

## **EVALUATION OF EFFECTIVE FACTORS TO IMPROVE PRODUCTIVITY TRANSPORT SYSTEM IN DOMESTIC MANUFACTURING COMPANIES**

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### **Abstract**

This study aimed to identify factors affecting on productivity of the organization is trying to provide useful and practical strategies for increasing the productivity of domestic goods road transportation companies (Khorasan Province). Obtained results indicate that effective factors to improve productivity transport system in domestic manufacturing companies explore in three factors including general environment, operational environment, domestic environmental factors that domestic environmental is most important factor and operational and environmental factors and the general environment are second and third place respectively.

**Keywords:** Productivity, Road Transport of Domestic Goods, Delphi Technique, Public Environment, Operational Environment

### **1- INTRODUCTION**

Transportation is a major component of the national economy and due to the role of infrastructure; frequency impact has on economic growth process. This section includes activities that widely is play in all areas of production, distribution and consumption of goods and services and in economic activities is responsible indispensable role. More important than the demands, an expectation of consumers increased every day and with this trend is growing along. (Teleghani;Gilaninia&et al, 2011)in Iran country variety of lorry vehicle proportional with current goods, flexibility in route selection, constant control over the goods along the route, relatively high safety and road access to all parts of the country ,the selection of the most important factors for road goods transport is compared with other factors. Therefore in this study is tried ,due to the excellent position of road transport and the extent of its performance

compared to other methods of transportation proceed to identify, assess and prioritize effective factors the productivity of goods transport companies, that led to the growing amount of goods moved by road in the country.

## **2- LITERATURE REVIEW**

In complex global environment, unpredictable changes, time and uncertainty play an important role (Gilaninia & et al, 2011). In many developing countries (Gilaninia & et al, 2011) Productivity can be defined simplified to efficiently and effectively use from the available resources and also productivity is defined to do correct work to correct way and has two main components effectiveness and efficiency. Effective means amount achieving of determined goals and efficient means amount correct use of available resources. Productivity investigated in any location and time, requires an understanding of the cultural is from discussed environment in the relevant field. Today, technology has brought systems for business that can help to companies (Rezvani;Gilaninia;Mousavian, 2011) It is anticipated that increase productivity is the only way to economic development and will promote the welfare of a nation. Miraculous changes short-term economic growth and development in some countries Like Japan, Germany, China and some East Asian countries is thereby increasing productivity and optimum utilization, efficient and effective human and physical resources of countries.(Moshabaki,1999).In Here Transport operator is Porterage Company that in return for a certain rent deals with to goods transportation. In this study, is defined effectiveness in terms of achieving the general objectives amount company, and also efficiency in terms optimum use of all available resources (Porterage Company). Although several studies on transport efficiency have been conducted in different countries but few of this research is needed comprehensive. One of the causes is transport system complex that is mentioned some of them in following:

A transportation system usually is Multimodal. Means transport system can be divided to different modal of air modal, sea, earth or combination of them and the transportation system can be designed For transport passengers, goods or both.

Transportation systems are Multisectoral. Mean that for transportation planning and evaluation different views can discuss to issue. This approach could include consumer perspective, the owner of the goods, transporting, or government.

A transportation system is Multiproblem. Different factors effect on transport system described characteristics in above is cause until most researchers in different fields and views discussed to evaluation productivity. In following table briefly mentioned to some of them.

Table 1 - History of Previous Research

Research	Name Of Researcher	Research Topic	Study Variables	The Main Results
1	Mohammd tiu	Identifying factors reducing power performance in international road transport companies of country goods	Demintions of Software,hardware and human resource Specialties	hardware and software Factors are effective on performance power country Road International Transport Companies, also specialized knowledge and skills of human resources, are including the factors affecting the performance of international road transport companies in country
2	Ali shojae	Evaluate amount productivity of human resources and its related factors in international goods transportation companies in Tehran	Effective factors on productivity human resources	Extraction of nine factors, including: Organizational support and Service compensation system strengthen the sense of commitment and loyalty in employees planning and conducting employee performance, creating climate of intimacy and cooperation in organization, spirit competitiveness, education, creativity and innovation, freedom and autonomy of employees and technology as effective factors on productivity of human resources.
3	Mohammad mashhadi zadeh	Measurement and analysis of productivity in the transport industry road - passenger	Returns compared to scale production and value of production factors (work and capital)	Returns compared to scale production is increased in the road- passenger transport industry in under section of the bus and riding rental, change in the value of production factors effect on rate of productivity
4	Ali mohammad ahmadi	determine Suppliers the equilibrium conditions (maximizing profits) road transport of goods	Optimal selection of couples origin - destination	Performance of road goods transport vehicles owners in choice of Couples origin - destination in order to maximize profits is not the optimal and provide a model in order to choice of goods transport optimal routes
5	Ali abotalebpor	Methods of increasing productivity in the goods transit	relationship between the amount of goods passing through a transit corridor (output) compared to inputs such as cost, time, transit, safety, and speed of ships, along the corridor	This relationship is a relationship not uniform and non-continuous This means that increasing in inputs amount is not cause increase output and improve productivity

### **2-1) Productivity transportation owner of goods viewpoint**

Owner of the goods can be a company, government or a real or legal person. Productivity transportation owner of goods viewpoint is sometimes called productivity distribution. However, data productivity of owner of goods viewpoint is the following same rent that deals with Transport operator or Transportation Company and its output is Transport or distribution of goods from origins to destinations.

### **2-2) Productivity transportation Transport operator viewpoint**

In here, Transport operator can be a portorage company, a vehicle owner or driver that with certain rent pays to goods transportation. So His output is same rent received and data all the variable and fixed costs, current and non-current vehicle and Transportation Company.

### **2-3) Productivity transportation government viewpoint**

Productivity transportation government viewpoint can be examined in term of owner of goods and transport operator but the most important aspect that needs to be noted in investigates productivity from government viewpoint. This is that government has highest responsibility in providing facilities in transportation.

In present study discussed about productivity in term of transport operator viewpoint. This research is based on studies in 2002 by Pearce and Robinson .Effective factors on productivity are discussed in the three environments :1) General environment consisting of global factors, economic factors, political factors, government and legal, social and cultural factors and technological factors,2) Operational, including trade unions and community, suppliers, competitors and competitive environment.3) Domestic environment of companies.

In other words, this study seeks to identify, assess and prioritize the effective factors on productivity (As the independent variable) on productivity of domestic goods transportation companies in Khorasan (As the dependent variable)

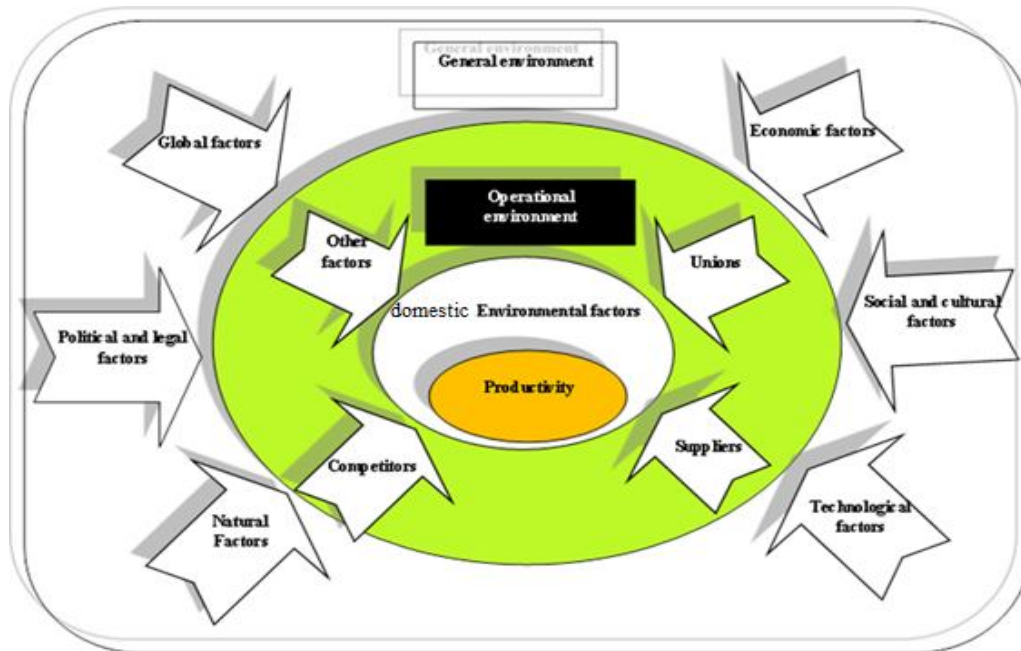


Figure 1) effective factors on productivity

### **3- RESEARCH METHOD**

According to classification research method based on objective, research method is developed. According to this classification, method of study is descriptive and survey. This research term of subject is in the field of productivity management. Seeks to identify, assess and prioritize the effective factors on productivity and according to its subject, location domain and areas surveyed this research is limited to domestic transport companies active in the province and terms of time domain is about 2010. Statistical society is responsible of goods active domestic transport Companies in Khorasan and sample is selected using simple random sampling. In this study to identify Factors that influence on productivity of road goods transport companies used from Delphi method that is a qualitative method and its target is access to the most reliable group consensus for subject matter with the use of questionnaires and experts surveys, to frequent according to feedback from them. Research has validity with related content, judging and apparent. Also after collecting the questionnaire responses, construct validity is confirmed with confirmatory factor analysis. Cronbach's alpha coefficient was used to examine the validity of the questionnaire. Obtained Cronbach's alpha coefficient is 0/90 that is more than 70% thus questionnaire is reliable.

### **4- DATA ANALYSIS**

According to the research hypotheses about the mean of a statistical society have been prepared therefore, for compare the observed mean in study variables with measure mean scale was used Single-sample T-test. To investigate the distribution variables used from Kolmogorov - Smirnov

test and as is shown results In Table 2, expect Operational environment variables, and unions and associations (that are significant level is under 0 / 05) other variables are normal.

Table2: Test results of test variables distribute by using Kolmogrov – Smirnov test

<b>examined Factors</b>	<b>Z</b>	<b>sig</b>	<b>examined Factors</b>	<b>Z</b>	<b>sig</b>
General environment	0/496	0/928	Social and cultural factors	1/291	0/056
Operational environment	1/355	0/039	Technological factors	0/888	0/360
Domestic environment	0/958	0/274	Competitors & competitor Environment factors	0/916	0/325
Global factors	1/117	0/137	Suppliers	1/303	0/052
Economic factors	0/010	0/170	Unions and Community	1/601	0/008
Political factors &...	1/025	0/208	Corporate intranets environment	0/985	0/274

The first research hypothesis: political, government and legal factors have most effect on the productivity in domestic transport manufacturing companies (Khorasan Province) among general environmental factors.

Absolute magnitude t value is 14/678 that is more 1/96 critical value .In other words, calculated significant level was smaller 0/01. Due to positivity statistic t, the research hypothesis is accepted with 99% confidence.

Table3: result of comparing observed mean with theoretical Mean

<b>Variables Research</b>	<b>observed mean</b>	<b>t</b>	<b>df</b>	<b>sig</b>	<b>mean difference</b>
<b>General environment</b>	3/641	15/844	92	0/000	0/641
<b>Global factors</b>	3/596	9/793	92	0/000	0/596
<b>Economic factors</b>	3/486	8/992	92	0/000	0/486
<b>Legal and political and government factors</b>	3/767	14/238	92	0/000	0/767
<b>Social and cultural factors</b>	3/735	11/992	92	0/000	0/735
<b>Technological factors</b>	3/632	3/632	92	0/000	0/632

Friedman rank test shows that among environmental factors are effective on productivity of domestic transport companies (Khorasan Province), respectively the greatest effect is dedicated to 1) political factors, government and legal, 2) social and cultural factors, 3) technological factors, 4) global factors and 5) economic factors.

The test result with less error level of 0/05 indicates that this is minimum average rating of the general environment significantly different to other factors.

Table 4: Comparing the results of General environment factors

<b>General environment factors</b>	<b>Z</b>	<b>sig</b>	<b>Test results</b>
<b>Economic factors- Global factors</b>	-1/424	0/162	The difference is not significant
<b>Legal and political and government factors- Global factors</b>	-2/160	0/035	The difference is significant
<b>Social and cultural factors- Global factors</b>	-1/858	0/069	The difference is not significant
<b>Technological factors- Global factors</b>	-0/319	0/734	The difference is not significant
<b>Legal and political and government factors- Economic factors</b>	-4/191	0/000	The difference is significant
<b>Social and cultural factors- Economic factors</b>	-3/683	0/000	The difference is significant
<b>Technological factors- Economic factors</b>	-2/672	0/009	The difference is significant
<b>Social and cultural factors- Legal and political and government factors</b>	-0/458	0/636	The difference is not significant
<b>Technological factors- Legal and political and government factors</b>	-2/201	0/032	The difference is significant
<b>Technological factors- Social and cultural factors</b>	-1/410	0/166	The difference is not significant

The second research hypothesis: Unions and Community factors have most effect on the productivity in domestic transport manufacturing companies (Khorasan Province) among Operational environment factors.

Absolute magnitude t value is 18/891 that is more 1/96 critical value .In other words, calculated significant level was smaller 0/01. Due to positivity statistic t, the research hypothesis is accepted with 99% confidence. Considering that operational environment Factors are composed from three factors and components fourteen. Thus each of the sub-Factors include: Competitors and their environmental factors, Operational environment, Suppliers, Unions and Community is also been tested separately. T statistic calculated for each of the three Factors listed in Table 5, Shows that these variables significantly affect in productivity domestic goods transport companies.

Table 5: result of comparing observed mean with theoretical Mean

Research variables	observed mean	t	Df	sig	mean difference
<b>Operational environment</b>	3/7019	16/631	92	0/000	0/79195
<b>Competitors and their environmental factors</b>	3/3397	6/771	92	0/000	0/42972
<b>Suppliers</b>	3/7731	13/833	92	0/000	0/86309
<b>Unions and Community</b>	4/0072	18/324	92	0/000	1/09724

Friedman rank test shows that among Operational environment are effective on productivity of domestic transport companies (Khorasan Province), respectively the greatest effect is dedicated to 1) Unions and Community and legal, 2) Suppliers, 3) Competitors and their environmental factors.

The test result with less error level of 0/05 indicates that this is Minimum average rating of factor significantly different to other factors. Comparison results of the mean ranks with together Operational environment effect on productivity domestic goods transport companies that are listed in Table 6 show that:

1. Impact of suppliers significantly is Most of the competitors and the competitive environment factors.
2. Impact of Unions and Community significantly is Most of the competitors and the competitive environment factors.
3. Impact of Unions and Community significantly is Most of suppliers.

Table 6: Comparing the results of Operational environment factors

Operational environment factors	Z	Sig	Test results
<b>Economic factors - global factors</b>	0/322	0/000	The difference is significant
<b>Government and legal and political factors - global factors</b>	7/343	0/000	The difference is significant
<b>Social and cultural factors - global factors</b>	2/879	0/003	The difference is significant

The third research hypothesis: Among the environmental effective factor the productivity of domestic goods transport companies (Khorasan Province) are effect domestic environment factors more than operational environment and operational environment factors more than environmental factors on the productivity of public transport companies.

Friedman rank test shows that among three environment factors are effective on productivity of domestic transport companies (Khorasan Province), respectively the greatest effect is dedicated to 1) Domestic environment, 2) Operating Environment, 3) General environment factors.

The test result with less error level of 0/05 indicates that this is Minimum average rating of factor significantly different to other factors. Comparison results of the mean ranks with together Operational environment effect on productivity domestic goods transport companies that are listed in Table 7 show that:

1. There is no significant difference between effect operational environment and general environment.
2. Effect of Domestic Environment Company is significantly more than general environment.
3. There is no significant difference between effect domestic environment and operational environment.

Table7: Comparing the results of environment factors

<b>Factors triple general, operational, and domestic environment</b>	<b>Z</b>	<b>Sig</b>	<b>Test results</b>
<b>Operating Environment - General Environmental</b>	-1/24	1/165	The difference isn't significant
<b>Domestic environment - General environment</b>	-3/119	0/001	The difference is significant
<b>Domestic environment - operational environment</b>	-1/74	0/071	The difference isn't significant

## 5- CONCLUSIONS & SUGGESTIONS

Road transport system goods in the country have a system that many variables including political Factors, government and legal, social and cultural issues, Transportation infrastructure (such as, roads, highways, terminals and ...), Global Factors, economic Factors (such as, Commercial exchanges Size, exports and imports, Inflation rate and economic indices growth) and Transportation companies' business conditions (such as, Freight rates, marketing and customer satisfaction attention ), In efficiency and effectiveness and or other words role have In its productivity.

1- According to the unions and Community has been identified as significantly factor in increasing productivity, Therefore is suggested that the government's special attention to this sector to enhance productivity through focus more and more on : 1- Divesting tasks to them, 2 - strengthen their financial position through paying bank facilities, 3 - official delegate more authority to them and ... .

2- Implementation of incentive policies, such as, 1) accept price expert of old car as a new car payment, 2) reducing the use of facilities and also long-time Installments

3- According to obtained results are better companies prioritize their planning components focus on respectively 1) Customer satisfaction through the timely loading and delivery times, 2) make specialized and raising the level of knowledge management and people employed in corporate 3) Staff and operators training in dealing with clients and drivers.

4- Activists and officials of transportation companies is suggested that for increase productivity have Most focus on domestic environment of your company and according to role of unions and Community to increase productivity, it is necessary Meanwhile presence and active participation in these groups and the use of their facilities.

## **REFERENCES**

- [1] Abtahi,Seyyd Hosein;Kazemi,Babak.(2000),productivity, Trade Studies And Research Institute.
- [2] Asgharpour,Mohammad Javad.(2003), Group decision making and game theory with the attitude of Operations Research, Publication of Tehran University.
- [3] Azizi ,mohammad.(2001). History of Transportation, Roads and Transportation Ministry, Road and Transportation Journal, First year,No2.
- [4] Azizi,mohammad.(2002). Basic concepts of transportation1, Roads and Transportation Ministry, Road and Transportation Journal, First year, No4.
- [5] Azkia,Mostafa.(2003). research Applied methods,keihan Publication.
- [6] Boulevard, Wilson.(2000).“Measuring Improvements in the Movement of Highway and Intermodal Freight”, Hagler Bailly Services, Arlington, VA22209, USA.
- [7] David,Fered R.(2005). Strategic Management, Translation:seyed mohammd erabi& ali pasian, Office of Cultural Researchs Publications.
- [8] FHWA.(1992). “Examination of Transportation Industry Productivity Measures (No.80)”, Productivity Measures Symposium held in Arlington, Virginia, USA.
- [9] G. Bell .( 1983). “The Economic Planning of Transport”, London.
- [10] Ghorori,behrooz.(2001). Growth process of transportation, Roads and Transportation Ministry, Road and Transportation Journal, First year, No2.
- [11] Gilaninia,sh;Seyyed Danesh,S.Y;Amiri,Maryam; Mousavian,S.J.(2011). Effective Factors on Adoption of E-Commerce in SME Cooperative, Interdisciplinary Journal of Contemporary Research in Business, VOL 3, NO 6,pp13-21.
- [12] Gilaninia.Sh; Alipour. H; Zia Khosoosi. E; Mousavian.S. J,(2011). CRM Application Impact on Customer Satisfaction in Financial and Credit Institutions (Case study: Financial and Credit Institutions in Guilan, Iran), Journal of Basic and Applied Scientific Research , 1(8),pp956-963,www.textroad.com.
- [13] Haghghat Monfared,Jalal.(2008). Journal of Management Studies, No. 88.

- [14] Harison,Gefri;Jan,Karon.(2007). Strategic Management, translated by Dr. B. Ghasemi, heiat Publications .
- [15] Harvey Consultants, Inc & Transmode Consultant, Inc.( 1998). “Regional Freight Mobility Action Package”, Harvey Consultants, Inc & Transmode Consultant, Inc, Florida, USA.
- [16] Human,Heidar Ali.(1994). Statistical inference in behavioral research, second edition, published in Parsa
- [17] Irani,Usef;Bakhtiari,Abolfazl.(2003). Practical research methodology, Publication of loh zarin
- [18] Iranian Productivity National Organization. (2004). Manual of total productivity measurement of production factors at the macro, part and economic enterprise level.
- [19] Iranian Productivity National Organization.(2005). Manual measurement of productivity indices.
- [20] Khaki,Gholamreza.(2004). Productivity Management (its Analysis in Organization), Islamic Azad University publication.
- [21] Kottler Philip, Armstrong Gary.( 2000).Marketing: An Introduction; Third Edition; Print ice Hall international edition; USA.
- [22] Marashi,nasrollah;farokhzad,soleiman.(2002). Measurement and analysis of productivity and technical control ratios, Publications Of Research Center Industrial Engineering and Productivity.
- [23] Martino, J. P. (1972 ).Technological Pore casting for Decision marking, a American Elsevier, New York.
- [24] Moshabaki,asghar.(1999).Management and Productivity: A few points of work and production , Publications Public Management Training Center.
- [25] Oum, Tae & Trethway, W & Waters, W.G.(1993). “Concepts, Methods and Purpose of productivity Measurement in Transportation”, Faculty of commerce and Business Administration, The university of British Columbia, Vancouver, B.C v6t 1z2, Canada.
- [26] Papacostas , C.s & Prevedouros P.d .( 1993). ”Transportation Engineering and Planning “ university of Hawaii at Monoa , Honolulu .
- [27] Prokopenko,Josef.(2000).productivity management, Institute of Labor and Social Security.
- [28] Rezvani,Mousa;Gilaninia,Sh;Mousavian,S.J.(2011). Strategic Planning: A Tool For Managing Organizations In Competitive Environments, Australian Journal of Basic and Applied Sciences, 5(9): 1537-1546.

- [29] Saghafi, Mostafa. (2001). Concepts of productivity measurement and its indicators in rail passenger transport, Articles Collections of the Sixth Conference of Rail Transportation.
- [30] Salari, Gholamhosein. (1995). Introduction to transport policy and its practice, journal of pa'am haml va nagh'l. No 184.
- [31] Schwaller, Antony. (1989). Transportation Energy and Power Technology; Chapman and Hall; New York.
- [31] Shirazian, Seyyed Gholamreza; Kamiab, Mohammad Reza. (1991). Transport Structure and establishment, Articles Collections of the Second Seminar investigated of National transportation issues.
- [32] Statistical Yearbook of Road Transport. (2007). Office of Information Technology - Organization of Road Maintenance and Transportati.
- [33] Statistical Yearbook of Road Transport. (2008). Office of Information Technology - Organization of Road Maintenance and Transportati.
- [34] Taheri, Shahnam. (2006). Productivity and analysis in Organizations, Publications of haie tazeh.
- [35] Taleghani, M; Gilaninia, Sh; Bashiri, Nasim; Mousavian, S.J. (2011). Assessing the Impact of Destination Features on Behavioral Intentions of Tourists in Tourism Industry (Case Study: The Historic City of Iran (Masouleh)), Interdisciplinary Journal of Contemporary Research in Business, VOL 3, NO 6, pp569-576.