

## The effect of supply chain integration on hotel performance through green supply chain management

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### CHRONICLE

#### Article history:

Received: April 4, 2021

Received in revised format:

April 24 2021

Accepted: May 3, 2021

Available online:

May 3, 2021

#### Keywords:

Internal integration

External integration

Green Supply Chain Management

Hotel performance

### ABSTRACT

Internal and external integration in hotel industries is essential to improve Green Supply Chain Management (GSCM) to maintain hotel performance and sustainability. This research is to examine the impact of internal and external integration on GSCM and hotel performance. It is quantitative research with judgmental sampling. Questionnaires were distributed to 72 hotel employees from 62 hotels of three-star hotels and above, who understand GSCM and hotel performance in East Java. But 66 questionnaires were returned, and only 62 questionnaires were valid for data analysis. Structural Equation Modelling (SEM) is used to analyze with the help of Java Web Start software. The results show that all six hypotheses are supported, internal integration with Use technology to significantly determine plans and coordination capable of external integration and GSCM. External integration with Sharing knowledge with partners and Collaborating in solving problems can improve GSCM significantly. Supply chain integration, which consists of internal integration and external integration, impacts hotel performance by reducing hotel waste and Efficient use of resources. GSCM in implementing Eco green, green procurement and product life cycle have a significant impact on improving hotel performance.

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## 1. Introduction

Information technology has enabled customers to have more access and information to products or services they need faster and accurately, increasing demand for various products or services. Information technology also allows customers to go from one place to another place around the world quickly. The growth of global tourism is a significant problem in hotel availability for a tourist destination and becomes an essential issue in increasing the number of tourists in a country (Chou, 2014). One of the ways to do this is by making use of information technology. Hotel industries have implemented information technology to introduce hotel products or services by providing accurate and complete information. These industries build systems of information technology that are easy to use and integrate internally and externally with hotel partners for their competitive advantages. The information technology used by hotels is a combination of software, hardware, and humans to process some data to produce the information needed in decision making (Slim et al., 2021). Internal integration refers to the relationship among the organisation's functions to interact, coordinate and collaborate to solve problems faced by the company to produce outputs and outcomes (Danese et al., 2013; Siagian et al., 2020).

The information provided by the hotels for internal integration is related to data functions within the hotels to collaborate with the information needed by the external hotels. This internal information includes the number of hotel rooms, hotel facilities, and infrastructure. Hotel internal data are managed in such a way as to produce costs associated with the hotel, and later they are automatically integrated with external parties, namely hotel partners. Many companies have built business systems according to applicable regulations to make cost savings (Famiyeh et al., 2018). The collaboration built by the company with

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suppliers/customers can increase environmental performance as workplace accidents have decreased in the last three years. Apart from that, the company's environmental location has also improved; and the company has reduced water waste.

Besides, external integration is done with suppliers and distributors/ retail and hotel customers by providing information to users to get accurate, complete and transparent communication when searching about the hotels. The internal and external integration is built by collaborating with partners to enable hotels to have efficiency and effectiveness of the process flow, product flow, information flow and cost flow. The relationships or integrated connections between suppliers, hotels and distributors/retail customers are called Supply Chain Management/ SCM (Lee et al., 2016). One key for companies to get SCM integration is by increasing companies' ability to design products or services more quickly by producing high-quality products or services at a lower cost when standing alone (Danese et al., 2013). SCM is also one of the main concerns for hotels to be done by becoming green hotels. Green hotel is an essential issue for global tourism-related to the green procurement process, the internal green process of the hotel, and green customers (Chou, 2014). They become a unity built by hotel management, and it is called Green Supply Chain Management (GSCM). Green Supply Chain Management requires a complete integrated system involving the hotels' core business, starting from purchasing environmentally friendly raw materials. Green Supply Chain Management was doing internal hotel processes that are environmentally friendly, providing hotel logistics systems that are environmentally friendly, and hotel activities related to eco green issues (Al-Ghwayeen & Abdallah, 2018). GSCM is a practical business activity of an organization to maintain supplier stability, environmental stability and process stability for the organization. Green activities by hotels include implementing green supply chain management practices related to internal and external integration, eco-design, green procurement, and cooperation with customers. While for internal integration, it is related to internal environment management. GSCM combines green purchasing with green manufacturing/ process, green material management, green distribution/ marketing, and reversed logistics (Hervani et al., 2005). Green logistics supply chain management is the ability of businesses to carry out material transfers from upstream to downstream in paying attention to the environment by using technologies including logistics traceability, vehicle routing to reduce emissions, energy-saving management and collaborative logistics.

An organization practicing GSCM enables organizational performance improvement. Famiyeh et al. (2018) state that when an organization wishes to invest in GSCM practices, it will improve organizational performance through cost reduction, quality improvement, and organizational flexibility. Based on the explanation above, the purposes of this research are first to get the magnitude of the influence of internal integration on external integration, implementation of GSCM and hotel performance in East Java. Secondly, it is to find whether external integration has impacted the implementation of GSCM and hotel performance in East Java. Thirdly, it is to find out whether GSCM has influenced hotel performance in East Java.

## **2. Literature Review**

### *2.1. Technology Internal Integration*

Organizations or companies have managed their functions, either internally or externally (Siagian et al., 2020). Internally, organizations always cooperate, communicate, coordinate and even collaborate cross functions to achieve company goals. Khalaf and Mokadem (2019) state that by making use of information technology, companies can have good communication and coordination to increase productivity and efficiency in achieving organizational goals, and vice versa. If companies do not have good coordination and communication internally, it will be complicated to achieve companies' goals and objectives. Moreover, Wang and Dai's (2018) research shows that coordination and communication set up by a company would be able to create good internal integration and make customers satisfied (Hamali et al., 2020). Thus, customers will always remember the company's brand in their minds.

According to Huo et al. (2014), companies can build internal integration by matching their organizational functions to impact the companies in communicating and collaborating with external parties well to have external integration. The company can be done synchronizing the companies' systems with supplier systems and even with customer systems. Besides, Han et al. (2013) stated the company's internal integration could be done by collaborating operational planning among the organization's functions, implementing what has been planned, and coordinating the companies' objectives altogether intensively. The indicators used in technology internal integration are the technology used to determine plans together (x11), use technology to share data among departments (x12), use technology for data integration among departments (x13), and use technology to coordinate among departments (x14).

### *2.2. External Integration*

Integration among departments within the organization will support its external integration with the customers or suppliers (Lee et al., 2016; Siagian et al., 2020). Al-Shboul et al. (2017) state that companies in the supply chain management flow related to the procurement of raw materials in partnership with suppliers, product/service processes with the roles of functions in the company, and external integration are built by companies in the supply chain management flow and integration with distributors/ retailers. Jajja et al. (2018) say that external integration can also be done by sharing sales forecast with their partners to enable to prepare materials; share products/ services' plans with suppliers and distributors/retailer/ customers; share

product/service progress in the company with the distributors/retailers/ customers and share stock level inventory with the distributors/ retailers.

Most companies use the management of information systems (Hamali et al., 2020). It is measured by sharing product defects during the production process, production schedules, and machine breakdowns with the relevant departments. Process control is measured by processes done and process capabilities and equipment on the production floor altogether. Zhao et al. (2013) declare that integration with suppliers and distributors/retailers/customers will provide good information and support internal integration and vice versa. Companies need to involve partners to build product quality or service quality and provide effectiveness and efficiency in the company's operations (Elvers & Song, 2016).

External integration can be to set goals together, share knowledge with external parties as a corporate partner, share risks and profits with partners, build promotions with partners, and share expertise in overcoming problems with partners (Woo et al., 2016). The indicators used in this study are risk-sharing with partners (x21), sharing values with partners (x22), sharing knowledge with partners (x23), and collaborating in solving problems (x24).

### 2.3. Green Supply Chain Management (GSCM)

Green Supply Chain Management (GSCM) is a process of moving material procurement, the process of materials into finished materials and the process of delivering products or services to customers by taking into account the environment to produce products or services more efficiently and effectively (Famiyeh et al., 2018; Hervani et al., 2005). According to Younis et al. (2016), GSCM refers to integrating organizational environmental conditions into the organization's process flow from supplier involvement to customer involvement through product or service design, raw material procurement, raw material selection, product manufacturing processes and final product delivery to customers as well as producing recycled products. Green practices in green supply chain management consist of green purchasing, green operations and green marketing (Çankaya & Sezen, 2019). Hotels can practice green purchasing in the procurement of environmentally friendly materials, or materials that have a long lifetime, reusable materials, and materials that produce less waste, eco-label materials and others (Tarigan et al., 2020; Xu et al., 2019). Then, green operations include reducing the consumption of electrical energy, water consumption, disposable products, the use of plastic products, food waste, and having a good sanitation system and the like (Han et al., 2020). In addition to this, green marketing can be done by conducting marketing mix activities that are environmentally friendly (Çankaya & Sezen, 2019). Al-Ghwayeen and Abdallah (2018) stated that the process of GSCM is related to the cooperation of companies with external parties, especially with suppliers in material procurement and selection. While with distributors, it has something to do with product sales, internal processes related to production processes, and company environments to maintain company sustainability. Furthermore, Sundram et al. (2018) also state that GSCM will enable the company to build internal and external integration by paying attention to the organizational environment. This study aims to measure the indicators of GSCM in hotels related to eco green (x31), green procurement (x32), product life cycle (x33), green products (x34), and green processes (x35).

### 2.4. Hotel Performance

Hotels are service industries that provide lodging facilities to the community, food and beverage products and laundry. Hotel chains increasingly emphasize commitments and policies related to the environment and business sustainability. Hotels implement green hotel practices in sustainable manners by considering consumer behavior towards environments and minimizing their impacts and maximizing long-term benefits. Organizations with more and more competitive advantages must measure their performances (Widjaja et al., 2020). Suitable hotel qualification and hotel performance improvement strategy are needed to maintain hotels' competitive advantages and sustainability. Hotels that have good performance will be the first choice of customers to use accommodation services. So, it can be said that the enormous number of hotel guests visiting and staying in the hotels, the hotels have implemented good competitiveness and maintained hotel performances well. Guest satisfaction is essential in the hotel industries. The level of guest satisfaction largely determines the level of hotel occupancy; thus, it also impacts the level of sales and profits (Scholz & Voracek, 2016). Customers with environmental awareness are actively involved in environmental activities and always pay attention to the environment to become their habit. This type of hotel customers tends to pay attention to the application of green hotels, so they behave by carrying out activities related to saving electricity and water, reducing single-use hotel products, and using products repeatedly, especially hotel towels (Han et al., 2020). In hotel industries, employees can focus on activities related to environmentally friendly use of resources, including water resources, electricity resources, paper resources, hotel waste reduction, and equipment recycles. By doing so, hotels can provide products or services that are environmentally friendly to hotel guests (Luu, 2017). Market orientation and focus carried out by hotels on their customers will be able to have a direct impact on hotel performance (Hinson et al., 2017; Siagian et al., 2019). Alnawas and Hemsley-Brown's (2019) research towards 216 hotels in the UK shows that hotel performance consists of financial performance and economic performance. The ones that control financial performance and economic performance can be determined by hotel age, hotel size and hotel membership. Indicators used in this research on hotel performance are hotel operational performance related to green activities, which include ease of hotel booking through information technology (x41), commitment to the use of green products (x42), efficient use of resources (x43), and the reduction of hotel waste (x44).

### 2.5. Relations Among Concepts

Internally, hotel industries can manage their operational functions well by cooperating, coordinating, and collaborating to achieve hotel goals. By using information technology, hotels can communicate, coordinate, and unite their operational functions to increase productivity and efficiency (Khalaf & Mokadem, 2019). These can be done by executing what has been planned and coordinating the companies' objectives intensively (Wang and Dai, 2018). Well managed internal integration can be done by implementing Green Supply Chain Management (GSCM). It includes processes like moving material procurement, transforming materials into finished goods, delivering products or services to customers by paying attention to the environment to produce products or services in more efficient and effective manners (Famiyeh et al., 2018). Technology internal integration impacts supply chain management's flow, especially to suppliers, by sharing information effectively (Han et al., 2013). So, the first hypothesis is:

**H<sub>1</sub>:** Technology internal integration has influenced green supply chain management significantly.

Besides, hotels need to integrate their internal functions and their external functions as well. The hotel can match their operational processes to impact the hotels in communicating and collaborating with business partners to have external integration well (Huo et al., 2014). When hotels can integrate their internal functions well, it will support external hotel integration with suppliers or customers with the help of GSCM. GSCM enables hotels to integrate the conditions of hotel environments into the company's process flow involving both suppliers and customers through a product or service design, raw material procurement, raw material selection, product manufacturing processes and final product delivery to customers, as well as producing recycled products (Younis et al., 2016). External collaboration with suppliers can be in sharing problems faced by hotels, sharing innovative ideas with suppliers, sharing risks with suppliers and building excellent communication with suppliers, which can increase green firm performance for hotels (Tarigan et al., 2020). This collaboration with suppliers and collaboration with customers will positively impact environmental company performance (Lee & Joo, 2020). Technology internal integration affects increasing external integration by sharing internal data with suppliers to make it easier for collaboration between partners (Han et al., 2013; Hamali et al., 2020). Integration with suppliers and distributors/retailers or customers will accommodate good information and support internal integration and vice versa (Zhao et al., 2013; Siagian et al., 2020). Thus, hotels need to involve partners to build product or service quality well and provide companies' operations effectively and efficiently (Jajja et al., 2018). One of the ways is synchronizing the companies' systems with a supplier and even with customer systems. So, the following hypotheses in this research are:

**H<sub>2</sub>:** Technology internal integration has influenced external integration significantly.

**H<sub>3</sub>:** External integration has influenced green supply chain management significantly

Coordination and communication set up by hotels can provide good internal integration and satisfy customers since this plays an essential role in making customers remember the company's brands (Wang and Dai, 2018). Having well internal integration can enable hotels to produce good quality products and services. Thus, it may boost hotel performance. Internally, companies can use their abilities to create a cross-functional team together to resolve problems among departments and collaborate among functions well to improve company performance by increasing sales, increasing market share, increasing profit, and customer satisfaction (Han et al., 2013). Internal integration can improve company performance significantly in manufacturing industries (Slim et al., 2021; Tarigan et al., 2018; Widjaja et al., 2020; Hamali et al., 2020). Furthermore, maintaining hotel qualification and hotel performance plays a crucial role in this high competition. Hotels need to keep their competitive advantages to perform well and survive. Customers tend to choose and stay in hotels with good performance than those that do not have good performance. Suitable hotel qualification and hotel performance will become the first choice for customers to keep as it can satisfy the offered products or services. The hotel occupancy level is mainly determined by the guest satisfaction level (Scholz & Voracek, 2016). So, the further hypothesis is:

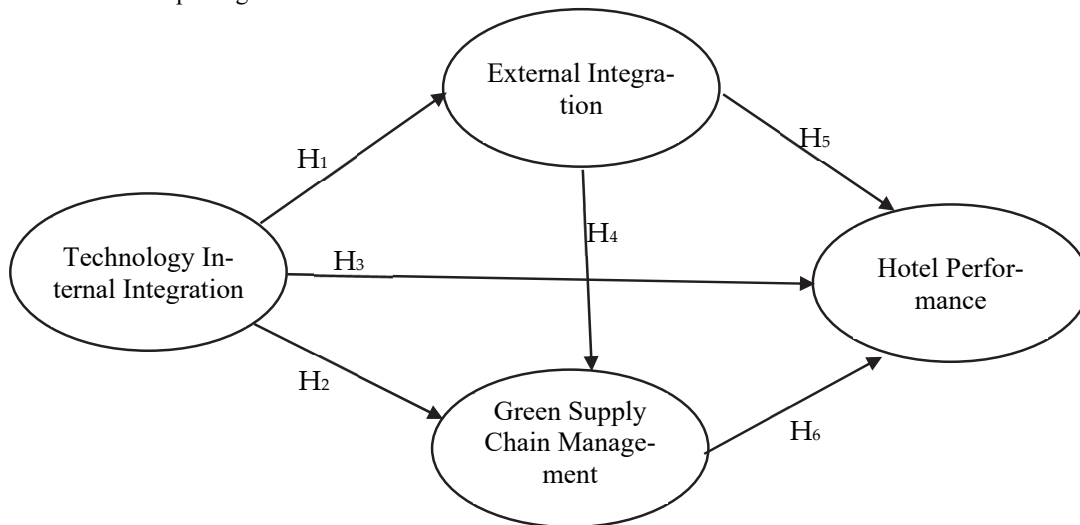
**H<sub>4</sub>:** Technology internal integration has influenced hotel performance significantly.

Moreover, companies' external integration in the supply chain management flow has something to do with the procurement of raw materials in partnership with suppliers, product/ service processes within the functions in the company, and integration with distributors/retailers Al-Shboul et al. (2017). It can also be done by sharing sales forecasts with the company's partners, products or services' plans, sharing product or service progress of the companies, and sharing risks with their business partners (Jajja et al., 2018; Woo et al., 2016). By doing so, the companies can implement GSCM well. GSCM process is associated with companies' cooperation with their external parties or business partners, especially with suppliers in material procurement and selection and distributors in product sales. Besides that, it is also related to internal processes, especially in the company environment, to maintain company sustainability (Al-Ghwayeen & Abdallah, 2018). Implementing GSCM can enable companies to build internal and external integration environmentally-friendly (Sundram et al., 2018). Hotel employees can pay attention to environmentally friendly activities by using water/ electricity/ paper resources efficiently and reducing hotel waste and recycling equipment when needed to produce environmentally friendly products or services to customers (Çankaya and Sezen, 2019). By focusing on market orientation, hotels will boost hotel performance (Tarigan et al., 2020; Xu et al., 2019). Therefore, the following hypotheses are:

**H<sub>5</sub>**: External integration has influenced hotel performance significantly.

**H<sub>6</sub>**: Green supply chain management has influenced hotel performance significantly.

The research model is per Figure 1 below.



**Fig. 1.** Research Model Green Supply Chain Management in Hotel Performance

### 3. Methods

The population can be explained as a comprehensive group of individuals, institutions, objects, and so forth with common characteristics that become a researcher's interest (Sekaran & Bougie, 2016). This research involves hotel employees of three-stars-hotels (classified by traveloka.com, agoda.com and Surabaya Tourism Office) in East Java. Judgmental sampling is used with the following criteria. The respondents are three-star hotel employees who understand the implementation of green hotels and have been working in related departments for at least two years or the ones who have become permanent hotel staff for two years. Questionnaires were distributed to 72 hotel employees from 62 three-star-hotels. Sixty-six (66) questionnaires were returned, but only 62 questionnaires were valid for data analysis. So, the response rate is 86.11%. The statistical descriptive analysis seen in Table 1. Table 1 shows that the respondents in this research are primarily males, which indicates that most jobs in hotel industries are done by males. In terms of education, most respondents are undergraduates (S1 degree), and some others are postgraduates (S2 degree). So, it can be said that hotels also take into account the managerial skills of their employees and technical skills to serve customers well. These qualifications can enable employees to make use of information technology and implement green hotels better. Moreover, the respondents who have been working for more than three years (32%) also indicate that employees have understood hotel management policies and departmental programs quite well to achieve hotel strategic targets. Besides, most of the respondents are from the food and beverage department, as many as 23 respondents (36%). This department has established policies related to green hotels, especially food and beverage waste. The food and beverage department is a part of the hotel, which manages and ensures standard operating procedures to be done well in all related areas of the hotel regarding food and beverages distribution.

**Table 1**

The Characteristics of Respondents

| Characteristics                        | Description           | Frequency | Percentage |
|--|-----------------------|-----------|------------|
| Gender                                 | Male                  | 35        | 56 %       |
|  | Female                | 27        | 44 %       |
| Education                              | S1 degree             | 56        | 90 %       |
|  | S2 degree             | 6         | 10 %       |
| Length of Work                         | 2 -3 years            | 30        | 48 %       |
|  | 4 -5 years            | 20        | 32 %       |
|  | 6- 7 years            | 7         | 12 %       |
|  | More than seven years | 5         | 8 %        |
| Department                             | Housekeeping          | 19        | 31 %       |
|  | Front office          | 13        | 21 %       |
|  | Food and Beverage     | 23        | 36 %       |
|  | Pastry                | 7         | 12 %       |
| Duration of green hotel implementation | 1 -3 years            | 43        | 69 %       |
|  | 4 -5 years            | 17        | 27 %       |
|  | More than five years  | 2         | 4 %        |

The respondents from the housekeeping department are 19 respondents (31%), who are in charge of cleaning and maintaining the hotel area. It includes guests' rooms, parking area, public area (lobby, restaurants, swimming pools, gardens, tennis courts,

and the like), linen and laundry rooms, as well as rented rooms such as arcades, drugstores, banks, money changers, travel agents, beauty salons, barbershops, meeting rooms, and others. There are four variables in this research. First, internal integration has something to do with data integration within the hotels. Second, external integration is related to information technology that can be accessed well by suppliers, distributors and customers. Third, Green Supply Chain Management (GSCM) is concerned with activities carried out by environmentally friendly hotels. Fourth, hotel performance refers to hotel operational performance related to green activities. The data analysis technique used is a quantitative research using SEM (Semi Equation Modeling) with smart PLS software version 2.0 (Hair et al., 2019). Moreover, data are analyzed using Java web start program, which is a form of Structural Equation Modeling (SEM) with validity and reliability tests as per Table 2. Table 2 shows that the average mean of internal technology integration is 4.0121, indicating that hotels have implemented and integrated their information technology systems in all departments quite well. The average mean between 3.8548 to 4.1935 is considered good. Thus, it also impacts their external integration with hotel business partners. The average mean of external integration is 4.0202 showing that hotels have coordinated and integrated their system with suppliers/distributors' systems. The least mean value is collaborating in solving problems (x24) as much as 3.7903, and the highest mean value is risk-sharing with partners (x21) as much as 4.2258. Hotels have been able to integrate externally by sharing information and risk with business partners to achieve mutual coordination and understanding to fulfill both parties' needs. Furthermore, green supply chain management activities have an average mean of 4.1032, representing that hotel GSCM has done well. The least mean value is product life cycle (x33), as much as 3.9355, and the highest mean value is green procurement (x32) as much as 4.1452. Green supply chain management shows that hotels have considered material procurement accordingly by paying attention to environmental factors. Then, the average mean value of hotel performance is 4.1935, indicating that hotels can perform well. Tcanalue is the ease of hotel booking through technology (x41) and commitment to the use of green products (x42) as much as 4.1985, and fulfil mean value is the efficient use of resources (x43) as much as 4.0806.

**Table 2**

Model Measurement

| Measurement Model                                       | Mean   | STDEV  | Loading | Remark   |
|---|--------|--------|---------|----------|
| <i>Technology of Internal Integration (Reliability)</i> | 4.0121 | 0.6581 | 0.817   | Reliable |
| Use technology to determining plans together (x11)      | 4.1935 | 0.6230 | 0.721   | Valid    |
| Use technology to sharing data (x12)                    | 4.0484 | 0.7112 | 0.619   | Valid    |
| Use technology for data integration (x13)               | 3.8548 | 0.6232 | 0.687   | Valid    |
| Use technology to coordinate (x14)                      | 3.9516 | 0.6383 | 0.869   | Valid    |
| <i>External Integration (Reliability)</i>               | 4.0202 | 0.8367 | 0.877   | Reliable |
| Risk-sharing with partners (x21)                        | 4.2258 | 0.7557 | 0.771   | Valid    |
| Sharing values with partners (x22)                      | 4.0968 | 0.9181 | 0.806   | Valid    |
| Sharing knowledge with partners (x23)                   | 3.9677 | 0.8487 | 0.810   | Valid    |
| Collaborating in solving problems (x24)                 | 3.7903 | 0.7711 | 0.814   | Valid    |
| <i>GSCM (Reliability)</i>                               | 4.1032 | 0.6983 | 0.847   | Reliable |
| Eco green (x31)   | 4.0484 | 0.6635 | 0.810   | Valid    |
| Green procurement (x32)                                 | 4.1774 | 0.6901 | 0.752   | Valid    |
| Product life cycle (x33)                                | 3.9355 | 0.8272 | 0.744   | Valid    |
| Green products (x34)                                    | 4.1452 | 0.6490 | 0.745   | Valid    |
| Green processes (x35)                                   | 4.2097 | 0.6308 | 0.562   | Valid    |
| <i>Hotel Performance (Reliability)</i>                  | 4.1935 | 0.6933 | 0.787   | Reliable |
| Ease of hotel booking through technology (x41)          | 4.2581 | 0.6256 | 0.525   | Valid    |
| Commitment to the use of green products (x42)           | 4.2581 | 0.6998 | 0.645   | Valid    |
| Efficient use of resources (x43)                        | 4.0806 | 0.7082 | 0.687   | Valid    |
| Reduction of hotel waste (x44)                          | 4.1774 | 0.7361 | 0.890   | Valid    |

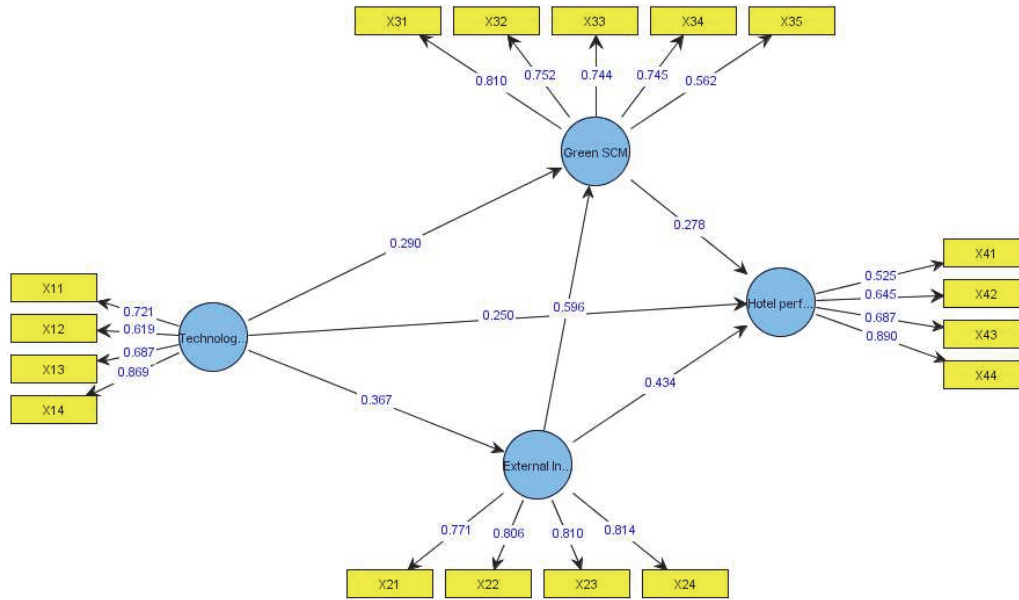
Initial data processing is done by testing the validity of the research indicators. The validity test's results of internal integration indicators are as follows: determining plans together (original sample estimate 0.721, t-statistic 4.868), sharing data among departments (original sample estimate 0.619, t-statistic 3.084), data integration among departments (original sample estimate 0.687, t-statistic 4.085), and coordinating among departments (original sample estimate 0.869, t-statistic 4.316). The results of external integration indicators are: risk-sharing with partners (original sample estimate 0.771, t-statistic 10.107), sharing values with partners (original sample estimate 0.806, t-statistic 10.333), sharing knowledge with partners (original sample estimate 0.810, t-statistic 11.039), collaborating in solving problems (original sample estimate 0.814, t-statistic 11.709).

Then, the results of GSCM indicators are as follows: eco green (original sample estimate 0.810, t-statistic 9.611), green procurement (original sample estimate 0.752, t-statistic 6.591), product life cycle (original sample estimate 0.744, t-statistic 5.713), green products (original sample estimate 0.745, t-statistic 4.860), and green processes (original sample estimate 0.562, t-statistic 2.322). While the validity test of hotel performance indicator is easy hotel bookings through information technology (original sample estimate 0.525, t-statistic 2.764), commitment to the use of green products (original sample estimate 0.645, t-statistic 4.623), efficient use of resources (original sample estimate 0.687, t-statistic 6.108), and hotel waste reduction (original sample estimate 0.890, t-statistic 27.666). All indicators in this research are valid as their original sample estimate is

above 0.50 with a t-statistic and higher than 1.96. Furthermore, the composite reliability test of four variables is as follows: internal integration (0.817) and external integration (0.877). GSCM (0.847), and hotel performance (0.787). So, the variable can be said that all four variables are reliable as composite reliability values are higher than 0.70.

**4. Data Analysis and Discussion**

The results of the six hypotheses in this research are shown in Fig. 2 and Table 3. The Results indicate the magnitude of the influence between one variable and another.



**Fig. 2.** The results of testing the hypotheses

**Table 3**  
Results for Inner Weight

| Hypothesis   | Original sample | Mean  | STDEV | t-statistic |
|--|-----------------|-------|-------|-------------|
| Technology Internal Integration → GSCM                 | 0.290           | 0.362 | 0.109 | 2.305       |
| Technology Internal Integration → External Integration | 0.367           | 0.355 | 0.115 | 2.185       |
| Technology Internal Integration → Hotel Performance    | 0.250           | 0.279 | 0.109 | 1.980       |
| External Integration → GSCM                            | 0.596           | 0.572 | 0.107 | 5.579       |
| External Integration → Hotel Performance               | 0.434           | 0.406 | 0.124 | 3.504       |
| GSCM → Hotel Performance                               | 0.278           | 0.411 | 0.125 | 2.051       |

Based on Fig. 2 and Table 3, internal integration has influenced GSCM as much as 0.290 significantly with t-statistic 2.305 > 1.960. So, the first hypothesis (H1) is supported. It shows that hotels can synchronize operational planning among departments within the hotels quite well by sharing data. Using a data integration system, hotels can coordinate functional departments effectively and efficiently. In this way, hotels can implement GSCM well to produce products or services that are environmentally friendly. Besides, hotels that have implemented internal integration can affect their external integration, which is as much as 0.367 and significantly with t-statistic 2.185 (> 1.960). Thus, the second hypothesis (H2) is supported. Hotels can cooperate and collaborate with their distributors/ suppliers/ customers by sharing risk. Besides that, hotels can also share values and knowledge with their business partners by making product or service innovation. When problems arise, hotels can solve problems together with their distributors/ suppliers/ customers by providing customer service to handle their complaints and feedback. Furthermore, internal integration has influenced hotel performance as much as 0.250 significantly (t-statistic 1.980 > 1.960). So, the third hypothesis (H3) is supported. When hotels can coordinate all departmental functions well, they will have efficient procurements, reduce the production cost, and cut product waste. Thus, they can produce good product/ service quality well. The higher the hotel performance they have, the more satisfied the customers towards their products or services offered by the hotels. This research supports Tarigan et al. (2018), which states that the internal integration system impacts increasing company performance.

In this research, external integration has influenced GSCM as much as 0.596 significantly with a t-statistic 5.579 > 1.960. This hypothesis can be said that the fourth hypothesis (H4) is supported. By sharing risk, values and knowledge with business partners, hotels can solve problems using synchronized and integrated information systems. The systems, called GSCM, enable hotels to have eco-green procurement by paying attention to product life cycles. Hotels can also be able to process green



products or services that are environmentally friendly. Moreover, external integration has influenced hotel performance as much as 0.434 significantly as the t-statistic is  $3.504 > 1.960$ . Thus, the fifth hypothesis (H5) is supported. Sharing risk, values and knowledge with distributors/ suppliers/ customers will enable hotels to solve problems together. Using information technology, hotels can synchronize the systems well by providing easy hotel bookings and green products/ services for their customers, using efficient resources that can reduce hotel waste. This study is in line with Tarigan et al. (2020), stating that a well-built external collaboration can significantly impact green firm hotel performance.

Finally, GSCM has also influenced hotel performance significantly, as much as 0.278, with a t-statistic  $2.501 > 1.960$ . Therefore, the sixth hypothesis (H6) is supported. Implementing GSCM enables hotels to have co green procurement from their business partners. Hotels can also take into account their product life cycles in processing green products/ services. Hotels that focus on implementing green operations and material procurement are unique and become the choice for customers who care and are aware of the environment (Han et al., 2020). GSCM helps hotels to cut cost and waste so that it will boost hotel performance.

## 5. Conclusions

All six hypotheses in this research are supported. The implementation of information technology can provide benefits for hotels by integrating GSCM internally and externally. Internally, hotels can manage efficient and effective business activities to achieve hotels' objectives and goals by integrating all departmental functions faster. This well-managed integration will directly affect hotels' external integration with business partners. When hotels can synchronize both internal and external integration using GSCM to maintain and produce environmentally and friendly products or services, it will escalate hotel performance simultaneously. By doing so, hotels can be sustainable in rapid and dynamic changes.

This research has shown the importance of internal and external integration for business processes using GSCM that can affect hotel performance. Thus, coordinating and collaborating with business partners is crucial for hoteliers to survive as competition is getting more arduous and challenging. Hotel managers must be able to get their competitive advantages to sustain in this dynamic era. For further research, it is recommended to have more comprehensive respondents with a grander scale as this research is focused on hotels in East Java only. It would be advisable to use this research as a benchmark or employ other related variables to boost hotel performance.

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