*	.317**	.379**	.354**	1	.225*	.248*	.280**	.614**
	Sig. (2-tailed)	.026	.001	.000	.000		.025	.013	.005	.000
	N	100	100	100	100	100	100	100	100	100
OP6	Pearson Correlation	.617**	.088	.294**	.174	.225*	1	.249*	.371**	.643**
	Sig. (2-tailed)	.000	.384	.003	.083	.025		.013	.000	.000
	N	100	100	100	100	100	100	100	100	100
OP7	Pearson Correlation	.169	.532**	.246*	.252*	.248*	.249*	1	.443**	.599**
	Sig. (2-tailed)	.093	.000	.013	.011	.013	.013		.000	.000
	N	100	100	100	100	100	100	100	100	100
OP8	Pearson Correlation	.174	.189	.509**	.374**	.280**	.371**	.443**	1	.682**
	Sig. (2-tailed)	.083	.060	.000	.000	.005	.000	.000		.000
	N	100	100	100	100	100	100	100	100	100
Total	Pearson Correlation	.582**	.520**	.689**	.577**	.614**	.643**	.599**	.682**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	
	N	100	100	100	100	100	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Case Processing Summary

		N	%
Cases	Valid	100	100.0
	Excluded	0	.0
	Total	100	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.761	8

4. CLASSICAL ASSUMPTION TEST

A. NORMALITY TESTING

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		100
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	4.82709105
Most Extreme Differences	Absolute	.080
	Positive	.046
	Negative	-.080
Test Statistic		.080
Asymp. Sig. (2-tailed)		.119[c]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

B. MULTICOLLINEARITY TESTING

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	29.629	2.565		11.553	.000		
	internal	.588	.154	.475	3.826	.000	.578	1.729
	external	-.450	.155	-.361	-2.905	.005	.578	1.729

a. Dependent Variable: performance

C. HETEROSCEDASTICITY TESTING

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.237	1.573		2.058	.042
	internal	-.108	.094	-.151	-1.146	.255
	external	.135	.095	.188	1.426	.157

a. Dependent Variable: ABS

5. REGRESSION ANALYSIS

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	external internal	.	Enter

a. Dependent Variable: performance

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.365[a]	.133	.116	4.87660

a. Predictors: (Constant), external, internal

b. Dependent Variable: performance

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	355.330	2	177.665	7.471	.001[b]
	Residual	2306.780	97	23.781		
	Total	2662.110	99			

a. Dependent Variable: performance

b. Predictors: (Constant), external, internal

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	29.629	2.565		11.553	.000		
	internal	.588	.154	.475	3.826	.000	.578	1.729
	external	.450	.155	.361	2.905	.005	.578	1.729

a. Dependent Variable: performance