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Supply Chain Visibility in Leading Organizations of the Shipping Industry

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ABSTRACT

It has been acknowledged that SC visibility is the driving force for the customers to fulfil their needs in today's world. In this research paper, the researchers aim to examine different factors impacting SC Visibility. Supply chain issues are bringing attention to a sector that has generated concern about healthy competition, worker welfare, and environmental damage for years. SC visibility factors need to be quantified because they provide clients with the data; they need to better estimate demand, ensuring they do not run out of anything during busy or lean periods. The study is based on an extensive literature review and responses from leading supply chain management consulting firms. To identify technology used in supply chain integration, one of the tools for SC visibility can cover all items and assets across extensive supply networks. Freight visibility is essential as shippers' interest in the safe and secure passage of products has proliferated. The population of this research is Employees who are working in the shipping industries and 3pl industries. The paper demonstrates the shipping line to find supply chain visibility. Interest in supply chain integration and analytic integration are primary factors because container logistics management provides direct support to vessel logistics. Their involvement in freight logistics remains unclear and uncertain.

Keywords: *Supply chain management, Logistics, Visibility, Shipping, Integration, Organization*

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Supply Chain Visibility in Leading Organizations of the Shipping Industry

1. Introduction

It turned out to be on the priority list of the supply chain officials as long as there is supply chain visibility is the step to success. Saving money, improving turns, increasing client satisfaction, reducing threat, strengthening compliance, consolidating transportation, and allowing agility & flexibility are just a few of the advantages of visibility. Not long ago, several cargo movers faced many problems connecting those points. The research aim is to study and describe those factors that lack customer visibility. In this chapter, we will consider Freight forwarding units of the shipping industry and how they are facing trouble in gaining visibility. Moreover, this research will include SC integration and its internal operations with an analytic approach. Supply chain issues are bringing attention to a shipping sector that has generated concern about healthy competition, worker welfare, and environmental damage for years. Shipping businesses are at a crossroads. They can adapt to a world requiring larger ports, more warehousing and distribution facilities, and more low-carbon ships. What they decide will almost certainly determine how the global economy reacts to the next world crisis. "The only way to have visibility over items and assets across extensive supply networks, as well as the capacity to act quickly on them, is through technology. The solution to increasing supply chain visibility is straightforward: clever solutions and smart technology". "Controlled access to exact, ideal, and complete occasions & data exchanges, content & basic supply chain data-inside and among the organizations and services running its networks for as long as supply chains have existed." is the ultimate goal of starting to end supply chain visibility.

Supply chain visibility in the shipping industries of Pakistan is no longer the best-kept supply chain secret; it is an absolute necessity. It has been and keeps on being a high-need region for supply chain professionals to invest. Freight visibility is growing more critical as shippers' interest in the safe and secure passage of products has grown to satisfy their customers' critical on-time delivery KPIs. SCH is defined as the "capture and analysis of supply chain information that helps in decision-making, diminishing risk factors, and increase in processes" or "the capability to be notified to exceptions in supply chain execution" (Caridi et al., 2014). SCV offers considerable cost and time savings benefits due to process synchronization (Caridi et al., 2014). For decades, the freight sector has been working to build a real-time information flow on the whereabouts of carried goods. Unneeded delays and wait periods, duties inflicted by clients for deferral, pointless important consignments for things mentioned by clients, and stock decrease are entirely brought about by an absence of or confined situational alertness among the numerous shareholders occupied with supply and logistic operations (Prajogo & Olhager, 2012; Urciuoli & Hintsa, 2018; Caridi et al., 2014). However, the information that carriers presently provide is out-of-date and erroneous, and it is only provided whenever the cargo hits particular milestones. The fundamental notion of freight visibility is based on carrier-dependent milestone-based data, which leaves shippers vulnerable in logistics. Between the checkpoints, organizations lack visibility into their inventory, whether carriers are providing the appropriate service levels, and where supply chain bottlenecks and inefficiencies exist. Supply chains can only acquire a component of the picture of cargo's locations and status if they do not have a comprehensive picture, which limits their capacity to optimize operations.

Supply chain visibility is a metric that can be used to assess the efficacy of a method (McIntyre, 2014). The dependability of worldwide supply chains straightforwardly affects business execution for cargo movers. The convenient appearance of products is imperative to keeping up with supply volumes for each industry. Freight forwarding business in the shipping industry is dynamic and complex; maintaining effective, productive, and adaptable operations requires technology. Shippers, cargo owners, brokers, carriers, or 3PLs can benefit from a new business model that combines real-time tracking with big data analytics. The combination helps them to forecast when fresh shipments should be scheduled and where they should focus future business. Supply chain visibility gives clients the data they need to better estimate demand, ensuring they do not run out of anything during busy or lean

periods. Visibility empowers customers to see where the items are, whether they are at risk while in transit, and follow shipments or transactions as they pass through each critical point. Therefore, transparency in the supply chain is the basis that will enable supply chain managers to keep their clients up to date with the necessary information and earn their trust in achieving a high score at the end of the year. As a result, having a comprehensive perspective of activities inside a company's supply chain network will lead to additional possibilities and more profit. Moreover, with the help of integrated operations and maintaining KPIs, completing every task within their settled time limits can make work efficient. Eventually, it helps create bonding between the clients to have trust. It also makes the business grow.

Lack of visibility is not a new challenge in the shipping world, but beyond doubt, it is an issue that is getting worse daily. As long as the global supply chain grows, there are more ships, cargo, lanes, destinations and ports to track, making shipping data extremely complex and reducing visibility into the shipments. Poor visibility into the supply chain operations brings very different sets of challenges. From poor customer experience and inaccurate KPIs to growing transportation risks, lack of real-time visibility into shipment and forecast demand, if not full fill, will create a bad reputation for the customer, which causes organizations not to do business in future. Furthermore, roughly a fifth of businesses see visibility as one of their top operating challenges (it ranks the third highest priority overall). In response to the fact that digital transformation is a significant driving factor in the evolution of contemporary supply chains, only around half of the organizations have made a plan to manage that change. Core logistics operations, such as moving goods or cargo in transit, in-plant logistics activities, delivery vehicle movement from warehouses to hubs to customers' doorsteps, and truck movement from manufacturers to end customers, are not entirely transparent, accessible, and traceable to the customers. Therefore, it becomes a big challenge for the shipping industries as there is a massive competition in the market and today's world visibility is the crucial part of supply chain operations.

1.1 Research Objective

The research is about finding factors which impact overall Supply chain visibility. Regardless of the information, SC visibility is necessary for the supply chain. However, companies are unsuccessful in attempting to provide supply chain visibility. The research aim is to provide a pool of information regarding factors impacting the overall supply chain visibility. So the companies could focus on those factors in search of possibilities for improvements to enhance success to provide supply chain visibility to their valuable customers in the competitive market.

1.2 Research Questions

Based on the problem statement and the research objectives, the following research questions will seek to find out the outcomes:

1. What problems are being faced in different integrated operations by shipping organizations?
2. What difficulties face organizations in maintaining internal KPIs?
3. What problems does an organization face in overall analytic integration?
4. How does Forecast in operations cause poor visibility?

2.1 Literature Review

There is much study on SCM in the service industries, particularly in healthcare and education (Ang & Griffin, 2008; Parker & DelLay, 2008). The performance of supply chains in 3PLs has been investigated over three business lines: freight forwarding, air and sea transportation, and logistics services. The performance differed dramatically between lines (Lai et al., 2004). Data, information, and systems are the foundations of integration, and they assist in delivering the required results at each level of the supply chain. (Poulymenakou & Tsironis, 2003) According to standard management, which closes the loop in SCM function within overall management, currently, information at different stages of operations influences the quality of a service or product (Poulymenakou & Tsironis, 2003). The

reality that there are variations in the level of supply chain visibility and information dissemination between participants in a supply chain is referred to as transparency. (Lamming et al., 2001).

Increasing the amount of data available in the supply chain creates the appearance of visibility. As a result, coordinating bits of knowledge from analysis to strategy might add to a firm's problem. A supply chain's visibility is critical for accuracy & timely data transmission. The more accurate the information, the higher the transparency; however, the larger the obscurity, the more the information deteriorates. The concept of visibility has been misunderstood in the literature, and it has been used interchangeably with the concept of information transmission (Swaminathan & Tayur, 2003). Several authors have suggested that visibility has advantages, including (1) further developed responsiveness (Patterson et al., 2003); (2) further developed preparation and recharging capacities (Mentzer et al., 2004); and (3) further developed direction. The performance measures are used to check and manage the business's overall operations. They are also used to evaluate and compare the performance of different organizations in the industry, plants, departments, teams and individuals (Mapes et al., 1997; Morran et al., 2009). Most companies evaluate their performances by allocating the indicators to individual processes.

2.1.2 Supply Chain Integration and SC Visibility

Integration is the process of binding people together with a system and process on a common platform. It is a starting point to start collaborating in a supply chain environment. The Source of any visibility solution is the information and the collected data from different integrated paths in the supply chain. Some organizations have adopted a highly digitized environment using EDI, simplifying data transfer. Others may rely on low-tech using excel spreadsheets and email communications. The key to effective supply chain integration towards visibility is connecting these systems and non-systems using different communication approaches and data formats. Visibility has been examined for a long time there is a need for direction to operationalize this phenomenon in complicated supply chains (Wycislak, 2021), Supply chain connection and information exchange are two essential tools in the development of supply chain visibility (Dubey et al., 2018), It represents two types of supply chain visibility research: 1) data technology means receiving and disseminating information among SC members; 2) supply chain visibility as a result of information sharing (Somapa, Cools & Dullaert, 2018). Integration is defined as the degree to which many parties collaborate to create mutually acceptable results. Supply chain reconciliation/integration refers to interior and external coordination systems as organizational processes that ought to be enhanced and incorporated (Kahn & Mentzer, 1998; Romano, 2003).

2.1.3 Analytic Integration and SC Visibility

The fact is that supply chain enterprises must widen their "supply chain knowledge," and "not knowing" is becoming increasingly unacceptable — especially as customers become more empowered with "ubiquitous visibility". Supply chain analytics means utilizing analytical techniques & applications to help decision-taking & at last, upgrade supply chain execution. It is not about knowing what a company knows versus not knowing what a company knows; it is also about getting information to key decision makers when and how they need it (Ellis et al., 2015). Current supply chain management must evaluate various types and stages of analytic methods used by every individual working on different operation parts. With an emphasis on the planning function, the analytic program concentrated on inquiry, reporting, and analysis (Ellis et al., 2015). Organizations likewise look for straightforwardness to further develop coordinated effort and correspondence among trading partners. To arrive at this point, organizations are utilizing new and existing innovation and examination capacities to painstakingly screen and dissect two of them, upstream and downstream supply chain tasks, gain straightforwardness & settle on taught decisions of their inward. Outside supply chain rehearses. Organizations have utilized different kinds of supply chain investigation (SCA) for quite some time to better their data handling abilities and supply chain activities.

2.1.4 Developing KPIs and SC Visibility

Key Performance Indicators, or KPIs, are tools used to analyze the value or success of a firm or supply chain by measuring the performance of specific vital operations. The objective in any supply chain is the client & transportation is a component of the supply chain. Recognizing that supply chain KPIs span a broad range of management issues and that each interruption has a significant impact on an organization's operations, this research prioritizes non-financial KPIs. Furthermore, we have realized that KPIs are equally as essential to companies as the phenomena of SCRes; nonetheless, KPIs are the primary cause of SCRes. It focuses on the link between supply chain resilience and KPIs and the advantages of using KPIs to establish or improve supply chain resilience (SCRes). It is especially true in every business where customers bind themselves into service level agreements and contracts, which will be evaluated through KPIs that both enterprise and its customer agreed upon. KPIs quantitative indicator is an essential aspect that firms must track and control to succeed (Nagyova & Pacaiova, 2009). KPIs capable of depicting the current state of a business and its distribution network should be defined for this purpose, assisting in the monitoring and evaluation of processes (Maestrini et al., 2017). Each firm creates and defines its KPIs based on functional context, responsibilities, and goals to collect relevant indicators for processes and needs. In SCM, the selection of correct KPIs is really important to integrate objectives at their different levels, which the result will be able to provide a broader view of the business.

KPIs must be contextualized to be project specific for project managers to use daily to improve project performance. This contextualization of the KPIs should make every important objective, component, and communication simple to see. The coordination, control, and observing of this complicated framework, just as its objectives, criticism connections, postponements, and data stream, need an agreement and displaying of how the parts of these frameworks cooperate. KPI is the key to substantially improving SC integration and overall performance. KPIs are a collection of metrics that focus on the parts of organizational performance that are most important for the organization's current and future success and which should be monitored twenty-four hours a day, seven days a week for some. A KPI cannot be a key to business if measured monthly, quarterly, or annually. In marketing or logistical words, the KPIs must be focused on the client. Client-oriented in corporate marketplaces has attracted academics and managers alike. It has become commonly used in service marketing. The term "customer-oriented businesses" refers to how well a firm understands and responds to its customer's needs in terms of continuous value development and execution. (Plomaritou & Konsta, 2013)

2.2 Relevant Theories

Theories are useful to cover the relevant research and support the research model. Therefore, this research used "Knowledge-Based Theory" for its support. The "Knowledge-Based Theory" is a firm theory that emphasizes resources and organizational capabilities as the primary sources of long-term competitive advantage and the foundation for strategy formation. Our approach starts with the problem as the fundamental unit of analysis, stating that the complexity of a problem determines the best solution search technique and the best way to organize that search. Our idea revolves around problem-solving and knowledge development. The manager's primary goal is to maintain above-average earnings by constantly discovering new information or solutions derived from unique combinations of current knowledge (Winter & Nelson, 1982; Nickerson & Zenger, 2004). According to our idea, managers select challenges while recognizing information sets or recent innovations, both inside and outside the association, that might be significant in finding answers to those issues (Winter & Nelson, 1982). The chosen issues represent an estimate of the projected value of prospective solutions and the company's capacity to accomplish high-esteem arrangements monetarily. This choice depends on an organization's information base and previous experience. Managers select challenges from a pool of unknown possible solutions. However, once a problem is selected, the work shifts to identifying relevant information and enhancing the likelihood of finding a high-value solution. This is accomplished by selecting organizational processes that manage search effectively. To structure the search most efficiently, organizationa must first comprehend the solution space for exploring. (Fleming & Sorenson, 2001).

The need for effective organizational coordination and staff learning integration is emphasized in the plan (Kogut & Zander, 1992; Winter & Nelson, 1982). Theorists have failed to agree on a single definition of knowledge (Balconi et al., 2007). Some experts believe there is no difference between information and knowledge. Data is translated into information, which is transformed into knowledge, and wisdom. Gorman categorizes knowledge into four explanatory types (knowing what), procedural (knowing how), judgment (knowing when), and shrewdness (knowing why). Balconi and colleagues produced a typology list that included know-what, know-why, know-how, and know-who. The concept distinguishes between tacit knowledge (what an individual knows just in her or his self-mind) and explicit knowledge (what a person knows outside of his or her mind) (Winter & Nelson, 1982). Bicycling is a well-known example of tacit knowledge (Phelan & Lewin, 2000). Tacit knowledge is a useful resource for businesses since it is difficult to acquire and replicate, presuming that someone with the requisite information can be found. Since implied information cannot be recorded or archived (or classified), it must be learnt through noticing specialists and afterwards applying abilities (Grant, 1996; Kogut & Zander, 1992).

Regrettably, scholars have yet to define tacit knowledge (Ancori et al., 2000). Most academics believe that the only method to learn about someone's tacit knowledge is to observe them in action. Articulation is the process of making a person's implicit knowledge explicit to the rest of the world. The process of storing, preserving, standardizing, and transmitting articulated information inside an organization is known as coding. Some experts say tacit knowledge cannot be expressed (Grant & Fuller, 1995). When tacit information is articulated, it loses its status as knowledge and becomes merely data (Soo et al., 2002). Others, on the other hand, feel that all tacit knowledge may be transformed into explicit knowledge (Schulz & Jobe, 2001). Hakanson created a typology to define important words in the theory, such as explicit knowledge (know-why and know-what), internalized knowledge (explicit knowledge that is not used), procedural knowledge (understanding of skillsets), and tacit knowledge (awareness of sentiments) (articulate and inarticulate). The success or failure of an organization is determined by how it manages its knowledge holdings. Firms that outperform their competitors in finding, absorbing, and using new knowledge from internal and external domains, for example, will dominate them. It claimed that companies that can safeguard their explicit knowledge outperform those that cannot. Organizations can protect their data by assigning responsibilities to employees so that they do not see the "whole picture" of a procedure, using employment agreements and strict confidentiality to keep corporate secrets hidden, and imposing fines on departing personnel, such as deferred compensation (pension plans, stock options) (Liebeskind, 1996).

According to the idea, organisations are supposed to be varied, knowledge-bearing bodies that apply knowledge to the production of their essential commodities (Foss, 1996). Because they are stores of beneficial knowledge, businesses organize themselves in certain ways. By contributing to differential efficiency, knowledge stocks enable certain organizations to gain competitive advantages over others. Knowledge stocks also help to explain why certain businesses are more diverse and imaginative than others. This assumption contradicts earlier conceptions of the company, which see organizations as nothing more than a collection of contracts that determine the optimal distribution of property rights (Kogut & Zander, 1992). The idea also holds that knowledge is the most strategic of an organization's resources—it is generated, preserved, and utilized (Grant, 1996). Knowledge is a significant resource since it supports all human activity and all technology ultimately manifests information. According to the thesis, individuals, rather than organizations as a whole, produce, store, and use knowledge. Managers face a challenging challenge in coordinating and integrating the information of several employees. Individual specialized knowledge is integrated through four mechanisms, according to Grant (1996): (1) systems, plans, approaches, and practices; (2) sequencing (time-designed timetables); (3) schedules (complex hierarchical examples of conduct); and (4) bunch critical thinking and direction (Discussing, sharing, and learning are large parts of social correspondence). In addition, figure 1 shows the research model that provides a visual understanding of research variables.

Based on the relevant literature and theoretical background, the following hypotheses were developed to address the research objectives and research questions:

H1: Supply Chain Integration has a significant impact on Supply Chain Visibility
H2: Analytic Integration has a significant impact on Supply Chain Visibility
H3: Developing KPIs has a significant impact on Supply Chain Visibility

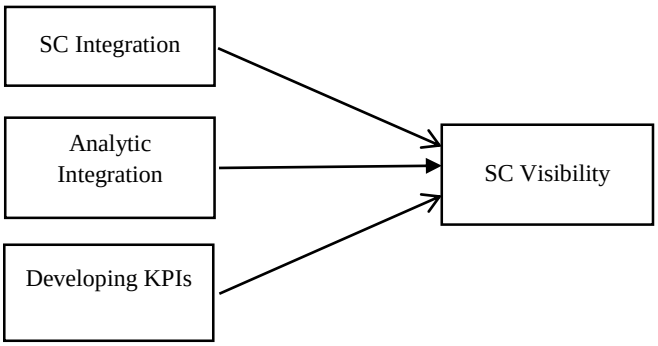

Figure 1: Conceptual Framework

3.0 Research Methodology

We have used explanatory research as a research approach in this study (Rashid & Amirah, 2017; Rashid et al., 2019; Rashid et al., 2021; Khan et al., 2021; Khan et al., 2022). The explanatory research helps to determine the cause of the occurrence of a specific phenomenon (Cohen et al., 2017; Hashmi & Tawfiq, 2020; Hashmi et al., 2020a; Khan et al., 2022; Rashid et al., 2020). This method usually describes a situation and problem in a casual relationship relative to the quantitative method. This method's prime objective is finding issues and key variables in a specific problem. The researcher characterizes paradigm as a fundamental arrangement of consistent convictions, a bunch of settlements on how issues ought to be deciphered, and in this manner, lead research (Creswell, 2003; Rashid et al., 2021). The difficulty is that the prescribed technique for characterizing research is to observe its paradigm (Hashmi et al., 2020b; Khan et al., 2022). This is fundamental because the decision of a particular worldview does not fit with the logical information of the researchers.

Further, the research strategy portrays strategy for information assortment and its explanation with an unmistakable arrangement of destinations. This method is a common course of action, for example, tending to the research queries (Hashmi et al., 2020; Hashmi et al., 2021; Khan et al., 2021). Yin (1994) stated that there are several essential research methods in humanistic social science, i.e., contextual investigations, history, recorded examination, overviews, and tests. Defined frameworks are based on the following conditions: 1. Center around contemporary occasions, 2. Command on conduct occasions, and 3—research queries. This study used a survey as a research strategy which is related to a deductive method, and it is normal in sociologies. The survey provides information from organized polls or meetings (Agha et al., 2021: Alrazehi et al., 2021; Das et al., 2021: Haque et al., 2021).

3.1 Sampling

A sample size might be depicted as more items or people that an analyzer wants to determine. Simultaneously, sampling is the technique of choosing a part of the population for an assessment to gauge an individual's perspectives, convictions, and qualities (Rashid & Rasheed, 2021). Sampling speeds up data collection and acquires exact outcomes. Regarding choosing the sampling technique, it relies upon the idea of the review or is possible to incorporate commonsense and hypothetical intimations.

In this study, we have used Convenience sampling as a non-probability sampling technique where the information is promptly accessible at the researcher's comfort. This technique assists

researchers with getting reactions or completing meetings in a savvy way. It has a wide-running conversation on example size in scholarly writing. Picking the correct selected size is, at this point, pursued by researchers as the measurable strategies are all together and sensitive to test size and pick correctly. In this research, we have a sample size of 143.

3.2 Unit of Analysis and Measurement Scale

In this research, we have an organization as a unit of analysis. Likert-type are generally utilized in survey examination to evaluate perspectives and perceptions. Such evaluating scales incorporate more than five response classifications and get advantages and disadvantages of their own. Writing demonstrates that the Likert information is generously less dependable where the scale surpasses seven or drops 5 (Johns, 2010).

3.3 Statistical Tool

The statistical package for the Social Sciences (SPSS) is a statistical information-analytical method used by many academics. The system is a software package built primarily for media studies database handling and statistical research. In this study, the researchers used SPSS to analyze the subject data.

4.1 Research Analysis

4.1.1 Demographic Analysis

Table 1 presents the demographic attributes of the respondents; where most respondents are above 31-35 years and 25-30 years' age group, which are 42.7% (74 out of 200) and 16.8% (73 out of 143) and whereas the rest of the proportion of the age group is as follows below 25 years 5.6% (27 out of 143) and above 35 years 35% (25 out of 143). Regarding the educational environment, a simple majority had a university degree holding master's and bachelor's degrees, with 60.8% (77 out of 143) and 28.7% (46 out of 143), respectively. At the same time, the rest of the respondents held the degree of PhD 10.5%. In terms of designation majority of the respondents were supervisors and managers 35% (79 out of 143) and 52.4% (out of 143), and others were senior managers 7% (9 out of 143) and CEO.

Table 1: Demographic Profiles

		Frequency	Per cent	Valid Percent	Cumulative Percent
Age	below 25 years	8	5.6	5.6	5.6
	25 - 30 years	24	16.8	16.8	22.4
	31 - 35 years	61	42.7	42.7	65.0
	above 35 years	50	35.0	35.0	100.0
	Total	143	100.0	100.0	
Education	Bachelors	41	28.7	28.7	28.7
	Master	87	60.8	60.8	89.5
	PhD	15	10.5	10.5	100.0
	Total	143	100.0	100.0	
Designation	Supervisor	50	35.0	35.2	35.2
	Manager	75	52.4	52.8	88.0
	Senior manager	10	7.0	7.0	95.1
	Director	6	4.2	4.2	99.3
	CEO	1	.7	.7	100.0
	Total	142	99.3	100.0	
Total		143	100.0		

Source: SPSS Output

4.1.2 Hypothesis testing

Exposure of data consistency has been completed by applying statistical tests of reliability.

Sixteen questions were the questionnaire's items, which included both dependent and independent variables. The model summary in table 2 of multiple regressions explains that the value of adjusted R square 0.261 means 26.1 % of predictions can be made through the model used in this research paper. The ANOVA results in table 2 indicate F=15.558 and (0.000) means it is Significant. It shows predictor variables there will impact the SC visibility.

The coefficient results cover beta value, Co-linearity and significant value. The β value shows the relationship between the dependent and independent variables, either positive or negative. The β value of Analytical Integration is 0.009, which explains positive relationship exists between Analytical integration and Supply Chain Visibility. The β value of the Key performance indicator (KPIs) is 0.202 means positive relationships between KPIs and supply chain visibility. The β value of Forecast is 0.384 positive relationship between forecast and supply chain visibility. The significant value of all the variables is 0.000< 0.005 mean a significant influence of all the variables on supply chain visibility.

Table 2: Regression Analysis

	N	Model Summary		ANOVA		Coefficients		
		R	Adjusted R Square	*F*	Sig.	Std. Beta Coefficient	*t*	Sig.
		0.261	0.244	15.558	0.000			
SCI	143					0.384	4.281	0.000
AI	143					0.009	0.107	0.915
KPIs	143					0.202	2.332	0.021
SAVE	143						3.427	0.001

*Note: Predictors (SI, AI, DKPIs); *Standardized beta coefficient (Dependent Variable = Supply Chain Visibility); SCI=Supply chain integration; AI=Analytical Integration; DKPI=Developing KPIs; SCV=Supply chain visibility.*

5. Discussion

The researcher has made a hypothesis based on independent variables and taken (alpha = 0.05). Since the F-test is greater than the test critic value researcher accepts the significant difference among the population. In table 2, beta is the standardized coefficient obtained if we standardized the values. Moreover, in the significant column, SCI = 0.01 means the coefficient is significantly different from 0, AI = 0.915, which is greater than 0.05, means the coefficient is significantly not different from 0, KPIS = 0.021, which is < 0.05 means the coefficient is significantly different from 0 and Forecast = 0.00 < 0.05 which means the coefficient is significantly different from 0.

Companies face problems in supply chain integration, including low tech used in the integration process due to changes in data processing and data handling practices. The key to effective supply chain integration towards visibility is to connect systems and no of systems using different communication and data systems. KPIs must be maintained through optimization, and by measuring the impact, the organization must have an action plan to remove blackness in KPIs. They have standardized measuring KPIs, which helps to achieve organizational goals. KPI activities always require a degree of customization depending on the strategic business goals of the organizations. SC Visibility needs an analytic approach to run the data successfully. An amount of SC analytics is required to utilize logical techniques & applications to help decisions taking & at last, upgrade supply chain execution. Analytic tools are also applied to support KPIs because they include logical thinking and decision making to reduce task time and for effective outcomes. An organization could utilize existing innovations for upstream and downstream supply chain tasks and, gain straightforwardness & settle on taught decisions of their inward and outside supply chain rehearses.

5.1 Implications of Study

It will benefit different leading organizations in the shipping industry who are working very hard to provide 99% visibility to their customers to help grow their businesses. In this study, different factors on visibility might be identified so that companies could work on those particular factors to improve their ongoing systems and gain overall success in different visibility sections. The goal of supply chain visibility is to have stronger insight into how supply chain works while also decreasing

the risk. When combine such insights with user data, a supply chain can be adjusted to be as efficient as possible.

5.2 Limitation

According to research, the unavoidable limitation was the sample size is very small. It was difficult to find significant relationships from the data since statistical tests usually require a larger sample size to ensure a representative population distribution and to be considered representative of the groups of people to whom the results will be generalized or reported. The availability of self-reported data can limit a study. Researchers can only collect subjective measurements from physical participation because of restrictions at different offices. It is difficult to compare results between participants, as they may have used different criteria to evaluate them. The study using self-assessment data can be highly subjective and limited.

5.3 Recommendations

In the light of the limitations identified and findings of the study are the recommendation on which further control actions could be taken. Researchers can further find data and spread information to enhance knowledge in this. Control action could be taken on these: How to end and every process would be visible for the customers if end-to-end visibility is provided, then how will it be possible to manage huge data. The analytical approach can be trained but could not be changed completely. KPIs are the tools for improvement of performance; all shipping companies should acknowledge one common set of KPIs and implement them more systematically and methodologically. Benchmarking can implement in the shipping market and can benefit shipping companies. Performance management is facing significant transformation. Before, creating KPI dashboards was a huge undertaking, and KPIs were only available at aggregated levels, but now granular data from internal and external sources is available in real-time. This moves the performance management process from a monthly routine to an operational procedure focused on dealing with exceptions and continual improvement. Planners, for example, can be reminded of important supply chain interruptions, with small exceptions or potential solutions for bigger ones handled automatically. The performance management system can identify the root causes of an exception by either comparing it to a predefined set of underlying indicators or by conducting big data analyses, leveraging data mining and machine learning techniques. Based on the identified root cause, the system will automatically trigger countermeasures, such as activating a replenishment order or changing parameter settings in the planning systems, such as safety stocks.

5.4 Conclusion

In this study, the researcher tries to analyze the importance of visibility and its challenges usually faced by supply chain companies, especially logistic or 3pl industries. Visibility is a product to serve its customers with a platform where they can understand and extract data used in their daily process chain. However, companies are unsuccessful in attempting to give SC visibility. The research point is to arrange a pool of information regarding the factors that impacted the overall visibility. It provides a data hub on a single platform where customers can easily perform and use data according to their needs. Research is about to observeobserve the relationship between dependent variables: SC integration, Analytical Integration, Forecast and KPI independent variable, i.e. SC visibility. In the search for greater comprehension of the issues, the researcher asked exploration questions to find the best outcome. The researcher gathered data from 126 respondents and performed multiple tests using SPSS. The objective of researcher found in the SPSS results summary that variability towards its model (*R2*) is 26.1%, where fewer predictions are to be observed.

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