Research Paper

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IMPACT OF INFORMATION TECHNOLOGY ON OPERATIONAL EFFICIENCY OF LIC

Mostafa Soleymannezhad[1]	[1]*Research Scholar, Institute of Development Studies, University of Mysore, Mysuru, Karnataka, India*
Prof. K.V. Aiyanna[2]	[2]*Professor of Development Studies, University of Mysore, Mysuru, Karnataka, India*

ABSTRACT

*I*nformation Technology (IT) is a term that encompasses all forms of technology used to create, store, exchange and operate information in its different forms as well as business data, conversations, motion pictures, still images and hypermedia productions. Knowledge about new technology and be updated is essential for any person in the new world to have a proper life and improved work. In this world, the risk is mixed with any job and life and anywhere and it is very important for human to decrease that.

In India, there are 24 Life Insurance companies which help people to reduce death or losing money risks. LIC is the famous and only one governmental insurance company in India and in this study, the researcher assesses the impact of Information Technology on Operation Efficiency of Life Insurance Corporation (LIC) in Mysore District. According to the result of the analysis mostly IT has a significant correlation with Operation Efficiency of LIC and only Brand Loyalty and Product Development of Operation Efficiency don't have a correlation with Admin of IT assets. Another result of study showed that IT has a positive impact on Operational Efficiency of LIC in perception of Customers respondents, it means Web and Admin have positive impact on Customer service, Brand loyalty and Product development of LIC.

KEYWORDS: *Hardware, PC, Software, Admin, Brand Loyalty, Customer Service, Product Development, Web, Insurance, LIC*

INTRODUCTION

There's no single meaning for insurance. Insurance will be outlined from the perspective of many disciplines, as well as law, economic, history, actuarial, risk theory and social science. An operating definition of insurance is followed: "Insurance is the pooling of fortuitous losses by transfer of such risks to insurers, who agree to identify insured people for such losses, to provide other pecuniary benefits on the occurrence, or to render services connected with the risk". (Rejda 2008).

The computing technology, advanced electronics and organizing technology together make today's Information Technology. Information technology (IT) is key to Company operations and utilizing. The vital utilization of information technology can help associations increment their upper hand and make impressive upgrades in working execution. IT has started to significantly affect the lives of individuals in created, industrialized nations, by changing the association of work and methods of recreation, and by expanding profitability (Daveri, 2003).

The scope of information technology will vary between insures. The IT has constantly played a very imperative role in the operations of every insurance company.

The new innovation in the area of information technology has made serious challenges in insurance industry of India. The practice with the application of information technology in inclusive variation of guarantor's operations has now become strategic in the sense that it has direct impact on the operation efficiency and on reducing the case of various activities.

Information Technology asset is divided by Administrator, Hard ware, Software and General IT and Operation efficiency is divided by Product development, Customer service, and Brand loyalty.

Operational efficiency can be defined as the ratio between outputs gained from the business and an input to run a business operation. When improving operational efficiency, the output to input ratio improves. Inputs would typically be money, people or time/effort. Outputs would typically be money, new customers, brand loyalty, market

differentiation, product development, innovation, quality, speed and agility, complexity or opportunities. In this study, researcher examine the impact of new Technology on Operation Efficiency of LIC and the researcher will prove that the IT is very important for Insurance company and help them to have better operational efficiency.

The limitation of this study is limited to Mysore district. Another limitation is the respondents are only 303 customers of LIC and the study is limited to selected life insurance corporation and, therefore, the findings cannot be generalized to whole insurance industries.

REVIEW OF LITERATURE

Insurance

In the first, the study will examine the results of previous researches about Insurance and Information technology and the relation between them. In insurance sector, Ansah-Adu, K, Andoh, C, & Abor, J. (2011) evaluated the insurance companies' efficiency in Ghana.

They used a two-stage procedure to assess the efficiency elements of insurance companies and to discover whether insurance companies are cost effective. A cross-sectional data set of 30 firms over the period 2006-2008 was used in their research; the study employs a regression model to detect the key determinants of the efficiency of the insurance industry in Ghana. They find that the drive for firm size, market share and the ratio of equity to total invested assets are important determinants of an insurance firm's efficiency. The findings of their study provide awareness into the cost efficiency of Ghanaian insurance companies.

Yadav, R. K., & Mohania, S. (2015) concentrated on the claim settlement process of LIC and ICICI prudential life insurance company in India. Numbers of claims are increasing in both the companies with the increasing market due to increasing number of policies. Then it is very important to have modest and clear claim settlement process. They used secondary data from IRDA and research papers from various journals. The study settled that in both LIC of India and ICICI prudential life insurance company are following appropriate claim settlement process. LIC claim settlement process is very much effectual but not that obvious and approachable as claim settlement process of ICICI Prudential Life Insurance Company.

Priti Jha, Bindu Roy (2015) explained that Fear of risk can be satisfied by taking all precautions to avoid risk. In India there are numerous life insurance companies, but LIC plays a major role in this field. Their findings reveal that LIC must try to increase its business by adopting new marketing strategies & by issuing more policies in order to retain its market share in the competitive scenario. According the results LIC also should make an advertisement to promote about its policies to the consumers.

IMPACT OF IT ON DIFFERENT INDUSTRY

In the second the study will assess the impacts of information technology on various company and firms. IT mentions to the total investment, expenditure, and knows how in computing and communication technology, including hardware, software, processes, and people, committed to providing these services (Bullon, 2009).

Rahul Chattopadhyay (2015) explained the Indian industry growth in IT. All parts of managing and processing information cover with Information technology.

Information technology has a revolutionary effect on the lives of people. In the last two decades, there is 20 times increase in export revenues for the IT industry, employing over two million people. Today in the growth of Indian economy, IT industry is playing a major role. His paper shows how to analyse the growth and performance of information technology industry in India. Several characteristics of information technology industry like the structure, income, exports, wealth creation, size and share, are studied.

Dewan, S., & Ren, F. (2011) They empirically examined the impact of information technology (IT) asset on firm return and risk financial performance, emphasizing the moderating role of the firm boundary strategies of diversification and combination. Their results indicated a compare between the direct and interactive effects of IT on both the return and risk dimensions. While the direct effect of IT capital is to increase the firm risk for a given level of return. Suitable boundary strategies can moderate the impact of IT on firm performance in a way that increases return and reductions risk. This effect is strongest in firms with high levels of IT investment concentration, and in more recent time periods. Their results delivered new visions into how IT and firm boundary strategies interact to affect the risk and return performance of firms.

IMPACT OF IT ON INSURANCE

And finally the study will investigate the believe of other researcher about impact of IT on Insurance industry. Olajide Solomon (2013) examined the impact of Information and Communication Technology (ICT) on insurance companies' profitability. He identified the implementation of ICT to promoting efficient service delivery in the insurance companies as a strategy for achievement of the profit extension objectives of insurance companies in Nigeria. He used the questionnaire from 152 respondents of 18 insurance companies in Nigeria. The study concludes that there is a positive relationship between ICT adoption and insurance companies' profitability. This indicates that the efficiency of insurance company, their quality of service delivery, and their effectiveness will improve with adding ICT. His paper also showed that the regular training of insurance personnel to keep them abreast of the current innovations in the use of ICT is very important.

Nastaran Haji Heydari, Somayeh Behestani and Poyesh Bahadori (2013) analysed the development rate of Iranian insurance industry in deploying E-commerce tools. Their population was 18 insurance companies from 22 companies in Iran. They had utilized Gartner IT Maturity Model for identifying the maturity level. Results show that the current maturity level of E-Insurance in Iran is estimated to be 70% of the first level. The outcome of their analysis illustrates that those insurance companies which were newly established and were in the first level of Gartner IT Maturity Model, have been able to gain more points in every level which have prioritized them in terms of alignment with the virtual world.

After search in the previous study it is concluded that there are several research about Insurance and about Information technology but a few study are about impact of IT on Insurance and especially in LIC of India.

The Operational efficiency includes:
- Brand Loyalty
- Customer Service
- Product Development

The IT Assets includes:
- Web
- Administrator (Admin)

HYPOTHESIS

H1: There is a significant correlation between IT assets and Operational efficiency of LIC.

H2: There is an impact of IT assets on the Operational efficiency in the perception of employees of LIC.

RESEARCH METHODOLOGY

For the study, data is collected from both primary and secondary data. The primary data collection tools which used are personal interview of LIC Employee and Customers, focus group discussion, a questionnaire from 303 customers of LIC and observation to collect primary data. Secondary data gathered from libraries, government departments, commercial bodies, and the internet. The websites of selected corporation, online journals and articles and related sites may also use as sources of secondary data for the study.

Non_ probability, Convenience, and Judgment adopted for designing the sample frame for the study. Respondents also selected with using the random procedure. Descriptive and analytical research design has been used for this study.

ANALYSIS

For analyzing of the Questioners data, I used (SPSS) program in version 22.0 and I used one way ANNOVA test. The Correlation coefficient will use for finding correlation between IT and Operation efficiency

The calculation of the correlation coefficient is as follows, with x representing the values of the independent variable and y representing the values of the dependent variable.

$$r = \frac{\Sigma(x - \bar{x})(y - \bar{y})}{\sqrt{[\Sigma(x - \bar{x})^2(y - \bar{y})^2]}}$$

$$r = \frac{\Sigma xy - n\bar{x}\bar{y}}{(n-1)SD(x)SD(y)}$$

Mean and standard deviation of x, $\quad \bar{x}, SD(x)$

Mean and standard deviation of y: $\quad \bar{y}, SD(y)$

Subtract 1 from n and multiply by SD(x) and SD(y), (n - 1) SD(x) SD(y)

Significance test

To test whether the association is merely apparent, and might have arisen by chance use the t test in the following calculation:

$$t = r\sqrt{\frac{n-2}{1-r^2}}$$

The t is entered at n - 2 degrees of freedom.

Pearson correlation coefficient r

$$r = \frac{\sum XY - \frac{(\sum X)(\sum Y)}{n}}{\sqrt{\left(\sum X^2 - \frac{(\sum X)^2}{n}\right)\left(\sum Y^2 - \frac{(\sum Y)^2}{n}\right)}}$$

The correlation analysis was used to test **H1** and the computations made were tabulated in table 1

Correlations				
Correlations between OE and IT			**Web**	**Admin**
Brand Loyalty	Pearson Correlation		.177**	.021
	Sig. (2-tailed)		.002	.710
	N		303	303
Customer Service	Pearson Correlation		.477**	.373**
	Sig. (2-tailed)		.000	.000
	N		303	303
Product Development	Pearson Correlation		.281**	.037
	Sig. (2-tailed)		.000	.523
	N		303	303

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

From the above table following conclusions were made:

- The correlation between Brand Loyalty and Web was positive, $r = +0.177$ with $P = 0.002$. Therefore the test was significant at 5% levels.
- The correlation between Brand Loyalty and Admin was positive, $r = +0.021$ with $P = 0.710$. Therefore the test was not significant at 5% levels.
- The correlation between Customer Service and Web was positive, $r = +0.477$ with $P = 0.00$. Therefore the test was significant at 5% levels.
- The correlation between Customer Service and Admin was positive, $r = +0.373$ with $P = 0.00$. Therefore the test was significant at 5% levels.
- The correlation between Product Development and Web was positive, $r = +0.281$ with $P = 0.00$. Therefore the test was significant at 5% levels.
- The correlation between Product Development and Admin was positive, $r = +0.037$ with $P = 0.523$. Therefore the test was not significant at 5% levels.

Mean squares (MS)

The calculation for the mean square for the factor

$$MS\ Factor = \frac{SS\ Factor}{DF\ Factor}$$

The calculation for the mean square for error

$$MS\ Error = \frac{SS\ Error}{DF\ Error}$$

Sum of Squares (SS)

SS Total is the total variation in the data. SS (Factor) is the deviation of the estimated factor level mean around the overall mean. It is also known as the sum of squares between treatments. SS Error is the deviation of an observation from its corresponding factor level mean.

$$SS\ Factor = \Sigma n_i(\overline{y}_{i.} - \overline{y}..)^2$$
$$SS\ Error = \Sigma_i \Sigma_j(y_{ij} - \overline{y}_i)^2$$
$$SS\ Total = \Sigma_i \Sigma_j(y_{ij} - \overline{y}..)^2$$

y_i = mean of the observations at i th factor level.
$y..$ = mean of all observations.
y_{ij} = value of the j th observation at the ith factor level.

Degrees of freedom (DF)

Indicates the number of independent elements in the sum of squares. The degrees of freedom for each component of the model are:

DF (Factor) = $r - 1$

DF Error = $n_T - r$

Total = $n_T - 1$

n T = total number of observation.

r = number of factor level.

F-value = $F = \dfrac{MS\ (Factor)}{MS\ (Error)}$

The degrees of freedom for the numerator is r – 1.
The degrees of freedom for the denominator is nT – r.

Regression analysis

$$\Sigma d_x^2 = \Sigma x^2 - \frac{(\Sigma x)^2}{n}$$

Calculate $\Sigma d_y^2 = \Sigma y^2 - \dfrac{(\Sigma y)^2}{n}$

Calculate $\Sigma d_x d_y = \Sigma xy - \dfrac{\Sigma x \Sigma y}{n}$

(this can be positive or negative)

Using of regression analysis to find the line of best fit to the data.

The **regression equation** for y on x is: y = bx + a where b is the slope and a is the intercept (the point where the line crosses the y axis)

$$b = \frac{\Sigma d_x d_y}{\Sigma d_x^2}$$ $\quad a = \overline{y}$ - b

Brand Loyalty

The multiple stepwise regression analysis was carried out to testing **H2** and the computations made were tabulated below in table 2 and 3

Table 2						
ANOVAa						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	137.996	2	68.998	5.139	.006b
	Residual	4028.281	300	13.428		
	Total	4166.277	302			
2	Regression	129.985	1	129.985	9.693	.002c
	Residual	4036.292	301	13.410		
	Total	4166.277	302			

a. Dependent Variable: Brand Loyalty
b. Predictors: (Constant), Admin, Web
c. Predictors: (Constant), Web

Table 3

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.302	2.354		2.252	.025
	Web	.159	.050	.193	3.183	.002
	Admin	-.036	.047	-.047	-.772	.440
2	(Constant)	4.801	2.262		2.123	.035
	Web	.145	.047	.177	3.113	.002

a. Dependent Variable: Brand Loyalty

- The estimated multiple regression of Brand Loyalty on Web and Admin is:

Brand Loyalty = 5.302 + 0.159 (WEB) – 0.036 (ADMIN)

Customer Service

The multiple stepwise regression analysis was carried out to tasting **H2** and the computations made were tabulated below in table 4 and 5

Table 4

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1859.453	2	929.727	57.017	.000[b]
	Residual	4891.801	300	16.306		
	Total	6751.254	302			

a. Dependent Variable: Customer Service
b. Predictors: (Constant), Admin, Web

Table 5

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.786	2.594		3.386	.001
	Web	.413	.055	.395	7.510	.000
	Admin	.230	.052	.233	4.443	.000

a. Dependent Variable: Customer Service

- The estimated multiple regression of Customer Service on Web and Admin is:

Customer Service = 8.786 + 0.413 (WEB) – 0.230 (ADMIN)

Product Development

The multiple stepwise regression analysis was carried out for tasting **H2** and the computations made were tabulated below in table 6 and 7

Table 6

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	285.912	2	142.956	13.670	.000[b]
	Residual	3137.323	300	10.458		
	Total	3423.234	302			
2	Regression	270.565	1	270.565	25.832	.000[c]
	Residual	3152.669	301	10.474		
	Total	3423.234	302			

a. Dependent Variable: Product Development
b. Predictors: (Constant), Admin, Web
c. Predictors: (Constant), Web

Table 7						
Coefficientsa						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	6.119	2.078		2.945	.003
	Web	.228	.044	.306	5.186	.000
	Admin	-.050	.041	-.072	-1.211	.227
2	(Constant)	5.426	1.999		2.714	.007
	Web	.210	.041	.281	5.083	.000

a. Dependent Variable: Product Development

- The estimated multiple regression of Product Development on Admin and Web is

Product Development = 6.119 + 0.228 (WEB) – 0.050 (ADMIN)

FINDING

- The correlation between the Web and Brand Loyalty is significantly positive.
  So **H1 is justified**
- The correlation between Admin and Brand Loyalty is not significantly positive.
  So **H1 is rejected**
- The correlation between The Web and Customer Service is significantly positive.
  So **H1 is justified**
- The correlation between Admin and Customer Service is significantly positive.
  So **H1 is justified**
- The correlation between The Web and Product Development is significantly positive.
  So **H1 is justified**
- The correlation between Admin and Product Development is not significantly positive.
  So **H1 is rejected**

It shows that mostly IT (Admin and Web) has a significant correlation with Operation Efficiency (Customer service, Brand loyalty and Product development) of LIC.

- The estimated multiple regression of Brand Loyalty on Web and Admin is:

Brand Loyalty = 5.302 + 0.159 (WEB) – 0.036 (ADMIN)

One unit change in Web score indicates 0.159 times changing in Brand Loyalty score. One unit change in Admin score indicates 0.036 times changing in Brand loyalty score. If the managers make an improvement in the Web and Admin, that influences to have better Brand Loyalty of the LIC.

- The estimated multiple regression of Brand Loyalty on Web and Admin was given by

Customer Service = 8.786 + 0.413 (WEB) – 0.230 (ADMIN)

One unit change in Web score indicates 0.413 unit changes in Customer service score.

One unit change in Admin score indicates 0.230 unit changes in Customer service.

It is natural that both Web and Admin of LIC are easily reachable to Customers that indicate better Customer service by the LIC.

- The estimated multiple regression of Product Development on Web and Admin was given by

Product Development = 6.119 + 0.228 (WEB) – 0.050 (ADMIN)

One unit change in Web score indicates 0.228 times change in the Product Development score.

One unit change in Admin score indicates 0.050 times change in the Product Development score.

If the managers make an improvement in the Web and Admin, that influences to have better Product Development of the LIC.

With the result of regression between 3 parts of Operation Efficiency and 2 parts of IT assets, we can see there is a positive impact of IT assets on Operation Efficiency of LIC.

So **H2 is justified**

CONCLUSION

There are different items that show the treatment of Information Technology in LIC. As per the proved statistics, it can be concluded that IT which divided by Web and Admin mostly have a significant correlation with LICs Operation Efficiency which divided by Brand Loyalty, Customer Service and Product Development and if LIC want to improve its Operation Efficiency should improve its IT assets, but only Brand Loyalty and Product Development of Operation Efficiency doesn't have correlation with Admin of IT assets. It means if LIC improve Admins quality and performance it doesn't positive impact on Brand loyalty and product development. Regarding another results of the study, Information Technology which divided by Admin and Web services has a positive and significant impact on Operation Efficiency of LIC with promoting Brand Loyalty and attracting more customers and decrease operation costs and develops products with new technologies and software. It is understood that the specific needs of different customers should find out with insurance companies. So that related services and activity as per their expectations with IT and new technologies can be achievements and it can attract customers and retain the market share.

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