

Role of ICT in Logistics Industry -An Employee Perspective

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Abstract— This ICT infrastructure in logistics sector has substituted the manual process by electronic exchange that has optimised the flow of information and documents between the service provider and the customer. Over the last few years, there has been a quick progress in the adoption of ICT in logistics sector. The communication tools like social networking, VoIP, Internet Telephony and email have been playing a leading role in securing a business as well as in providing service in an efficient manner. Moreover, the intelligent transportation systems also play a vital role in planning the route and enabling faster transfer of goods from one place to another. The increasing rivalry competition is one of the major forces driving ICT usage. This study focuses on the influence of internet- based communication tools on increasing the efficiency of the employee and operation as well. This would enable us to understand the deployment of ICT on firms and on the logistics industry as well.

Keywords—logistics, ICT, employee efficiency, operation efficiency, social networking

1. Introduction

Logistics service providers play a vital role, they perform the task of coordination of the flow of movement of both physical products and information throughout the supply chain and enabling to respond to market changes more swiftly. Manpower training is more essential for the logistics sector. As a heavy manpower industry with lack of training institutions which has led to the short fall in efficient management of the operations. Lack of integration and IT standards are prevalent in the logistics industry in India. In the last few years, there has been a tremendous innovations and development in the industry. Logistics firms are making use of social media to build communities around their core services in an attempt to bring clients and employees together in

order to work efficiently. ICT has changed the industry structure, it provides firms with new instruments which helps to compete with competitors. Now-a-days employees use social media tools such as Whatsapp, Skype to get connected with the customers and other stakeholders to better perform their operations. ICT is an extension of IT, more particularly, the communication technologies. UNESCO (2009) defines ICT as “It refers to all forms of technologies that are used to transmit, store, create, display, share or exchange information by electronic means.” Communication technologies influence the way information is distributed in a logistics firm and other stakeholders in the value chain. The working environment has changed and there is requirement of information at a faster phase that it was required in the past. Firms rely on the ICT to support their business processes and organizing mechanism and to communicate over time and space. The logistics firm rely on the shared decision making which is possible only through ICT. The deployment of ICT such as Intranet, email, video conferences, etc enables to transfer huge amount of information through various channels. It also provides a better way of sending the right information at the right time to the right person. This study is done to evaluate the influence of ICT on the employee efficiency and operation efficiency and find the most commonly used communication technology that helps in employee efficiency.

2. Review of Literature

The speed of information, physical flows of goods in a timely manner is enabled through ICT. ICT enables the efficient communication of business information among organizations [1]. Every activity in logistics involves the processing and communication of information, ICT has a pervasive influence on value chain. Value chain means the group of activities through which service is created

and delivered to the end customers. Internet enables to link the related activities and make the data available to stakeholders within and outside the firm, which includes the suppliers, customers, etc., ICT is classified into data communication technologies-EDI, fax, Internet, identification technologies-RFID, Bar coding, data acquisition technologies-Voice recognition, robotics. [2] has stated that ICT brings several benefits to the logistics firms. ICT is considered as a major source in increasing the productivity and is one of the key components in logistics [1]. ICT has a major influence on logistics operations than any other component. [3] explains that timely and accurate availability of information enables the organisation to coordinate internal activities. A product doesn't move until there is the movement of information, this probably explains the key role of ICT. The ICT developments influenced the logistics market by shifting focus to more electronic than physical.

The ICT developments influenced the logistics market by shifting focus to more electronic the physical. The new ICT and e-business technologies have led to the economic development [4] and the demand for speed, safety is met through advancements in information technology. The transport and logistics firms are progressing significantly over the last few years due to the adoption of modern technologies. Logistics firms have adapted the application of information technology so that it enhances the operation efficiency. Logistic firms have adopted IT throughout their business processes [5]. ICT has increased efficiency and effectiveness in business process makes information sharing more faster and brings down the linguistic barrier and reduces the geographical boundaries. Also, information technology makes the communication more efficient, reduces cost and thus productivity increases and bridges the cultural gap.

Companies adopt use of information technology to increase profitability and customer satisfaction [6]. ICT's includes the technologies used in the production, processing, retrieval and distribution of information. It provides benefits both personally and professionally for its users [7]. The usage of ICT has led to a significant gain in the working environment and standard of living. [8] identified that reduced time and effort in acquiring information and to communicate with other, effectively making use of technologies, reducing

learning time and minimizing the relearning time, motivating the work structure are the issues that must be focused to understand the increase in productivity. [9] studied the influence of ICT on the business value and states that ICTs might lead to "Productivity Paradox". Moreover [10] states that productivity can be obtained by making changes directly to the product process or the adoption of ICT's. [11], [12] have proved that there exists a ICT stimulation that influences the workforce productivity and economic growth. [13] explains that investment in knowledge, ICTs and improvement of quality through training and education would improve the productivity of the workforce.

3. Methods and Materials

The study done is descriptive in nature. The study aims to investigate the influence of ICT on employee efficiency and operation efficiency. The sampling method applied is snow ball sampling. Snow ball sampling is a non-probability sampling. The questionnaire consisted of 22 items with two parts. The first part collected the demographic data such as age, number of experience and the second part consisted of 18 questions related to ICT, employee efficiency and operation efficiency. Each variable comprising of 6 questions each and measured using 5-point Likert scale from strongly agree to strongly disagree. The questionnaire has been collected through mail from employees working in freight forwarding companies and courier companies mainly handling the operations. Initially few of the questionnaire have been mailed and the respondents again mailed the questionnaire to other employees in their respective field. 262 valid responses have been taken for the analysis. The statistical analysis has been done using SPSS-21. The Cronbach's alpha test is done to evaluate the questionnaire reliability. The instrument used have been proved reliable as the Cronbach test revealed 0.897. The statements used in the questionnaire is given in the table no.1.

Table 1: Statements

<p>ICT</p> <p>My company’s internet facility enables me to use social networking such as Whatsapp. My company provides me with email ID’s My company’s internet facility enables me to make voice calls My company’s internet facility enables me to use VoIP such as Skype My company is equipped with tracking and tracing facilities. ICT has provided new management and control tools.</p>
<p>Staff – efficiency</p> <p>Social networking enables me to provide customized service to the customer efficiently. Sending mails allows me to keep in touch with the customer throughout the process which in turn helps to send and receive documents. The tracking and tracing facility helps me to plan the movement of goods accurately. The Skype facility enables me to fix business for my company. ICT adoption in my company has increased my efficiency and performance. ICT enables me to plan the route that reduces the cost which in turn benefits the customer.</p>
<p>Operation-efficiency (quality, flexibility, speed)</p> <p>The use of ICT enables the goods reach the customer at the right time The use of ICT increases the speed of the logistics activities. The use of ICT reduces the cost for both the company and the customer The use of ICT increases the reliability of the service. ICT helps in providing the service accurately The tracking and tracing facilities provide accurate info to the customer.</p>

Hypothesis:

H1₀: ICT has no influence on the efficiency of an employee in logistics industry.

H2₀: ICT has no influence on the operation efficiency in the logistics industry.

H3₀: There exists no significant difference among the experience of the employee in using ICT and operation efficiency.

3.2 Results and Discussions

3.2.1 Influence of ICT on the efficiency of the employee in the logistics firms

Table 2. Model Summary-ICT and Employee efficiency.

R	R Square	Adjusted R	Std. Error
.542	.293	.291	2.27346

Table 3. ANOVA-ICT, Employee efficiency results.

Model	Sum of Square	Df	Mean Square	F
Regression	557.52	1	557.52	107.8
Residual	1343.84	260	5.17	
Total	1901.37	261		

Table 4. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	4.698	.553		8.496	.000
ICT	.467	.045	.542	10.386	.000

a. Dependent Variable: Employeeefficiency

A simple linear regression is done to find the influence of ICT, an independent variable on the dependent variable, the efficiency of an employee using SPSS21. The table above suggests that there is an influence of ICT on the efficiency of an employee as the test is significant with p<0.05 and

with F=107.8 and 261 degrees of freedom, which states that there is a linear relationship between ICT and employee efficiency. The adjusted R-square is 29.3 that means the linear regression explains 29% variance.

3.2.2 *The influence of ICT on operation efficiency in logistics firm*

Table 5. Model Summary-ICT and operation efficiency results

R	R Square	Adjusted R	Std. Error
.580	.337	.334	.97013

Table 6. ANOVA-ICT, operation efficiency

Model	Sum of Square	Df	Mean Square	F
Regression	124.157	1	124.157	131.92
Residual	244.698	260	.941	
Total	368.855	261		

Table7. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Constant	5.829	.236		24.70	.000
ICT	.220	.019	.580	10.38	.000

a. Dependent Variable: Operation efficiency

A simple linear regression is done to evaluate the influence of the independent variable, ICT on the dependent variable, operation efficiency. The above table proves that test is significant with p-value<0.05 with F=131.9 and 261 degrees of freedom. Hence the null hypothesis is rejected, and it is proved that there exists linear relationship between ICT and operation efficiency. More over the linear regression explains 33.7% variance.

3.2.3 *Experience to staff and operation efficiency*

Table 8. ANOVA-Experience and operation efficiency

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	60.35	3	20.11	16.82	.000
Within Groups	308.49	258	1.19		
Total	368.85	261			

One-way Anova has been done to find whether there is a difference between experience an operation efficiency. The above table shows that the test is significant as the p-value is less than 0.05, with F=16.8 and 261 degrees of freedom. Hence the null hypothesis is rejected. The experience of staff in using ICT has a significant difference on the operation efficiency.

4. Conclusion

The study has revealed that ICT plays a vital role in the logistics firm. The communication technologies like e-mails, Whatsapp, Skype plays a major part in the logistics business from securing a business to the delivery of the operations. Since these technologies reduces the time in performing an operation with quality, flexibility and speed. The employee efficiency and the operation efficiency are influenced by the ICT facilities provided by the firm. The tracking and tracing facility enables to provide the customer with timely information regarding their goods. It has been identified from the study that ICT influences both employee efficiency and operation efficiency positively which obviously improves the business process and logistics operations. The more the employee efficiency and operation efficiency, the better is the service provided to the customer. Moreover, the study also revealed that the experience of an employee also has a significant effect on the efficiency of the operation. The investment of the logistics firms on ICT is highly recommended as it increases the efficiency of the firm enabling them to provide better customer service which in turn

would increase the credibility of the firm. The study also throws light on the lack of training to the employees in the logistic firms. As the employee gains experience he is performing better, the study highlights the importance of training so that the employees are efficient enough at the start of their career.

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