OPEN ACCESS JOURNALS
Indiana Journal of Humanities and Social Sciences
Abbriviate Tittle- Ind J Human Soc Sci
ISSN *(Online)*- 2582-8630
Journal Homepage Link- https://indianapublications.com/journal/IJHSS
INDIANA PUBLICATIONS
PRODUCTIVE AND QUALITY RESEARCH

Research Article

Volume-03|Issue-03|2022

The Effect of Supply Chain Integration on the Operational Performance

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Article History
Received: 05.03.2022
Accepted: 20.03.2022
Published: 31.03.2022

Citation
Simbarashe, M. D., Charumbira, J., Vhanda, R., Shava, G., Ndlovu, M. J., & Shumba, F. (2022). The Effect of Supply Chain Integration on the Operational Performance. *Indiana Journal of Humanities and Social Sciences*, *3*(3), 86-94.

Abstract: Supply chain integration (SCI) is a useful approach to improve various measures of firm performance. This study aimed to assess the impact of supply chain integration strategies on the performance of IDCZ. A descriptive case study research design was adopted. The study employed a mixed-method research approach employing both qualitative and quantitative research approaches to address the research objective. The sample population was 73 employees of IDCZ. The sample size was determined through the Rao soft formula. The sample was determined through the stratified random sampling Questionnaires and interviews were used to collect information regarding internal integration, supplier integration, customer integration, logistics integration, information sharing, processing integration and performance of the firms. Questionnaires were distributed through the drop and pick method to avoid inconveniencing the respondents during working hours. Data collected was edited and analysed using SPSS. The results indicated that there was a positive and significant correlation between internal integration, supplier integration, customer integration, logistics integration, information and performance of the firm. The findings revealed that at the organisation there was minimum supply chain integration with the customer, logistics, information sharing. The study was about the impact of internal integration, customer integration, supply integration, logistics integration, information sharing and process integration on IDCZ, it was concluded that enhancing supplier integration, internal integration, customer integration, logistics integration, information sharing will boost IDCZ's operational performance. The study recommended that the industry managers should ensure that the extent of integration of the six variables namely internal integration, supplier integration, customer integration, information sharing, logistics integration and process integration are enhanced. The study further recommended a study that will assess the challenges affecting supply chain integration at IDCZ and other parastatals. A future study that will assess the barriers to the implementation of supply chain integration strategies at IDCZ and other parastatals was recommended in the end.

Keywords: Supply Chain Integration, Customer Integration, Internal Integration, Logistic Integration, Supplier Integration, Information Sharing.

INTRODUCTION

Supply chain integration continues to be an important subject to those that seek to comprehend ways of harnessing the possibility of the supply chain to generate sustainable value. A lot of attention has been given to the execution of integrative Supply Chain Management, both in academics and practitioners. Some practitioners recognised the significance of Supply Chain Management implementation; however, they failed to understand ways of implementing it. This situation is triggered by the absence of transparency and stability in what is to be measured in the execution of integrative Supply Chain Management. The theoretical foundation for qualifying the role of integrative Supply Chain Management execution in refining the competitiveness and performance of the company is still not that strong and this has caused a lot of debates (Sliman, 2015; & Akimo, 2016). Competitive advantage is the centre of success or failure for an organisation. The escalation of competition at a global scale and the demand for better customer service has increased considerably among firms. As a result, supply chain integration, focused on coordinating processes in the supply chain impeccably, currently is thought to be a significant determinant to sustain a competitive advantage over competitors. Competition determines the relevance of the activities carried out by a firm to support its performance. Supply Chain Management integration is a concept that is based on the notion that effective coordination, cooperation and collaboration can enhance competitiveness and in the end would support company performance. Execution of supply chain management that is integrated both internally and externally can create a source of competitive advantage.

Supply chain integration is a dominant aspect in the past decade. In modern years, empirical evidence has shown that fruitful implementation of supply chain integration can help a firm improve an organisation's performance as well as a competitive advantage (Wiengarten *et al.*, 2010). Supply chain management (SCM) pursues to boost competitive performance

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through tightly integrating the internal cross-function inside an organisation and fruitfully connecting them with the outside processes of suppliers, customers, and other channel members to be fruitful (Kim, 2006). This, therefore, means that an organisation that is following supply chain management practices must concentrate on supply chain integration as well as its execution (Hussein & Nassar, 2010).

IDCZ is a parastatal that was established in 1963 through the Industrial Development Corporation Act (Chapter 14.10) to invest in the industry as a state agency. For many years in existence, the Industrial Development Corporation of Zimbabwe Limited (IDCZ) has had problems to do with poor raw materials, delays in delivery of procured products, information asymmetry concerning customer needs, and unconformity to environmental bylaws. It seems very little has been done to use an integrated approach to managing the supply chain to solve such issues. There seems to be no collaboration among supply chain members of IDCZ; this in turn is affecting the customer in terms of poor quality. These days, it is important for firms to have a supportive relationship with fellow supply chain members to respond to the needs of the customers as well as market demands. The purpose of this study was to assess the impact of supply chain integration on the operational performance of IDCZ.

LITERATURE REVIEW

Supply chain integration refers to "the degree to which all operations inside an organisation, and the operations of its suppliers, consumers, and other supply chain members, are assimilated together" (Narasimhan & Kim, 2002). Supply chain management is made up of three independent variables in its initial measure and these are internal, suppliers and customer integrations (Abuzaid, 2014). Others also assume integration in two ways that are internal and external integration (Tan *et al.*, 2002). Stevens (1989) categorises supply chain integration into three categories, which are functional, internal and external integration. Nevertheless, this research centres on internal and external integration only, since functional integration is a necessity for all organisations to execute and achieve internal Integration (Ou *et al.*, 2010). The main certainty is that supply chain integration is a critical method to increase several measures of organisational performance (Van Hoek & Mitchell, 2006). The root of integration as such is made up of cooperation, collaboration, information sharing, trust, partnerships, shared technology, and an essential move away from managing separate functional processes, to managing integrated chains of processes (Pagell, 2004). In addition, there are three major vital stages in supply chain management which are procurement, production and distribution. Procurement is the supply chain function involved in the purchasing of stock as per request (Kouferos *et al.*, 2005). In other words, procurement is also responsible for tendering, supplier selection, ordering and buying which are healthy for any business organisation since delays in delivery of procured goods are solved and effective communication concerning the movement of stock is enhanced (Muduli & Barve, 2011). If the above is solved through procurement, there is a high rate of achieving both operational and financial performance in any organisation. The supply chain is also responsible for stores management which if managed very well enhances the production department of any company (Peeters, 2011).

Measurement of organisational performance does not solely rely on the financial performance since it only focuses on numerical performance ignoring the qualitative part of performance such as operational performance (Agus, 2015). According to Agyei *et al.* (2013), most research on supply chain integration focused mainly on the financial performance whereas the performance of the business is not reviewed financially only but also using operational performance. The present study did not focus on financial performance only but also assessed supply chain integration on operational performance. Furthermore, internal integration aids all organizational functions in leveraging each other's resources and capabilities to design a good product, ensure and maintain product quality and reduce duplication of tasks (Schoenherr & Swink, 2012). Boon-itt (2011) in his study revealed that internal integration creates close links between the manufacturing and the distribution processes to ensure effective and timely delivery of goods and services. In addition, Chaghooshi *et al.* (2015) opinioned that external integrations enable the manufacturers to deliver inputs on time, enhance the production planning and reduce inventory obsolescence and stock-outs through making use of enough and accurate information concerning the demands and preferences of the customers. Furthermore, effective integration with suppliers helps manufacturers in reducing mistakes and enhancing product quality through sharing of information and planning jointly which results in desirable operational performance of manufacturers (Petersen *et al.*, 2005). Integration of product with suppliers and customers help manufacturers in developing a new product capability, flexibility, promoting product quality and innovation to produce competitive advantage (Haque & Islam, 2013)

Many studies on the relationship between financial performance and supply integration have been carried out worldwide where almost 80% of researchers confirms that the relationship exists (Byun *et al.*, 2015). Frohlich & Westbrook (2001) coined that manufacturers who integrate with a supplier and customer integration very well mostly achieves the best performances financially and in terms of gaining large market share because of quality of everything, the product, the timing, the advertising and any other aspects that enhances the smooth functioning of the

***Corresponding Author:** Mapenda Daniel Simbarashe

business. Haque & Islam, (2013) cited that internal and external integration are both related to the financial performance by virtue of achieving time-based performances which strengthen the financial attributes of an organization. Schoenherr & Swink, (2012) proclaimed that most manufacturers with the greatest external customer and supplier integration degrees achieve the highest improvement in overall performance. The above-analysed literature clearly explains the importance of integration on operational performance which results in great financial performance.

RESEARCH METHODOLOGY

The study was a descriptive case study utilising primary data collection. Secondary and primary data. Primary data was gathered directly from the elements of the population in this case IDCZ employees using a structured questionnaire. In this study, the researchers wanted to test the relationship between supplier integration, customer integration, logistics integration, internal integration and information integration versus operational performance. Descriptive study ascertains and reports how things are and assists the researcher to define a phenomenon in means of attitude, values and features (Mugenda & Mugenda, 2003).

The research adopted the mixed methods approach which consists of both qualitative and quantitative research methods. The mixed-method approach was adopted because findings from both, that is the quantitative and the qualitative could be checked for consistency. The mixed-methods approach increases the comprehensiveness of overall findings by showing how qualitative data provided explanations for statistical data. Mixed methods involve collecting and analysing both quantitative and qualitative data (Saunders 2012). Typically, qualitative data involves words whilst quantitative data involves numbers. Qualitative data is regarded to be more flexible and unstructured in comparison to the numerically-based quantitative category. Quantitative research on the other hand helps to enhance reliability, objectivity and generalization of findings. Therefore, the study used both approaches to attain maximum possible findings to the research.

Mugenda & Mugenda (2003) define a population as a complete set of individuals, with common characteristics. It is the total collection of elements about which the study wishes to make some inferences (Cooper & Schindler, 2008). A total of 95 employees of IDCZ formed the target population of this study (IDBZ human resources database, 2018).

To come up with a sample a Raosoft formula was used

$$\frac{Z^2 \times (p) \times (1-p)}{C^2}$$

Where: Z=level of confidence value (in this case 95%)

P= percentage picking choice expressed as a decimal

C= confidence interval

$$\frac{1.96^2 \times 0.95(1-0.95)}{0.05^2}$$

N= 73. So the sample size was made up of 73 respondents.

Sampling techniques are also referred to as sampling processes, sampling methods or sampling plans. Sampling theory distinguishes between two basic sampling approaches: probability or random sampling and non-probability sampling of which only the probability sampling methods shall be used in this research study. This is because probability avoids bias when choosing a respondent. Stratified random sampling shall be adopted in this study, the procedure allows the target population to be divided into strata based on branches of IDCZ. A stratum was formed in each of the following subsidiaries in Harare (Zimphos, Motira Private Limited, Allied Insurance, Chemplex, Willowvale Motor Industries, Surface Wilmar, Olivine, Deven Motors and Sunway City). Each subsidiary was weighted in the proportion of the total IDCZ group companies. Malhotra (2010) defined stratified sampling as a probability sampling technique that uses a two-step process to partition the population into subpopulations or strata. Elements were selected from each stratum by a random procedure and the strata were mutually exclusive and collectively exhaustive.

Golafshani (2003) reliability is the degree to which results of the research are constant over time and there is a precise picture of the total population under investigation. According to Toke *et al.* (2012), the purpose of reliability analysis is to find the degree to which a measurement procedure yields the same result if the process is frequent over and over again under the same conditions. In this research, the Cronbach alpha coefficient was produced through the use of SPSS to determine the reliability of the questionnaire. The value generated was compared with the threshold of 0.7 to endorse reliability.

RESULTS AND DISCUSSION

The Influence of Internal Integration on Operational Performance at IDCZ

***Corresponding Author:** Mapenda Daniel Simbarashe

Table 1. Descriptive Statistics for Internal Integration

	Minimum	Maximum	Mean	Std. Deviation
Integration across functional areas is under firm control	1.00	5.00	2.4000	1.06866
There is Integrative inventory management at IDCZ	1.00	5.00	2.9571	.80642
There is a high level of responsiveness and flexibility to meet internal customers' needs	1.00	5.00	3.0000	.85126
There is the use of cross-functional teams in process improvement at IDCZ	1.00	5.00	3.0286	1.23911
The level of utilization of periodic interdepartmental meetings among internal functions is high	1.00	5.00	3.0429	1.20909
There is a high level of information flow within the firm between the order and inventory management process	2.00	5.00	3.4429	.98739
There is sound interpersonal, relations, communication activity interaction among functions in the firm	1.00	5.00	3.7000	.64494

Most respondents disagree that integration across the firm's functional areas is under the firm's control, this is shown by a mean score of 2.4000 out of a possible 5. In terms of inventory management integration, there is also a strong disagreement among the respondents this is represented by a mean score of 2.9571. In terms of responsiveness to customer needs, there was neither agreement nor disagreement, this is represented by a mean score of 3.0000. When it comes to cross-functional teams in process improvement, most respondents agree that there is the formation of cross-functional teams to improve the processes, this is shown by the mean score of 3.0286. There is high use of interdepartmental meetings within IDCZ, as represented by the mean score of 3.0429. When it comes to information flow between order and inventory management, it emerged that there is high information flow in terms of inventory ordering this is shown by the mean score of 3.4429. The majority of the respondents strongly agree that there is sound interpersonal relation, among functional areas in the organisation, this is shown by the mean score of 3.7000. It was further highlighted that the sharing of information across departments promotes interaction among the departments.

The Influence of Customer Integration on Operational Performance

Table 2. Descriptive Statistics on Customer Integration

	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic
IDCZ always communicate with major customers	1.00	5.00	3.5286	.79348
The level of computerization for ease of customer orders is high	1.00	5.00	3.1143	1.26883
There is a quick ordering system with major customers	1.00	5.00	3.0143	1.05628
There is a high level of sharing of available inventory with the major customers	1.00	5.00	2.9286	.95282
The organisation can achieve efficient and rapid delivery for customer orders	1.00	5.00	2.9286	1.05393
There is a high level of information sharing about market information and inventory stocking point with customers	1.00	5.00	2.7714	.70549
There is a high degree of joint planning to anticipate demand visibility with customers	1.00	5.00	2.6143	.80385
There is a high degree of customer involvement in product development	1.00	5.00	2.4143	1.08338

Most respondents agree that IDCZ always communicates with its major customers, this is shown by the mean score of 3.5286. There is a high level of computerisation for ease of customer orders, this is shown by the mean score of 3.1143. When it comes to major customers, there was strong agreement within the respondents that the major customers are responded quickly by the organisation, this is indicated by the mean score of 3.0143. These findings are in line with the findings of Cole (2013) who noted that existing customers must be prioritised because they contribute significantly to the organisation's revenue. When it comes to sharing the available inventory with the major customers, it emerged that most respondents disagreed that there was a high level of inventory sharing with the major customers, this is shown by the mean score of 2.9286. The mean score is the same as that of achieving efficient and rapid delivery for customer orders. This, however, contradicts the findings of Kim (2013) who found that responding rapidly and efficiently to customer needs will help increase customer satisfaction, his study was concerned with the impact of customer integration on customer satisfaction. The study also revealed that there is no high level of information sharing about market information and inventory stocking point with customers this is indicated by the

***Corresponding Author:** Mapenda Daniel Simbarashe

mean score of 2.7714. In the study, it also emerged that there is no high degree of joint planning to anticipate demand visibility with customers, as revealed by the mean score of 2.6143. In terms of product development most respondents believe that they just develop the product without the involvement of the customers, this is shown by the mean score of 2.4143, which was the least from the elements of customer integration.

The Influence of Supplier Integration on Operational Performance

Table 3. Descriptive Statistics on Supplier Integration

	Minimum	Maximum	Mean	Std. Deviation
IDCZ has a strategic partnership and long-term relationship with suppliers (single/dual sourcing of supply)	1.00	5.00	3.4857	.97420
Supplier share their production capacity with IDCZ	2.00	4.00	3.4714	.79348
suppliers share their production schedule with IDCZ	1.00	5.00	3.2143	1.12794
There is a high degree of supplier involvement in the process of procurement and production	2.00	4.00	3.1714	.85077
IDCZ Sharing its production plan with suppliers	1.00	4.00	3.0714	.92190
Information is exchanged with major suppliers through information networks	1.00	4.00	3.0714	1.02606
IDCZ always involve its suppliers in product development	2.00	4.00	3.0286	.77966

There is supplier integration in IDCZ, the value of 3.4857, which shows that most respondents agree that IDCZ has a strategic partnership and long term relationship with suppliers. These findings are in line with Fynn et al., (2010), who noted that strategic partnerships have a great significance on an organisation's performance. In addition, suppliers of IDCZ share their production capacity with IDCZ this is indicated by a mean score of 3.4714. In terms of sharing the production schedule, it emerged that suppliers share their production schedule with IDCZ, this is represented by a mean score of 3.2143. In the process of procurement and production, there is a high degree of supplier involvement at IDCZ, this is indicated by the mean score of 3.1714. IDCZ shares its production plan with its suppliers this is represented by the mean score of 3.0714. IDCZ exchanges its information with suppliers this is indicated by the mean score of 3.0714. Suppliers are involved by IDCZ when developing products, this is shown by the mean score of 3.0286.

How Logistics Integration Affects Operational Performance at IDCZ

Table 4. Descriptive Statistics on Logistics Integration

	Minimum	Maximum	Mean	Std. Deviation
The time from receipt of customer order to delivery will decrease if creating teamwork along the supply chain is maintained with partners (customers, within IDCZ and suppliers) in the logistic distribution chain	2.00	5.00	3.6286	.90364
Storage facilities at IDCZ are well managed	2.00	5.00	3.4571	.92761
Distribution costs are reasonable to the customers	2.00	4.00	3.3571	.66016
The logistic provider always deliver the right quality and the right quantity of product to the right customer	1.00	5.00	2.9857	1.31318
Customers are always served quickly	1.00	4.00	2.7286	1.04841
Transport planning, management and control processes for IDCZ with other logistics firms is very efficient.	1.00	4.00	2.6143	.92145

If teamwork by supply chain partners is maintained time of delivery will be improved, this is shown by the mean score of 3.6286. In an interview, it emerged that relationships are critical since they ensure that goods arrive at a point of destiny at an agreed time with all parties knowing what is going on in the supply chain. Storage facilities at IDCZ are well managed this is shown by the mean score of 3.4571. Distribution costs are considered to be reasonable to the customers this is indicated by the mean score of 3.3571 out of a possible 5. The logistic provider does not always deliver the right quality and the right quantity of the product to the right consumer, this is shown by the mean score of 3.3571. Customers in most cases are not served quickly, this is shown by the mean score of 2.7286. In an interview, it emerged that most deliveries delay because sometimes there will be a delay in deliveries of inputs. In the findings, Abdullah *et al.* (2011) highlighted that a business that serves its customers quickly is operating well. There are poor transport planning, management and control processes at IDCZ with other logistics firms this is shown by the mean score of 2.6143. This however contradicts the argument by Halldorsson (2012), who highlighted that poor logistics planning is

***Corresponding Author:** Mapenda Daniel Simbarashe

poor management planning which will result in the dissatisfaction of customers.

How Information Sharing Influences Organisation Performance

Table 5. Descriptive Statistics on Information Sharing

	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic
Suppliers are more interested when much of IDCZ information is shared with them	2.00	5.00	3.5143	.91276
Customers are more interested when much of IDCZ information is shared with them	1.00	5.00	3.3857	1.08070
Information is always shared electronically	2.00	4.00	3.2143	.93084
IDCZ often share critical information with the suppliers and or customers	1.00	4.00	2.7857	1.12794
Our current information system provides us with real-time information necessary for decision making	1.00	4.00	2.7000	.96834

In the study, information sharing was seen as another variable that affects operational performances. It further emerged that are much more interested when much of IDCZ information is shared with them this is indicated by the mean score of 3.5143. These results concur with that of Johansson (2012) who opined that information sharing is critical in ensuring the business' performance. He further highlighted that information sharing with all the members in the supply chain will eventually lead to greater customer satisfaction. Similarly, in this study customers are more interested when the information is shared with them, this is shown with the mean score of 3.3857. IDCZ shares its information electronically this is represented by a mean score of 3.2143. In their study, Dolci and Macada (2014) indicated that information sharing is made easier when shared through electronic means. Their study was about the benefits of ICT investment in supply chain integration. However, when it comes to critical information IDCZ do not share such information, this is represented by a mean score of 2.7857. The mean score of 2.7000, shows that IDCZ's current information system does provide it with real-time information necessary for decision making.

Hypothesis Testing

Hypothesis 1: Supplier Integration has an Effect on the Operational Performance of IDCZ

The results indicated that supplier integration and operational performance of IDCZ are positively and significantly related (.589**, p<.01). This is an indication that enhancing supplier integration within IDCZ leads to increased operational performance. Likewise ignoring supplier integration can affect the productivity of IDCZ.

Hypothesis 2: Customer Integration has an Effect on the Operational Performance of Idcz

The results indicated that customer integration and operational performance of IDCZ are positively related (0.837**, p<.01). This means that improving the extent to which the IDCZ ensures customer integration has a great potential to improve the IDCZ's performance. Elements of customer integration dealt with in this study such as computerization for ease of customer ordering and establishment of a quick ordering system should be ensured for improved operational performance.

Hypothesis 3: Internal integration has an effect on the operational performance of IDCZ.

Internal integration and operational performance of IDCZ are positively and significantly related (.670**, p<.01). This means that enhancing internal integration within IDCZ has the potential to increase the operational performance of the IDCZ. Ignoring internal integration will negatively affect the operational performance of IDCZ, linking of functional areas at IDCZ is of paramount importance if the organisation is to improve its performance.

Hypothesis 4: Logistics integration has a positive relationship with operational performance.

Logistics integration and operational performance of IDCZ are positively related (.859**, p<.01). This means that improving the extent to which the IDCZ ensures logistics integration has a great potential to improve the IDCZ's operational performance. It can therefore be concluded that the null hypothesis is rejected and it can be concluded that there is a strong significant relationship between logistics integration and operational performance. Storage facilities must be made available, providing on-time delivery to customers as well as reducing distribution costs will boost the performance of IDCZ.

Hypothesis 5: There is a positive relationship between information sharing and operational performance.

The results indicate that the information sharing and operational performance of IDCZ are positively and significantly related (.806**, p<.01). This is an indication that enhancing information sharing within IDCZ will lead to increased operational performance. In this study, the null hypothesis was rejected and it was concluded that there is a strong significant relationship between information sharing and IDCZ's operational performance. Likewise

***Corresponding Author:** Mapenda Daniel Simbarashe

ignoring information sharing can affect the productivity of IDCZ.

Hypothesis 6: There is a Positive Relationship between Process Integration and Operational Performance

Process integration and operational performance of IDCZ are positively and significantly related (.852**, p<.01). The null hypothesis was thus rejected and it was concluded that there is a strong relationship between information sharing and operational performance. This is an indication that enhancing process integration within IDCZ leads to increased operational performance. Likewise ignoring process integration can affect the productivity of IDCZ.

Multiple Regression Model

A multiple regression model was established to test if there is a linear relationship across these variables. The question that the study wanted to address is: Is there an impact of supply chain integration elements on operational performance in IDCZ? To test the hypotheses multiple regressions analysis is used to analyse the effect of the supply chain integration variables on operational performance variables. To be able to use multiple regressions the following assumptions should be fulfilled: Normality, reliability, multi-collinearity, independence of errors and correlation.

Table 6 result also shows that the VIF values are less than 10 and the tolerance values are more than 0.2. This indicates that there is no multi-collinearity within the independent variables of the study.

Table 6. Multiple Regression Statistics

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4.459	1.031		9.172	.000	11.521	7.398		
	Internal	.806	.087	.804	9.273	.000	.632	.980	.080	2.545
	customer	.067	.104	.082	.644	.522	.276	.141	.037	7.151
	Supplier	.429	.055	.444	7.823	.000	.538	-.319	.186	5.384
	logistics	.678	.146	.356	1.525	.000	1.387	1.968	.043	3.141
	Information sharing	.248	.088	.167	2.807	.007	.425	-.072	.168	5.940
	Process	.590	.144	.352	4.106	.000	.876	-.303	.081	2.275

a. Dependent Variable: operational performance

Supplier integration has a significant relationship with an operational performance at IDCZ at (α≤0.05). Table 4.12 shows that there is a positive direct impact of supplier integration on operational performance, since (Beta= 0.444, t=7.823, sig. 0.000, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which shows that the supplier integration has an impact on operational performance at (α≤0.05).

Internal integration has a positive relationship with an operational performance at IDCZ, at (α≤0.05). Table 6 shows that there is a positive direct impact of internal integration on operational performance, since (Beta= 0.804, t=9.273, sig. 0.000, p<0.05), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the internal integration has an impact on operational performance at (α≤0.05).

Customer integration has a positive impact on operational performance at IDCZ, at (α≤0.05). Table 6 shows that there is a positive direct impact of supplier integration on operational performance, since (Beta= 0.082, t=0.644, sig. 0.000, p<0.05), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that the customer integration has an impact on operational performance at (α≤0.05).

Logistics integration has a positive impact on operational performance at IDCZ, at (α≤0.05). Table 6 shows that there is a positive direct impact of supplier integration on operational performance, since (Beta= .356, t=1.5250, sig. 0.000, p<0.05), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that logistics integration has an impact on operational performance at (α≤0.05).

Information sharing has a positive impact on operational performance at IDCZ, at (α≤0.05). Table 6 shows that there is a positive direct impact of supplier integration on operational performance, since (Beta= .167, t=2.807, sig. 0.000, p<0.05), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that information sharing has an impact on operational performance at (α≤0.05).

Process integration has a positive impact on operational performance at IDCZ, at (α≤0.05). Table 4.12 shows that there is a positive direct impact of supplier integration on operational performance, since

***Corresponding Author:** Mapenda Daniel Simbarashe

(Beta=.352, t=4.106, sig. 0.000, p<0.05), the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that process integration has an impact on operational performance at (α≤0.05).

From table 6, the researcher concludes that all supply chain integration variables have an impact on the operational performance of IDCZ.

The regression model

$$Y_{OP} = 4.459 + 0.806\,X_{II} + 0.067X_{CI} + 0.429X_{SI} + 0.678\,X_{LI} + 0.248X_{IS} + 0.590\,X_{PI}$$

Where,

Y_{OP} = Operational performance
X_{II} = Internal integration
X_{CI} = Customer integration
X_{SI} = Supplier integration
X_{LI} = Logistics integration
X_{IS} = Information sharing
X_{PI} = Process Integration

From the regression equation above it emerged that holding internal integration, customer integration, supplier integration, information sharing, logistics integration and process integration operational performance would be 4.459. A unit increase in internal integration would lead to an increase in the operational performance of IDCZ by 0.806 units. A unit increase in customer integration would lead to an increase in IDCZ's operational performance by 0.067 units, a unit increase in supplier integration would lead to an increase in the operational performance of IDCZ by 0.429 units. A unit increase in logistics integration would lead to an increase in IDCZ's operational performance by 0.678 units, a unit increase in information sharing would lead to an increase in the operational performance of IDCZ by 0.248 units. Lastly, a unit increase in process integration would lead to an increase in the operational performance of IDCZ by 0.590 units. The overall number of internal integration had the greatest impact on operational performance at 5% level of significance and 95% level of confidence, customer integration had the least significance.

These results are in line with the findings of Tamimi (2015) who discovered that there is a strong linear relationship between supply chain integration variables and operational performance. His study was about the impact of supply chain integration on operational performance at Jordanian Pharmaceutical Manufacturing Organisations. The results are also in line with the findings of Mose (2015) who also found that there is a significant relationship between supply chain integration and operational performance, his study was about the impact of supply chain integration strategies on the performance of the pork processing industry in Rwanda. So this study was in line with other findings in other countries.

CONCLUSIONS

IDCZ communicates with major customers using various ways. The computerization of services for ease of customer ordering and communication with major customers is being done at IDCZ. It was established that IDCZ has quick ordering systems which were established with major customers. On the other hand, it was concluded that inventory available is not shared with major customers and the organisation cannot attain efficient and rapid delivery for customer orders. There is also a low level of information sharing about market information and inventory stocking point with customers. There is a low degree of joint planning to anticipate demand visibility with customers, also there is a low degree of customer involvement in product development.

In this study, it emerged that supplier integration and operational performance of IDCZ are positively and significantly related. IDCZ has a strategic partnership and long-term relationship with suppliers. It was also concluded that suppliers share their production capacity with IDCZ, they also share their production schedule with IDCZ. It was also established that there is a high degree of supplier involvement in the process of procurement and production. In this study, it emerged that IDCZ shares its production plan with its suppliers and also information is exchanged with the major suppliers through information networks in addition IDCZ involves its suppliers in product development.

It further emerged that the internal integration and operational performance of IDCZ were positively and significantly related. It was also concluded that there is sound interpersonal relations and communication activity interaction among functions in the organisation. It was also noticed that periodic interdepartmental meetings among internal functions are being utilised at IDCZ. It also emerged that cross-functional teams are used in process improvement, there is also a high level of responsiveness and flexibility to meet internal customers' needs. However, there is no integrative inventory control integration across functional areas at IDCZ.

Information sharing has a strong positive significance to organisational performance. In this study, it can be concluded that suppliers and customers become more interested if the information is shared with them and also information is shared electronically at IDCZ. IDCZ does not share critical information with suppliers and customers and the current information systems within the group do not provide the firm with up to date information that is necessary for decision making.

From the study, it emerged that there is a strong significant positive relationship between logistics integration and operational performance.

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IDCZ as an organisation believes that the time from receipt of customer order to delivery will decrease if creating teamwork along the supply chain is maintained with partners (customers, within IDCZ and suppliers) in the logistic distribution chain. When it comes to storage facilities it emerged that IDCZ manages its storage facilities well and their distribution costs are reasonable to customers. It was also concluded that customers are not served quickly and there is no efficient transport planning, management and control processes with other logistics firms, this, therefore, means that the logistics firms of IDCZ are not well integrated.

There is a positive relationship between process integration and organisational performance. The integration of processes has helped the processing of sales quickly and also to boost production. However, customers are not served quickly, there is inefficiency in the ordering of inputs and the production process does not flow smoothly.

The Study Recommended the Following Areas of Further Study:

- A study that will assess the challenges affecting supply chain integration at IDCZ and other parastatals. This study will expose the challenges that need to be addressed for improved performance.
- Future researchers could as well conduct research that will measure the barriers to the implementation of supply chain integration at IDCZ. This research will be significant in that it will assist the organisation's management to recognise areas within the organisation that need to be refined to enhance the performance
- A study that will focus on the impact of supply chain integration in the parastatal to establish the degree of supply chain integration in the government-owned organisation.

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