Efficiency of Business Intelligence tool, B-Accuracy in Export Logistics

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Abstract

Export logistics entails the transfer of goods and services from one nation to another and is supported by a sophisticated network of vendors, carriers, and regulatory bodies. Organizations can use BI systems to manage and analyse key performance indicators (KPIs) including inventory levels, delivery times, and transportation costs in order to find areas for improvement and make data-driven choices.

Business intelligence (BI) tools are software programmes that let businesses collect, examine, and visualise data from numerous sources to help them make better decisions. With the use of BI tools, users can extract insights from huge datasets and spot trends, patterns, and correlations using capabilities like data mining, data visualization, dashboards, reporting, and predictive analytics.

BI tools include things like Tableau, Power BI, QlikView, and SAP BusinessObjects, to name a few popular ones.

And this is where a business uses its own software, dubbed B-Accuracy, to operate a 7-in-1 ERP that incorporates managerial activities in addition to logistical services. This paper aims to demonstrate how logistics operation are compatible and simple by employing B-accuracy ERP Solution. The **objective of the study** is: a) to understand about the practicality of B-Accuracy in terms of compatibility, finances & decision making, b) to identify the factors that leads to efficient export logistics using B-Accuracy, c) to analyse the factors that contribute to the efficiency of B-Accuracy, d) to develop a model that explains the factors and its contribution to effective export logistics using B-Accuracy.

Introduction

ERP (Enterprise Resource Planning) systems are sophisticated software platforms used to control a wide range of commercial operations, including accounting, purchasing, inventory control, and human resources. An ERP solution called B-Accuracy was created to assist companies in streamlining their financial management procedures.

B-Accuracy can be used to handle export logistics. The solution provides tools for managing supply chains and logistics, including order processing, inventory management, and procurement.

A variety of tasks are included in export logistics, including purchasing products, packaging them, shipping them, clearing customs, and processing payments. By automating numerous procedures and giving companies real-time insights into their logistics operations, B-Accuracy can assist firms in managing these activities more successfully.

Businesses can manage their procurement procedures and keep tabs on their inventory levels with the help of B-Accuracy, making sure they have the necessary products on hand to satisfy client demand. The technology can assist firms in running their order processing and shipping departments while giving clients access to real-time tracking data and status updates.

In conclusion, B-Accuracy can be used to manage export logistics even though it was mainly created as a financial management system. Its capabilities, including order processing, inventory management, and procurement, can assist companies in streamlining their supply chain and logistics operations, increasing accuracy, and enhancing the performance of their export logistics.

Additionally, B-Accuracy may support companies in managing their currency exchange and payment processing operations, enabling them to handle payments in numerous currencies and control foreign exchange risks.

The flexibility of B-Accuracy also interacts with other systems, including CRM, HR, and procurement, is one of its main advantages. Businesses may observe their operations more comprehensively and make better decisions because to this connection.

Objective of the study

a) to understand about the practicality of B-Accuracy in terms of compatibility, finances & decision making.

b) to identify the factors that leads to efficient export logistics using B-Accuracy.

c) to analyse the factors that contribute to the efficiency of B-Accuracy.

d) to develop a model that explains the factors and its contribution to effective export logistics using B-Accuracy.

Scope of the study

This study provides insight into the B-Accuracy's compatibility and ease of use with regard to export documentation, decision-making, and financial return efficiency, which has an impact on procurement, HR function, and logistics costs.

Review of literature

[1] Eidizadeh, R., Salehzadeh, R., & Chitsaz Esfahani, A. (2017).

In conclusion, the essay offers a helpful overview of the roles played by organisational innovation, information exchange, and business intelligence in attaining a competitive advantage. However, more investigation is required to ascertain the practical efficacy of the suggested model and to take into account additional variables that might affect organisational performance and competitive advantage.

[2] Neubert, M., & Van der Krogt, A. (2018).

In conclusion, the essay gives a helpful overview of how business intelligence solutions affect the performance of exports for software companies in developing nations. To evaluate whether these results can be applied to other sectors of the economy and geographical areas, more investigation is required.

[3] Li, J., & Lakzi, A. (2022).

This article suggests a novel model to evaluate these elements and offers a useful summary of the variables that may have an impact on export competitiveness efficiency. To ascertain whether the suggested model is practical, additional study is required.

[4] Golestanizadeh, M., Sarvari, H., Cristofaro, M., & Chan, D. W. (2023)

In conclusion, the study offers a helpful overview of how using business intelligence affects export growth and brand internationalisation in large industrial enterprises. To ascertain whether these results are generalizable to other business sectors and company types, as well as to take into account additional variables that might have an impact on export growth and brand internationalisation, more research is nevertheless required.

[5] Krmac, E. V. (2009).

In summary, the essay offers a helpful overview of how business intelligence is applied in transportation logistics. The effectiveness of the suggested approach in practise and other elements that might have an impact on transportation logistics operations both call for more investigation.

[6] Kusmantini, T., Mardiana, T., & Pramudita, R. (2021)

In general, the research article "Analysis of the Effect of Business Intelligence on Competitive Advantage through Knowledge Sharing and Organisational Innovation in Export Companies" is well-written and educational and offers insightful information about the connection between BI, competitive advantage, knowledge sharing, and organisational innovation.

[7] Jin, D. H., & Kim, H. J. (2018).

Overall, the logistics case study offers a convincing illustration of how big data research and business intelligence may be combined to offer insightful information to firms. Companies in the logistics sector can enhance operations, cut costs, and ultimately provide better service to their clients by utilising these solutions.

[8] Irannezhad, E., Prato, C. G., & Hickman, M. (2020).

Overall, the study offers a potential strategy for enhancing hinterland port logistics operations through the use of a sophisticated decision support system. A complete and up-to-date perspective of logistics operations is provided through the combination of big data analytics, artificial intelligence, and decision-making models, enabling operators to make wise decisions and optimise their operations.

Research methodology

A standardised questionnaire will be used in this study's quantitative research approach to collect data from 151 logistics companies in Tamil Nadu. Both primary and secondary data were employed in the investigation, a sampling method known as Convenience Sampling was employed to get information. Statistical tool such as Factor analysis, Regression, SEM and weighted average were used for analysis.

Table 1: Reliability analysis of B-Accuracy

Reliability Statistics	
Cronbach's Alpha	N of Items
.831	19

All items reliability analysis produced a Cronbach alpha value of 0.831 for B-Accuracy, confirming that the total correlation across all items is higher than the permissible minimum and is therefore approved.

Table 2: Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity for efficiency of B-Accuracy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.681
Bartlett's Test of Sphericity	Approx. Chi-Square	1383.56
	df	171
	Sig.	<.001

All 20 variables that affect a person's preference for B-Accuracy were tested for sphericity using the KMO and Bartlett's method for the items. When the KMO Bartlett's Test for Sphericity was run, the result for B-Accuracy was determined to be 0.681, which is higher than the required minimum of 0.5. Thus, the sampling's appropriateness was confirmed. The Chi-square score of 1383.56 for B-Accuracy for this test indicated that it was significant at (P0.01), demonstrating the stability of the data set for factor analysis.

Table 3: Descriptive Statistics of 20 variables and its communalities

KEY FACTORS	FACTORS	EXTRACTION
Compatibility	**Presentation**	.705
	Time for familiarization	.705
	Clarity & understandability	.698
	Customisable to the needs	.628
	Time for completing the shipment	.766
	Help page to assist	.674
Easiness of Financial operations	**Increasing the financial return**	.556
	Faster, efficient financial operation	.567
	Order placing and procurement	.671
	Efficiency of logistics costing	.798
	Indian trade portal & XE website	.794
Competitive advantage	**Tried any BI tools like B-Accuracy**	.829
	Comparison of B-Accuracy & SAP	.727
Decision Making	**Faster and timely decision making**	.720
	Report generation function	.658
	Better decision making in aspects like:	
	Supplier quotation comparison	.838
	Generation of financial reports	.744
	Real time information	.741
	Functions like HR & finance	.757

There were communalities greater than 0.5 for all 20 variables under the 4 main criteria. Greater communalities suggest that the factor solution has extracted more variance from the variables. This shows that all 20 variables were taken into account for the study and that none were skipped.

Table 4: Factors loading for key variables of B-Accuracy

FACTOR LOADING		INITIAL EIGEN VALUES		
		TOTAL	% OF VARIANCE	CUMULATIVE %
Compatibility	.748	5.984	31.492	31.492
	.590	2.187	11.512	43.004
Easiness of Financial operation	.713	1.781	9.371	52.367
	.656	1.309	6.887	59.263
Competitive Advantage	.571	1.201	6.324	65.586
Decision Making	.694	1.060	5.581	71.167

The factor loading under four factors is significant for all 20 variables under B-Accuracy. In this case, the factor loading of B-Accuracy spans from 0.571 (B-Accuracy Competitive advantage) to 0.748 (B-Accuracy Compatibility), above the minimum requirement of 0.5. All the elements together account for a certain percentage of the total variation. Factor 1 accounted for 31.492% of the entire variation. The varimax rotation method was used in conjunction with principal component analysis of the extraction method, which converged in six iterations.

On the basis of the independent 20 variables (four factors: compatibility, finance, competitive advantage, decision making), the regression analysis was employed in this study to derive a suitable mathematical expression for determining values of the dependent variable (star ratings of the company). The study looked at the median summary for the important B-Accuracy measures and the company rating for each organisation.

Table 5: Model for factors influencing the variables of B-Accuracy

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.615[a]	.378	.287	.42052	1.740
a. Predictors:(Constant), Compatibility, Finance, Competitive advantage, Decision making					
b. Dependent Variable: Star ratings of the company					

The "Modal Summary" and "ANOVA" outputs are the results of the model fit. The modal summary contains estimates of the model fit for the numerous correlation coefficients R and R-Square as well as the adjusted version of this coefficient. According to the table, 20 factors account for 51.1% of the variation in the important B-Accuracy measures, R = 0.615, and R Square = 0.378, respectively.

Table 6: ANOVA for variables influencing the B-Accuracy

Model	Sum of Squares	df	Mean Square	F	Sig.

1	**Regression**	13.971	19	.735	4.158	<.001[b]
	Residual	22.989	130	.177		
	Total	36.960	149			

a. Dependent Variable: Star ratings of the company

b. Predictors:(Constant), Compatibility, Finance, Competitive advantage, Decision making

Clarity and understandability (X3), faster & more efficient financial operation (X8), order placement and procurement (X9), Indian Trade Portal & XE website (X11), faster, more timely decision making (X14), and real-time information (X19) were all found to be significant at P0.001. While there was a bad correlation between passenger satisfaction and presentation (X1), completion time (X5), and report creation (X15). from the key metrics of B-Accuracy.

Y=4.874 - 0.212X1 + 0.257X3 – 0.241X5 + 0.123X8 + 0.222X9 + 0.086X11 + 0.280X14 – 0.279X15 + 0.220X19

Table 7: T-test for key factors influencing variables of B-Accuracy

Model	**Key Factors**	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
(Constant)	**Compatibility**	4.874	.490		9.955	<.001
Presentation		-.212	.071	-.315	-.2977	.003
Time for familiarization		-.177	.085	-.171	-1.382	.169
Clarity & understandability		.257	.086	.357	3.004	.003
Customisable to the needs		-.065	.078	-.100	-.828	.409
Time for completing the shipment		-.241	.065	-.356	-3.712	<.001
Help page to assist		.050	.063	.071	.797	.427
Increasing the financial return	**Easiness of Financial operation**	-.106	.075	-.153	-1.421	.158
Faster, efficient financial operation		.123	.071	.156	1.726	.087
Order placing and procurement		.222	.067	.350	3.321	.001
Efficiency of logistics costing		.055	.103	.063	.531	.596
Indian trade portal & XE		.086	.049	.163	1.736	.085

website						
Tried any BI tools like B-Accuracy	**Competitive Advantage**	.005	.092	.005	.055	.956
Comparison of B-Accuracy & SAP		-.134	.093	-.169	-1.451	.149
Faster & timely decision making	**Decision Making**	.280	.082	.423	3.405	<.001
Report generation function		-.279	.112	-.326	-2.496	.014
Better decision making in aspects like:						
Supplier quotation comparison		-.078	.086	-.095	-.904	.368
Generation of financial reports		-.102	.097	-.136	-1.051	.295
Real time information		.220	.074	.327	2.961	.004
Functions like HR & finance		-.019	.074	-.030	-.262	.794

With reference to the standardised coefficients, the most significant variables to extract relevance for client satisfaction of B-Accuracy are faster prompt decision making (0.423), Clarity & comprehension (0.357), Order placement & Procurement (0.350), followed by other variables described above. This indicates that improved client satisfaction can be attained if these factors are taken into consideration.

Table 8: Weighted Average – Client's opinion on preference factors of B-Accuracy

	SUPPLIER QUOTATION COMPARISON	**EASY GENERATION OF FINANCIAL STATEMENT**	**TIMELY INFORMATION OF INVENTORY & TRANSPORTATION**	**INTEGRATED FUNCTIONS LIKE HR & FINANCE**	∑
STRONGLY AGREE	450	360	375	300	1485
AGREE	204	252	204	228	888
NEUTRAL	27	45	72	99	243
DISAGREE	0	0	0	0	0
STRONGLY DISAGREE	0	0	0	0	0
∑	681	657	651	627	**2616**

According to weighted average analysis, the majority of clients believed that supplier quotation comparison was their top preference, followed by ease of generating financial statements, and real-time inventory and transportation information.

Table 9: Weighted Average – Client's preference for B-Accuracy

	EASINESS OF HANDLING	TIME SAVING	COST SUFFICIENT	QUALITY IN PERFORMANCE	COMPREHENSIVE SOFTWARE FOR ALL FUNCTIONS	∑
EXCELLENT	450	420	270	300	255	1695
VERY GOOD	12O	144	144	144	192	744
GOOD	18	18	18	18	0	72
AVERAGE	0	0	0	0	0	0
POOR	0	0	0	0	0	0
∑	588	582	432	462	447	**2511**

The majority of clients' opinions regarding what led them to choose were based on a weighted average analysis that was done. Clients' preferences for B-Accuracy agency indicate that ease of handling is their top preference, followed by time savings at number two and performance excellence at number three.

Structural Equation Modelling on Influencing factors leading to passenger satisfaction

SEM was used to assess how well the conceptual model under development fit. The following variables were utilised in the analysis: The client's company's star ratings were regarded as observed, endogenous variables, and the elements affecting the client's happiness as observed, exogenous variables. 28 variables make up the SEM for the model, of which 13 are observed, 15 are unobserved, 14 are exogenous, and 14 are endogenous. There are also 14 endogenous variables. The study's utilised factors are discovered to be significant. The construct reliability indicator is the C.R.

Table 10: Influencing factors in SEM Analysis

	Estimate	S.E.	C.R.	P	Label
B-Accuracy better decision making	4.540	.050	91.306	***	
Report generation function of B-Accuracy	4.320	.048	90.758	***	
B-Accuracy as competitive advantage	4.640	.051	90.650	***	
Usage of BI tool before B-Accuracy	1.520	.041	37.138	***	
Indian Trade Portal XE websites in Logistics costing	1.700	.077	21.997	***	
Order placing and procurement	4.220	.064	65.869	***	
Faster and efficient financial functions	4.380	.052	85.006	***	
Helps in increasing the return	4.180	.058	71.617	***	
Time for completion of shipment	4.020	.060	66.803	***	
Clear and understandable	4.380	.056	77.528	***	
Time for familiarization	4.460	.060	74.896	***	
Presentation of the software	4.120	.061	68.087	***	
Star rating	4.440	.041	109.186	***	

Figure 1: SEM on influencing factors of B-Accuracy for Client's satisfaction

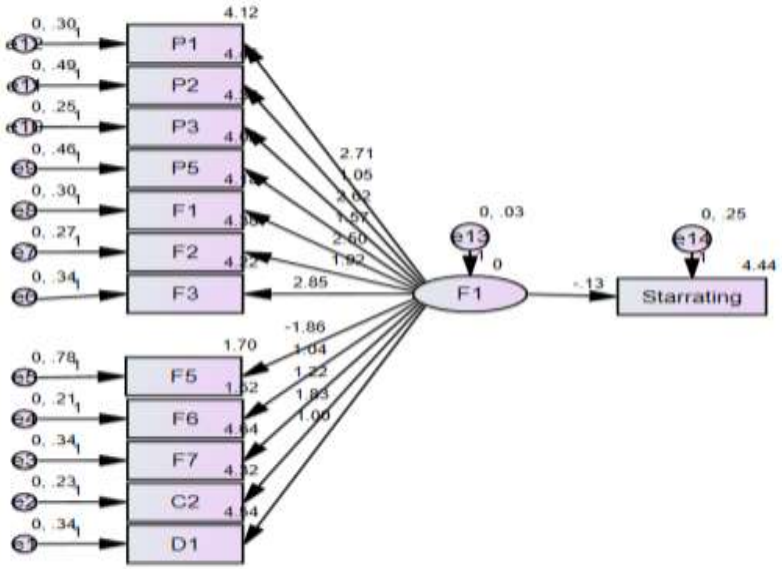

Table 11: Goodness of fit indices

Goodness of fit		Values	Range of values
Chi-Square Test	**CMIN**	244.185	P<0.001
Absolute Fit Measure			
Degree of Freedom	**DF**	65	>=0
Chi-Square Test/DF Ratio	**CMIN/DF**	3.757	
Goodness of Fit Index	**GFI**	0.876	>0.90
Root Mean Square Error of Approximation	**RMSEA**	0.136	<0.08
Incremental Fit Measure			
Adjusted Good of Fit Index	**AGFI**	0.857	>0.90
Tucker-Lewis Index	**TLI**	0.455	>0.90
Comparative Fit Index	**CFI**	0.610	>0.95
Normed Fit Index	**NFI**	0.557	>0.90

Fig. 1 shows the SEM on influencing factors of B-Accuracy for client's satisfaction. To evaluate the suitability of the measurement model, reliability and validity analyses, as well as Confirmatory Factor Analysis, were carried out. The model fit of the suggested

model was assessed using multiple goodness of fit indices. The variables found correspond well to the variables that influence passenger satisfaction. The 20 elements that go into deciding B-Accuracy are influenced by the client's pleasure, which is the most crucial component.

Findings & Conclusion

- The complete item total correlation for B-Accuracy is over the permissible minimum of >0.7, according to a reliability analysis using the Cronbach's alpha value
- The KMO measure is also above the required minimum of 0.5. The sampling's appropriateness is therefore well proven.
- At the 1% level of significance, Bartlett's test of sphericity is significant (P 0.01). As a result, the stability of the factor analysis dataset is proven.
- A four-iteration convergence process using the varimax rotation approach and principal component analysis of the extraction method was used to contribute the contributing factors loading to the client's satisfaction.
- The findings on weighted average on client's opinion shows, the statement of "Suppliers quotation comparison" ranked 1 on client's opinion.
- And the findings of another weighted average on client's choosing B-Accuracy, the statements of "Easiness of handling" placed ranked 1.
- A linear association was shown by multiple regression between the 20 passenger satisfaction factors, with both positive and negative effects on overall client satisfaction.
- The client's company's star ratings and elements affecting client satisfaction with a good fit have a partial impact on key metrics of influencing factors on B-Accuracy for SEM.
- The aforementioned conclusions were found to be consistent with the study's goals and thus address its research intent. The study shows that B-Accuracy has better satisfied the customer with 71.167% of the total variance on B-Accuracy, validating the preference of B-Accuracy among the clients. The important metrics of B-Accuracy responsible for customer's satisfaction were discovered.

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