

Impact of Buyer & Supplier Integration on Performance of SMEs - A Case Study of Sindh

Dr. Saima Tabassum

*Chairperson, Department of Business Administration,
Sindh Madressatul Islam University Karachi, Pakistan*
saimatabassum@smiu.edu.pk

Bilal Anwar

*Scholar, Department of Business Administration,
Sindh Madressatul Islam University Karachi, Pakistan*

Raja Dahiya Mehtab

*Scholar, Department of Business Administration
Sindh Madressatul Islam University Karachi, Pakistan*

Abstract

The concept of integration is nothing new and is been followed up for centuries either formally or informally. This investigation aims to identify and explore the relationship of buyer and supplier integration on the financial performance level of SMEs in the context of Sindh, Pakistan. The systematized literature review has been done to collect information for a reason to find out a relationship between these variables. It needs to be identified via an evidence-based account of the positive, negative, or significant relationship between these variables confronted by the data which has been extracted from the professionals. The research is purely based on quantitative tools and a purposive sampling method has been used for this study to analyze the impact of the variables on each other. The data is gathered from SMEs and each response represented a single SME. The gathered data is then analyzed via SPSS for all the needed statistical tests. However, the results concluded that supplier integration has a positive and highly significant relationship and impact on financial performance level whereas the buyer integration relationship with financial performance level isn't supported and the impact remains insignificant.

Keywords: *Supplier Integration (SI), Buyer Integration (BI), Supply Chain Integration (SCI), Financial Performance Level (FPL), Small and Medium Enterprises (SMEs)*

Introduction

Small and Medium-sized Enterprises (SMEs) are the backbone of every nation, and this can be justified, by observing their role in humongous world economies like America and European economies (US Office, 2021). SMEs in developed nations generate two-third of employment and contribute around 50% of GDP (Asare, 2017). SMEs are strategically vital as they are the dominant form of business and crucial in the growth and progress of developed and developing countries (Redmond, 2016). A major part of the private business sector comprises SMEs and its role can be highlighted as a pivotal role as it contributes to employment generation, poverty reduction, enhancing capabilities such as manufacturing and technology. Various definitions can be generated through the collected evidence and the validity of each resides in its context. In Pakistan's scenario definitions from various authorities such as small and medium enterprises development authority (SMEDA), SME Bank, State Bank of Pakistan, and Pakistan Bureau of Statistics differentiate from each other. For the context of this study, SMEs in Pakistan are taken as those organizations,

- The number of employees is up to 250 people (employees $\leq$ 250)
- Amount up to Rs. 25 million as paid-up capital.
- Rs. 250 million as Annual sales.

This definition has been finalized after rigorous scrutiny and approval by the Federal cabinet in the year 2007 (SMEDA, 2007). SMEs in Pakistan contribute 30% towards GDP and make up to 25% of manufacturing exports (SMEDA, State of SMEs in Pakistan, 2019). If we categorize the industries that compose 53% of SME activity includes retail business, wholesale, hotel, and restaurant sectors. As identified by PBS, 22 % of SMEs are in the service sector whereas 20% are in the industrial. SME contribution to export is significant and crucial for a country's economic development. For this reason, many studies have been carried out to recognize factors that impact SME performance. This contemporary study focuses on the interplay of two such supply chain integrations that impact SMEs' performance – (Supplier Integration & Buyer Integration).

Supply Chain Integration (SCI) is consistently receiving consideration which can be seen through the extant literature available on this subject. Researchers identify SCI as a competitive advantage as it decreases the cost of production, shorten lead time, improves customer satisfaction, and enhances quality. Supplier integration allows firms to avoid an antagonistic attitude towards suppliers rather it initiates cooperation which assists in new product development, mutual problem solving, sharing, and exchange of design and

technology assistance (Wong, 2011). Supplier integration from a transactional cost viewpoint is very beneficial as it decreases the overall transactional cost. Realization of shared goals via supplier integration eliminates process uncertainties and opportunistic behaviour. The prevention of uncertainties is discerned as an achievement as it allows the focal firm to estimate and counter fluctuations in customer demands.

Buyer integration assists the focal firm to respond rapidly to customer's needs by gaining in-depth access to the customer's firm, product, market & culture. This involves continuous sharing of data to and from the customer. Strategic information sharing is involved in the integration process and customer cooperation with the focal firm improves visibility and transparency enabling mutual planning. Along with this Buyer, integration enables focal firms with a profound understanding of available opportunities and market expectations, allowing them to respond quickly to customer needs and requirements by decreasing the supply and demand gap (matching supply and demand). This sharing of expertise and information with other supply chain partners is also accommodated to boost performance. As signified by the introduction that escalating integration across the upstream and downstream portions has created an effectual impact on the performance of organizations. The purpose of this review is to analyse the correlation between the SI & BI and its impact on performance and efficiency. While the sharing of keen information across the supply chain has now been a factor to achieve competitive advantage in Pakistan where local and international SMEs and firms have been practicing different tactics to gain or retain their market share (Hassan & Nasereddin, 2018). We intend to find out the possible outcomes of the integration within the supply chain activities towards the performance of SMEs in terms of financial level efficiency in the perspective of Pakistan through the Sindh province SMEs. We will study this attitude with two independent variables and one dependent variable. Our objective is to examine the effect of the following factors SI & BI and answer our 4WS (what, when, where, why) and 1H (how) and the purpose is to also determine that to which extent does these variables affect the overall financial performance level. This conceptual model will facilitate our findings and will make our purpose more fruitful and our results would be more desirable though. The impact of COVID on the SMEs is visible were around 40.25% of SMEs faced a shortage of raw material (Adbi & Joint, 2021). Whereas it is to be believed that the probability of shortage of supplies is significantly low when the integration of a company with its supplier is high and the accurate and needed information is shared at the right time. (Lotfi et al., 2013). The firms that had a lesser impact on their overall supply chains as compared to the ones that faced a high disruption and uncertainty within their entire

supply chains were seen to be more focused upon information sharing and coordination at every needed point of their chain (Miroudot, 2020). In the post-pandemic world, the global supply chains need to be more flexible in terms of having an information system and the importance of exchanging information across the line shouldn't be ignored and it should be practiced in any mean either formal ways or in terms of informal ways (Miroudot, 2020). So, the above arguments clearly show and realizes us the importance of integration at both supplier and buyer point. Given this, we will study and analyse the practices of these variables within the SMEs of Pakistan and will also relate them to the positive outcomes in terms of market share and financial means.

Literature Review

Integration has been a profound interest when it comes to supply chain and organizational performance. Researchers have probed numerous integrations that have been projected in existing works of literature. Various integration proposed are Supplier integration (SI), Buyer integration (BI), Internal Integration (II), Strategic Integration, Cross-functional Integration (CF) & Relationship Integration. (Stank, 2001). To know how this SCI impacts individual performance in the dimension of a firm it is also significantly important to understand how these two dimensions influence each other and integrate. Working thoroughly with these dimensions aligns in line with the definition of supply chain management, the process from supplier to manufacturer and to end customer. Extensively studying the following study model a debate occurs to reduce dimensions of SCI to two dimensions, which are established as SI & CI. Supplier integration and Buyer integration through information sharing, demand management, relationship through information network, data sharing of inventory, and process development.

These dimensions have been indicated by researchers that relationship integrations have an enormous impact on a firm's performance, especially in rising economies. Researchers from China observed the integration of organizations with its supplier and customers and their explorations have indicated that their collaboration has brought outcome that is beneficial and constructive (Ülgen, 2015). But this execution of integration has only been beneficial for an organization that has emphatically administrated it on both ends. The productive outcome of SCI in China has changed the traditional mentality of the auto industry into "community-oriented development". On this basis, the characterization of SCI can be elaborated as Internal coordination and external coordination (integration with suppliers and customer/Buyers) (Chen I. a., 2004). It's vital to identify that research on SI and BI has been conducted individually in developed countries but a gap in this study can be seen in

developing and under-developed countries and in Pakistan's context especially Sindh province there is no such study that focuses on SMEs specifically. So, this study carves a path for researchers in the residing country and other countries to reduce the gap on the topic of SMEs performance whether it be operational or financial performance.

Supplier Integration

Globalization in the current era has created global competition and this competition has urged organizations to reassess and formulate better SC strategies to tackle costs of production and superior customer services. This race has made industries rethink their production and supplier network. Organizations are now spinning towards outsourcing and improving harmonization among international and local supplier bases. This coordination results in SC integration, which focuses on attaining good performance through uniform information sharing and flow of materials (Cemal, 2006). As discussed, earlier researchers have focused on various integrations and have studied their impact on an organization's performance. This study focuses on two-dimension of integration the Supplier and Buyer integration which is considered as external integrations by many researchers. Supplier integration is a crucial topic in the extant literature as it creates a substantial impact either on the supply chain network as a whole or on manufactures or customers (Carr AS, 1999). The model of supplier collaboration/ integration has been probed by various researchers on the topic such as data sharing between suppliers and buyers, demand and inventory planning, logistical integrations, supplier involvement in product and process development. This study focuses on SI, well-defined as the degree to which relevant information sharing and collaboration or association with supplier base for seamless material management and flow of information which smoothens and enhances procurement and other processes (Furlan A, 2006). The literature on Supply chain management provides a general view that supplier integration in a firm enhances various dimensions of performance. Verily supplier and buyer integration help both of these parties to achieve several advantages through integrations such as reduction in costs and inventories, increase in quality, improved customer satisfaction, quick order fill rate and high profitability (Lawson B, 2009;). The extant literature presented by Van der Vaart & Van Donk collocated various research studies on the topic of supply chain integration. This collocation allowed them to put forward certain variables through the classification of elements used to compute supplier and Buyer integration (van der Vaart T, 2008). The first group of variables focused on vital activities that help focal firms collaborate such as information-sharing, demand planning & collaborative decision. The second group of variables relates to the relationship, that the firm sustains with suppliers and customers.

Various studies construct a hypothesis that connects SI with Financial performance, according to some SI reduces lead times which results in a fast supply chain network. A fast Supply network reduces costs through lowering inventory and costs related to its holding and delivery (Das A, 2006;).

Organizations strive to shorten the lead time for processes like procurement, production, and logistics, help all the entities to function more efficiently in the supply chain which results in reduced inventories (Brewer PC, 2000;). Supplier integration can impact positively the per-unit cost of manufacturing. Thus, this positive impact not only reduces inventory cost but also resolves the problem in procurement procedures, which in return eliminates inefficiencies resulting in better performance of the focal firm.

The initiating point of the firm for either producing quality products or offering quality service requires acquiring quality incoming materials or raw objects from suppliers. This obliges effective supplier involvement/Integration. This contemporary study focuses on supplier integration and studies how the focal firm is particularly integrating with the supplier and whether this integration is producing an impact on financial performance with a massive or insignificant. This extant study accumulates data from the focal firm associated with its supplier on matters such as the level of information exchange between the focal firm and suppliers, the level of present-day stability in between both of them during the procurement process, the level of the strategic partnership with supplier irrespective of whether it is in product development or future projects, etc., besides this the level of exchange of inventory data is also taken in account to understand its impact on financials such as decreasing cost through minimizing inventory and the last point this study focuses on examining the impact of the level of supplier process improvement focal firm pursues, on the financial performance. Hence, we propose the following hypothesis for the existing study:

Hypothesis 1 (H_1): Supplier Integration positively impact SMEs performance

Buyer Integration

An argument on authors general opinion made by (Fabbe-Costes, 2008), that authors generally agree that close connections and high magnitude of integration across boundaries in a focal firm lead to a higher degree of performance of the organization and its overall supply network. Whereas other researchers have limited customer (Closs, 2003; Fynes, 2005; Sahin, 2005) integrations as a distinct contributor to performance. As this study focuses on finding the positive relation between firm performance and Buyer integration, various arguments in extant literature are present that support the actuality of the positive relationship. To support the existence (Lee, 1997) recognizes the main cause of the “bullwhip effect” and to

counteract it strategies are proposed. The recommended strategy to counter the effect is uninterrupted sharing of point-of-sales data and alignment of operations to member activities of final demand. Thus, a reduction in uncertainty in the system results in cost (Chen F. D.-L., 2000) reduction in retailers' demand information sharing. As exhibited by (Lin, 2002) that savings in inventory cost can be accomplished through efficient sharing of demand information. Determined by (Zhao, 2002) a significant impact on overall supply chain performance and the total cost is found through order coordination and information sharing. Developing and improving partnerships with customers is another vital facet of customer integration (Power, 2005). Collaboration with major customers, stimulate better communication, openness to information sharing from both ends. In turbulent situations firm which is closely linked to customers have the advantage of sharing the unexpected issue with customers, thus firms avail a potential to adjust activities accordingly. A focal firm (producer/Service) can obtain valuable feedback from customers on quality or delivery performance. This relationship produces more efficient solutions to problems and builds inter-firm decision-making practices (Flynn, 1999) (Westbrook, 2001). All of these arguments represent a shred of evidence for the positive relation between Buyer integration and a firm's performance.

All of these facets of Buyer integration or SCI are potential benefits, and they seem compelling but recently a debate among researchers has risen on the factual positive impact of integration on a firm's performance. Various survey-based research on supply chain management argued that the actual impact is unanimous, and others interpret that SCI is complex and more research on gaining knowledge on its relationship with performance is needed. (Sezen, (2008)) findings elaborated that sharing of information and SCI are not significantly linked to performance and efficiency. About this, (Das, 2006) set forth that cooperation with others can add inflexibility and upsurge the cost of coordination.

Coherently, the linkage between CI & performance, (Disney, 2002), investigated the negative effect on costs due to the issue of inventory nervousness in the downstream process. The continuous recalculation in inventory control causes fluctuations in target inventory or production magnitude.

In general, the relationship between Buyer integration and performance is acknowledged and suggestions are made by the previous studies on the need for further research. This study can be patronaged by data which is collected for the following study. Information on Buyer integration is racked up by focal firms on various subjects to identify its impact on financial performance, topics such as the level of linkage between both the firm and its customers, the

intensity of communication of firm with its major customers, frequency of attaining feedback from major customers, how frequently the firm contacts the customers irrespective of the reason of contact i.e. feedback, involvement in decision or invitation and ultimately data is collected on the level of involvement of the customer in the product development process. Hence, we propose the following hypothesis.

Hypothesis 2 (H₂). Buyer Integration positively impacts SMEs performance

Performance

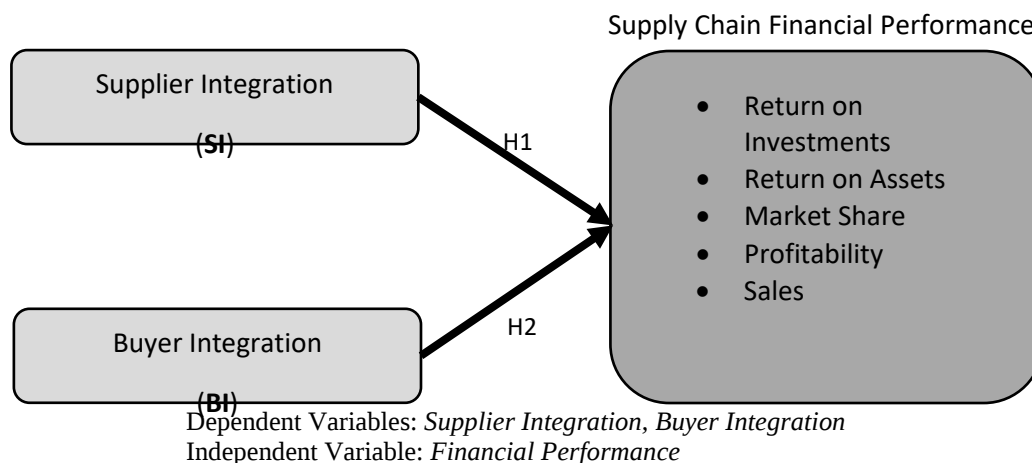
A wide range of opinions regarding organizational and business performance through extant literature review can be drawn out. As argued by (Chen I. P., 2004), the primary goal of each firm is to make a profit for the stakeholders, and for that reason, the main concept of firm performance should be financial performance. financial performance has been the key model for performance for more than decades. Whereas other researchers (Dixon, 1990) (Johnson, 1987) have highlighted this as a major limitation of solely relying on financial performance as the key concept. From the example of (Beamon, 1999), he indicated that system performance may not be described adequately through numerical performance and it will be of no use in qualitative assessment due to imprecision. It is not in the research's scope to debate the various views and concepts of performance, performance concept holds complexity, so to create ease we choose financial performance as the key theory. Researchers have also started a combination of qualitative and quantitative concepts which is a broader view of the performance model. The study by (Vickery, 2003), indicated company performance through the use of both financial and operational performance.

Performance objective for the SME can be crafted into two terms short-term objective and long-term objective. The short-term objectives of SMEs are to increase productivity, shrink lead time & inventory. Whereas the long-term objective of SCM is to escalate market share and overall supply chain integration (Rao, 2006) (Kehoe, 2004). This study focuses on evaluating the synergy between SI & CI to analyse and elaborate that why the relationship between SI-CI on performance is not unanimous through those findings, that focus on the aspect of performance such as growth in sales, profitability, return on assets, return on investments & increase in market share. Further need for argument support on the linkage between SI, CI & performance can be uncovered from operation management literature. Various organizations might request data, customers and suppliers might share data that is not only beneficial for production but also for such critical problems that might not be easy to uncover and might arise locally (Chen IJ, 2004). Depending on the gathered data, various supply chain activities can be adjusted and solved. Continuous information sharing, whether

it would be in design or quality or cooperative relation with suppliers, provides a focal firm to seamlessly manage the upstream material flow. Issues due to information distortion (Wangphanich P, 2010) like inventory stockout, long lead time, and delayed deliveries can increase the bullwhip effect may affect the various performance dimension discussed earlier. The focal firm can utilize feedback or data sharing from customers. Using customers in producing the product to satisfy their needs, thus maximizing their expectations and satisfaction level. Buyer integration provides information related to operations such as inventory. Customer and focal firm cooperation provide opportunities for accurate in-demand data. Thus, both SI and CI are related to financial performance (Chen I. P., 2004 b). Analysing the focus of this study, that is to identify the impact of SI and BI on the financial performance.

Framework

This extant study focuses on ascertaining whether the financial performance is amplified through integration or futile. For that reason, data on financial performance is collected from matters such as the level of return on investment of the focal firm, the profitability level of the firm, volume of sales experienced, the proportion of the return on assets, and the relative size of market share the company holds. This data will assist in ascertaining whether or not the SI & BI indirect variable has a positive or negative correlation with the dependent variable the financial performance.



Research Methodology

Research Paradigm & Design

There are three purposes of research namely exploratory, descriptive and explanatory (Anderson and Arsenault, 1998). In exploratory investigations, researchers study new things that have never been seen before. Descriptive research is conducted after exploratory research

and explanatory research aims to understand problems that were not studied before. The purpose of the research is explanatory, in addition to recent research; the theory is more extensive (Neuman, 2014). There are mainly four types of research design, which are descriptive, correlational, Casual, and experimental which must be decided according to the objective of the research (Sekaran and Bougie, 2016). This study aims to determine the buyer and supplier integration on the financial performance level so keeping this in mind this study analyses the relationship between the variables, thus the research design is a correlation.

Research Instrument & Validity

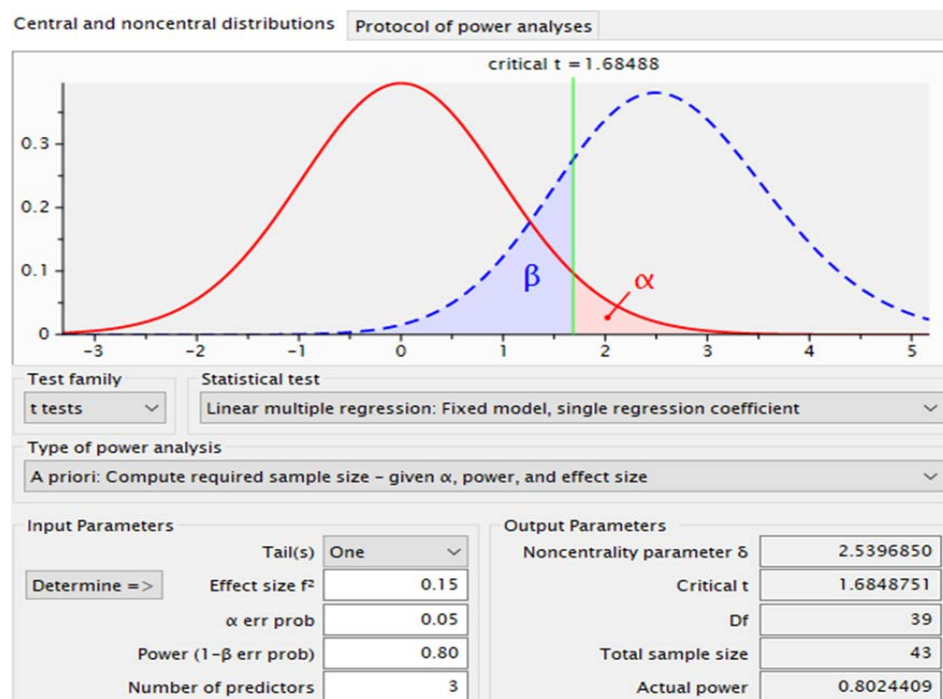
The segment in this investigation is particularly focused upon the supplier & buyer integration impact on the performance of SMEs in Sindh from the point of the focal firm. We investigated and surveyed the existing available literature to carry out a survey and, in this regard, we adapted a value scale to measure the supplier and buyer integration along with SMEs performance in terms of financial means. The questionnaire was divided into 4 parts which are the following (0) Demographics, (1) Supplier Integration, (2) Buyer Integration, and (3) Financial Performance Level with a total of 15 content closed-ended questions 5 from each 1st, 2nd & 3rd part respectively.

To test the hypothesis, from a population of SMEs in Sindh we used a Purposive sampling method in our research. Purposive samples are samples of specific people with characteristics similar to research (Newman, 2007). Respondents can easily be obtained using this sampling technique. Following this we have collected primary data from manufacturing and service sector SMEs from all over the Sindh Province having supply chain department or at least supply chain practices which pose a factor of integration be it on supplier or buyer side. The total sample size remains 80. Keeping in mind the pandemic factor, the questionnaire was administrated via Google forms & emails from SMEs all over Sindh and every respondent was selected based on the profile mentioned. One representative from each SME was asked to fill the questionnaire preferably a supply chain manager and where it was not applicable C-level and top-level executives were selected familiar with supply chain practices to maintain and raise the validity and reliability of data and research purpose.

One of the basic elements, tools, or foundations of quantitative research is the collection of data (Duffy, 2006). The first and foremost element of this data collection is to acquire evidence which purely statistical and that supports the questions in a way that it can answer all of them. Data collection is a way that enables businesses and organizations to conclude the given quantitative data in such an effective way that can help in drawing an evidence-based conclusion or even helps in the informed decision-making process (JONES, 1987).

Sample Size

The sample size is estimated in a way that should be enough and sufficient to describe the intervals, occurrence of the given interest, and items in such an effective way that may address the objective of research firsthand. And even before this, a sample size should be drawn at the very first phase of a quantitative research project or investigation (Heck Jr., 1975). One of the reasons for this is to inform the funders of the research or ethics committee beforehand or mainly to allocate and plan the resources of the study. According to the latest study by (Malterud et al., 2015), in quantitative research, the sample size can be drawn out from “the Information power” that a stated or given sample holds. However, the number of authors stuck to a concept which states that the sample size ought to have relied upon the scope, intervals of research questions and items, the quality content of the items and variables along with the study design of the study. G power has been used to find about minimum sample size. The sample size is described as a small fraction of the total population. The sample size for this study will be respondents from 80 different SMEs sector having integration and supply chain practices.



Research Variable & Instrument

Level of supplier integration. The level of supplier integration measurement scale was consisting of a 5-point Likert scale with “None” to “Very High” at the endpoints was adapted for 5 items posing factors of level of information, planning, and various other factors

taken from (Narasimhan & Kim, 2002) also used by (Huo, 2012; Seo et al., 2014) to measure to SI.

Level of buyer integration. The same 5-point Likert scale was adapted as used in the measurement of the level of SI for the 5 items consisting of the level of communication, feed, back, and other important variables from (Narasimhan & Kim, 2002) to measure the BI.

Level of SMEs performance. The level of SMEs performance was measured in terms of financial variable and means derived from a result and impact of BI & SI to understand the relationship of these two variables impact on it. A 5-point Likert scale was adapted to measure it with having two ends; 1 = None and 5 =Very High for 3 items taken from (Khurshid et al., 2018) and two items taken from (Narasimhan & Kim, 2002).

Data Analysis and Discussion

Demographic Profile of Respondents

As shown in Table 1, the data was collected from 88 respondents, 8 outliers were deleted from the data. The further tests were performed with 80 respondents. Among them, 56 were male and 24 were female creating a ratio of 70% and 30% respectively. The highest age group which participated were 26-35 having a percentage of 42.5 along with the lowest participation of the age group of 46-55 having a 3,8% in total. 58.8% of participants were having experience of 0-5 years which was the highest among the rest and the lowest stands at 3.8% which means participants having above 20 years' experience contributed only 3.8% of the survey. 28.8% of the survey were filled by the Managers which were the highest along with people having an others position contributing almost 23.8%, CEO/Owners and Executives accounted the same percentage of 17.5 respectively whereas the General Managers accounted 12.5% of the survey.

Since we divided the SME Sectors into two main sub-categories i-e Manufacturing and Service keeping this in mind the collection of data represents them in the following percentages of 32.5% and 67.5% respectively. And both of the sectors were having a breakdown of employees in the following manner collectively SMEs with 0-100 number of employees contributed 53.8% of the survey, 100-200 contributed 13.8% of the survey and last 200-250 which was the last category it contributed 32.5 % of the survey.

Table 1: Demographic Profile of Respondents

Demographic Factors	Frequency	%
Gender		
Male	56	70.0
Female	24	30.0
Age		
15-25	30	37.5
26-35	34	42.5
36-45	8	10.0
46-55	3	3.8
55 above	5	6.3
Experience		
0-5 Years	47	58.8
6-10 Years	14	17.5
11-15 Years	9	11.3
16-20 Years	7	8.8
Above 20 Years	3	3.8
Designation		
CEO/Owner	14	17.5
General Manager	10	12.5
Manager	23	28.8
Executive	14	17.5
Other	19	23.8
SME Sector		
Manufacturing	26	32.5
Service	54	67.5
Number of Employees		
0-100	43	53.8
100-200	11	13.8
200-250	26	32.5

Reliability and Validity

The study is conducted to check the reliability, validity, and accuracy of the items. The sample size of 80 total number of respondents is tested by SPSS. According to the outcomes, the values of Cronbach Alpha for SI is 0.769, BI is 0.823 and FPL is 0.816 respectively. All these values are greater than 0.7 which is the threshold of Cronbach's Alpha. It demonstrates that the measuring instrument is reliable. The result of reliability analysis is given below:

Table 2: Reliability

Reliability (n=80)		
Variables	Cronbach's alpha	Number of Items
Overall	0.856	15
Supplier Integration	0.769	5
Buyer Integration	0.823	5
Financial Performance Level	0.816	5

KMO and Bartlett's Test

The summarization of gathered research data is crucial for extracting the key information. For that reason, we started with KMO and Bartlett's test. The KMO, Kaiser-Meyer-Olkin test

defines the suitability of data for summarization in factor analysis. The complete model has been examined in KMO to check whether the sampling is adequate or not. It is important to understand that this test, analyses the variance that is common in the variables, the higher the value i.e., closer to 1, the lower the variance the more suitable data is for factor analysis.

Table 3: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.825
Bartlett's Test of Sphericity	Approx. Chi-Square	471.351
	Df	105
	Sig.	.000

For this study, the KMO expounds 0.825 value for the complete model which means the proportion of variance in the current model is lower and the sampling adequacy of the data is meritorious and well suited for factor analysis. On the other hand, the Bartlett Test examines the correlation between the variables and analyses how significantly the variables are correlated with each other.

Bartlett measures the value in the range of 0 to 1. The closer to 0 the more significant the correlation is and closer to 1 shows significantly less correlated the variables are. For this research, bartlett's test presents a score of 0.000 which means the tested hypothesis is highly correlated as the value is significantly small and interprets that the data is beneficial for factor analysis.

Rotated Component Matrix

In the factor analysis, the data were analysed to get the Rotated Component Matrix which is a key output of principal component analysis (PCA refers to the method to minimize the existing dimensionality in the dataset, to reduce data loss and increase interpretability of data). RCM assists in determining what the components represent. The important thing to recognize in the rotated matrix of factor loading is to what degree a simple structure is attained. In this present study, the content was examined based on items SI1 to FPL5, which has had high loading from each component. This shows if there is a conceptual fit between the component and items and if the naming is possible. The item SI1, SI2, SI3, SI4, and SI5 were intended to draw user(firm) perception of Supplier integration, so the Rotated matrix for the item SI1, SI2, SI3, SI5 show high loading for the factor highlights for being conceptualized as relating to the same paradigm whereas SI4 despite being an item of Supplier Integration is cross-loading.

Table 4: Rotated Component Matrix

	1	2	3	4
SI.1	.094	.252	.575	.490
SI.2	.087	.175	.661	.424
SI.3	.057	-.008	.792	.087
SI.4	.115	.196	.121	.794
SI.5	.434	.270	.619	-.040
BI.1	.622	-.030	.144	.520
BI.2	.673	.099	.183	.382
BI.3	.825	.006	.103	-.031
BI.4	.796	-.022	-.153	.160
BI.5	.716	.160	.437	-.179
FPL.1	.056	.748	.201	.337
FPL.2	-.012	.714	.437	.018
FPL.3	.032	.568	.548	.064
FPL.4	.098	.750	.007	-.045
FPL.5	-.006	.763	.002	.183

Extraction Method: *Principal Component Analysis*.

Rotation Method: *Varimax with Kaiser Normalization*.

a. Rotation converged in 6 iterations.

Dependent Variable: *Financial Performance Level*

Predictors: (Constant), *Supplier Integration*

The reason behind this cross-loading is the user perception of item SI4. SI4 is about the exchange of inventory data with suppliers, as for this research we have collected data from the manufacturing and service sector and therefore in the service sector, user perception on inventory is disparate as there is the unavailability of inventory in the service sector in Sindh's context for that reason this item doesn't fall in the same construct of SI.

For items, BI 1 to BI 5, all of them have high loadings and the same is for FPL 1 to FPL 5. Item BI 1 to 5 falls in the same construct of Buyer Integration enhance providing support for their conceptualization and FPL1 to FPL5 show high loading in Financial Performance level defines that they are of the same construct.

Hypothesis Testing

The hypothesis in the study was examined under the regression analysis. The study hypothesis model contained two hypotheses. The first hypothesis was supplier integration positively impacts financial performance. The examined hypothesis result is given below.

H1 – Model Summary			
R	R-Square	Adjusted R Square	Std. Error of the Estimate
0.536	0.287	0.278	0.60843

The model summary showing the R and Adjusted R square of Impact of Supplier Integration on Financial performance Level.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.435	.368		3.899	.000
	Supplier Integration	.561	.100	.536	5.603	.000

Along with this, the standardized beta coefficient analyses the strength of the effect by comparing the effect of each independent variable to the dependent variable. In this table, the Beta value of supplier integration is .536 that identifies that it has a 54% impact on the financial performance level of the organization. Concerning this, the t value also provided a result of 5.603 that indicates the significant impact of SI on Financial performance whereas the strength of the model is $R^2 = 29\%$. The sum-up summary of all the results is that they are supporting the first hypothesis and verifying that Supplier integration has a positive impact on Financial Performance level.

ANOVA					
Model		Sum of Squares	df	Mean Square	Sig.
1	Regression	11.622	1	11.622	31.94
	Residual	28.875	78	.370	
	Total	40.496	79		

a. Dependent Variable: Financial Performance Level

b. Predictors: (Constant), Supplier Integration

Observing the Model summary clear defines that 28 percentage of variance in financial performance level can be explained by the Supplier integration. The ANOVA table clearly illustrates that there is a significant relationship between the dependent variable (Financial Performance) and independent variable (Supplier Integration) which is Sig. .000 which is less than 0.05 (it's important to understand that 0.05 is a thumb rule, not a scientific fact, and not necessary to be achieved particularly, further details on 0.05 are discussed later)

The second hypothesis of this contemporary study was examined, and the results are as under.

H2- Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.203 ^a	.041	.029	.70559

The model summary showing the R and Adjusted R square of the impact of Buyer Integration on Financial performance Level. According to the summary, only 4% of the variance in financial performance can be explained by buyer integration.

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.664	1	1.664	3.342	.071 ^b
	Residual	38.833	78	.498		
	Total	40.496	79			
a. Dependent Variable: Financial Performance Level						
b. Predictors: (Constant), Buyer Integration						

The ANOVA table indicates that the relation between the dependent variable (Financial Performance level) and the independent variable (Buyer Integration) is not statistically significant. The reason for this is the value of Sig. is 0.071, the value for p needs to be < 0.05 as favored by various researchers.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.511	.526		4.776	.000
	Buyer Integration	.241	.132	.203	1.828	.071

Correlation:

A correlation test and a P-value < 0.05 indicates that the relationship between Supplier Integration and Financial Performance Level is highly significant and there is Solid evidence

for H1 and hence it proves that the former have a positive impact on the latter which means the organizations who acknowledge and work on supplier integration in their process and operations tends and poses the higher and a positive impact on the level of their finances.

Correlation

		Supplier Integration	Buyer Integration	Financial Performance Level
Supplier Integration	Pearson Correlation	1	.441**	.536**
	Sig. (2-tailed)		.000	.000
	N	80	80	80
Buyer Integration	Pearson Correlation	.441**	1	.203
	Sig. (2-tailed)	.000		.071
	N	80	80	80
Financial Performance Level	Pearson Correlation	.536**	.203	1
	Sig. (2-tailed)	.000	.071	
	N	80	80	80

A P value > 0.05 for a correlation between buyer integration and financial performance level shows and indicates a less significance between these two, however, according to (Knaub, 1987) the sample size has a great impact on the p-value and significance level, the large sample size usually poses a higher significance level so based upon this theory and justification this study has a small sample size and is only targeting Sindh province and the data size is shrunk because the population remains unclear since in the informal economy countries it's hard to population. Also, this study is following a purposive sampling method keeping all of these facts it establishes a strong ground in the favour of the argument that the smaller sample size may have a p-value > 0.05 so maybe this is one of the reasons the p-value standing at 0.071. And as per American Statistician, it is clearly stated recently in (Wasserstein, 2016) that P-value isn't a sole tool or a test on which a hypothesis or statement can be said true or false since there are more factors on which a conclusion is drawn out that are the study design, problem statement, obvious and known facts, and external evidence. Along with the P-value, another statistical test should be carried out to cater to this issue, and only then a conclusion should be drawn out (Muriel-Vizcaíno, 2017). Data dredging and moving towards P hacking in toase significance level should be avoided as it leads to biased results. The misuse and misconception of P-value causes a lot of troubles therefore it is to be said that to run multiple other tests and use other approaches as well to reject or accept a hypothesis (Wasserstein, 2016). And

according to Lehmann, (1993) the fixed model value of $P < 0.05$ is something not scientifically proven since the entire 19th century the research the hypothesis was tested out informally rejecting a hypothesis on basis of this rule of thumb was not taken into an account.

However, keeping all these facts in mind, it is still concluded that the hypothesis 2 buyer integration has no significant impact on financial performance level since all other statistical tests have also concluded that the impact is not supported. And one of its reasons is that in Sindh, Pakistan the concept of buyer integration is not taken into account and even the customer service representative also lacks since SMEs here are based on selling concept focusing more on clearing shelves (sales) and fascinated with the customer satisfaction level which is one of the reasons that most of the SMEs dissolve within the 5 years of their start-up and formation. And so, the SMEs in Sindh are very much informal and sheepish when it comes to involving buyers within their decisions and strategic planning along with evaluation of the feedback and information gathered from buyers. In the result, it is identified that why hypothesis 2 is not supported.

Discussion, Implications and Conclusion

The focus of the study is to question whether SI and BI impact organizations' financial performance. From these outcomes, a discussion is formed which will provide a suggestion for managerial and theoretical implications.

Theoretical Implications

The model of the study analysed the SI and BI impact on financial performance. The impact of SI is significant for that reason it is our foremost implication, whereas the BI's impact has not been significant and our discussion on BI is not for implication but rather suggestions. Findings support that SI impacts the focal firm significantly and positively in terms of sales, market share, profitability, and return on assets. The result is consistent with various other studies that emphasize the adoption of such integration as crucial for focal firm's performance (Scannell TV, 2000) (Lee CW, 2007). This quantitative research will be a contribution to theory with empirical evidence and will assist researchers in Pakistan's context especially in Sindh to understand the model and requirement and the validity of integration in different sectors. on the other hand, Buyer Integration in Sindh's context, the impact is not significant due to the current business model adopted by SMEs which don't involve Buyers nor have adequate information communication among them.

Managerial Implications

This study defines managers that a significant boost in performance can be obtained through integrating suppliers with the focal firm. Those improvements in terms of profitability, market share, return on assets, sales can be achieved. The study suggests managers invest in supplier integration and procedures to build a robust supply chain.

Conclusion

The work contributes to various other literature on Integration in the supply chain by examining the impact of supplier and buyer integration on financial performance, measured in terms of levels. The result of the study has identified supplier integration as a sole impactor on financial performance in Sindh's context whereas Buyer integration has been insignificant in impacting the financial performance. The SMEs in Sindh can utilize the results of this study to boost performance through data interchange, periodical communication, in producing procurement stability, along supplier process improvement. Where the business model of SMEs in Sindh is unlike the common model of developed countries and stakeholders like buyers are not involved much in business decisions and communication with buyers is also limited which creates provides the outcome that due to limited buyer interaction with firm and no integration the performance is not impacted whereas opportunities are still available for the SMEs to integrate buyer in firm's supply chain to produce more fruitful results.

Research Limitations and Scope

The main focus of this study is to help recognize the dynamics and importance of the integration for buyers and suppliers from the point of the focal firm. The results will aid other SMEs and firms to understand the importance of integration to increase its usefulness and its effect on the financial performance level, thereby increasing its intentions for continuity. It is important to note that this extant literature possesses limitations.

- First, the sample does not represent all SMEs within Sindh, as the data is collected based on a purposive sampling method.
- The unavailability of data with numerous authorities on the case of SMEs makes it more hectic to produce the result, as adequate information is unreachable. In Pakistan's context, the lack of secondary data is a genuine limitation, though researchers can use this literature for extensive research in countries where data is available.
- Time limitations need to be considered as a major limitation

- As discussed earlier the data was unavailable but on top of that SMEs were not serious about the questionnaire and in providing adequate and accurate information and various refused to fill.

The scope of this study is parochial in the case of operational performance as this study focuses on cause & effect on financial performance, which is not the sole measurement of performance, for that reason researchers can investigate the impact of SI & BI on operational performance as well.

References

- Asare, A. (2017, Nov 28). *Entrepreneurship, key to reducing unemployment*. Retrieved from Graphic: <https://www.graphic.com.gh/business/business-news/entrepreneurship-key-to-reducing-unemployment.html> Accessed on 7 May 2021
- Beamon, B. (1999). Measuring supply chain performance”, *International Journal of Operations & Production Management*, Vol. 19 No. 3, pp. 275-92.
- Brewer PC, S. T. (2000;). Using the balanced scorecard to measure supply chain performance. *Journal of Business Logistics*, 21(1):75–93.
- Carr AS, P. J. (1999). Strategically managed buyer–supplier relationships and performance outcomes. *Journal of Operations Management*, 17(5): 497-519.
- Cemal, Z. A. (2006). “Identifying organizational capabilities as predictors of growth and business performance. *The Business Review, Cambridge*, Vol. 5 No. 2, pp. 109-16.
- Chen I.J, P. A. (2004). Strategic purchasing, supply management, and firm performance. *Journal of Operations Management*, 22(5):505–23.
- Chen, F. D.-L. (2000). Quantifying the bullwhip effect in a simple supply chain: the impact of forecasting, lead times and information. *Management Science*, Vol. 46 No. 3, pp. 436-43.
- Chen, I. a. (2004). "Understanding supply chain management: critical research and a theoretical framework”. *International Journal of Production Research*, Vol. 42 No. 1, pp. 131-63.
- Chen, I. P. (2004 b). Towards a theory of supply chain management: the constructs and measurements. *Journal of Operations Management*, 22 (2), 119– 150.
- Chen, I. P. (2004). “Strategic purchasing, supply management, and firm performance, *Journal of Operations Management*, Vol. 22 No. 5, pp. 505-23.
- Closs, D. a. (2003). “Internal and external logistics information technology integration”. *The International Journal of Logistics Management*, Vol. 14 No. 1, pp. 63-76.
- Das A, N. R. (2006;). Supplier integration – finding an optimal configuration. *Journal of Operations Management*, 24(5):563–82.
- Das, A. N. (2006). “Supplier integration – finding an optimal configuration”, *Journal of Operations Management*, Vol. 24 No. 5, pp. 563-82.

- Disney, S. a. (2002). A procedure for the optimization of the dynamic response of a vendor-managed inventory system”, *Computers & Industrial Engineering*, Vol. 43 Nos 1-2, pp. 27-58.
- Dixon, J. N. (1990). *The New Performance Challenge - Measuring Operations for World-class Competition*. Homewood, IL: Dow Jones-Irwin.
- Duffy, M. E. (2006). Resources for determining or evaluating sample size in quantitative research reports. *Clinical Nurse Specialist*, <https://doi.org/10.1097/00002800-200601000-00004>, 20(1), 9–12.
- Fabbe-Costes, N. a. (2008). “Supply chain integration and performance: a review of the evidence”. *International Journal of Logistics Management*, Vol. 19 No. 2, pp. 130-54.
- Flynn, B. a. (1999). “Information-processing alternatives for coping with manufacturing environment complexity”. *Decision Sciences*, Vol. 17 No. 3, pp. 249-69.
- Furlan A, R. P. (2006). Customer-supplier integration forms in the high-precision air-conditioning supply chains. *Journal of Manufacturing Technology Management*, 17(5): 633-55.
- Fynes, B. d. (2005). “Supply chain relationship quality, the competitive environment and performance”. *International Journal of Production Research*, Vol. 43 No. 16, pp. 3303-20.
- Heck Jr., K. L. (1975). Explicit Calculation of the Rarefaction Diversity Measurement and the Determination of Sufficient Sample Size. *Ecology*, <https://doi.org/https://doi.org/10.2307/1934716>, 56(6), 1459–1461.
- Johnson, H. a. (1987). Relevance lost – the rise and fall of management accounting. *Canadian Business Review*, Vol. 14 No. 4, pp. 48-50.
- Jones, R. H. (1987). Data collection in decision-making: a study in general practice. *Medical Education*, 21(2), 99–104. <https://doi.org/https://doi.org/10.1111/j.1365-2923.1987.tb00673.x>
- Kehoe, A. G. (2004). Performance observation and analysis of an information re-engineered supply chain: A case study of an automotive firm. *Industrial Management & Data Systems*, Vol. 104 No. 8, pp. 658-66.
- Knaub, J. (1987). Practical Interpretation of Hypothesis Tests - letter to the editor - TAS. *The American Statistician*, 41, 246–247.
- Lawson B, C. P. (2009;). Strategic purchasing, supply management practices and buyer performance improvement: an empirical study of UK manufacturing organizations. *International Journal of Production Research*, 47(10):2649–67.
- Lee CW, K. I. (2007). Relationships between supply chain performance and degree of linkage among supplier, internal integration and customer. *Supply Chain Management: An International Journal*, 12(6): 444-52.
- Lee, H. P. (1997). The bullwhip effect in supply chains. *Sloan Management Review*, Vol. 38 No. 3, pp. 93-102.
- Lehmann, E. L. ((1993). The Fisher, Neyman-Pearson Theories of Testing Hypotheses: One Theory or Two. *Journal of the American Statistical Association*, 88(424), 1242–1249. <https://doi.org/10.1080/01621459.1993.10476404>.

- Lin, F. H. (2002). "Effects of information sharing on supply chain performance in electronic commerce". *IEEE Transactions on Engineering Management*, , Vol. 49 No. 3, pp. 258-68.
- Muriel-Vizcaíno, R. T.-G.-B.-N.-P.-R. (2017). En relación con el artículo: Calidad de vida de los pacientes con inmunodeficiencias primaria. *Acta Pediatrica de Mexio*, 38(2), 134-138.
- Power, D. (2005). Supply chain management integration and implementation: a literature review. *Supply Chain Management: An International Journal*, , Vol. 10 No. 4, pp. 252-63.
- Rao, S. L.-N. (2006). The Impact of Supply Chain Management Practices on Competitive Advantage and Organizational Performance. *Omega*, Vol. 32, pp. 107-24.
- Redmond, J. C.-B. (2016). Beyond business as usual: how (and why) the habit discontinuity hypothesis can inform SME engagement in environmental sustainability practices. *Australasian Journal of Environmental Management*, Vol. 23 No. 4, pp. 426-442.
- Sahin, F. a. (2005). "Information sharing and coordination in make-to-order supply chains". *Journal of Operations Management*, Vol. 23 No. 6, pp. 579-98.
- Scannell TV, V. S. (2000). Upstream supply chain management and " competitive performance in the automotive supply industry. *Journal of Business Logistics*, 21(1):23-48.
- Sezen, B. ((2008)). Relative effects of design, integration and information sharing. *Supply Chain Management: An International Journal*, Vol. 13 No. 3, pp. 233-40.
- SMEDA. (2007). SMEDA Definition. Retrieved from <http://www.smeda.org.pk>
- SMEDA. (2019). *State of SMEs in Pakistan*. Retrieved from SMEDA: https://smeda.org/index.php?option=com_content&view=article&id=7:state-of-smes-inpakistan
- Stank, T. K. (2001). "Performance benefits of supply chain integration". *Transportation Journal*, Vol. 41 No. 2, pp. 31-46.
- Ülgen, F. V. (2015). Logistics performance management in textiles supply chains. *International Journal of Productivity and Performance*, 52 - 75.
- USOffice, U. S. (2021). Small- and Medium-Sized Enterprises (SMEs). Retrieved from *United State Trade Representatives*: <https://ustr.gov/trade-agreements/free-trade-agreements/transatlantic-trade-and-investment-partnership-t-tip/t-tip-12#:~:text=SMEs%20are%20the%20backbone%20of,similar%20businesses%20that%20do%20not>.
- van der Vaart T, v. D. (2008). A critical review of survey-based research in supply chain integration. *International Journal of Production Economics*, 111(1):42-55.
- Vickery, S. J. (2003). The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships", *Journal of Operations Management*, Vol. 21 No. 5, pp. 523-39.
- Wangphanich P, K. S. (2010). Analysis of the bullwhip effect in multi-product, multi-stage supply chain systems-a simulation approach. *International Journal of Production Research*, 48(15):4501-17.

- Wasserstein, R. L. (2016). The ASA's Statement on p-Values: Context, Process, and Purpose. *American Statistician*, 70(2), 129–133.
- Westbrook, R. a. (2001). Arcs of integration: an international study of supply chain strategies. *Journal of Operations Management*, Vol. 19 No. 2, pp. 185-200.
- Wong, C. B.-I. (2011). The contingency effects of environmental uncertainty on the relationship between supply chain integration and operational performance. *Journal of Operations Management*, Vol. 29 No. 6, pp. 604-615.
- Zhao, X. X. (2002). "The impact of information sharing and ordering co-ordination on supply chain performance". *Supply Chain Management: An International Journal*. Vol. 7 No. 1, pp. 24-40