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# INTERNATIONALIZATION AND INNOVATION CAPABILITIES DETERMINES EXPORT PERFORMANCE OF INDIAN AUTO COMPONENT INDUSTRY

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**Abstract:** All countries in the world formulate export policies to promote exports and enable manufacturing firms to compete in international markets. The firms are striving to achieve desired level of export performances with the support of export policies and commitment towards entering into international business along with various dimensions of innovations. Manufacturing industries search for one or the other strategy to market their products in global markets to survive under cut-throat competition. In international markets, a common export practice includes internationalization and innovation abilities of a company determines the export performances. The objective of the research is to find out whether international and innovation capabilities of auto components manufacturers has significant relationship with export performance. There are 88 auto component manufacturing companies were selected in south India to collect the data related to export performance. Linear regression analysis was used to test the hypothesis formulated. The results revealed that gathering export market information, capable of using export market information, role of export mode, relationships & networks, flexible to modify firm resource base, develop new service, technological up-gradation, in-house product designs, improvement in the existing products and re-align manufacturing system have found significant relationship with export performances of auto component manufacturing companies in India.

**Keywords:** auto components, internationalization, innovation, export performance

## INTRODUCTION

Demand for auto components is primarily dependent on the requirement of Original Equipment Manufacturers (OEMs) across the globe. Initially the Indian auto component manufacturing industry faced many challenges, especially in technological expertise. Gradually, with rapid changes in the global automotive industry, the Indian auto component industry entered into technological alliance and joint venture with global automotive manufactures to meet the specific requirement of OEM's (Parhi, M. 2008g; Sahoo T., et al., 2010).

The origin of the Indian auto component manufacturing industry dates back to 1953, when the Indian Government decided to develop its own manufacturing base with the principal aim of import substitution (Sagar, et al., 2004; Torayeh, and Neveen, M. 2011). Gradually, with the support of the government, the auto component manufacturers started to find better opportunities for export across the international markets in spite of tough competition therein. In view of fluctuating market conditions in overseas markets, the auto component manufacturers had to formulate and constantly review the marketing strategies to gain strong market position and competitive edge (Kaleka, A. and Morgan, N.A. 2017; Dholakia, N. and Khurana, R, 1976). They also needed to focus on investment in developing state-of-the-art technology to serve a number of vehicle models in domestic and overseas markets. (Torayeh, and Neveen, M. 2011; Tang, R.Y. 2011). Many researches have been conducted to

streamline export strategy. The present investigation attempts to identify the significant relationship between firm's internationalization, Innovation and export performance of auto component manufacturing firms. The success of auto component industry is determined by firm characteristics such as firm's internationalization capabilities and innovation capabilities.

Firm characteristics such as firm size, nature of the business, capital investment and technological capabilities are key factors that are playing an important role to decide the successfulness of export operation of the company (Kahia, M. 2017). Firm characteristics such as firm size, firm's assets, firm's financial stability, firm's product line are considered as an important determinants of export success. The larger the firm in size, the better chances of firm having an ability to innovate and produce products with new features along with service after sales by gaining the status of leader in technology through R&D. The same can be used as a strategy for export orientation (Erdila, S.T. and Ozdemir, O. 2016). Many of the research results showed that the firm characteristics, environmental characteristics and export commitment are positively influence on export performance. Many researchers have addressed export performance without considering the export marketing strategy implementation. The firm's export performance is determined by the formulation of appropriate export orientation (Jalali, S.H. 2012). Many studies related to identifying differences among the firm characteristics and export performance of

the companies operating domestically. Firm size, firm's technological intensity, firm's vertical and horizontal integration, capital investment, extent of imports and export policy of the country are found to be key determinates of export performance (Sahoo, T, 2010). Researchers have done Classification of firm's internal factors to test significant impact on export performance of small scale enterprises. The firm characteristics, export market characteristics and managerial characteristics are the factors found as key determinants of export performance. It is also found that international market information, marketing research, export market segmentation, targeting, positioning and product characteristics are playing significant role in enhancing export performance of the small scale enterprises (Nazar, M. et al., 2009). The firm characteristics such as product quality through product and process improvement, firm age, firm's extent of international exposure, technical expertise, continuous export engagement, firm size, cost of export operation, export operational efficiency and seriousness of export marketing are considered as key determinants to attain export goal (Balakrishnan, K et al., 2007). There is a significant impact of size of the firm on export performance because as the size of the firm is large, company will have an ability to sustain the risk associated with international markets due to sophisticated resources available which also leads to achieve low cost advantage through large scale production which enhances the export success of the firm (Saripalle, M, 2008).

#### LITERATURE REVIEW

##### — Firm's internationalization capabilities

Internationalization capabilities of the firm have significant effect on export growth which also is a key indicator of company's continuous improvement, survival in international markets, ability to keep competitors away along with economic growth of the nation (Alen, L. 2017). It is understood that investing on state of art technology, well designed distribution network, research and development partnership are going to be a greater advantage to enhance export performance in automotive/auto component industry keeping long run revenue in mind. Sophisticated infrastructure facilities creates attractive space to cope up with frequently changing customer requirements and foreign market trends. This can be achieved through increasing production with help of upgraded technology. Strategic alliances also will assist auto and auto component industry in Indian to access latest technical requirements/technology to serve international markets with global quality standards which enhances the export performance (Arora, V. 2014). Firm characteristics such as firms experience and image are the indicators of export success of any organization. Besides firm's export

competitiveness and firm's export exposure are the indicators of internationalization capabilities leading to successful export performance. Experienced firms are able to understand export markets better and attract customers through adaptation of marketing strategies in the light of environmental conditions in the international market (Kahia, M. 2017). Along with exporting of traditional mechanical parts such as engine parts, gear boxes and brakes parts, the company need to export high end/critical/advanced electronic parts which exhibit the strength of Indian exporters and also enhances the export profitability of the company. The report concludes that there is a need for focusing on exporting of higher value added products to achieve desired level of export success (Kumar, A, and Dubey, S, 2017). In the near future the auto component industry in India export sales is expected to increase gradually. due to positive regulatory policies in the country. The domestic companies are able to manufacture product which meets global quality standards through technical collaborations along with low cost as a competitive advantage which is helping Indian companies to achieve robust export growth (CRISIL Report, 2017). With the combination of firms internal and external knowledge, a firm can innovate products rapidly. The firm knowledge can be created by experiments, learning by theory of experience curve, learning by organized and unorganized networks within the innovation environment. Communication with outside innovation sources helps to have continuous link to become strong in technology which was not addressed internally. Therefore, firm's technological innovation can be termed as firm's ability to communicate, learn and process and utilize the knowledge base. This technological innovation is possible through importing required technology, sharing, integrating, interacting and adopting them in an organization which helps in enhancing export performance too (More, R.Z. and Jain, K. 2013). Internationalization process involves lot of risk in terms of financial losses, market failures due to lack of resources and high transactional cost may affect negatively on firm's long term survival. In addition to this firm should go through more managerial complexities, liability towards foreign customers due to scarcity of resources etc. Therefore, transactional cost, resources of the firm and risk associated with foreign markets are considered as an influential factor on firm's export performance (Musuva, A. M. et al., 2013). In order to achieve export success, firms should be strong enough with sufficient export market information and that is to be shared among the needy people and the departments in an organization for the appropriate decision making to respond to changing market conditions and to face challenges immediately. In this study he found marketing

intelligence has significant relationship with firm's export performance (Benoit Battistelli 2013). After liberalization process took place in the year 1991 the auto component manufacturing firms in India were exporting moderate quality products in smaller quantity to underdeveloped countries such as Middle East, South Africa and also exporting less critical components for after markets requirement to moderately developed countries. Gradually Indian auto component manufacturing firms have learnt to upgrade their technology and acquired competencies slowly, but some auto component manufacturers had greater shift to provide high quality products to meet the demands of global OEMs (Kumaraswamy, A 2012). Liberty should be given by the firms to the foreign branches which are big in size in the form of independent decision making with respect to deciding marketing strategies in foreign markets as method of control over the distribution system. Degree of decentralization is also considered as one of the mode of having control over foreign branches operating globally. Therefore, decentralization and providing the power of making independent decisions by firm's foreign branches are the factors significantly affecting export performance of the firm (Henry F.L 2012). Choosing appropriate export mode for the business organization to operate internationally is very crucial for achieving desired level of export success. Strategy of export market entry by manufacturing firm has significant impact on export performance. Most of the manufacturing firms begins operating internationally through direct exports which is considered as safe mode in terms of reducing risk and simple way to process international transactions and also helps in facing global market challenges by meeting the changing demands of overseas customers gradually (Sadaghiani, J.S. and Dehghan, N. 2011). The firms export knowledge, stage of export, firms experience in domestic markets and firm's resources are found positive influence on export performance (Mohamad, O et al., 2011). The influence of export transaction overheads and firm's resources capabilities on internationalization process of manufacturing firms in Kenya, Mombasa countries. The results show that export processing overheads such as export decision implementation cost, cost incurred due to information less trade, market timing cost, opportunity cost and firm characteristics and firms' resources capabilities are the factors positively impact on internationalization process such as market size, number of export intermediaries, direct/indirect trade barriers, county risk and market growth of manufacturing firms (Stoian, M.C 2010). The factors affecting the extent of internationalization capabilities of small scale enterprises of South Korea has been studied it shows that, International capabilities such as ownership characteristics, human

resources, technological capabilities and external factors determines the extent of internationalization capabilities of small scale enterprises in South Korea are tested on export performance. The results found that ownership pattern, firm's human resources, and technological capabilities and export market standardization strategies are the significant factors that determines the export performance. Further it is understood that firms internal and external factors cannot be ignored while framing strategy for overseas markets (Ivan Damir Anic, I. D, 2009).

#### — Firm's innovation capabilities

Advanced technology in automatic and manual transmissions, well designed engine structure, electric and electronic parts/sensors, anti-lock braking systems have attractive export growth potential. Need for the customer safety such as distance control, lane assistance, vehicle to vehicle communication also have increased the growth potential for exports (CRISIL Report, 2017). The export prospects and rising consciousness of original equipment manufacturers on product quality leading to rise in innovation capabilities of auto component manufactures (Tiwari, R. and Kalogerakis, K. 2017). The various forms of innovations such as managerial and organizational innovation, product and process innovation and market innovation have been tested on export performance. The results showed that product and process innovations have significant influence on export profit. There is no considerable impact of managerial and organizational innovation on export performance of companies operating in Malaysian Manufacturing Sector (Kim, M.M., and Azizi, 2009). In this report, it is understood that, to reduce weight of vehicle, the OEMs are using alternative materials. Usage of electronic products, fiber/ plastic materials and adherence to environmental policies and technology with respect to customer safety in the vehicle are the major divers of demand for auto component industry.

Innovation through R&D activities in India has better export opportunities to exploit global market. India is opening number of R&D centers across the world which also serves headquarters locating locally to produce advanced and innovative products and launch them in international markets (E&Y Report, 2016). Process innovation plays key role in increasing product quality in manufacturing industry. Therefore, firms should invest substantial funds on research and development activities which strengthen the firms long term survival by sustaining export profits which also enhances the reputation of the firm in international markets (Mitra, A.K and Joshi, B.P. 2014). Standardization and adaptation of export marketing strategies are important variables for technological oriented industries. In the literature review on export marketing, it is understood that,

export marketing strategy adaptation have negative correlation with technology orientation. High degree of standardization of export marketing strategies can be found in industries which are technological oriented for example photocopier industries, equipment manufactures for medical field, aircrafts, computers manufacturing industries and auto/Auto component manufacturing industries (Mersid Poturak Teoman Duman, 2014). Auto component industry should understand the changing requirements of OEMs regularly in foreign markets for its long term survival. Both automotive and auto components manufacturing firms should focus on innovation through research and development to meet changing market conditions in the export markets which also helps in keeping competitors away. Improved reliable quality standards reduce the cycle time and cost which is a key strategy for facing highly changing business environment due to changing customer preferences. In order to match this fluctuations, auto component manufacturers should work closely with OEMs by collaborative partnerships to enhance export performance (Arora, V.2014). Auto component manufacturing firms locating in the same clusters should have capability of innovation and advanced technological competitiveness apart from R&D capabilities. Sometimes having in house R&D facilities alone cannot be sufficient unless having technical support from outside sources through technological collaborations and joint ventures. Combination of both internal and external R&D efforts with technical support the Indian auto component manufactures can face the challenges posed in foreign markets. It is found that firms' competitive advantage such as low cost, favorable exchange rates, support by government in duty drawback are inadequate. The export success is dependent on how well auto component industry is able to manage its technology as an export business strategy (More, R. Z. and Jain, K. 2013). Product quality oriented competition can be seen in Indian auto component manufacturing industries. Due to highly skilled labors with low- cost advantage of Indian auto components, global OEMs are looking at India as auto component hub. Along with this, information technology and software developments made Indian auto component firms as an emerging sector which suppliers embedded product models to OEMs. Gradually Indian component manufacturers are improving products with global quality standards through strategic alliances and technical collaborations while other companies are planning to enter export markets (Chisthy, S. K. and Asadullah 2013).

Firm's operating in technological oriented environment, should use adaptation pricing strategy to capture more market share in export market in

order to get immediate return on investment on advanced technology. Once the technology becomes obsolete, there is no guarantee to recover initial investment. Therefore he advocates that price adaptation strategy and export performance have found significant influence on export performance (Alshammari, S. D. and Islam, R. 2014).

To examine relationship between firm's manufacturing productivity and export performance from the period of 2003 to 2015 using the information available at firm level has been studied. The earlier studies show that product innovation enhances the export performance of the company which is also a contributing factor for the economic development of the nation. Productivity through product innovation, research and development, resources reallocation, strategies related to integrate marketing commutation are considered as key elements which influence positively on export performance (Yan A.W et al, 2007).

#### — Problem statement

Although Indian auto component industry has been fairly successful in penetrating global markets, the importance of export strategies in foreign markets to find better export prospects has not been addressed in any research adequately. Such a study therefore could throw more insights on the critical drivers which could be addressed to accelerate export growth. There is a need for understanding and fine tuning the export orientation followed by Indian auto component manufacturers due to the changing global market scenario. The success of export performance is dependent on various factors. However, firms have little understanding about the specific nature and drivers that contribute to effectiveness of export performance. There is a need to understand the Indian auto component manufacturing company's internationalization and innovation capabilities. Rising competition, complexities and foreign market uncertainties are posing challenges for the Indian auto component manufacturers in foreign markets. To tackle these challenges, the firms should increase their export efficiency through internationalization and innovation capabilities to achieve desired level of export performance.

#### — Objectives of the study

- ≡ To study the factors related to internationalization of auto component firms and its relationship with export performance.
- ≡ To examine the innovation capabilities of auto component firms leading to rise in export performance.

#### — Hypothesis of the study

- ≡ **H1:** Firm's internationalization capabilities have significant relationship with Export Performance.

≡ **H2:** Firm’s innovation capabilities have significant relationship with Export Performance

— **Research methodology**

The research methodology is adopted based on the descriptive analytical research approach. Each objective has been addressed in the study systematically to understand auto component manufacturing company’s internationalization and innovation capabilities. Consequently, study continues to find out influence of these capabilities on export performance leading to develop systematic knowledge for export performance of Indian auto component manufacturers.

— **Scope of the study**

This research has been narrowed down to study how auto component manufacturers are modifying their firm’s internationalization and innovation capabilities, and how these approaches are influence the export performance. The geographic area covered for the study is Tamilnadu, Karnataka and few companies in Andhra Pradesh.

— **Sample size**

The total number of auto component companies operating in India is 647 with these firms being members of ACMA (Automotive Component Manufacturers Association of India). Of these companies (Table:1) 146 auto component companies are located in South India, of which, 119 companies are component exporting companies and are actively involved in both export and domestic business out of 119 companies 88 auto component manufacturing companies in south India.

Table1: Number of Respondents (Auto component Manufacturing Units/Product wise)

Product Category	Total Companies in South India	Total Population (Exporters) in South India	Number of Respondents	Percentage of respondents
Engine components	53	42	27	30%
Drive Transmission & Steering components	19	18	6	7%
Suspension & Braking components	8	6	5	6%
Body & Chassis components	10	8	8	10%
Equipments/ Tools and accessories	23	20	20	22%
Electrical components	16	12	9	10%
Other products	17	13	13	15%
<b>Total</b>	<b>146</b>	<b>119</b>	<b>88</b>	<b>100%</b>

Source: Primary Data through Survey and CAMA Data Base-Buyer Guide

— **Respondents**

The target respondents for the survey were the managers who have occupied the positions of Export In-charge/Export Manager/Vice-president Marketing. The interaction was made with senior level people who have knowledge about export operations.

This survey was implemented by personal visit to auto component manufacturing firms. Managers were requested to give their appointment for the discussion and a scheduled questionnaire was issued collect data. Questionnaire has been sent through online to the respondents but the response was very poor due to their busy schedule. In the present research out of the 119 auto component manufacturers which contributed the population 88 companies have responded indicating response rate 74%.

— **Data collection**

≡ **Primary data**

The first time data has been through self-administered structured questionnaire which was developed and asked to fill. Personal interviews were also done with respondents to discuss about foreign market familiarity, awareness, or understanding of export marketing strategies, industry profile, facts and figures, information, descriptions about international operations etc.

≡ **Secondary Data**

The following are the sources that the secondary data was collected and in chapter 1 and chapter.

- Automotive Component Manufacturers Association (ACMA)
- Database of ACMA “Buyers Guide”
- Export-Import Bank of India
- Society of Indian Automobile Manufacturers (SIAM)
- Mysore University Off-Campus Wide Access Online E-Sources
- Companies’ Annual Reports
- Journals, Thesis, Magazines, research articles, Newspapers etc.

— **Data collection instrument**

Basic outline of the approaches used in various research articles has been helpful to develop questions for studying export behavior of Indian auto component manufacturers. A structured questionnaire is developed according to the respondent’s familiarity, awareness, or understanding of concepts which is related to their industry, such as facts, information, descriptions, or strategies or export practices etc.

— **Data measurement**

All the variables of firm’s internationalization, firm’s innovation capabilities and export performance of auto component manufacturers were measured by using Likert’s five point scales.

Export performance has been defined as export satisfaction of managers who are engaging in export activities in auto component manufacturing companies.

**ANALYSIS AND RESULTS**

**— Gathering Export Market Information**

In order to enter into international business, the auto component manufacturing firms should conduct regular market research to gather information on factors affecting international business operation. The information may be on specific requirement of original equipment manufacturers abroad, political stability, economic conditions of the host country, competition intensity, entry barriers such as tariff and taxes, foreign customer’s perceptions etc. The auto component manufacturers may go for periodic market research or gather required export information.

**— Capable of using export market information**

The results of market research and the information available on export market conditions should be disseminated among all the department and strategic business units of the company for making effective export decisions. In this connection company should be in a position to use available information effectively because mere collection of information does not serve the purpose.

**— Role of Export Mode**

South Indian auto component firms find direct export mode as simple way of export to enter international business due to less risk involved in meeting OEMs demand. Firm’s with small export commitment would choose direct export as an entry mode considering the advantages such as rising export sales, grater export market control, access to export market information, opportunity to gain international experience. Out of 88 companies surveyed 40 companies have chosen direct export at the initial stage at present the 47 companies are engaging in direct export.

**— Flexible to Modify Firm Resource Base**

Resource base in the context of export can be defined as the firm’s adequate financial and human resources to meet requirements of original equipment manufacturers abroad. Substantial physical resources such as state of art with respect to technology, premises, facilities for physical distribution, separate export oriented units. R&D facilities are also found significant for successful export operations.

Firm’s internationalization capabilities of South Indian auto component manufacturing firms such as gathering export market information, capable of using export market information, role of export mode, relationships & networks, strive to be the pioneer, flexible to modify firm resource base, are the variables used to test the significant relationship with export Performance.

Table 2: Relationship between Firm’s internationalization capabilities and export performance

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.918a	.842	.831	.44826		
ANOVA <sup>b</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	86.937	6	14.489	72.110	.000 <sup>a</sup>
	Residual	16.276	81	.201		
	Total	103.212	87			
a. Predictors: (Constant), Flexible to Modify Firm Resource Base, Strive to be the Pioneer, Relationships & Networks, Gathering Export Market Information, Capable of using export market information, Role of Export Mode						
b. Dependent Variable: Export Performance						
Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.632	.218		-2.892	.005
	Gathering Export Market Information	.325	.083	.307	3.907	.000
	Capable of using export market information	.220	.066	.258	3.350	.001
	Role of Export Mode	.333	.102	.265	3.260	.002
	Relationships & Networks	-.005	.068	-.005	-.077	.939
	Strive to be the Pioneer	.093	.069	.091	1.356	.179
	Flexible to Modify Firm Resource Base	.184	.060	.179	3.042	.003
a. Dependent Variable: Export Performance						

The analyses show that, the value of R indicating Firm’s internationalization capabilities and export performance have high degree of correlation (.918) and R<sup>2</sup> is .842 indicates the variables selected fits the data to the model well. The significant of F change is less than 0.05 which indicate that Firm’s internationalization capabilities have found significant relationship with Export Performance. All the six variables were considered to predict export performance.

In this case Gathering Export Market Information (t =3.907, p =.000), Capable of using export market information (t =3.350, p =.000) Role of Export Mode (t =3.260, p =.002) and Flexible to Modify Firm Resource Base (t =3.042, p =.003) are the factors have significant relationship with Export Performance.

Regression model for Export Performance is

$$Y=b_0+b_1x_1+b_2x_2\dots+b_k \times k + n$$

Y= dependent variable, β<sub>0</sub>=Constant, β<sub>1</sub>=Beta<sub>1</sub>, β<sub>2</sub>=Beta<sub>2</sub>, 1= Independent variable 1 2=Independent variable 2.

Export Performance =  $-.632 + (.325 \times \text{Gathering Export Market Information}) + (.220 \times \text{Capable of using export market information}) + (.333 \times \text{Role of Export Mode}) + (-.005 \times \text{Relationships \& Networks}) + (.093 \times \text{Strive to be the Pioneer}) + (.184 \times \text{Flexible to Modify Firm Resource Base})$

Since the gathering export market information, capable of using export market information, role of export mode, relationships & networks and flexible to modify firm resource base significant value is less than the 'p' value of 0.05 respectively. Therefore, hypothesis statement number 1 that is Firm's internationalization capabilities have significant relationship with Export Performance is accepted.

#### INNOVATION CAPABILITIES OF AUTO COMPONENT MANUFACTURING FIRMS

— **Develop New Service:** New services like providing credit facilities, logistics services, warehousing service, installation, rework and replacement, payment of export insurance premium on behalf of clients, services with respect to customized products manufacturing, product and process improvement for the benefit of export customers, R&D facilities, services related to information and communication technology, development of system models for original equipment manufacturers abroad are considered as key elements for enhancing export performance.

— **Technological Up-gradation:** Process and product improvement, collaboration with research institution to develop new technology, setting up of R&D facility, obtaining of quality certifications (Product quality improvement), having state of the technology, flexible manufacturing facilities, technical collaboration with clients, ability of manufacturing cross deployment products, technological upgradation in the form of implementation of CNC machines, automations, robotics are the key elements can be considered essential to achieve desirable export performance.

— **In-house Product Designs:** Product design may change due to varied customers' demands, in order to address this issue, the auto component manufacturers need to adopt product strategy with the help of engineering /R&D Department of the company. This can be achieved through process and product innovation.

— **Improvement in the Existing Products:** The concept called cross deployment can be adopted by the Indian auto component manufacturers. For example, the component manufactured supplied for on-road vehicles can be supplied for off-road machineries. More specifically, the engine valves manufactured for buses and trucks can be supplied for locomotives and excavators, generators and in the aerospace industry.

— **Re-align Manufacturing System:** Well-designed manufacturing layout, process design, outsourcing non-core products, just in time management, having well trained technical team, in-house research and development, setting up of strategic business units (Export oriented units), transformation of tradition manufacturing process to advanced technology are the factors considered as key elements for the successful export business.

Firm's innovation capabilities of South Indian auto component manufacturing firms such as associate with research institutions, new product development, develop new service, technological up-gradation, protect intellectual property rights, in-house product designs, in-house testing capabilities, improvement in the existing products, re-align manufacturing system, leads to improvement in export Performance.

The analyses of this research show the value of R indicating Firm's innovation capabilities and export performance have high degree of correlation (.960) and  $R^2$  is .921 indicates the variables selected for the study fits the data to the model well. The significant of F change is less than 0.05 which indicate that firm's innovation capabilities have found significant relationship with export performance. All the ten variables were considered to predict export performance.

In this case Develop New Service ( $t = 3.973$ ,  $p = .000$ ), Technological Up-gradation ( $t = 2.645$ ,  $p = .010$ ), In-house Product Designs ( $t = 4.098$ ,  $p = .000$ ), Improvement in the Existing Products ( $t = 2.960$ ,  $p = .004$ ), and Re-align Manufacturing System ( $t = 1.931$ ,  $P = .057$ ) are the factors have significant relationship with export performance.

Regression model for Export Performance is

$$Y = b_0 + b_1 \times 1 + b_2 \times 2 \dots + b_k \times k + n$$

Y = dependent variable,  $\beta_0$  = Constant,  $\beta_1$  = Beta 1,  $\beta_2$  = Beta 2, 1 = Independent variable 1, 2 = Independent variable 2.

Export Performance =  $-.532 + (-.058 \times \text{Usage of Information and Communication Technology}) + (-.080 \times \text{Associate with Research Institutions}) + (.107 \times \text{New Product Development}) + (.267 \times \text{Develop New Service}) + (.213 \times \text{Technological Up-gradation}) + (-.134 \times \text{Protect Intellectual Property Rights}) + (.199 \times \text{In-house Product Designs}) + (.037 \times \text{In-house Testing Capabilities}) + (.344 \times \text{Improvement in the Existing Products}) + (.139 \times \text{Re-align Manufacturing System})$ .

Since the variables such as development of new service, technological up-gradation, in-house product designs, improvement in the existing products, re-align manufacturing system's significant values are less than the 'p' value of 0.05 respectively.

Table 3: Showing Innovation Capabilities of Auto Component Manufacturing Firms

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.960 <sup>a</sup>	.921	.911	.32517		
ANOVA <sup>b</sup>						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	95.071	10	9.507	89.913	.000 <sup>a</sup>
	Residual	8.142	77	.106		
	Total	103.212	87			
a. Predictors: (Constant), Re-align Manufacturing System, In-house Product Designs, Technological Up-gradation, Collecting market information from various sources, New Product Development, Protect Intellectual Property Rights, Develop New Service, Associate with Research Institutions, In-house Testing Capabilities, Improvement in the Existing Products						
b. Dependent Variable: Export Performance						
Coefficients <sup>a</sup>						
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	-.532	.173		-3.071	.003
	Usage of Information and Communication Technology	-.058	.052	-.059	-1.121	.266
	Associate with Research Institutions	-.080	.073	-.099	-1.096	.276
	New Product Development	.107	.059	.131	1.819	.073
	Develop New Service	.267	.067	.373	3.973	.000
	Technological Up-gradation	.213	.081	.171	2.645	.010
	Protect Intellectual Property Rights	-.134	.096	-.124	-1.394	.167
	In-house Product Designs	.199	.049	.195	4.098	.000
	In-house Testing Capabilities	.037	.091	.041	.406	.686
	Improvement in the Existing Products	.344	.116	.324	2.960	.004
	Re-align Manufacturing System	.139	.072	.130	1.931	.057
a. Dependent Variable: Export Performance						

Therefore, hypothesis statement number 2 i.e., firm's innovation capabilities have significant relationship with export performance has been accepted.

— Findings:

- ≡ It is found that there is a significant relationship between gathering export market information and export performance of auto component manufacturing companies in India.
- ≡ The research findings reveal that the capable of using export market information and export performance of auto component manufacturing firms has direct relationship.

- ≡ Most of the auto component manufacturers adopt direct export strategy to enhance export performance.
- ≡ It is identified that, the auto component manufacturing companies are inculcating the practice of allocating substantial financial and human resources to achieve desired level of export performance.
- ≡ There is a drastic change has been identified with regard to services connected with auto components such as credit facilities and logistics services to its foreign customers has been considered as significant with export performance.
- ≡ The auto component manufacturing companies are acquiring required technologies through technological collaboration along with internal R&D capabilities to rise the exports.
- ≡ The core products are designed and manufactured in-home according to original equipment manufacturers requirement and non-core products are outsourced to save the cost of manufacturing. The engineering and R&D department may take care of product design and development. It is identified that the foreign clients send their products or components designs or drawing (Blue print) through mail. The Indian auto component manufacturing companies have such capability of designing and development of products in-house based on component drawings sent by OEM's.
- ≡ The Indian auto component manufacturers are using the strategy of cross deployment which means the components used for one vehicle models can used as an application component in the other vehicles or other industry with little modification.
- ≡ It is found that the component manufacturers are able to use flexible manufacturing system through CNC, Automation and robotic technologies, by that these companies are able to meet changing demand of OEM's as and when technology changes.

— Suggestions

- ≡ In order to internationalize the auto component manufacturers can opt for three options to source foreign market information
  - the firm should make periodical international market research as a habitual process.
  - market information can be obtained from market research agencies.
  - based on the data available within the company the export manager can predict the future export operation.
- ≡ Effective utilization of market research information makes the company to take appropriate export decisions. Each export case

should be properly recorded kept for the future references.

- ≡ South Indian auto component firms find direct export mode as simple way of export to enter international business due to less risk involved in meeting OEMs demand.
- ≡ Auto component manufacturing firms should have substantial financial and human resources along with manager's export strategic planning to face the challenges posed in international business.
- ≡ Services related to logistics, finance and technological support has been considered as an important service in the industry.
- ≡ Technological Up-gradation through technical collaborations and joint ventures with original equipment manufacturers are considered as significant elements for export performance.
- ≡ Having own or in-house research and development facilities enables auto component manufacturers to come out with new and unique products to meet foreign customers.
- ≡ It is advisable to the auto component manufacturers to implement the concept called product cross deployment where the products of one client can be supplied for the other clients with little modification, by that cost of product development and setup cost can be reduced.
- ≡ Installation of new technology is very essential to meet changing technological requirement of original equipment manufacturers, so that the firms need to implement Total Quality Management (TQM) to meet the demands of foreign customers with global standards.

#### — Limitations of the study

- ≡ The present research is confined to test relationship of internationalization and innovation capabilities of auto component manufacturing companies with export performance only.
- ≡ The present research includes only linear regression analysis to find out significant relationship among the variables selected.
- ≡ The study is limited to the geographic areas such as Karnataka, Andhrapardesh and Tamilnadu.
- ≡ Only 88 auto component manufacturing companies were selected as samples size due to limited population size.
- ≡ The variables are measured only on the basis of subjective measures.

#### — Directions for the future research

- ≡ Comparative analysis can be done to test the influence on export performance of other industries.
- ≡ The marketing elements or variables such as product, price, place, promotion strategies and

service marketing strategies such as people, process, physical evidence can be tested on export performance of auto component industry in India.

- ≡ Advanced statistical tools can be used to test the impact of multi-dimensional variables of international and innovation capabilities on export performance.
- ≡ Firm's Internal and external factors that influence export performance of Indian auto component manufacturing companies can be studied.
- ≡ The researchers can explore the export marketing strategies which can improve the export performance.

#### CONCLUSIONS

The present study is to understand the significant relationship of internationalization and innovation capabilities with export performance of Indian auto component manufacturing companies. It is understood that gathering export market information, capable of using export market information, role of export mode, relationships & networks, flexible to modify firm resource base, develop new service, technological up-gradation, in-house product designs, improvement in the existing products and re-align manufacturing system have found significant relationship with export performances of auto component manufacturing companies in India. Appropriate foreign market information, direct export mode and technological upgradation is advisable to the auto component manufacturing companies where they can achieve desired export performance.

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