PEZZOTTAITE JOURNALS

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

OBJECT ORIENTED DYNAMIC METRICS: AN OVERVIEW

Navneet Kaur[1] Dr. Hardeep Singh[2]

ABSTRACT

The unabated demand for high-quality software product has resulted in extensive research in the arena of software measurement. A variety of static and dynamic measures is available in literature supporting the assessment of software systems by conforming them to various quality attributes. The dynamic measures require the execution of code to collect the runtime information, whereas, static measures can evaluate the software without executing the source code. Although the software assessment is easy through static measures, the researchers have proved the relevance of dynamic measures over the static measures. The dynamic measures are proficient in acquire the true runtime behavior of the Software, as these measures can capture the Object Oriented (OO) features such as Inheritance, polymorphism and dead code. The aim of the current paper is to present the existing OO dynamic coupling, cohesion and complexity metrics.

KEYWORDS

Cohesion, Complexity, Coupling, Dynamic Measures, Static Measures, Quality Attributes etc.

INTRODUCTION

Software metrics have been frequently utilized to quantify the design properties of the Software, which helps in the assessment of different quality attributes such as reliability, functionality, complexity, performance, testability, and maintainability. Researchers backing the process of Software quality assessment have identified several measures. On one side, software measures can be adopted by managers to uncover the deficiencies of the software development process, whereas, the same measures can also assist the software engineers to take the technical decision, for e.g. calculation of complexity metrics for cost and effort estimation.

Traditional metrics such as cyclomatic complexity metric [1], Halstead metrics [2], and Information flow metrics [3] have been widely utilized to evaluate the software systems developed using procedural language. The inadequacy of traditional metrics in measuring Object Oriented (OO) notions such as classes, objects, and encapsulation, led to the introduction of OO metrics. Chidamber and Kemerer [4] proposed the very first suite of OO measures. Harrison et al. [5], Henderson et al. [6], and Braind et al. [7] made further refinements by introducing more measures capturing the additional dimensions of OO software.

All of these suggested metrics are static in nature; the values of these measures can be acquired at compile time. The current paper presents the work conducted for the formulation of the dynamic metrics. The results of the dynamic metrics depend on the input to the system. Although the values of dynamic metrics are difficult and costly to collect, these metrics have advantages over the static metrics. Static metrics are unable to evaluate properties that can only be uncovered during execution time such as Inheritance, polymorphism, and dead code.

This paper presents some of the dynamic coupling, cohesion and complexity measures. The rest of paper is organized as follow: Section 2 reviewed the existing dynamic coupling measures. Section 3 and Section 4 reviewed dynamic cohesion and dynamic complexity metrics. Section 5 concludes the paper.

DYNAMI COUPLING METRICS

As low coupled Software is highly recommended by the academician and industrial analyst, extensive research has been done to evaluate the degree of coupling present in the Software. Chidamber and Kemerer [4], Harrison [5], Henderson [6], and many other have formulated several static coupling measures. However, their inefficiency in capturing execution behavior led to the formulation of dynamic measures. Yocoub et al.[8] formulated four metrics which records the information about runtime coupling between objects (listed in Table 1, Sr. No.1-4). The main advantage of these measures as compared to other dynamic metrics is their efficiency of quantifying coupling at an early development phase. The values of the proposed metrics can be collected from executable Object Oriented design models. The quality attributes that can be assessed using these measures are maintainability, understandability, reusability and error flow between faulty objects.

[1] Research Scholar, Department of Computer Science, Guru Nanak Dev University, Punjab, India, Contact at: helloasbhalla@gmail.com
[2]Professor, Department of Computer Science, Guru Nanak Dev University, Punjab, India, Contact at: helloasbhalla@gmail.com

Arisholm et al. [9] emphasized on the fact that coupling contributes to change-proneness and in order to estimate this dimension the author have suggested twelve metrics to predict the software changes to happen in the future. The measures suggested by the author are listed in Table 1 (Sr. No. 5-16). Hassoun et al. [10] proposed a measure - *Dynamic Coupling Metric* (DCM) supporting the extracting of runtime coupling information of Meta level architecture (Table 1, Sr. No. 17).

Mitchell et al. [11-13] have suggested nine measures capturing coupling information to evaluate the complexity and maintainability of Software. The list of measures proposed by the authors is included in Table 1, Sr. No.18-26. Zaidman and Demeyer [14] proposed a metric (Table 1, Sr. no. 27), which can help to locate the classes from where the software comprehension process should be initiated. Beszedes et al. [15] introduced a metric (Table 1, Sr. No. 28), to compute the impact set for impact analysis. The work is based on the idea that if a function f1's execution is closer to the execution of function f2, then the chances of their dependency are high. Sandhu and Singh [16] introduced four metrics to measure dynamic coupling (Table 1, Sr. No. 29-32). Gupta [17] proposed three dynamic coupling metrics to quantify the interdependence among software classes (Table 1, Sr. no. 33-35).

DYNAMIC COHESION METRICS

Bieman and Kang, Bonja and Kidanmariam, Fernandez and Pena, and many others have worked in the formulation of static measures [18-20]. Mitchell and Power [21] extended the concept of LCOM (suggested by Chidamber and Kemerer [4]) and proposed two dynamic measures capturing run-time information of coupling and cohesion dimensions (Table 2, Sr. No. 5-6).

Gupta and Chhabra [22] proposed four metrics to acquire the run-time cohesion information (Shown in Table 2, Sr. No. 1-4). The authors validated the suggested measures both theoretically and empirically. The authors collected the values of these measures using profilers and aspect-oriented Programming. The statistical validation was performed by employing these measures to predict the change-proneness of 20 java programs.

DYNAMIC COMPLEXITY METRIC

The Software Complexity metrics are used to estimate the testing and maintenance efforts required during the software development process. Static complexity metrics only measure the complexity of a module, but dynamic metrics calculates the execution frequency of these complex modules. Khoshgoftaar et al. proposed two dynamic complexity metrics - *Dynamic relative complexity (DRC) and Dynamic system complexity (DSC)* [23]. It is imperative to mention here, that both DRC and DSC are applicable to procedure-oriented programs, whereas the measures outlined in previous section are applicable to OO metrics.

STATISTICAL VALIDATION OF THE PROPOSED DYNAMIC MEASURES

Lavazza et al. [24] validated the dynamic measures and check their proficiency against fault prediction**.** The experiment was performed on four open-source Java projects, which were HttpUnit v1.7, Jakarta Commons IO v1.4, Log4J v1.2.16 and PMD v4.2.5. The authors also compared the predictive outcome of the size and coupling dynamic metric with the static methods and found that former gave better results.

Geetika and singh in their study [25] has compared the outcome of two measures, i.e., dynamic CBO and static CBO. The authors utilized the javassist library to fetch the information about dynamic measure from nine java application. The outcome indicated that dynamic CBO was capable to capture more feature than static measures.

CONCLUSIONS

In this paper, the authors discussed several dynamic coupling, cohesion and complexity metrics. The outcome of these metrics heavily depends on the environment input pattern. The researchers have claimed that dynamic metrics have advantages over static metrics, as they provide an accurate assessment of the software by including the effects of features like dead code, polymorphism and dynamic binding. During the survey, the authors have noticed that as compared to static metrics the number of dynamic metrics formulated for OO System is very small.

Table-1: Description of Considered Dynamic Coupling Metrics

S. No.	Metric	Description
1	$EOC(O_i,O_j)$	"It calculates the percentage of number of messages sent by o_i to o_j, with respect to total number of messages exchanged between all objects in particular scenario."[8]
2	$IOC(O_i,O_j)$	"It calculates the percentage of number of messages received by o_i, sent by o_j, with

		respect to the total number of messages exchange during a particular scenario."[8]
3	ORFS(O_i)	"It calculates the percentage of number of messages sent by Oi to all other objects." [8]
4	OPFS(O_i)	"It calculates the percentage of total number of messages sent to object O_i from all other objects during a particular scenario x."[8]
5	IC_OD	"It counts the number of messages sent from an object to other objects within the scope." [9]
6	IC_OM	"It counts the number of distinct methods invoked by an object." [9]
7	IC_OC	"It gives the count of number of distinct server classes used by the method of a particular object." [9]
8	IC_CD	"It gives the count of the total number of messages sent by all methods of all objects in a class." [9]
9	IC_CM	"It counts the number of distinct methods invoked by all methods in all objects of a class."[9]
10	IC_CC	"It counts the number of distinct server classes used by all methods of all objects of a class." [9]
11	EC_OD	"It counts the number of messages received by one object from other objects." [9]
12	EC_OM	"It counts the number of distinct methods received by an object." [9]
13	EC_OC	"It counts the number of distinct client classes that are being used in a given object." [9]
14	EC_CD	"it counts the total number of messages received by all methods of all objects of a class." [9]
15	EC_CM	"It counts the number of distinct methods received by all methods of all objects of a class." [9]
16	EC_CC	"It counts the number of distinct client classes that are being used in all objects of a given class." [9]
17	Dynamic Coupling Metric	The sum over all program execution steps and the sum over the total number of objects, (Oi), coupled to object P at time t." [10]
18	Dynamic Coupling between Objects	"It counts the number of other classes to which a class is coupled at runtime." [11]
19	Degree of Dynamic Coupling between Class A and Class B	"Percentage of number of times a class A accesses methods or instance variables from a class B at runtime with respect to total number of accesses by a class A. [11]
20	Degree of dynamic coupling within a given set of classes.	"Percentage of sum of number of accesses to methods or instance variable outside each class with respect to sum of total number of accesses from these classes."[11]
21	Run time import degree coupling(RD_I)	"It counts the number of accesses made by a class as a proportion to total number of access."[12]
22	Run time export coupling (RD_E)	"It counts the number of accesses made to a class as a proportion of total number of accesses." [12]

23	Run time import coupling between objects (R_I)	"It counts the number of classes from which a class accesses methods or instance variables at run time." [12]
24	Run time export coupling(R_E)	"It counts the number of classes who access methods or instance variable from a given class." [12]
25	Run-time CBO	"It is used to inspect whether objects of the same class type couples to same classes at execution time. [13]
26	Unique accesses to objects	"It measures the number of unique accesses to other classes by each object of the class." [13]
27	CRFS	It registers every message that the instantiations of a certain class sends during the execution of the program excluding duplicate messages." [14]
28	DFC	"The minimal level of indirection between all possible occurrences of the two functions in the traces." [15]
29	DCa	"The percentage of number of classes accessing the methods of a class at runtime to the total number of classes." [16]
30	DKSC	"The percentage of number of calls sent to a class at runtime to the total number of static calls sent to all the classes." [16]
31	DKCC	"The percentage of number of calls sent by a class at runtime to the total number of static calls sent by all the classes." [16]
32	Dynamic aggregation coupling	"It counts the number of aggregation relations occurs at run-time." [17]
33	Dynamic inheritance coupling	"It counts the number of inheritance relations occurs at run-time." [17]
34	Dynamic invocation coupling	"It counts the number of invocation relations occurs at run-time". [17]
35	Dynamic reference coupling:	"It counts the number of the total number of method-attribute reference relations". [17]
36	Dynamic object coupling between objects	"It is defined as the summation of Dynamic aggregation coupling, Dynamic Inheritance coupling, Dynamic invocation coupling and dynamic reference coupling measures." [17]
37	Class-level dynamic coupling	" It is defined as the average of Dynamic aggregation coupling, Dynamic Inheritance coupling, Dynamic invocation coupling and dynamic reference coupling measures" [17]

Sources: Authors Compilation

Table-2: Dynamic Cohesion Metrics

S.No.	Metric	Description
1.	DC_AM_X	"It is defined as the ratio of the actual number of distinct dependence relations of type 'Attribute-Method Write Relation' between all attributes and all methods during execution of specified scenario."
2.	DC_MA_X	"It is defined as the ratio of actual number of distinct dependence relations of type 'Method-Attribute Read Relation' between all methods and all attributes during execution of a specific scenario to the maximum possible number of relations of this type between them."

3.	DC_MM_X	"It is defined as the ratio of actual count of distinct dependence relations of type 'Method-Method Call Relation' between all ordered pairs of methods during execution of specific x to the maximum possible number of relation of this type between them."
4.	DC_AA_X	"It is defined as the ratio of actual number of distinct dependence relations of type 'Attribute-Attribute Reference Relation' between all ordered pairs of attributes during execution of specific x to the maximum possible number of relation of this type between them."
5.	DLCOM	"DLCOM is a measure of the similarity of the methods and instance variables in a class at runtime". [21]
6.	DCLCOM	"DCLCOM is an extension of DLCOM, modified to take into account the number of accesses to instance variables by the methods contained within a class." [22]

Sources: Authors Compilation

REFERENCES

McCabe, T. (1976). Complexity Measure. *IEEE Transactions on Software Engineering*, Vols. SE-2, no. 4, pp. 308 - 320, December.

Halstead, M. H. (1977). Elements of Software Science, New York: Elsevier.

Henry, S., and Kafura, D. (1981). Software Structure Metrics Based on Information Flow. *IEEE Transactions on Software Engineering*, Vols. SE-7, no. 5, pp. 510 - 518, September.

Chidamber, S., and Kemerer, C. (1994). A metrics suite for object oriented design. *IEEE Transactions on Software Engineering*, vol. 20, no. 6, pp. 476 - 493, June.

Harrison, R., Counsell, S., and Nithi, R. (1998). An evaluation of the MOOD set of object-oriented software metrics. *IEEE Transactions on Software Engineering*, vol. 24, no. 6, pp. 491 - 496, June.

Henderson, B., -Sellers. (1996). Object-oriented metrics: measures of complexity, NJ, USA: ACM.

Briand, L., Daly, J., and Wust, J. (1997). *A unified framework for cohesion measurement in object-oriented systems*. In Fourth International Software Metrics Symposium.

Yacoub, S., Ammar, H., and Robinson, T. (1999). *Dynamic metrics for object oriented designs.* In Sixth International Software Metrics Symposium.

Arisholm, E., Briand, L., and Foyen, A. (2004). Dynamic coupling measurement for object-oriented software. *IEEE Transactions on Software Engineering*, vol. 30, no. 8, pp. 491 - 506, August.

Hassoun, Y., Johnson, R., and S. Counsell (2004). A dynamic runtime coupling metric for meta-level architectures. In Eighth European Conference on Software Maintenance and Reengineering.

Mitchell, A., and Power, J. (2003). Run-time Coupling Metrics for the Analysis of Java Programs-preliminary results from the SPEC and Grande suites.

Mitchell, Á., and F. Power, J. (2004). An empirical investigation into the dimensions of run-time coupling in Java programs," in Proceedings of the 3rd international symposium on Principles and practice of programming in Java , Las Vegas, Nevada, USA, 2004.

Mitchell, A., and F. Power, J. (2005). Using object-level run-time metrics to study coupling between objects. ACM symposium on Applied computing, New Mexico: Santa Fe.

Zaidman, A., and Demeyer, S. (2004). Analyzing large event traces with the help of coupling metrics. In Proceedings of the Fourth International Workshop on OO Reengineering, University Antwerpen, 2004.

Beszedes, A., Gergely, T., Farago, S., Gyimothy, T., and Fischer, F. (2007). The Dynamic Function Coupling Metric and Its Use in Software Evolution. In 11th European Conference on Software Maintenance and Reengineering, Netherlands: Amsterdam.

Singh, P., and Singh, H. (2010). Class-level Dynamic Coupling Metrics for Static and Dynamic Analysis of Object-Oriented Systems. International Journal of Information and Telecommunication Technology, vol. 1, no. 1, pp. 16-28.

Gupta, V. (2011). Validation of Dynamic Coupling Metrics for Object-Oriented Software. ACM SIGSOFT Software Engineering Notes, vol. 36, no. 5, 2011.

M. Bieman, J., and B.-K. Kang (1995). Cohesion and reuse in an object-oriented system. In SSR '95 Proceedings of the 1995 Symposium on Software reusability, Seattle, USA: Washington.

Bonja, and Kidanmariam, E. (2006). Metrics for class cohesion and similarity between methods. In Proceedings of the 44th Annual ACM Southeast Regional conference, Melbourne, Florida.

Fernandez, L., and Pena, R. (2006). A sensitive metric of class cohesion. International Journal of Information Theories and Applications, vol. 13, no. 1, pp. 82-91

Gupta, V., and Chabbra, J. K. (2011). Dynamic cohesion measures for object-oriented software. Journal of Systems Architecture, vol. 57, no. 4, pp. 452-462.

Khoshgoftaar, T., Munson, J., and Lanning, D. (1993). Dynamic system complexity. In First International Software Metrics Symposium.

Tosi, D., Lavazza, L., Morasca, S., and Taibi, D. (2012). On the definition of dynamic software measures. In Proceedings of the ACM-IEEE international symposium on Empirical software engineering and measurement. pp. 39-48

Geetika, R., and Singh, P. (2014). Empirical investigation into static and dynamic coupling metrics. In ACM SIGSOFT Software Engineering Notes, vol. 39, no.1, pp.1-8, 2014

*****

PEZZOTTAITE JOURNALS

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

PERFORMANCE CONTRIBUTE INDUSTRY AND PERCEPTION OF RESPONDENTS AUTOMOBILE INDUSTRY

Dr. Kulsoom Rana[3]

ABSTRACT

Automobile industry in India is catching the attention of global competitive manufacturers of automobile. Today automobile industry is an attractive industry in India. This sector has been viewed as significant driver and indicator of economic growth. Automobile industry is providing employment opportunities to the persons with an engineering, mechanical engineering and technical diplomas. Further, this industry is also providing jobs to middle and low-level workers. Manufacturers are now-a-days have come up with their innovative strategies and are concentrating integration of high technology into the automobiles, and focused on small cars and fuel efficiency with low market price to target maximum market.

Transportation system carries the torch of light and the civilization follows. The presence of good and efficient transport system is an index of growth of on economy and "as is transport industry so is the economic growth of a nation." A rapid economic and industrial development is linked to the existence of sound transport system. The objective of this paper is to analyse the performance of automobile industry trend and to study and analyse consumer perception about demonetization, challenges, determining factors of growth of the industry and future trends.

KEYWORDS

Automobile, India, Global Manufacturers, Perception, Competition, Production, Exports etc.

INTRODUCTION

The shift from controlled regime to decontrolled regime has caused appreciable changes in the automobile policy during the last couple of decades (Ranawat et al. 2009; Kale 2012). It is highly believed that the changed industrial policy brings benefits to the economy and India would set on a new growth trajectory. The factors like elimination of capacity creation, new firms entry, and import of capital goods and raw material would simplify and ease on the supply side permission granted to go optional production scale played a catalyst role in shaping the global competitive automobile industry.

The Indian automobile industry plays a significant role as it has employed 9 million people and covers 5% of world's total employment in manufacturing unit. The industry currently contributes about 5% of GDP and it is predicted to grow further in coming years. Automotive Mission plan (AMP) expects the industry to reach a turnover of $ 150-200 billion in the next 8 years. Over the last 5 years, the two-wheeler production has crossed 18.8 million units by the end of 2015-16 and exports 2.4 million vehicles to the different countries. Similarly, passenger vehicle segment show production of 3-4 million and export 6 lakhs 53 thousands by the end of 2015-16. Vehicle manufacturers now-a-days are adopting an outward appeal approach and explaining new markets across the globe including Middle East, Europe, South Africa, Algeria, Latin America, Russia etc.

STATEMENT OF PROBLEM

Globalisation scenario made the automobile industry more competitive and global manufacturers are keeping an eye on Bengaluru. The silicon city is the fastest growing city in Asia. Automobiles are no longer considered as luxury, have become one with everyday life, and become one of the necessities. 70% of the automobiles of entire Karnataka are on the roads of Bengaluru causing heavy traffic and going to schools, colleges and office, health centers is a problem and would prefer the own mode of transportation.

The trend of buying a two-wheeler instead of a car is becoming a popular mode or trend among the office goers in Bengaluru. Medical college, Engineering, UG and PG streams of different knowledge institutions are using mini buses to reach colleges in the much earlier than heavy traffic hours. The growth of software and hardware, manufacturing industries and service industry necessities the use of automobiles in Bengaluru. Customers are also changing their attitude and showing a trend of readiness to spend because of growing salaries and wages. This trend of change compels every maker of automobiles to understand the perception level of customers and hence a study has been taken up.

[3] Assistant Professor, Department of Commerce, Al-Amen Arts, Science and Commerce College, Karnataka, India, kulsoomrana123@yahoo.com

REVIEW OF LITERATURE

The study by Amima Sheb et al (2017) reveals that automobile industry has become world's most attractive automobile market for both manufacturers and consumers and its benefits, which provides support to the economy, employment and stability for families employed by the automobile industry.

Vikram Shirde (2014) has stated that a manufacturer can succeed in the present competitive market only after understanding the complex consumer behaviour.

Prasanna Mohan Raj (2003) studied the factors influencing customers brand performance of the economy segment SUVs and MUVs. His findings show that the preference given was influenced by product reliability, monetary factor, trendy appeal, frequency of non-price promotions offered, trustworthiness and customer feeling towards brands.

Nikhil Monga et al., (2012) have attempted to answer some of the questions regarding brand personality of selected cars in India by conducting the market research. The study shows that brand perception is something, which starts building up before a car is purchased.

Ravita Verma et al. (2013) studied the luxury car segment of India. Researchers and previous studies have revealed that the luxury car market is growing at a steady rate of 25% per annum with more and more numbers of luxury cars entering Indian car market. Their research further reveals that High Net Worth individuals (HNI) prefer luxury car since they want to differentiate with crowd for various reasons.

Balakrishna Menon et al. (2012) study findings reveals that due to price difference in Gasoline and Diesel about 1/3 of the car owners were having diesel vehicles. The research reveals that about 1/7 of a car for the city drive for family usage, while using the second car for office and business usage.

OBJECTIVES OF STUDY

To analyse the performance of automobile industry in terms of production and exports of automobiles.
To study the customers perception about factors determining the growth of the industries.
To analyse the perception of demonetization effect on auto industry.
To study the customers perception of future trends in the automobile industry.
To study the customers perception about the challenges to be faced by the automobile industries.

HYPOTHESES

The automobile industry's performance is below expectations and not good.
Customers have no knowledge of factors dividing the growth of automobile industry.
Customers have no knowledge of effect of demonetization.
Customers have no perception about future trends.
The industry customers have no perception of challenges to be faced by the automobile industry.

Sampling Technique

A well-drafted questionnaire in English was administered as schedule to collect the required data. Through the literacy level is very good at Bengaluru and only to save time and to get response schedule method of data collection was followed. Convenient sampling technique was performed while choosing the sample. 500 respondents across only Bengaluru urban excluding slums were felt sufficient to collect the data.

Sample Data	**Gender**	**Area**
Convenient	Males 350 Females 150	Entire Bengaluru Urban
Sample Coverage	Officials, Institutions Students, Professionals	Homemaker
Sample Coverage	Only urban Bengaluru, Important places, Lalbagh International Institutions, Universities, Religious Centers Sports Centers	

SURVEY FINDINGS

Table-1 show data about automobile trends, number of vehicles in millions. The annual growth of passenger vehicles, commercial vehicles, three and two wheelers was 9.7 million in the year 2006-07 and stood at 23.9 million tons and annual growth rate varies from 0.98% to 27.65%. There is a robust increase in the production of two wheelers from 7.6 million to 18.8 million, which were 8 million units during 2007-08. Two wheeler segment production shows an upward trend except during the year 2007-08.

Table-2 reveals data about exports of automobiles. The total exports stood at 623819 during the year 2004-05 and stood at 3643494 units during 2015-16, showing 484% rise in exports over 2004-05. The major exports is seen in two wheelers wherein it was 366407 nearly 50% total exports during 2004-05 and touched a magic figure of 2482876 during 2015-16 indicating a robust growth by 577%.

Table-3 reveals information about customer's perception factors determining the growth of the industry. 300 respondents strongly agree followed by 134 agree, 36 somewhat agree and 30 disagree. Out of 300 respondents who have strongly agree 60 viewed that strong built legal and banking infrastructure, 55 said about fuel economy matter drives the manufacturers to deliver performance oriented products, 53 about women and youths are liking the automobile products, and finally 45 each enhanced affordability and government policy to modernize and establish auto-manufacturing hub. The ANOVA quantitative metric fails to accept the null hypotheses and accepts the alternative. Therefore, it is concluded have that the respondents are aware of the drivers determining the growth of automobile industry.

Table-4 reveals data about respondent's perception regarding demonetization effects on automobile industry. 310 out of 500 strongly agree about the drivers of demonetization and effects followed by 140 agree and 50 somewhat agree. Out of 310 who have strongly agree 120 said about used car sales is also expected to swoop by 50% leading to a loss of Rs. 3900 crores, 105 said about greater effect is found in unorganised used market which is driven by cash based transactions. Out of 140 who have said agree, 55 said about unorganised used market which is driven by cash based transactions, 50 about swoop is sales of used cars. The ANOVA quantitative technique fails to accept the null hypotheses and accepts the alternative. Therefore, it can be concluded here that respondents are aware of effects of demonetization effect on the automobile industry in the beginning.

Table-5 speaks about respondent's perception of future trends in the automobile industry. 310 respondents strongly agree over the future trend drivers followed by 150 agree and 40 somewhat agree. Out of 310 who have strongly agree 75 said about more than 50% vehicles are driven by diesel, 72 about consumers like more innovative design, colour and adoption of latest technology, 58 about self-regulating cars, 55 about motorists demand for parking place. Out of 150 respondents who have agree 40 said consumers like innovative design, colour and adoption latest technology, 32 about high performance oriented hybrid cars may gain more popularity, 30 about parking place, 26 about self-regulating cars and 22 about 50% vehicles are powered by closed. ANOVA statistical tool fails to accept the null hypotheses and accept the alternative. Therefore, it can be concluded here that respondents are aware of future trend drivers.

Table-6 reveals data about challenges to be faced by automobile industry. 280 out of 500 are highly perceived followed by 160 perceived, 35 somewhat perceived and 25 not perceived. Out of 280 who are highly perceived 70 said about innovation in the automobile industry is a challenge, 68 about severe fluctuations in the fuel prices, 52 about shift competition, 40 about low-level research. 160 out of 500 who are perceived said that 48 about severe fluctuations in the fuel prices, 35 about innovation in the automobile industry, 28 about stiff competition ANOVA statistical metric fails to accept the null hypotheses and accepts the alternative. Therefore, it can be concluded here respondent are aware of challenges to be faced in future.

CONCLUSION

The growth of automobile industry is a symbol of technical wonderfulness by mankind. It has created enormous interest among policy makers, researchers and analysts. The growth of automobile industry can be traced to the favourable government policy and better support given by supporting industries. Automobile industry is positioned as one of the world's most attractive automotive markets for both manufacturers and consumers and its benefits, which provides support to the economy, employment, and good amount of stability to the employee family members.

The shift from traditional to market oriented development strategy, produced significant changes in the institutional set up supporting the automobile industry and this policy is expected to be highly influential in the long-term growth and development of the industry.

The global level manufacturers should concentrate on consumer behaviour changes and how it effects purchase decision before and post purchase. In the global competitive trend, a manufacturer will be successful if the manufacturer accesses the consumer needs and trends properly.

REFERENCES

Amima, Shoeb, & Adel, Maqbool. (2017). Growth of Indian automobile industry. ***International Journal of Emerging Research in Management Technology,*** 6(5), 29.

Vikram, Skinda. (2014). Analysis of research in consumer behaviour of automobile passenger car customer. ***International Journal of Scientific and Research Publications,*** 4(2) 1-8.

Prasanna, Mohan Raj, Jishnu, Sasikuram, & Sriram, S. (2013). A study of customer brand preferred in SUVs and MUVs. Effect on marketing mix variation. ***International Referral Research Journal*****,** 4(1), 48-58.

Verma, Ramita, & Rathore, Shubhkamana. (2013). PEST Analysis for Indian Luxurious Car Market. ***IJMSSR,*** 2(1), 22-26.

Balakrishna, Menon, & Jagathy, Raj V. P. (2012). Dominent partial least square factors of consumer behaviour of passenger cars. ***Asian Journal of Management Research,*** 13(1), 83-99.

Ranawat, R., & Tiwari, R. (2009). Product innovation for the people's car in an emerging economy. ***Technovation,*** 31(5/6), 216-217.

Kale, D. (2012). Sources of innovation and technology capability development in the Indian automobile industries. ***International Journal of Institution and Economics*****,** 4(2), 121-150.

Retrieved from http://arpapress.com/Volumes/Vol11Issue3/IJRRAS_11_3_10.pdf

Retrieved from http://docshare.tips/ar-treasury-1921_58b3bccbb6d87fc13f8b49c5.html

Retrieved from http://documents.worldbank.org/curated/en/319451468758118890/text/multi-page.txt

Retrieved from http://investopedia.com/terms/g/growthindustry.asp

Retrieved from http://japsonline.com/admin/php/uploads/409_pdf.pdf

Retrieved from http://pezzottaitejournals.net/pezzottaite/images/ISSUES/V4N1/IJLSCMPV4N106.pdf

Retrieved from http://reports.weforum.org/travel-and-tourism-competitiveness-report-2017/industry-trends/

Retrieved from http://studyres.com/doc/17334858/introduction-to-business-statistics-7th-edition-2008-pdf

Retrieved from http://www.ajtmr.com/papers/vol1issue2/Automobile-Industry-and-performance.pdf

Retrieved from http://www.answers.com/Q/When_should_you_accept_a_null_hypothesis

Retrieved from http://www.biztechreport.com/story/633-growth-automobile-industry-thailand

Retrieved from http://www.grips.ac.jp/vietnam/VDFTokyo/Doc/SIbook1Chapter2.pdf

Retrieved from http://www.ijsrp.org/research-paper-0214/ijsrp-p2670.pdf

Retrieved from http://www.ijsrp.org/research-paper-0914/ijsrp-p3317.pdf

Retrieved from http://www.independent.co.uk/news/business/news/home-insurance-companies-overcharge-uk-hou...

Retrieved from http://www.un.org/esa/sustdev/publications/industrial_development/3_1.pdf

Retrieved from http://www.yourarticlelibrary.com/economics/factors-that-determine-economic-growth-and-dev...

Retrieved from https://idsa.in/issuebrief/fatf-as-an-instrument-of-cft-compliance-in%E2%80%93pakistan_vch...

Retrieved from https://link.springer.com/content/pdf/10.1057%2Fs41287-017-0106-3.pdf

Retrieved from https://link.springer.com/content/pdf/10.1057/s41287-017-0106-3.pdf

Retrieved from https://researchleap.com/analysis-on-the-

Retrieved from https://researchleap.com/analysis-on-the-factors-that-determine-sustainable-growth-of-smal...

Retrieved from https://www.deepdyve.com/lp/elsevier/product-innovation-for-the-people-s-car-in-an-emergin...

Retrieved from https://www.ermt.net/docs/papers/Volume_6/5_May2017/V6N5-103.pdf

Retrieved from https://www.goodreturns.in/classroom/2013/10/who-are-hnis-214741.html

Retrieved from https://www.ibef.org/industry/india-automobiles.aspx

Retrieved from https://www.indiastat.com/SOCIO_PDF/104/fulltext.pdf

Retrieved from https://www.investopedia.com/terms/g/growthindustry.asp

Retrieved from https://www.quora.com/How-can-trains-become-a-more-popular-mode-of-transportation-in-the-U...

Retrieved from https://www.researchgate.net/publication/229400304_Product_Innovation_for_the_People

APPENDIX

Table-1: Automobile Production Trends (Number of Vehicles) in Millions

Category Year	Passenger Vehicles	Annual Growth Rate%	Commercial vehicles	Annual Growth Rate%	Three Wheelers	Annual Growth Rate%	Two Wheelers	Annual Growth rate%	Grand Total	Annual Growth Rate%
2005-06	1.3	-	0.4	-	0.4	-	7.6	-	9.7	-
2006-07	1.3	-	0.5	25	0.6	50	8.5	11.84	10.9	12.37
2007-08	1.6	23	0.6	20	0.5	-16.67	8.0	-5.88	10.7	-1.83
2008-09	1.8	12.5	0.4	-33.33	0.5	0	8.4	5	11.1	3.73
2009-10	2.4	33.33	0.6	50	0.6	20	10.5	20	14.1	27.02
2010-11	3.0	25	0.8	33.33	0.8	33.33	134	27.61	18.0	27.65
2011-12	3.1	3.33	0.9	12.5	0.9	12.5	15.4	15	20.3	12.78
2012-13	3.2	3.22	0.8	-11.11	0.8	-11.1	15.7	1.91	20.5	0.98
2013-14	3.1	-3.12	0.7	-12.5	0.8	0	16.9	7.64	21.5	4.87
2014-15	3.2	3.22	0.7	0	0.9	12.5	18.5	9.46	23.3	8.37
2015-16	3.4	6.25	0.8	14.28	0.9	0	18.8	1.62	23.9	2.51
AAGR		10.67%		8.39%		10.05%		9.42%		

Sources: IBEF - India Brand Equity Association - February 2017 - P. 12. www.ibef.org

Table-2: Automobile Export Trends (Number of Vehicles)

Category Year	Passenger Vehicles	Annual Growth Rate%	Commercial vehicles	Annual Growth Rate%	Three Wheelers	Annual Growth Rate%	Two Wheelers	Annual Growth rate%	Grand Total	Annual Growth Rate%
2004-05	160677	-	29940	-	66795	-	366407	-	623819	-
2005-06	170193	5.92	40600	35.60	76881	15.09	513169	40.05	800843	28.32
2006-07	189347	11.25	49766	22.57	143896	87.16	619187	20.65	1002196	25.14
2007-08	218401	15.34	58994	18.54	141225	-1.85	819713	32.38	1238333	23.56
2008-09	335729	53.72	42625	-27.74	148066	4.84	1004174	22.5	1530594	23.60
2009-10	446145	32.88	45009	5.59	173214	16.98	1140058	13.53	1804426	17.89
2010-11	444326	-0.40	74043	64.5	269968	55.85	1531619	3434	2319956	28.57
2011-12	508783	14.50	92258	24.6	361753	33.99	19475111	28.95	2937905	26.63
2012-13	559414	9.95	80027	-13.25	303088	-16.21	1956378	-0.94	2898907	-1.32
2013-14	596142	6.56	77050	-3.71	353392	16.59	2084000	6.52	3110584	7.30
2014-15	621341	4.22	86939	12.83	407600	15.33	2457466	17.92	3573346	14.87
2015-16	653053	5.10	103124	18.61	404441	-.78	2482879	1.03	3643494	1.96
AAGR		14.49%		14.37%		20.70%		19.72%		17.87%

Sources: (1) 2004-05 to 2010-11 Vandana Singh P. 8
(2) 2011-2016, SIAM Data
(3) Complication by researchers.

Table-3: Customers Perception about Factors Determining the Growth of the Industry

Factors Driving the Growth of the Industry	SA	A	SWA	DA	T
Fuel economy matter drives the manufacturers to deliver performance oriented products	55	25	4	4	88
Strongly built legal and banking infrastructure	60	18	6	5	89
Enhanced affordability an account income increase	45	20	5	4	74
Existence of inexpensive skilled labour	42	18	8	5	73
Women, youths are liking automobile products	53	37	8	7	105
Government of India's policy to modernize and establishment of auto manufacturing hub	45	16	5	5	71
Total	300	134	36	30	500

Sources: Field Survey
***Note**: SA - Strongly Agree, A - Agree, SWA - Somewhat Agree, DA - Disagree, T- Total

Hypotheses

H_0:	Automobile industry performance and customer's perception about factors determining the growth of industry is not positively related and there exists no significant variation in the factors determining the growth of the industry.	Reject
H_1:	Automobile industry performance and customers perception about factors determining the growth of industry is positively related and there exists significant variation in the factors determining the growth of the industry.	Accept

ANOVA Table

Source of Variation	ss	d.f.	ms	F-ratio	5% F limit (from F table)
Between the sample	7941.9399	(4-1)=3	7941.9399/3 =2647.3133	2647.3133/28.66667 =92.3481	
Within the sample	573.3334	(24-4) =20	573.3334/20 =28.86667		F(3, 20) =3.10
Total	8515.2733	(24-1)=23			

Sources: Field Survey

ANOVA Analysis

The calculated value being 92.3481 higher than the TV = 3.10 @ 5% level of significance with d.f. = v1 = 3 and v2 = 20 fails to accept the null hypotheses and accepts the alternative.

Table-4: Customers Perception Regarding Demonetization Effect on Automobiles

Perception of Effects Drivers of Demonetization	SA	A	SWA	T
Used car sales is also expected to swoop by 50% leading to the loss of Rs. 3900 crores	120	50	20	190
The first two days of demonetization witnessed a drop by 15% in footfall at showroom Hero Motor Corp	85	35	12	132
The greater effect is found in unorganised used market which is driven by cash based transactions	105	55	18	178
Total	310	140	50	500

Sources: Field Survey
Note: SA - Strongly Agree, A - Agree, SWA - Somewhat Agree

Hypotheses

H_0:	Performance of automobile industry and customer's perception regarding demonetization effect on auto industry is not positively and there exists no significant variation in the driver of demonetization	Reject
H_1:	Performance of automobile industry and customer's perception regarding demonetization effect on auto industry is positively related and there exists significant variation in the driver of demonetisation	Accept

ANOVA Table

Source of Variation	ss	d.f.	ms	F-ratio	5% F limit (from F table)
Between the sample	11620.3113	(3-1)=2	11620..3113/2 =5810.15565	5810.15565/144.667 =40.162	
Within the sample	868.0001	(9-3) =6	868.0001/6 =144.6667		F(2, 6) =5.14
Total	12488.314	(9-1)=8			

Sources: Field Survey

ANOVA Analysis

The calculated value being 40.162 higher than the TV = 5.14 @ 5% level of significance with d.f. = v1 = 2 and v2 = 6 fails to accept the null hypotheses and accepts the alternative.

Table-5: Customers Perception of Future Trends in the Automobile Industry

Future Trend Drivers	SA	A	SWA	T
Self-governing cars predicted to be constructed by 2020	58	26	6	90
More than 50% vehicles are powered by diesel	75	22	8	105
Motorists wanted parking information	55	30	6	91
High performance oriented hybrid cars may gain more popularity	50	32	5	87
Consumers like more innovative design, colour adoption of latest technology	72	40	15	127
Total	310	150	40	500

Sources: Field Survey
Note: SA - Strongly Agree, A - Agree, SWA - Some what agree.

Hypotheses

H_0:	Performance of automobile industry and customers perception of future trend is not positively related and there exists no significant variations in future trend drivers	Reject
H_1:	Performance of automobile industry and customers perception of future trend is positively related and there exists significant variations in future trend drivers	Accept

ANOVA Table

Source of Variation	ss	d.f.	ms	F-ratio	5% F limit (from F table)
Between the sample	7373.3335	(3-1)=2	7373.335/2 =3686.6667	3686.6667/57.6667 =63.93	
Within the sample	692.000	(15-3) =12	692/12 =57.6667		F(2, 12) =3.88
Total		(15-1)=14			

Sources: Field Survey

ANOVA Analysis

The calculated value being 63.93 higher than the TV = 3.88 @ 5% level of significance with d.f. = v1 = 2 and v2 = 12 fails to accept the null hypotheses and accepts the alternative.

Table-6: Customers Perception about Challenges Ahead to be faced by Automobile Industry

Challenges Ahead	HP	P	SWP	NP	T
Innovation in the automobile industry	70	35	8	6	119
Poor infrastructure	50	25	6	4	85
Stiff competition	52	28	5	3	88
Low level research and development	40	24	6	5	75
Severe fluctuation in fuel prices	68	48	10	7	133
Total	280	160	35	25	500

Sources: Field Survey
***Note**: HP - Highly Perceived, P - Perceived, SWP - Somewhat perceived, NP - Not perceived.

Hypotheses

H_0:	Performance of automobile industry and customers perception about challenges ahead to be faced is not positively related and there exist no significant variations in the challenges	Reject
H_1:	Performance of automobile industry and customers perception about challenges ahead to be faced is positively related and there exist significant variations in the challenges	Accept

ANOVA Table

Source of Variation	ss	d.f.	ms	F-ratio	5% F limit (from F table)
Between the sample	8670	(4-1)=3	8670/3 =2870	2870/66.75 =42.99	
Within the sample	1068	(20-4) =16	1068/16 =66.75		F(3, 16) 3.24
Total	9738	(20-1)=19			

Sources: Field Survey

ANOVA Analysis

The calculated value being 42.99 higher than the TV = 3.24 @ 5% level of significance with d.f. = v1 = 3 and v2 = 16 fails to accept the null hypotheses and accepts the alternative.

*****

PEZZOTTAITE JOURNALS

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

THE INTERNET AND INDIA'S IP LAW, INTERNET GOVERNANCE AND LEGAL EDUCATION: AN OVERVIEW

Ritika Panwar[4]

ABSTRACT

The importance of IPR and their protection is acknowledged the world over as an important element. In tune with the world scenario, India too has recognized the value of IP, which recognition has been consistently upheld by legislators, courts and the industry. India is now a signatory to various IP treaties and conventions. This has helped India become more attuned to the world's approaches and attitudes towards IP protection. India has already taken steps to comply with its obligations under TRIPS; The broad level contours of IP policy are now visible in the form of the national IP policy. However, recent judicial rulings and steps taken by various enforcement agencies demonstrate that India is gearing up for effective protection and enforcement of IPRs. This study outlines the state of Internet governance in India by briefly addressing issues such as India's role in the global and regional Internet governance frameworks as well as domestic multi-stakeholder initiatives, if any. This study also considers the need for enabling Indian legal education to prepare law students to a legal profession, which is increasingly oriented by the Internet.

KEYWORDS

IPR. Copyrights, Internet, Governance, Trademark, Patent etc.

1. INTRODUCTION

The expeditious technological alterations over the previous decades have provided an extensive number of new and innovative goods and services. The new technology has enlarged the importance of intellectual property. This new technology may be in the stream of patent, trademark, copyright etc. But the growth of new technology has given rise to new set of challenges to existing legal regimes around the world like computer programs, computer database, computer layouts, various works on web, etc.[1] So it is very necessary to know more about copyright with regard to computer programs/software, computer databases and various work in cyber space. Intellectual property law is arguably among the legal regimes challenged by the rapid development of the Internet. In this context, the first three sections of this article examine the main challenges and loopholes of the major Indian intellectual property laws in the context of the Internet. The fourth section considers the need for enabling Indian legal education to prepare law students to a legal profession, which is increasingly oriented by the Internet.

2. COPYRIGHTS AND THE INTERNET

While the contours of copyright law has always been drawn by the developments in the technological world, the emergence of digital technologies in the last few years have raised a whole new set of challenges to copy right regime. As the digital works can be replicated at ease, it becomes difficult for the copyright owners to control the replication of their works. In addition, the ease of transmission over the internet has raised newer problems for the copyright owners. However, the Internet affects almost every aspect of copyright issues, this segment addresses on the significant and topical legal issues viz.: (i) legal safeguards to computer software's (ii) legal immunity of databases, and (iii) duty and accountabilities of online service providers.

2.1 The legal safeguards to computer software's

"Computer software" also referred to as computer programs are the instructions executed by a computer. Computer programme as defined in the amended Copyright Act means a set of instructions expressed in words, codes, schemes or in any other form, including a machine-readable medium capable of causing a computer to perform a particular task or to achieve a particular result. The words 'schemes or in any other form' would seem to indicate that the source code and object code of a computer programme are entitled to copyright protection.[2]

[1]Dr. Priya Rai and Dr. R. K. Sharma, Transforming Dimension of IPR: Challenges for New Age Libraries, National Law University Delhi Press at p.134
[2]Ibid at 137

[4]Assistant Professor, SRM University, Haryana, India, ritikapanwar124@gmail.com

India has adopted most of the international instruments like TRIPS, Berne Convention, WIPO Copyright treaty etc., and has incorporated law on software protection. The software programs in India, like in other countries including US, Europe and Japan are protected as copyrights under the provisions of Copyright Act 1957. In *Tata Consultancy Services v. State of Andhra Pradesh*[3], the Supreme Court considered computer software is intellectual property, whether it is conveyed in diskettes, floppy, magnetic tapes or CD ROMs, whether canned (Shrink-wrapped) or uncanned (customized), whether it comes as part of computer or independently, whether it is branded or unbranded, tangible or intangible; is a commodity capable of being transmitted, transferred, delivered, stored, processed etc., and therefore as a 'good' liable to sale tax. The software program is considered as the 'literary work'. Though the term 'literary work' is not defined by the Act, under the law it is treated on par with other works such as dramatic works, musical and artistic works, cinematographic works and sound recording. Thus, under Indian law, the computer programs are literary works on par with that of musical or artistic works. The protection is extended to only the original work. The protection is available to the 'expression' and not to the ideas. In order to get the protection under the copyright law, the essential element is to transform the 'idea' into a 'tangible form'. The protection afforded to copyrighted materials may include economic rights, prohibiting the reproduction, adaptation, distribution, performance, and display without the consent of the copyright owner. This principle is taken from the Berne Convention and the member countries like EU and Japan extends the protection to the expression.[4] The Copyright Act protects the author's economic and moral rights in the copyrighted work as stated in Sections 14 and 57 respectively, including the rights in computer programmes. In the case of computer programmes, the copyright owner is entitled to reproduce the work, issue copies of the work to the public, make any cinematographic film or sound recording in respect of the work, make any translation or adaptation of the work, apart from the right 'to sell or give on commercial rental or offer for sale or for commercial rental any copy of the computer programme.' Such commercial rental does not apply in respect of computer programmes where the computer programme itself is not the essential object of the rental. This provision on rental rights is in line with Article 11 of the TRIPS Agreement and was added in the Act in 1999. Even though the TRIPS Agreement does not specifically protect the moral rights, these rights are protected under the Copyright Act (Section 57).

2.2 Legal Immunity of Databases

Article 300A of the Constitution ensures the right not to be deprived of property except by authority of the law. However, this right can be claimed only against the State and not against private individuals or employees. Further, the data in question has to be regarded as property. The Information Technology Act, 2000 defines "Data" under Section 2(o). The practice of storing and retrieving copyrighted works in computer systems and maintenance and operation of database is likely to grow. In addition, the traditional aims of intellectual property protection, encouraging innovation while protecting the public domain for the advancement of arts and sciences must be maintained.[5] One such case on the works of compilation or databases is of Burlington Home Shopping Pvt Ltd v Rajnish Chibber[6], where the plaintiff published mail order catalogues dealing with several consumer items, which were posted to a select list of the plaintiff's clients. The said database was an expensive one in a gradual process of compilation. The defendant managed to get a copy of the database and started making use of the same for establishing relationship with the plaintiff's customers. The question, which arose, was whether a database consisting of compilation of mailing addresses of customers was a subject matter of copyright. The court decided that compilation of addresses involved devoting time, money, labour and skill. Even though the sources were commonly situated, the compilation amounted to a 'literary work' wherein the author had a copyright.[7] Specifically Section 43 of the Indian Information Technology Act, 2000 imposes liability "to pay damages by way of compensation not exceeding one crore rupees to the person so affected" if "any person without permission downloads, copies, or extracts any data, computer database or information from such computer, computer system or computer network." The newly inserted section 43A obliges corporate bodies who 'possess, deal or handle' any 'sensitive personal data' to implement and maintain 'reasonable' security practices, failing which they would be liable to compensate those affected by any negligence attributable to this failure.[8] These rules have been made in furtherance of India's recognition of a co-regulatory regime for data protection. These rules are evidently an attempt at introducing the Fair Information Practice Principles and the OECD guidelines in the Indian scenario.[9] In addition to the civil remedies spelled out, Section 72-A could be used to impose criminal sanctions against any person who discloses information in breach of a contract for services. These amendments have widened the liability for breach of data protection and negligence in handling sensitive personal information.

---

[3]271 ITR 401
[4]T. C. James, Copyright Law of India and the academic Community, Journal of Intellectual Property Rights Vol. 9, May 2004
[5]Tabrez Ahmad and Sourav Dan, Comparative Analysis of Copyright Protection of Databases: The Path to Follow, Journal of Intellectual Property Rights, Vol. 17, March 2012, pp. 111-121.
[6]Burlington Home Shopping Pvt Ltd v Rajnish Chibber, (1995) 61 DLT 6 (Del)
[7]Govindan v Gopalakrishna, AIR, 1955 Mad 391(Madras)
[8]LegalEra, Internet, Electronic Commerce and Intellectual Property, August 2012 available at http://ssrana.in/Admin/UploadDocument/Article/2012-08-14%20-%20Internet%20Electronic%20Commerce.pdf
[9]Ashok Panigrahi, Ranjan Upadhyaya, Dr. P. P. Raichurkar, E-Commerce Services in India: Prospects and Problems, International Journal on Textile Engineering and Processes ISSN 2395-3578 Vol 2, Issue 1 January 2016

The recent Justice AP Shah Report on Privacy provides for multidimensional and inclusive understanding of the right to privacy to include concerns surrounding data protection on the internet and challenges emerging there from.[10] The privacy approach paper also suggested masquerading a data protection regime through a privacy legislation to address regulations on collection, control, utilization and proper disposal of data, which are not covered under the purview of the existing IT Act.[11] It recommends the applicability of such a regime to public as well private entities and proposes a distinction between personal data and personal sensitive data

2.3 Liabilities and Accountabilities of Online Service Providers

The Copyright Act, 1957 does not deal with the liability of ISPs. The Indian government grants intermediaries a conditional safe harbor under the IT Act and The Information Technology (Intermediaries Guidelines) Rules 2011 ("Intermediary Law"). This is similar to the safe harbor rules of the European Union. However, the liability of ISPs finds mention in Section 79 of the Information Technology Act, 2000 as Network service providers not to be liable in certain cases. For the removal of doubts, it is hereby declared that no person providing any service as network service provider shall be liable under this Act, rules or regulations made there under for any third party information or data made available by him if he proves that the offence or contravention was committed without his knowledge or that he had exercised all due diligence to prevent the commission of such offence or contravention. Explanation-For the purposes of this Section, - (a) 'network service provider' means an intermediary; (b) 'third party information' means any information dealt with by a network service provider in his capacity as an intermediary.'

The 2011 Intermediary Law provides a diligence framework to be followed by intermediaries in order to avail of the exemption under Section 79. Various procedures have been prescribed which need to be observed by an intermediary, such as (i) the need to inform the users of the computer resource not to transmit any information that among other things is harmful, obscene or defamatory; (ii) the requirement to "act within 36 hours" of receiving knowledge of the transmission of any prohibited information; and (iii) the requirement to disable information that is contradictory to the Intermediary Law. The Copyright Act provides that any "transient or incidental storage of a work or performance for the purpose of providing electronic links, access or integration, where such links, access or integration has not been expressly prohibited by the right holder" is not an act of infringement of copyright unless the person responsible for such storage (i.e. an intermediary) is aware or has reasonable grounds for believing that the work/performance stored is an infringing copy.[12] The Copyright Act also provides that if the intermediary responsible for such storage has received a written complaint from the owner of copyright in the work alleging that such storage is an infringement of the work, the intermediary should stop facilitating access to the work for a period of 21 days or until he receives an order from a competent court regarding the matter.

A rather dangerous position was adopted by the Delhi High Court in the case of Super Cassettes v. Myspace[13], when it assumed that an intermediary held a reasonable ground of belief in respect of the infringing activity on his/her site. While such an assumption holds true in the physical world, it breaks down in virtual space; intermediaries have little monitory control over the dissemination of information on their site. However, the High Court used this faulty line of reasoning to hold the defendant liable for running a website that facilitated the sharing of media content by users/subscribers.

3. TRADEMARKS AND INTERNET

Trademarks are of considerable importance in e-commerce and are of similar significance in the online world as in the physical world. The brand plays a crucial role in e-business, more so because the consumer is deprived of face-to-face interaction in the virtual market. The challenges that a trademark owner faces in the online environment include unauthorized deep linking, meta-tagging, banner advertising, framing, search engine marketing abuse, SEO manipulation, pop-up advertisement, mouse trapping, etc. The offences result in diversion of traffic to competing business, exploitation of right holders' brand for generation of advertising revenues and counterfeit, and grey market sales. These issues are alleviated by the territorial nature of trademark law and the global nature of the Internet.[14]

---

[10]Justice AP Shah, Report of the Group of Experts on Privacy, Planning Commission, Govt. of India, October 2012, available at http://planningcommission.nic.in/reports/genrep/rep_privacy.pdf
[11]Rahul Matthan, Approach Paper for a Legislation on Privacy, Draft for Discussion, October 2010, available at http://ccis.nic.in/WriteReadData/CircularPortal/D2/D02rti/aproach_paper.pdf
[12]Section 52(c), Copyright Act, 1957
[13]Super Cassettes Industries Ltd. v. Myspace Inc. (2011) (48) PTC 49 (Delhi High Court)
[14]Hemant Goyal, Mohit Porwal, India: Protection of Domain Name as a Trademark available at http://www.mondaq.com/india/x/327272/Trademark/Protection+of+Domain+Name+As+A+Trademark

In India, Earlier, the legal provisions for registration and protection of trademarks of goods were contained in the Trade and Merchandise Marks Act, 1958. In view of the developments in trading and commercial practices, particularly in the wake of economic liberalization and globalization of industry and trade, the need to encourage transfer of technology, and to give effect to some major judicial decisions on the subject, a comprehensive review of the law was made. Consequently, the Trade and Merchandise Marks Act, 1958, was repealed and replaced by the Trade Marks Act, 1999, which came into force on 15th September, 2003. The legislative provisions of the 1999 Act have been supplemented and elaborated by the Trade Marks Rules, 2002, the Trade Marks (Applications and Appeals to the Intellectual Property Appellate Board) Rules, 2003, and the case law on the subject.

The new Trademarks Act of 1999 is in line with the WTO recommendations and is in conformity with the TRIPS Agreement to which India is a signatory. The object of the 1999 Act is to confer the protection to the user of the trademark on his goods and prescribe conditions on acquisition, and legal remedies for enforcement of trademark rights. It will for the first time protect service marks and give provision of registration for collective marks, it will also differentiate between well-known trademarks and trademarks in general, and special treatment and rights are envisaged for well-known trademarks. The 1999 act is a modification of the 1958 act, it has provided exhaustive definitions of terms frequently used, enhanced punishment for offenders, increased the period of registration, registration of non- traditional trademarks. Laws of trademarks are based on distinctiveness and deceptive similarity. If distinct signs are freely used the brand equity created by one person will be freely used by another. The value of distinctive sign depends on sales volume and public association of sign with quality. A trade mark in India is valid for ten years and can be renewed thereafter indefinitely for further ten-year periods.

In Yahoo! Inc. v. Akash Arora & Another[15] the Delhi High Court for the first time successfully protected domain name in India involving passing off remedy. In this case, the plaintiff is the owner of the trademark, 'yahoo' and the domain name 'yahoo.com'. The defendant adopted the domain name 'yahooinida.com' for similar service. In People Interactive (I) Pvt Ltd v Gaurav Jerry[16] the Court accepted the plaintiff's contention that the defendant had been using its registered trademark SHAADI.COM and its registered domain name 'www.shaadi.com' as meta-tags in his domain name 'www.ShaadiHiShaadi.com'. The court found that the defendant had diverted as much as 10.33% of internet traffic away from www.shaadi.com to his own site. Condemning the defendant's conduct as "online piracy", the court granted an interim injunction in favour of the plaintiff. There is scope and need for developing indigenous law. While getting the law to cope with the technological changes in the use of the internet will be a formidable challenge, what can happen is that we may be irreversibly heading towards erecting more cyber borders, which can in turn generate a whole slew of law avoidance technologies. These concerns are the beginning in what predictably will be a long-term engagement for lawmakers and those associated with the enforcement of law.

4. PATENT AND INTERNET

Patent law in India is incorporated in the Patents Act, 1970 of India. In India's continued efforts to comply with its commitment under TRIPS the Patents Act has been amended thrice since 1995, by the Patents (Amendment) Act, 1999 ("First Amendment"), the Patents (Amendment) Act, 2002 ("Second Amendment") and Patents (Amendment) Act, 2005 ("Third Amendment"), Prior to the Third Amendment, the President of India had promulgated Patents (Amendment) Ordinance, 2004 ("Ordinance"), which was later replaced by the Third Amendment. The legislation is supported by the Patents Rule, 2003 ("Rules").[17]

A Patent is a statutory right for an invention granted for a limited period of time to the patentee by the Government, in exchange of full disclosure of his invention for excluding others, from making, using, selling, importing the patented product or process for producing that product for those purposes without his consent. The Patents Act has provisions with respect to compulsory licensing, the government's rights to fix prices for patentable goods, and use of some patents for the government only.[18] The Patent Amendment also allows petitioners to file applications through electronic media. Of note, over the course of several decades, India's patent law has taken a range of different approaches to the question of "process patents"—that is, whether processes (in contrast with products/molecules/chemical compounds) may be patented. The 1970 law granted process patents, and under its provisions, patents for chemicals, medicines, and drugs were initially granted for a period of fourteen years. This situation changed with the enacting of the Patent Amendment Act of 2002 and Patent Rules, which extended the patent term for a period of twenty years (as well as adding several other provisions related to fees and other questions). Yet with the Patent Amendment of 2005, process patents were completely abolished. This amendment has specific implications for chemical and pharmaceutical industries in particular.

---

[15]78 (1999) DLT 285

[16]NMS (L) NO. 1504 of 2014 in SUIT (L) NO. 622 OF 2014

[17]Professional Programme Intellectual Property Rights- Law and Practice, The Institute of Company Secretaries of India available at https://www.icsi.edu/Docs/Website/IntellectualPropertyRightLaws&Practice.pdf

[18]Jorge L. Contreras, and Rohini Lakshane, Patents and Mobile Devices in India: An Empirical Survey, Vanderbilt J. Transnational Law (2016-17) available at available at http://ssrn.com/abstract=2756486

The Act provides for patent protection for inventions relating to both processes and products. In case of patents relating to product, the grant provides exclusive right to prevent unauthorized persons from making, using, offering for sale, selling or importing the product in India. In case of patents relating to process, the patentee receives an exclusive right to prevent unauthorized persons from using the process and offering for sale, selling or importing for those purposes the product obtained directly from the process in India. Product produced by the process is also protected.

The proliferation of information on the Internet clearly helps firms to analyze who has taken out what patents in their area and when, and how central these patents are to their own R&D efforts. Patent-holders deemed "in the way" can become targets for take-over, or perhaps be invited to form a joint venture (another means of extracting the rents).[19] New business tools, like web-enabled exchanges for patents and licenses, have been created, linking potential buyers and sellers of intellectual property, but often also providing a range of other services. These include evaluating the patents on offer and insurance policies to mitigate the risk of buying a patent that is later found to be invalid. In sum, the Internet considerably enhances the innovating firm's ability to access patent-related information posted on the World Wide Web, to signal its activities and intentions to other market participants, and to exchange patent-related information.[20]

5. INDIAN LEGAL EDUCATION AND THE INTERNET

"Education- is the manifestation of perfection already in man"- Swami Vivekananda.

While the teaching of black letter legal-doctrines is an important function of the law institute, it is not the only function. The student needs to clarify his moral values, social goals, he needs to orient himself in past trends and future goals, he needs to acquire the scientific knowledge and skills necessary to implement objectives within the context of contemporary trends.[21] A bold and creative decision on the part of the Bar Council of India, first to supplement the three year (mostly part-time) LL.B. programme with an integrated five-year LL.B. course and secondly to try out the scheme in a model law school (National Law School) sponsored by the BCI itself. An organized attempt by the BCI with the assistance of the National Law School was done to revamp the curriculum, increasing the number of required subjects to be taught and introducing an imaginative component of practical training to be completed at the law school in the final year. This has given a special impact to Indian legal education.

The Internet is a very big storeroom of learning legal material. As a result, it significantly expands the legal resources available to students beyond the standard print materials found in colleges/ universities students can access the latest reports on government bare acts statutes, gazettes, notifications, latest case laws legal articles and non- government websites, including research results, scientific and artistic resources in museums and art galleries, and other organizations with information applicable to student learning.[22] Internet also becomes an effective tool for empirical research to some extent as questionnaires are being sent across via electronic mail and information and views can be collected at lesser cost, time and effect. Therefore, cyber world is a boon to legal research and academic influence as it provides greater access to information from around the world, provide cheaper more effective means of communication within the country and across the border, thereby brigs people closer which facilities public discourse and discussion. Furthermore, electronic databases operated by prominent publishing houses have ensured that judges, practitioners and law students all over the world can readily browse through materials from several jurisdictions and creating a tradition of research in law schools and universities is imperative if India has to transform itself from being only a consumer of available legal knowledge to being a leading producer in the world of new legal knowledge and ideas.

5.1 Online Legal Information Resources

The blessings of technological revolution span over almost entire information cycle and are discussed in following sections.

5.1.1 E-Journals

Some journals appear in electronic form only. Others, particularly those offered by traditional publishers are exact replicas of the print publications. There are projects, such as JSTOR, The Journal of Information, Law and Technology (JILT), The Journal of Law, Social Justice and Global Development (LGD) and The Entertainment and Sports Law Journal are the examples of electronic journals available free in the Internet.

---

[19]Lee Davis, Patents and the Internet, Centre for Law, Economics and Financial Institutions at CBS available at http://openarchive.cbs.dk/bitstream/handle/10398/6822/wplefic022002.pdf?sequence=1

[20]Jorge L. Contreras, Patents and Internet Standards, Global Commission on Internet Standards available at https://www.ourinternet.org/sites/default/files/publications/gcig_no29_web.pdf

[21]Mrs. Archana K., Practicability of Clinical Legal Education in India- An Overview, Journal of Education and Practice, ISSN 2222-1735 (Paper) Vol.4, No.26, 2013

[22]Prof. Dr. Ranbir Singh, Prof. Dr. Ghanshyam Singh, Digital Library- Legal Education and Research available at http://nludelhi.ac.in/download/publication/2015/Digital%20Library-Legal%20Educaiton%20and%20Research.pdf

5.1.2 Electronic Fee-Based Databases

LexisNexis- The database provides access to 5 billion searchable documents from more than 32,000 legal, news and business sources.

Westlaw is Thompson West's online legal research service. The primary legal materials are available on jurisdictions of UK, USA and Commonwealth countries.

Manupatra is an Indian legal information database comprising legal and business module. It includes case updates from the Supreme Court and all High courts, orders of tribunals, 1100 Central Acts with all amendments incorporated, notification circulars of 36 Government of India ministries including SEBI and RBI- updated daily, full-text of Bills in Parliament and ordinances, agreements and drafts, committee reports, stamp duty, court fees, court rules, etc.[23]

INDLAW is an Internet provider of research modules relating to Indian legal, tax, business and regulatory issues.

Hein Online is an image-based collection of legal periodicals. Each volume starts from volume one. Most of the titles are from USA and UK.

Legal Pundits is an Internet-based legal and regulatory information service.

*World Bank Resource Online***-** World Bank e-Library is an electronic portal of the World Bank's full-text collection of books, reports and other documents on social and economic development.

5.1.3 Free and Authentic E-Resources in the Internet

There are many government portals, which provide free information on various legal issues including recent decisions by the Courts for example, *The Judgments Information System*- consists of the judgments of the Supreme Court of India which also includes judgments of several High Courts.

National Portal of India [URL: www.india.gov.in] gives a single window access to all Government of India websites which provides a one-step source for important documents and reports released or published by the Indian Government at the Central or State level.

Legal databases, such as LexisNexis and Westlaw, are excellent resources on core law field but free sites should not be overlooked, especially when dollars are scarce. Resources available free several other Internet of cost or with a very nominal fee. Resources include current information on law, reviews, book reviews, discussion forum, mailing lists, research products/articles by students for further discussion, etc.

India being a common law country has an advantage of having a legal system, which is similar to many other countries of the world. Therefore, firms from other countries visit the top law schools to handpick talent. Legal education is an investment, which if wisely made will produce most beneficial results for the nation and accelerate the pace of development. Legal Education is essentially a multi-disciplined, multi-purpose education, which can develop the human resources and idealism needed to strengthen the legal system. A lawyer, a product of such education would be able to contribute to national development and social change in a much more constructive manner.

6. INTERNET GOVERNANCE IN INDIA

Internet Governance issues have become increasingly complex as the Internet is a fast evolving global resource. Cyber space represents virtual properties that may be located anywhere and therefore what jurisdictional framework they come under is open to interpretation.

The Internet Governance consists of the collective rules, procedures, processes, and related programs that incorporates all stake holder's expectations, practices & interactions resulting in practices and operations that are consistent with the sovereign rights of states and the social and market interests of end-users and operators. It includes agreements including international agreements about standards, policies, rules, and enforcement and dispute resolution procedures.

[23]Raj Kumar Bhardwaj and M.Madhusudhan, Open access legal information sources and their use by students of National Law University, Annals of Library and Information Studies, Vol. 60, December 2013, pp. 315

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

Discussions on IG took an international flavor with the convening of the World Summit on Information Society (WSIS) in Geneva in mid-2002.[24] The Summit originally had an agenda to construct better telecommunications infrastructure in developing nations to erase the digital divide, as reflected in the self-declared purpose of WSIS as "to harness the potential of knowledge and technology to promote the development Goals of the Millenium Declaration." However, this agenda was modified in two important ways as WSIS progressed. First, the focus was expanded from mere improvement of infrastructure to a variety of human rights issues involving communications, like freedom of speech and privacy, which came to be known as internet public policy issues. Second, a new dominant agenda of technical governance of the internet emerged.

India's contribution towards deliberations on Internet governance is mature but lacks consistency and coherence. India along with the US, EU and Japan did not sign the International Telecommunication Regulations (ITR), to come into effect from 1 January 2015, at the World Conference on International Telecommunications (Dubai, 2012) which was signed by 89 out of 144 members including Russia, China, South Korea, countries of Africa, Middle East and Latin America. In doing so India largely subscribed to the view that the new set of rules8 allows greater government control of the Internet. If we scan through India's statements at UN General Assembly (over the recent years) it is clear that initially India never proposed to change existing multi-stakeholder models promoted by private interests and supported by the US, notwithstanding India's intentions of forging a greater international cooperation in management of Internet related policy matters.[25] Earlier in 2011, India had proposed a United Nations Committee for Internet Related Policies to be constituted of multiple members. Naturally, this could have meant future regulation of the Internet by national governments within a broad framework of UN policies. However, in 2013, at UN General Assembly India unambiguously advocated following up on the Tunis agenda for a multilateral structure of Internet governance and called for a UN initiative in policy making towards the use of cyberspace and ICTs for sustainable and inclusive development. Demand for multilateralism was also raised by India in a Joint statement of IBSA in 2010. It states "Although there is a positive movement towards improving transparency and accountability in the activities of the Internet Corporation for Assigned Names and Numbers (ICANN), its legal status remains problematic.[26] The fact that only one country, instead of the international community of States, is the provider and guarantor of the management of names and numbers of the Internet in all countries contravenes established UN principles and universally accepted tenets of multilateralism." Despite having one of the largest numbers of Internet users in the world and having a strong base in ICT services, public opinion in India is ill formed and government departments have not engaged in wider consultations in the process of formulating India's stance on Internet governance. India's response towards intimidating digital surveillance has been rather weak. However, India is slowly moving towards creating its own infrastructure to protect critical digital resources and institutionalise security surveillance to neutralise terror threats.

While it is important for India to carefully align itself under difficult geopolitics of the World Wide Web, India should also buckle up for host of other issues of the global Internet that affects its economics. For example, with cloud computing, which is increasingly making its way into global businesses, it is expected that firms would be able to make use of virtual servers without having to incorporate additional physical infrastructure thus significantly reducing costs for new businesses. However, in the absence of global regulations for emerging digital technologies, responsibilities may be hard to assess and penalties ill defined for human errors leading to data losses.

Unsettling revelations of Internet surveillance and scrutiny in the recent past have thrust upon drastic changes in the way multilateral Internet governance was being discussed and deliberated. The sense of urgency in setting records straight on all means and tools of Internet administration in the first place is discernible.

Unfortunately, the world seems to be grappling in the dark, appears directionless and caught in confusions of insurmountable proportion in this regard. Moreover, one feels that until date policy debate on Internet Governance has been preoccupied with technical issues around cyber-security and firewalling and to some extent making use of the Internet in promoting UN programmes on development.

The challenge for developing countries therefore, is to propose their framework and agenda of alternative multilateral Internet governance institutions that would be fair towards them and are run democratically.[27]

[24]Rekha Jain, A Model for Internet Governance and Implications in India, Indian Institute of Management Ahmedabad Research and Publications W.P. No. 2015-03-23
[25]Ian Wallace, India, the U.S., and Internet Governance available at https://www.brookings.edu/wp-content/uploads/2016/06/23-india-us-internet-governance-wallace.pdf
[26]Smarika Kumar, An Introduction to the Issues in Internet governance, The Centre for Internet & Society available at http://cis-india.org/internet-governance/issues-in-internet-governance
[27]Emily E. Campbell, Trademarks, Copyrights, Trade Secrets, Internet and E-Commerce Law available at http://dunlapcodding.com/practice-areas/service/trademarks-copyrights-trade-secrets-internet-and-e-commerce-law

7. CONCLUSION

The importance of IPR and their protection is acknowledged the world over as an important element. In tune with the world scenario, India too has recognized the value of IP, which recognition has been consistently upheld by legislators, courts and the industry. India is now a signatory to various IP treaties and conventions. This has helped India become more attuned to the world's approaches and attitudes towards IP protection. India has already taken steps to comply with its obligations under TRIPS, The broad level contours of IP policy are now visible in the form of the national IP policy. However, recent judicial rulings and steps taken by various enforcement agencies demonstrate that India is gearing up for effective protection and enforcement of IPRs. The Indian police have established special IP cells where specially trained police officers have been appointed to monitor IP infringement and cyber crimes. Various Indian industries have also become more proactive in protecting their IPRs. For example, the Indian Music Industry, an association of music companies, which headed by a retired senior police official, has taken similar proactive steps to combat music piracy. India now needs to improve the IPR regime both from the side of the legislation and from the side of enforcement of laws. This improvement will help in the creation of a better environment for improving the overall innovation in the country. Overall, India has taken many positive steps toward improving its IPR regime and is expected to do much more in the coming years to streamline itself with the best practices in the field of intellectual property rights.

REFERENCES

Retrieved from http://cybercellmumbai.gov.in/html/cyber-laws/Chapter-12.html

Retrieved from http://cybercellmumbai.gov.in/html/cyber-laws/chapter-9.html

Retrieved from http://euro.ecom.cmu.edu/program/law/08-732/Patents/PatentsAndTheInternet.pdf

Retrieved from http://fra.europa.eu/en/charterpedia/article/17-right-property

Retrieved from http://hospitalitynu.blogspot.com/2012/06/parts-of-bar.html

Retrieved from http://iasscore.in/national-issues/national-details-605.html

Retrieved from http://meity.gov.in/content/network-service-providers-not-be-liable-certain-cases

Retrieved from http://mhrd.gov.in/sites/upload_files/mhrd/files/upload_document/ugc_act.pdf

Retrieved from http://nbr.org/downloads/pdfs/ETA/IndiaIP_workingpaper_070815_reduced.pdf

Retrieved from http://s1.q4cdn.com/199638165/files/doc_financials/Nielsen-Global-E-commerce-Report-August...

Retrieved from http://thenationaltrust.gov.in/upload/uploadfiles/files/act-englsih.pdf

Retrieved from http://theology.balamand.edu.lb/index.php/student-activities/1268-patign1105

Retrieved from http://theology.balamand.edu.lb/index.php/student-activities?limit=4&start=48

Retrieved from http://unctad.org/meetings/en/Contribution/ecn162012_c10_EN.pdf

Retrieved from http://www.advocatekhoj.com/library/bareacts/informationtechnology/79.php?Title=Informatio...

Retrieved from http://www.cc.iitd.ernet.in/misc/liability-network-service-providers.pdf

Retrieved from http://www.cci.gov.in/sites/default/files/C-2011-40_0.pdf

Retrieved from http://www.cottoninc.com/fiber/quality/Classification-Of-Cotton/

Retrieved from http://www.cyberlawsindia.net/Information-technology-act-of-india.html

Retrieved from http://www.etu.org.za/toolbox/docs/localgov/webundrstdlocgov.html

Retrieved from http://www.iasscore.in/community/special-details-39.html

Retrieved from http://www.ijmdrr.com/admin/downloads/301220166.pdf

Retrieved from http://www.incometaxindia.gov.in/booklets%20%20pamphlets/royalty-and-fees-for-technical-se...

Retrieved from http://www.indiabudget.gov.in/ub1999-2000/mem/mem1.pdf

Retrieved from http://www.itu.int/net/wsis/geneva/

Retrieved from http://www.karnikaseth.com/liability-of-network-service-providers-in-cyberspace.html

Retrieved from http://www.legaleraonline.com/articles/internet-electronic-commerce-and-intellectual-prope...

Retrieved from http://www.legalserviceindia.com/copyright/infringement.htm

Retrieved from http://www.legislation.gov.uk/ukpga/1999/31/section/2

Retrieved from http://www.mca.gov.in/MinistryV2/companiesact2013.html

Retrieved from http://www.mondaq.com/india/x/103086/Trademark/Domain

Retrieved from http://www.mondaq.com/india/x/262564/Copyright/Copyright

Retrieved from http://www.mondaq.com/india/x/455958/Trademark/Internet

Retrieved from http://www.mondaq.com/india/x/54494/Patent/Patent

Retrieved from http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Patents_and_the_Indian_Pharmaceutic...

Retrieved from http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research%20Articles/Intermediaries_...

Retrieved from http://www.nishithdesai.com/information/areas-of-service/practice/intellectual-property.ht...

Retrieved from http://www.prigastore-philatelie.com/en/autres-pays-d-europe/5287-aden-et-dependances.html

Retrieved from http://www.publishingindia.com/GetBrochure.aspx?query=UERGQnJvY2h1cmVzfC8xNTI0LnBkZnwvMTUy...

Retrieved from http://www.rna-cs.com/liability-of-intermediaries-under-information-technology-act-2000/

Retrieved from http://www.scra27.org/publications/tcp/tcp-past-issues/tcpspring2014/student-issues/

Retrieved from http://www.ssrana.in/Admin%5CUploadDocument%5CArticle%5C2012-08-14%20-%20Internet%20Electr...

Retrieved from http://www.ssrana.in/Intellectual%20Property/Patents/Patent-Case-Laws-in-India.aspx

Retrieved from http://www.trademarklitigationindia.com/trademark-enforcement/

Retrieved from http://www.wipo.int/edocs/lexdocs/laws/en/in/in065en.pdf

Retrieved from http://www.wipo.int/edocs/pubdocs/en/copyright/891/wipo_pub_891.pdf

Retrieved from http://www.wipo.int/edocs/pubdocs/en/intproperty/791/wipo_pub_791.pdf

Retrieved from http://www.wipo.int/export/sites/www/about-ip/en/iprm/pdf/ch5.pdf

Retrieved from http://www.wipo.int/patent-law/en/developments/research.html

Retrieved from http://www.wipo.int/patents/en/faq_patents.html

Retrieved from http://www.wipo.int/treaties/en/ip/berne/summary_berne.html

Retrieved from https://blog.ipleaders.in/liability-e-wallets-credit-card-frauds/

Retrieved from https://en.oxforddictionaries.com/definition/form

Retrieved from https://finance.eller.arizona.edu/sites/finance/files/grullon_11.4.16.pdf

Retrieved from https://indiankanoon.org/doc/1162252/

Retrieved from https://indiankanoon.org/doc/1592558

Retrieved from https://indiankanoon.org/doc/39800/

Retrieved from https://kractivist.wordpress.com/2012/05/08/for-the-sake-of-free-speech-save-your-voice-ca...

Retrieved from https://lawgic.info/79-network-service-providers-not-to-be-liable-in-certain-cases/

Retrieved from https://newyorkessays.com/essay-terry-eagleton-and-literature-theory/

Retrieved from https://taxguru.in/goods-and-service-tax/gst-law-agents-overlap-intermediary.html

Retrieved from https://web.iima.ac.in/assets/snippets/workingpaperpdf/8992574912015-03-23.pdf

Retrieved from https://www.altacit.com/publication/evolution-of-trademark-laws-in-india/

Retrieved from https://www.asil.org/insights/volume/17/issue/6/internet-governance-and-international-law-...

Retrieved from https://www.bbvaopenmind.com/en/article/the-impact-of-the-

Retrieved from https://www.brookings.edu/wp-content/uploads/2016/06/USBrazil-Global-Internet-Governance-w...

Retrieved from https://www.clickandcopyright.com/copyright-resources/copyright-infringement.aspx

Retrieved from https://www.depts.ttu.edu/aaec/icac/archive/pdf/Markets_and_Marketing_optimized/Grading/Th...

Retrieved from https://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM0...

Retrieved from https://www.google.co.in/patents/EP1523171A1?cl=en

Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/627956/IP-Rights...

Retrieved from https://www.hughjames.com/service/

Retrieved from https://www.ilo.org/dyn/natlex/docs/WEBTEXT/32063/64873/E87IND01.htm

Retrieved from https://www.internetsociety.org/ianatimeline/

Retrieved from https://www.itu.int/en/wcit-12/Pages/itrs.aspx

Retrieved from https://www.lawteacher.net/free-law-essays/business-law/consider-the-challenges-law-essays...

Retrieved from https://www.myadvo.in/blog/data-theft-a-dual-challenge-to-law-and-technology/

Retrieved from https://www.nalsar.ac.in/eLibrary/e-resources.html

Retrieved from https://www.ny-trademark-lawyer.com/challenging-trademark-rights-after-five-years-of-regis...

Retrieved from https://www.quora.com/What-are-some-drastic-changes-that-our-Earth-has-undergone-in-these-...

Retrieved from https://www.quora.com/What-are-the-advantages-and-disadvantages-of-having-an-ego

Retrieved from https://www.trademarkprotector.com/trademark-registrations-cover-ten-years/

Retrieved from https://www.wikihow.com/Legally-Dispute-a-Domain-Name

Retrieved from https://www.wto.org/english/tratop_e/trips_e/intel2_e.htm

*****

PEZZOTTAITE JOURNALS

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

A STUDY ON USE AND IMPACT OF MODERN TECHNOLOGICAL AIDS IN EDUCATION SECTOR FOR STUDENT LEARNING PROCESS: WITH SPECIAL REFERENCE TO MANGALORE REGION

Seema[5] Shubha[6] Saritha[7]

ABSTRACT

Education and learning is a lifelong process therefore anytime anywhere access to it is the need. Technology affects every phase of our lives. It has shown its presence everywhere. However, technology has a huge impact on education and student learning process that cannot be denied, it improve the quality and quantity of education. It is a requirement of the society that the individuals should posse's technological literacy. Objective of this empirical paper is to find out the awareness about modern technological aids available to enhance student's skills and learning. Present study focus on technological aids used by the informants for their learning process and intricacy faced by them .The paper attempts to highlight the impact that technology has on a student's motivation to learn new information, skill and retain said information. This paper also explores the importance of technology in education. This study reveals both primary and secondary data. Primary data by personal opinion and through survey method, which involve administering the questionnaire to the selected student's from various institution. The area of this study is confined to Mangalore region.

KEYWORDS

Technology, Learning Aids, Students Awareness, Satisfaction, Intricacy etc.

INTRODUCTION

The swiftness of transform brought about by new technologies has a noteworthy effect on the manner people live, get educate and work. Latest and emerging technologies challenge the traditional process of teaching and learning, and the way education is managed. Information technology, while an important area of study in its own right, is having a major impact across all curriculum areas. Easy worldwide communication provides instant access to a vast array of data, challenging assimilation and assessment skills. Rapid communication, plus increased access to IT in the home, and in educational establishments, could mean that learning becomes a truly lifelong activity—an activity in which the pace of technological change forces constant evaluation of the learning process itself. Student engagement and interest had also increased due to the presence of technology

THE PRESENT STUDY

This study titled "use and impact of modern technological aids in education sector for student learning process - with special reference to Mangalore region" is explanatory and descriptive in nature. It is an empirical study based on the survey of college students.

OBJECTIVES

The present study is conducted with the objective of assessing the student's awareness about modern technological aids available to enhance student's skills and learning. Present study focus on technological aids used by the informants for their learning process and intricacy faced by them .The paper attempts to highlight the impact that technology has on a student's motivation to learn new information, skill and retain said information. This paper also explores the importance of technology in enhancing student's skills.

METHODOLOGY

This study reveals both primary and secondary data. Primary data has been collected by personal opinion and through survey; method, which involves administering the questionnaire to the selected student's .The area of this study, is confined to Mangalore region. A sample of 150 has been selected based on random sampling method. The collected data has been analyzed and presented in the form of tables and meaningful interpretation. Secondary data is collected from various journals, articles, websites, dissertations and thesis pertaining to the relevant matters of the subject under study.

[5]Assistant Professor, Department of PG Studies in Commerce, Alva's College, Karnataka, India, seemashetty183@gmail.com
[6]Assistant Professor, Department of PG Studies in HRD, Alva's College, Karnataka, India, shubhamhrd4@gmail.com
[7]Student, Department of PG Studies in Commerce, Alva's College, Karnataka, India, sarithan791@gmail.com

DISCUSSION AND RESULTS

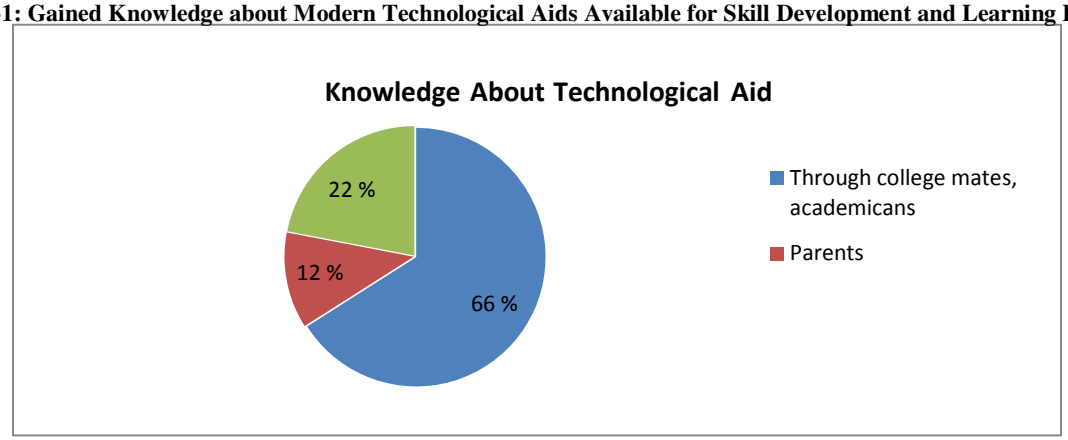
Table-1: Awareness about Modern Technology Aids Available for Learning Process

S. No.	Content	Yes %	No %	Some Extent %	Total %
1	Having awareness about most of the modern technological aids available for learning.	56	0	44	100
2	Creating awareness about use of modern technological aids in education is necessary.	75	5	20	100
3	You will recommend modern technology to others.	80	0	20	100

Sources: Authors Compilation

Table-1 depicts the result of student's awareness and need of modern technological aid in their learning process. According to the survey majority of the students has aware about all the modern technology aids available for learning process. In addition, there in opinion that education sector should take an initiation of creating further awareness about using innovative modern technology aids. Most of the respondents are ready to suggest these aids to others.

Chart-1: Gained Knowledge about Modern Technological Aids Available for Skill Development and Learning Process



Sources: Authors Compilation

Above graph highlights the possession of knowledge about modern technological aids available for skill development and learning process. Majority of respondents came to know about the aspect of technological aids through college mates, academicians and least percentage of students is in opinion that they got the knowledge through relatives, friends and parents.

Table-2: Usage of Technological Aids

S. No.	Various Technological Aids	Using %	Not Using %	Total %
1	Internet Search Tools	72	28	100
2	Video	77	23	100
3	Email	66	34	100
4	Tape / CD / DVD / Player	26	74	100
5	Mobiles	76	24	100
6	Digital Cameras	73	27	100
7	LCD Projector	88	12	100
8	TV / Radio	51	49	100

Sources: Authors Compilation

Table 2: The above table states the usage of modern technological aids. According to the survey, majority of the respondents are using internet search tool, E-mail, Mobile, video Digital Camera, LCD Projector. Least respondents are using Tape and CD player as a learning aid because most of students are using computers to display videos and recordings.

Table-3: Intricacy Faced While Using Modern Technology

S. No.	Content	Yes %	No %	Some Extent %	Total %
1	Technical Errors.	60	4	36	100
2	Lack of Availability of Infrastructure is the Reason for Less Usage.	28	32	40	100
3	Lack of Knowledge is a Factor for Less Usage.	32	26	42	100
4	Information Worthiness and Data Protection.	22	30	48	100
5	Information Overloaded.	55	18	27	100
6	Lack of Practice.	64	12	24	100

Sources: Authors Compilation

The above table states the intricacy faced while using modern technology. Most of the respondents is in opinion that they faced technical issues, information overloaded data protection is another challenge and all problem were resolved and there is a need of errorless services. Majority of the students said that some extent lack of knowledge and availability of infrastructure is the reason for less usage.

Table-4: Positive Impact of Modern Technological Learning Aids

S. No.	Content	Yes %	No %	Some Extent %	Total %
1	Technology Helps you to Enhance Your Skills and Knowledge.	76	0	24	100
2	Use of Technology for Learning Practices Saves Time & Made Learning is Easy.	88	0	12	100
3	Whether Modern Technological Aids Made Education Sector Boost.	62	0	38	100
4	Overall Satisfied with Modern Learning Aids.	63	8	29	100

Sources: Authors Compilation

The above table depicts the positive impact of technological aids. Most of the respondents were in opinion that Technology helps them to enhance your skills and knowledge and it made education sector boost. Using technological aid to learning purpose helps them to saves time and it can be accessed information at any time & place. Overall, they are satisfied with modern leaning aids.

SUGGESTIONS

To suggest, Learning with technology has become crucial in today's education. Worldwide, governments, education systems, researchers, academicians and parents consider technology to be a critical part of a children's learning and skill development process. Youth people need to be highly skilled in their use of information and communications technologies. Proper initiatives should be taken to educate & create awareness through more advertisement, speeches & workshop, demos to maximize and for right usage of student learning technological aids. Students has faced problem of technical errors so proper care about technical issues by using advanced software for errorless usage should be encouraged. Parents and academicians to see that these all- technological aids are rightly used to change student's behaviour, skills and knowledge and it should not hinder student's growth and created negative consequences. The role and expertise of teachers are critical because teachers are at the front line of designing and delivering the learning experience .Computer devices are more powerful and come in different forms; the internet connects those devices and connects students to each other in the classroom, through the college and around the world. All users of technology in this area, as a Concession on energy savings Solar can be used. Overall, it should be user and Environmental Friendly.

CONCLUSION

Technology has changed dramatically over recent decades. Stills a major issue and has an important for development of education sector and youth in India and there is a need of making healthy processes and the use of IT and physical infrastructure as efficient and effective. Technology is really a good way for students to get more awareness about today's changing competitive environment and nurturing new skills and knowledge has to accomplish this requirement. Technology is changing all the time and what we know about how to use that technology effectively. As a future learner there is a need of understanding and practice regarding the use of technology to help learning process and this study is a small try in that direction.

REFERENCES

Jonassen, D., Howland, J., Moore, J., & Marra, R. (2002). ***Learning To Solve Problems with Technology***. Upper Saddle River, NJ: Prentice Hall.

Wright, V. H., & Wilson, E. K. (2005). From preservice to in-service teaching: A study of technology integration. ***Journal of Computing in Teacher Education***, 22(2), 49-55.

Retrieved from http://wikieducator.org/index.php?title=Need_and_Importance_of_Information_Technology_in_Education&oldid=423036

Retrieved from http://bieap.gov.in/Pdf/revtheoryP65.pdf

Retrieved from http://data.conferenceworld.in/DSCW/P907-913.pdf

Retrieved from http://myessaypoint.com/the-importance-of-technology-in-education

Retrieved from http://ro.uow.edu.au/cgi/viewcontent.cgi?article=1413&context=asdpapers

Retrieved from http://varron.expertscolumn.com/article/elements-teaching-and-learning-process

Retrieved from http://wikieducator.org/index.php?title=Need_and_Importance_of_Information_Technology_in_E...

Retrieved from http://wikieducator.org/Need_and_Importance_of_Information_Technology_in_Education

Retrieved from http://www.eduprime.com/information-technology

Retrieved from http://www.ghec.co.in/IT

Retrieved from http://www.ghpc.co.in/it-engineering

Retrieved from https://avneetsidhublog.wordpress.com/2017/10/13/blog-5-technology

Retrieved from https://www.buzzle.com/articles/impact-of-technology-on-education.html

Retrieved from https://www.coursehero.com/file/p1kcu36v/The-above-table-depicts-that-the-growth-rate-of-a...

Retrieved from https://www.mouthshut.com/product-reviews/Alva-s-College-Moodbidri-reviews-925721067

Retrieved from https://www.quora.com/What-are-some-examples-of-lifelong-activities

Retrieved from https://www.quora.com/What-are-the-steps-to-be-taken-to-improve-literacy-rate-in-India

Retrieved from https://www.quora.com/What-steps-are-being-taken-to-improve-access-to-education-in-India-W...

Retrieved from https://www.ukessays.com/essays/education/

*****

PEZZOTTAITE JOURNALS

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

UNDER PINNIN G O F ' CHAOS T HE ORY ' AND CHANGE MANAGEMENT ROLES IN ERP IMPLEMENTATIONS WITH REFERENCE TO INFORMATION TECHNOLOGY INDUSTRY AT HYDERABAD AND BANGALORE

Chandra Sekhar Kalubandi[8] Dr. B. R. Megharaj[9]

ABSTRACT

Change Management is a common buzz word in today's businesses, with constantly evolving business goals and strategies, change is inevitable and managing change is essential. It has become a monumental errand for any organization in the recent times. It is a planned technique in bringing foremost adjustments for reaching employee's expectations to transport the enterprise ahead smoothly. Change management is also used as a catch-all for project activities that may otherwise be overlooked. It is thus important to understand what it is and how to use it to be effective in the discipline.

The Enterprise Resource Planning (ERP) system is a set of integrated business applications supporting core business processes such as Production and Logistics, Finance and Accounting, Sales and Marketing, and Human Resources. An ERP system integrates and helps the different departmental units of the organization to share data and knowledge, reduce costs, improve and impose best of the business Processes.

The objective of the study includes - To ascertain the underpinning of 'Chaos theory and change management Roles' in ERP implementations in IT industry at Hyderabad and Bangalore. Research collaborates Moderate to very High rankings for various elements of Chaos theory under demographic variables - Age, gender, Education, Occupation and Income. Research concludes intense application of Chaos theory under demographic segmentation variables. The shift from traditional methods to modern methods of change management practices is due to demand from the industry and can even conclude providing 'change management is need for organizations in ERP Implementations.

KEYWORDS

Change Management, Errand, Enterprise Resource Planning, Underpinning, Chaos Theory, IT Industry etc.

INTRODUCTION

The world of business today is highly competitive and the organizations are operating in a complex environment where market positions are the function of competitive factors, technology is undoubtedly leading the way and the race among organizations to change; besides it is also aiding businesses to reap its best, the resultant outputs are technology-enabled products. The environments in which organizations operate become increasingly complex, turbulent, and uncertain (van Tonder, 2004:47). Only those agile organizations responding quickly and effectively to changing political, economical, social and technological environmental conditions will sustain, to sustain in business 'Change' is becoming inevitable for organizations, they need to change, in order to keep in balance with the environment more so with technological environment. However, to remain in business and sustain its competitive position in a dynamic environment, managing change needs is a core competency in which managers need to gain skills. The ability to manage change will be more important in the years ahead than at any time before (Nadlerand Tushman, 1989: 194). It is also claimed that while the future may be uncertain, it is clear that organizations and managers unable to respond swiftly to the sweeping changes will fail in future.

The Enterprise Resource Planning (ERP) system is a set of integrated business applications supporting core business processes such as Production and Logistics, Finance and Accounting, Sales and Marketing, and Human Resources. An ERP system integrates and helps the different departmental units of the organization to share data and knowledge, reduce costs, and improve and impose best of the business Processes. (Adel M. Aladwani, 2001). Despite having so many benefits, lot of ERP projects still fails (Stratman and Roth, 1999). Most of the ERP system implementation that fails is due to employee resistance to change. A good and careful change management strategies are required facilitating a successful ERP implementation. (Adel M. Aladwani, 2001).

[8] Research Scholar, Sri Krishnadevaraya Institute of Management, Sri Krishnadevaraya University, Andhra Pradesh, India, kalubandi@gmail.com
[9] Professor, Sri Krishnadevaraya Institute of Management, Sri Krishnadevaraya University, Andhra Pradesh, India, drmegha2617@yahoo.co.in

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

CHANGE MANAGEMENT

Meaning

Change Management is a planned change approach internal to an organization. The objective is to amplify the advantages and lower the potential hazard for the association identified with changes because of ERP practice. In any ERP execution attempted by a business, change administration is one of the greatest undertakings intensely required by the association. Not just this, it requires a lot of subsidizing from the organization yet in addition require an abnormal state of responsibility all through the entire organization. It is a think way to deal with guarantee an adjustment in individual desires towards the real changes in the work procedure achieve by the implementation of ERP to advance the business easily.

Importance

The entire idea of progress administration association in ERP execution is building common trust and comprehension between the organization and its representatives all through the business part, amid the usage stage. The concentration of progress administration in the business ought to be client centric overseeing the desire of the potential end of client as opposed to innovation or item arranged. End client will not be staggered with the best in class gear, if the new ERP framework or business process ignored to satisfy individuals' desire. While ERP implementation requires the business to institutionalize its business forms, change administration will be expected to ensure that harms can be kept at a strategic distance from what are caused by change.

Chaos Theory and Change Management Roles

Managing Transitions: Destabilize people; get them involved in decision-making and problem solving.
Building Resilience: Provide people with the ability to absorb change
Destabilizing the System: Create a State of tension, Seek disconfirmation of organizational beliefs, Act as a devil's advocate, Seek to nurture the creativity needed to cope with the chaotic environment in which organizations operate.
Managing Order and Disorder, the Present and the Future: Provide balance between a need for order and a need for change.
Creating and Maintaining a Learning Organization: Facilitate ways in which continuous learning is available to everyone in the organization

PROFILE OF INDUSTRY

IT industry excels as one of the fastest growing industry by outshining the automobile and other traditional industries. In addition, its applications have permeated all aspects of human and industrial life. To gain competitive edge in the market industries like agriculture. Manufacturing and services enhances the qualitative aspects through IT. IT has become an economic phase of the world than mere an industry for increased productivity. It is growing rapidly because of economies of scale and voracious demand from customers and enterprises. In terms of investment, infrastructure, employment, turnover and geographical coverage IT industry has occupied the position of largest industry.

REVIEW OF LITERATURE

Fisher and Kotter (2015) contend that change flows as follows: anxiety and denial, happiness, fear, threat, guilt and disillusionment, depression and hostility, gradual acceptance, moving forward Steensma, (2010), including the need for more integrated ways of working (Rugman and Hodgetts, 20011) and the need to improve business performance Balogun and Hailey (2008). These considerations typically result in structured change programs based on the assumption that change management on employees consists of a (limited) set of interventions, which are regarded as objective, measurable and linearly manageable programs that can be realized in a relatively short time.

Reid and Smith (2010), Chenhall, (2013) and Woods (2011) The study of organizational behavior in which explanations are given as to how contingent factors such as technology, culture and the external environment influence the employees and functions of organizations for meaningful changes clearly shows that for performance based results employees must be fully engaged. The assumption underlying contingency theory is that no single type of organizational structure is equally applicable to all organizations. Rather, organizational effectiveness is dependent on a fit or match between the type of technology, environmental volatility, the size of the organization in terms of human capital, the features of the organizational structure and its information system. Contingency theories were developed from the sociological functionalist theories of organization structure such as the structural approaches to organizational studies.

Kuruppuarachchi et al. (2012) declares some of the problems in the application of change management and the implementation of ERP in organizations. His analysis states that there are many employees and manager who do not prefer to change their organizational structure for ERP. According to these people, there is nothing disagreeable with the company without ERP and thus there is no need for change management. However, employees who have a preference of traditional ways of management usually cannot accept the ERP formulation and thus can show apprehensiveness towards it.

Panorama Consulting Solutions is a well-known consulting group specializing in the ERP, their latest surveys in 2015 shows that more than 55% of projects budget overrun whereas above 75% of project schedule overrun and about 41% of the respondents have a point of view that ERP delivered half of the expected benefits. The last five year data of panorama independent research provides the average cost of ERP implementation projects that is about $6.1million whereas the average duration of the ERP implantation projects has been 15.7 months. The research results shows that out of these project 58% of project have crossed the planned budget and 65% of the project faced delay and could not be completed according to their planned duration. There is 53% of the organization that could not achieve half of the benefits planned at the start of the project (Panorama Consulting Solutions, 2014).

Hunton, Lippincott and Reck (2003) researched organisation performance of ERP adopters and non-adopters. Results indicate that return on assets (ROA), return on investment (ROI), and asset turnover (ATO) were significantly better after the third year for adopters, as compared to non-adopters. Their results were consistent with Poston and Grabski (2001), who reported no pre- to post-adoption improvement in financial performance for ERP firms. However, remarkable differences arise between the two studies in financial performance. Non-adopters financial performance decreased over time while it held steady for adopters. The theory suggests that ERP system implementation has better impact on larger organizations (Bradford and Frorin, 2003), however, Hunton, Lippincott and Reck (2003) proven in practice that "*for relatively large ERP-adopting firms, there will be a significant negative association between firm health and performance*".

RESEARCH GAP

Core part of the research is identifying the potential concept capable of generating spark or the need for a research, the gap can be conceptually unexplored domain or an explored domain with negligent or limited research. The industry in which this occurs offers a level playing field for a researcher to pursue his research activity in an effective fashion. ERP implementations are a major market in IT with around a lakh of employees and Change Management is a concept that no one has tried to relate to so far with ERP. This offers a level playing field for the researcher to relate both of them and conduct an empirical evaluation.

NEED FOR STUDY

Market growth, higher employment and a need for productivity precedes need for a research. The academic concepts tested in various industries hitherto are to be tested and validated once again for their application. Change Management improves organization's ability to handle its internal and external functioning and ERP implementation.

SCOPE OF STUDY

Change Management is a perennial exercise of applying critical academic concepts for redesigning of ERP implementation in the industry. Academic Scope of the present research is that of the concept of Change Management process. Industry scope is IT. Location scope is Hyderabad and Bangalore. Period scope refers to the research period 2012 to 2016.

RESEARCH METHODOLOGY

The present research study strictly abides by the conceptual frame work enunciated by the subject Research Methodology for the design and conduct of the research, this part of the study aims at presenting all the components of the research in a descriptive style which includes Statement of the problem, Objectives of the study, Hypotheses formulation, Data gathering, Data processing, interpretation or Description, finally followed by presenting the Findings and Conclusions of the study. All elements in various stages of research process are explained descriptively, offering due importance to them and treating them individually and distinctively.

STATEMENT OF PROBLEM

Parameters employed for measurement of development in all organizations depend on Physical, Human, Financial, and Information resources; however, in the process of organizational employees' development, employees do encounter problems that are resultant of the above forces.

Handling or solving these problems is the aim of the change management programmes, which aims to enhance employee's abilities in collectively handling the problems in an organizational environment. Evaluation of implementation intensities of various change management Programs in IT industry of Hyderabad and Bangalore assumes significance in the backdrop of stiff competition. Hence, evaluation of change management programs dealing with the development of employees' career through the collective efforts of its own employee from all levels of the organization forms the core part of the present research.

OBJECTIVE OF STUDY

Primary

To ascertain the underpinning of select Change Management Models in ERP implementations in IT industry at Hyderabad and Bangalore.

Secondary

To ascertain the underpinning of 'Chaos theory' and change management Roles' in ERP implementations in IT industry at Hyderabad and Bangalore.

Hypothesis

Primary

H_0 1: Underpinnings of Select Change Management Models is not related to ERP Implementations in IT industry at Hyderabad and Bangalore.

Secondary

H_0 2: Underpinning of *'Chaos theory and change management Roles'* is not related to ERP implementations in IT industry at Hyderabad and Bangalore.

Sampling

Sampling Plan

The sample plan consists of choosing employees from IT industries for the study from the geographical region of Hyderabad and Bangalore cities. Further, the total size and composition of IT employees of the IT firms form the base for prescribing no. and size of respondents to be drawn from various hierarchical levels of the IT firms.

Universe

Encompasses total number of Male and Female employees at various hierarchical levels of all IT firms at Hyderabad and Bangalore cities.

Sample Size

It is a proportional representation of the employee density at a given location, firms and their various hierarchical levels, fixing the sample size of 316 and 974 for Hyderabad and Bangalore respectively.

Sampling Technique

The process of drawing sample respondents from the sample universe is known as sampling technique, among many techniques available Stratified sampling is employed for the purpose since it is more appropriate as the sample respondents are distributed in different organizations as stratified groups at different hierarchical levels of the firms. The organizational setting of the employee pre determines the suitability of the sampling technique making the exercise more meaningful, appropriate and relevant.

STATISTICAL TOOLS APPLIED FOR ANALYSIS

The following statistical tools are used for analyzing the data procured from the respondents from different locations selected for the study.

Simple Percentage
Chi-square Analysis

LIMITATIONS OF STUDY

A research study of this nature could not be carried out without any limitations. Hence, this research study is limited to principally the population, target population and sample population as their opinions, attitudes there on the findings of the study. Second factor is the time factor, which exerts magnificent influence on the opinion of sample population. In a study of this magnitude though, meticulous care has been taken in each aspect of study.

Unawareness of concepts and procedures prevailing in some respondents.
Hesitation on part of few of the respondents to offer details.
Bias as a general phenomenon in the responses offered.

Despite the above limitations, the researcher offered his best to overcome the limitations while completing the study.

DATA ANALYSIS & INTERPRETATION

Table-1: Change Management through Chaos Theory in ERP Implementations in IT industry at Hyderabad and Bangalore

Change Management	1	2	3	4	5
	LOW		HIGH		
Managing Transitions					
Destabilizing employees	-	-	41 (3.2%)	1249 (96.7%)	-
Involving in decision making and problem solving	-	-	41 (3.2%)	1246 (96.5%)	3 (.2%)
Building Resilience					
Enhancing employee ability to absorb/accept change	-	-	41 (3.2%)	1242 (96.2%)	7(.5%)
Destabilizing the System					
Create a state of tension	-	-	43 (3.3%)	1245 (96.4%)	5 (.3%)
Seek disconfirmation of organizational beliefs	-	-	41 (3.2%)	1245 (96.4%)	2 (.2%)
Acting as devil's advocate	-	-	41 (3.2%)	1243 (96.3%)	6 (.5%)
Imparting creativity to cope with highly competitive markets	-	-	41 (3.2%)	1244 (96.4%)	5 (.4%)
Managing the Present and Future					
Balancing between the need for order and change	-	-	41 (3.2%)	1245 (96.4%)	4 (.3%)
Creating and Maintaining Learning Organization					
Facilities for continuous learning for every one	-	-	41 (3.2%)	1244 (96.4%)	5 (.4%)

Sources: Authors Compilation

Table-1 provides the change management actions as application of Chaos theory, which assumes that organizational change is non-linear, is fundamental rather than incremental. The companies continuously regenerate themselves through adaptive learning and interactive structural changes. In the present study, it can be seen that in change management actions, for managing transitions 96% of the sample rated 4 for destabilizing employees and involving them in decision-making and problem solving. The study also reveals that majority of respondents (96.2%) pointed out that building up resilience was high through enhancing employee

ability to absorb/accept change. The next step of change management action is destabilizing the system in which 96% of the IT employees selected gave high rating for creating a state of tension, seek disconfirmation of organizational beliefs. The respondents also rated high the change manager in acting as devil's advocate and imparting creativity to cope highly competitive markets. The change manager given rating of 4 (high) by majority of respondents in balancing the need for order and change. Further, it can be noted that majority of the respondents also rates facilities for continuous learning for everyone as high. Change is constant, from the results it can be concluded that chaos theory is related to ERP implementation in IT industry. With growth of organizations, complexity and possibility for susceptible events increase. Creativity and flexibility are necessary to adapt to the change and it is change manager role to build resilience, maintain balance and encourage creativity. From this result, it can be concluded that chaos theory has good influences in change management in ERP implementation in IT industry at Hyderabad and Bangalore.

Table-2: Gender differences in Chaos Theory

S. No.	Change Management	Male			Female			Chi-square Significance
	Rating	**3**	**4**	**5**	**3**	**4**	**5**	
1.	***Managing Transitions***							
A	Destabilizing employees	28	746		13	503		.332
B	Involving in decision making and problem solving	28	745	1	13	501	2	.352
2.	***Building Resilience***							
	Enhancing employee ability to absorb/accept change	28	743	3	13	499	4	.359
3.	***Destabilizing the System***							
A.	Create a state of tension	29	743	2	13	501	2	.441
B.	Seek disconfirmation of organizational beliefs	29	744	1	14	501	1	.575
C.	Acting as devil's advocate	28	742	4	13	501	2	.513
D.	Imparting creativity to cope with highly competitive markets	28	743	3	13	501	2	.545
4.	***Managing the Present and Future***							
A.	Balancing between the need for order and change	28	743	3	13	501	2	.545
5.	*Creating and maintaining learning organization*							
A.	Facilities for continuous learning for every one	28	742	4	13	503		.14

Sources: Authors Compilation

The table presents gender differences in chaos theory of change management. The study notes that majority of male and female respondents rated high the managing transitions, building resilience, destabilizing the system, managing the present and future, creating and maintaining learning organization. The chi-square test reveals that there are no gender differences as the calculated value is greater than 0.05 significance level.

FINDINGS

Moderate to very high Conceptual application of Chaos theory and change management.
Roles in ERP implementations in IT industry.
High Conceptual application of Chaos Theory and Change Management Roles by the majority of male and female respondents.

CONCLUSIONS

Concludes persistence in existing Chaos Theory and Change Management Roles in ERP implementations in IT industry.
Concludes that there are no gender differences in existing Chaos theory and change management Roles in ERP implementations in IT industry.

REFERENCES

Palmer, I., & Dunford, R. (2008). Organizational change and the importance of embedded assumptions. ***British Journal of Management*****,** 19(1), 20-32.

Abrahamson, E. (2000). Change without pain. ***Harvard Business Review***, *78*(4), 75-79.

Alvesson, M., & Sveningsson, S. (2008). ***Changing Organizational Culture***. USA: Routledge Publishing.

Beckhard, R., & Pritchard, W. (1992). ***Changing the Essence: The Art of Creating and Leading Fundamental Changes in Organizations.*** San Francisco: Jossey-Bass.

Buchanan, D., Claydon, T., & Doyle, M. (1999). Organizational development and change: The legacy of the nineties. ***Human Resource Management Journal***, *9*(2), 20-37.

Carnall, C.A. (2007). ***Managing Change in Organizations*** (5th Ed.). London: Prentice Hall.

Carr, D., Hard, K., & Trahant, W. (1996). ***Managing the Change Process: A Field Book for Change Agents, Consultants, Team Leaders, and Reengineering Managers***. New York: McGraw-Hill.

Duck, J. D. (1993). Managing change: The art of balancing**.** ***Harvard Business Review***, *17*(6), 109-118

Hannagan, T. (1998). ***Management Concepts & Practices*** (2nd Ed.). London: Pitman Publishing.

Kotter, J. P. (2005). Leading Change: Why Transformation Efforts Fail. ***Harvard Business Review***, 73(2), 59-67.

Retrieved from http://investopedia.com/terms/e/erp.asp

Retrieved from http://journals.sagepub.com/doi/abs/10.1177/0021886312469442

Retrieved from http://link.lib.byu.edu/portal/Managing-the-change-process--a-field-book-for/OSeBB2GkE6k/

Retrieved from http://link.library.deakin.edu.au/portal/Managing-the-change-process--a-field-book-for/OSe...

Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/bjom.2008.19.issue-s1/issuetoc

Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8551.2008.00568.x/abstract

Retrieved from http://onlinelibrary.wiley.com/resolve/doi?DOI=10.1111/j.1467-8551.2008.00568.x

Retrieved from http://sche.ap.gov.in/ASSTPROFDASHBOARD/Notifications/SRI%20KRISHNA%20DEVARAYA%20UNIVERSIT...

Retrieved from http://support.sas.com/resources/papers/proceedings13/430-2013.pdf

Retrieved from http://umsl.edu/~sauterv/analysis/f06Papers/Wonglikphai/

Retrieved from http://www.asee.org/documents/zones/zone1/2014/Student/PDFs/6.pdf

Retrieved from http://www.bestpracticehelp.com/ITIL_and_Organisational_Change_Tinkering_and_Kludging_to_A...

Retrieved from http://www.changemethod.com/change-management-roles/

Retrieved from http://www.economist.com/node/12918653

Retrieved from http://www.mba-tutorials.com/management/2265-implementation-of-erp-in-the-organization.htm...

Retrieved from http://www.nios.ac.in/media/documents/316courseE/E-JHA-31-10A.pdf

Retrieved from http://www.plumsoft.com/wp-content/uploads/2015/06/article2.pdf

Retrieved from http://www.scirp.org/(S(i43dyn45teexjx455qlt3d2q))/reference/ReferencesPapers.aspx?Referen...

Retrieved from http://www.skuniversity.ac.in/dload/PDF%20SKU-Asst%20Professors%20Notification%20Phase-II%...

Retrieved from http://www.umsl.edu/divisions/business/mob/Syllabi/5600_balser.pdf

Retrieved from http://www.wiley.com/WileyCDA/Section/id-351233.html

Retrieved from http://www.wiley.com/WileyCDA/Section/id-351234.html

Retrieved from http://www.wiley.com/WileyCDA/WileyTitle/productCd-0471788708.html

Retrieved from http://www.worldcat.org/title/managing-the-change-process-a-field-book-for-change-agents-c...

Retrieved from http://www-pub.iaea.org/MTCD/publications/PDF/te_1491_web.pdf

Retrieved from https://2012books.lardbucket.org/books/an-introduction-to-organizational-behavior-v1.1/s19...

Retrieved from https://annabelami.wordpress.com/2010/03/19/palmeri-and-dunford-r-2008-organizational-chan...

Retrieved from https://bloggerravi.wordpress.com/2017/05/23/balancing-past-present-and-future/

Retrieved from https://cb.hbsp.harvard.edu/resources/marketing/docs/95204f2.pdf

Retrieved from https://changedesignsportal.worldsecuresystems.com/public/organisation/change/Roles-in-cha...

Retrieved from https://changedesignsportal.worldsecuresystems.com/public/organisation/change/The-role-of-...

Retrieved from https://global.oup.com/academic/product/the-design-and-conduct-of-meaningful-experiments-i...

Retrieved from https://hbr.org/2007/01/leading-change-why-transformation-efforts-fail

Retrieved from https://hbr.org/product/leading-change-why-transformation-efforts-fail-hbr-bestseller/R070...

Retrieved from https://managementstudents.wordpress.com/2011/09/04/impact-of-enterprise-resource-planning...

Retrieved from https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID2656524_code2445090.pdf?abstractid=265652...

Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1095902

Retrieved from https://quizlet.com/93743842/mgmt-417-flash-cards/

Retrieved from https://selecthub.com/enterprise-resource-planning/why-erp-systems-are-important/

Retrieved from https://www.business.unsw.edu.au/Programs-Courses-Site/Courseoutlines/MBAX9131-s2-15-leade...

Retrieved from https://www.cliffsnotes.com/study-guides/principles-of-management

Retrieved from https://www.cliffsnotes.com/study-guides/principles-of-management/managerial-environments/...

Retrieved from https://www.deepdyve.com/lp/emerald-publishing/change-hrm-and-the-voluntary-sector-TyPhlCm...

Retrieved from https://www.deepdyve.com/lp/wiley/organizational-change-and-the-importance-of-embedded-ass...

Retrieved from https://www.enterpriseinnovation.net/files/whitepapers/top_10_erp_vendors.pdf

Retrieved from https://www.prosci.com/change-management/thought-leadership-library/making-a-business-case...

Retrieved from https://www.smartsheet.com/8-elements-effective-change-management-process

Retrieved from https://www.thebalance.com/point-of-view-1277038

Retrieved from https://www.torbenrick.eu/blog/change-management/successful-change-management-involve-the-...

Retrieved from https://yourbusiness.azcentral.com/functions-organization-business-4346.html

*****

PEZZOTTAITE JOURNALS

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

IMPACT OF GRAPHIC PRESENTATION OF NEWS IN NEWSPAPER PRODUCTION: A CASE STUDY OF THREE MAJOR HINDI DAILIES IN HARYANA

Monika Dua[10]

INTRODUCTION

Over the past few year or couple of years, technology has been integrated in our lives greatly. The most influential impact of technology is regularly on the transfer of information thorough various new high tech. modes. These high tech modes changed the style of newspaper writing, presentation and publication traditional methods. The twenty first centuries most innovative and creative invention in the field of printings is Graphics. And when we think about the newspapers, we think of them as bringing us news, when we think of news we think of what is going on in our surroundings us. And a newspaper is not only the source of information but it also a source of full entertainment. But it depends how it's designed so that the readers cum buyer immediately buy it and read it. As concern about the printing technology change the changed in the readers also took place. Now the readers cum buyers who always predict new content in the better presentation way. Now his behaviour not stable it changes every moment of the day. So it is very important and hard to hold the readers for the newspapers industry. That is why newspaper individually daily experiment the new things in terms of technology or content or the content presentation. In this manner newspaper also apply or adopt the new way of presentation in their printing the news. They also started to use the graphics in their news. Graphics are normally used in the form of Table's, Graphs, Pie Charts, Cartoon characters and Caricatures. This experiment by the media houses enhances their circulation and readerships, researchers said. If we talk about the graphics or to understand the meaning of real graphics these are the such visual elements which were used to explain any important information in such way that all text and content, photos or any video (when used in animation) in a story keeps the interest and also increase the readers of the newspaper if the news is published in form of graphical presentation. Graphical presentation of any news can be in the form of Pie charts, bar diagrams, used of caricature or cartoons. These graphics elements not even make the story interesting but also the important part of the content or the story. In our research or study we made it to prove that now the newspaper understood the importance of the graphics. Use of Graphics in a newspaper gives a feel of magazine. Which full feel the need of the buyers who wants to read magazines but because of higher cost could not able to buy magazines? So they satisfied themselves to read the newspapers. If we went to the history, the first graphic information in a newspaper was published in 1806 in The Times, a London based newspaper. That used graphic was a diagram of murder scene published for the motive of explaining the order of events in relation to the location **(Finberg/Itule, 1990, p 121).**

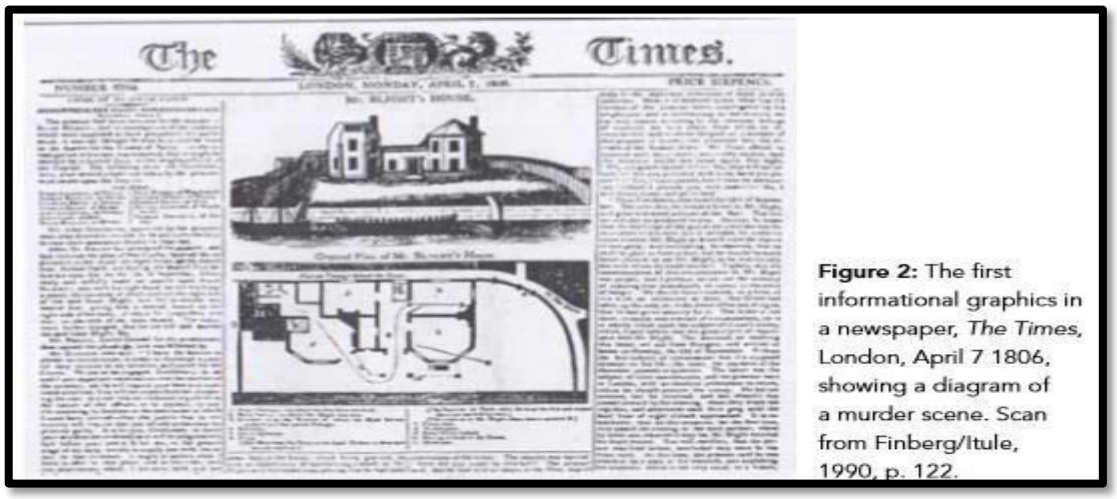


Figure 2: The first informational graphics in a newspaper, *The Times*, London, April 7 1806, showing a diagram of a murder scene. Scan from Finberg/Itule, 1990, p. 122.

Sources: Authors Compilation

***Special Reference**: The current state of graphics in British newspapers and news magazines Maren Volsdal Skirbekk Reading 2011, Dissertation submitted in the partial fulfilments of the requirements of the Master of Arts in Information Design at the Department of Typography & Graphic Communication, University of Reading, UK. Designed, typeset and printed the by author Maren Volsdal Skirbekk, using Bembo Std., & Avenir LT Std.*

[10] Assistant Professor, Department of Graphics and Animation, Institute of Mass Communication and Media Technology, Kurukshetra University, Haryana, India, monikadua26@gmail.com

For many years the use of informational graphics in newspapers was limited mainly due to time consuming production techniques ad limited printing technology. But during World War I informational graphics became a common practice in newspapers in Somme part of world. Graphics in newspapers used by many purpose. For this we can say that it can be divided into two broad fields. One is flavour graphics and informational graphics. The purpose of flavour graphics is as the name suggests the reader is inspired to read the story. Flavour graphics usually illustrations and solve the purpose which is solved by the photography. They used this type of graphics when relevant photography is not available. Informational graphics cover a, a hinterland between photography and illustration' **(Richard, 2000, p 89)** and used when a story cannot be told or even understood by only use of the words. Accompanied only by photography or illustration.

SCOPE AND LIMITATIONS OF STUDY

The present study is limited to only three Hindi major newspapers in Haryana.
The study is also limited to observe the one month of the three newspaper i.e. from 15 December-2017 to 15 January-2018.
The study also limited in way that space of all graphical presentation of news measures in the sq. cm.
Study divided and concerned in three main segments of news in the newspaper i.e. Front Page/Head Lines, Sports Page and Business Page.

OBJECTIVE OF STUDY

To explore state of the total space in sq. cm. which newspapers used graphical representation of news among the three major Hindi newspapers of Haryana i.e. Dainik Bhaskar, Dainik Jagran and Punjab Kesari?
To also find out the pre-defined segments status of news in terms of graphical presentation of news of the newspapers including % age wise.
To know the overall graphical presentation of news among the three newspapers.
To find out the segment/page wise graphical presentation of news in the newspapers.
To find out the comparison of segment and newspaper in terms of graphical presentation.

METHODOLOGY

It is a case study and totally based on the primary data.

Data Collection

Data were collected during 15 December-2017 to 15 February-2018. It is one Month data in which graphical presentation of news space was calculated in sq. cm. and noted. Data as the basis was analysed using in the tabular, percentage and graphical methods representations.

SIGNIFICANCE OF STUDY

The findings of this study will educate the managers, editors even production managers and page makers on the impact, feature and advantages of graphics presentation in newspaper production.
This research will contribute to understand the consumer's behaviour as to enhance the circulation and readership. It proves that graphics presentation is another factors to increase the circulation.

Table-1: Dainik Bhaskar (From 15 December-2017 to 15 January-2018)

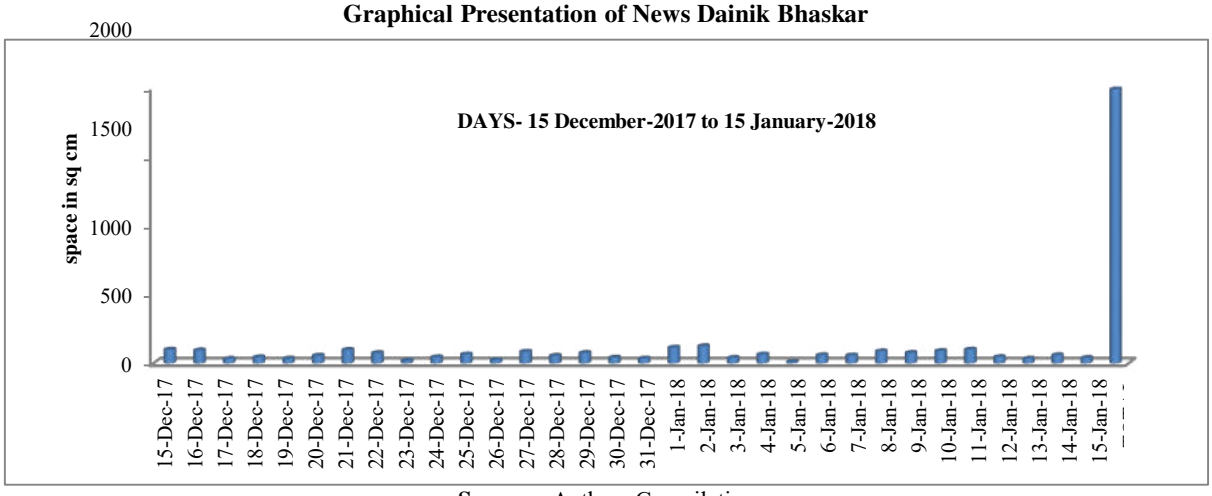
S. No.	Date	Sq. cm.	S. No.	Date	Sq. cm.
1	15-December-17	100	18	1-January-18	115
2	16-December-17	95	19	2-January-18	125
3	17-December-17	33	20	3-January-18	40
4	18-December-17	45	21	4-January-18	65
5	19-December-17	35	22	5-January-18	10
6	20-December-17	56	23	6-January-18	60
7	21-December-17	98	24	7-January-18	58
8	22-December-17	75	25	8-January-18	88
9	23-December-17	20	26	9-January-18	76
10	24-December-17	45	27	10-January-18	90
11	25-December-17	65	28	11-January-18	100

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

12	26-December-17	25	29	12-January-18	46
13	27-December-17	85	30	13-January-18	34
14	28-December-17	55	**31**	14-January-18	60
15	29-December-17	76	**32**	15-January-18	40
16	30-December-17	42		TOTAL	1992
17	31-December-17	35			

Sources: Authors Compilation

Graph-1: Dainik Bhaskar (From 15 December-2017 to 15 January-2018)



Sources: Authors Compilation

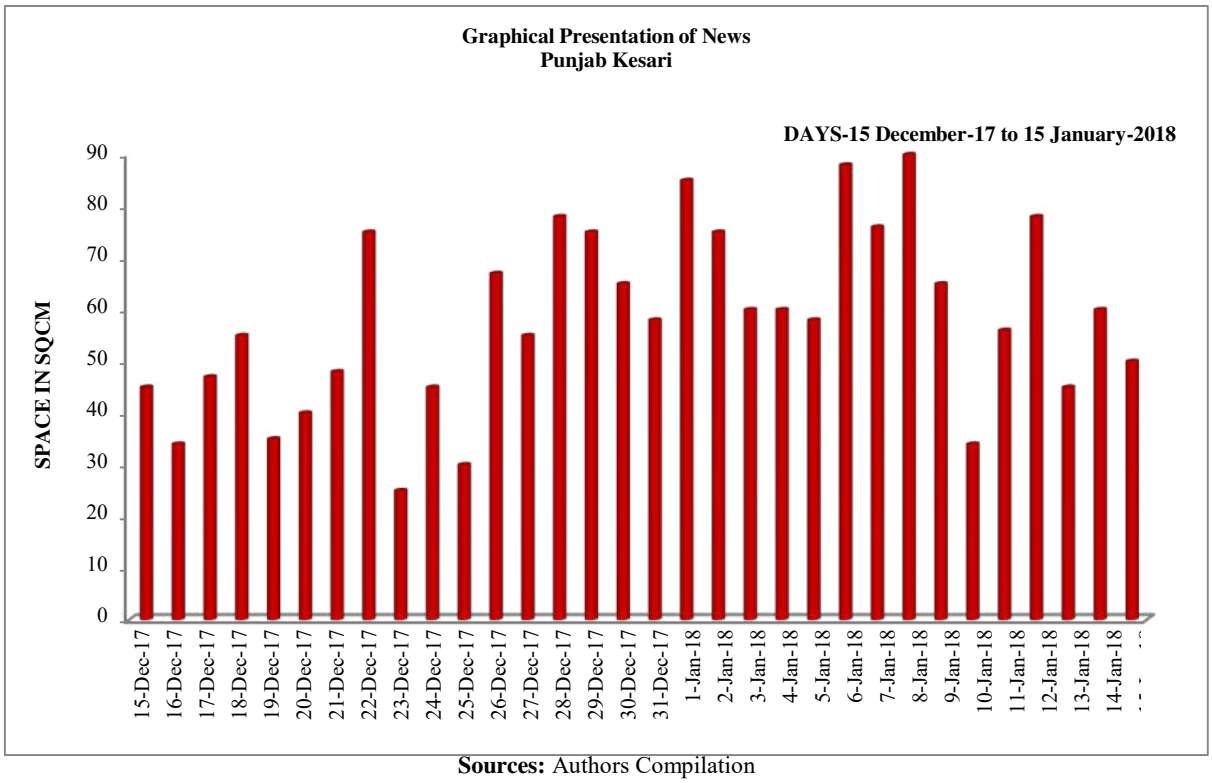
Graph-1 shows the overall picture of graphical presentation of Dainik Bhaskar news published. In this the Interpretation shows that a regular changes but not in very high level in terms of space but news in graphical presentation is regularly published. It proved that Dainik Bhaskar always tried to publish their news in graphical way so that it can be readable with interest of readers. If we concerned about the highest and lowest number of sq. cm. used for graphical presentation then it is 115 and 125 sq. cm., which is published on First and second January 2018 and 33 sq. cm., lowest published on 18 December-2017 i.e. and we predict the total sq. cm., published news in graphical presentation then it is 1992 sq. cm., of the total sq. cm., area of news published in said newspaper.

Table-2: Punjab Kesari (From 15 December-2017 to 15 January-2018)

S. No.	Date	Sq. cm.	S. No.	Date	Sq. cm.
1	15-December-17	45	18	1-January-18	85
2	16-December-17	34	19	2-January-18	75
3	17-December-17	47	20	3-January-18	60
4	18-December-17	55	21	4-January-18	60
5	19-December-17	35	22	5-January-18	58
6	20-December-17	40	23	6-January-18	88
7	21-December-17	48	24	7-January-18	76
8	22-December-17	75	25	8-January-18	90
9	23-December-17	25	26	9-January-18	65
10	24-December-17	45	27	10-January-18	34
11	25-December-17	30	28	11-January-18	56
12	26-December-17	67	29	12-January-18	78
13	27-December-17	55	30	13-January-18	45
14	28-December-17	78	**31**	14-January-18	60
15	29-December-17	75	**32**	15-January-18	50
16	30-December-17	65		TOTAL	1857
17	31-December-17	58			

Sources: Authors Compilation

Graph-2: Punjab Kesari (From 15 December-2017 to 15 January-2018)



Sources: Authors Compilation

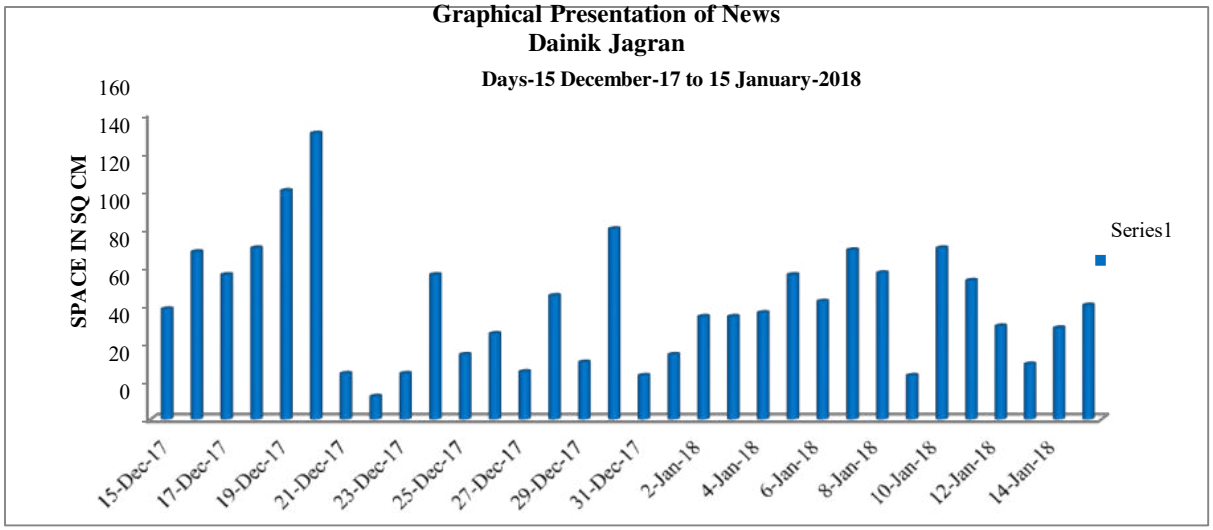
Graph-2 researchers tried to understand the overall picture of graphical presentation of Punjab Kesari. Interpretation shows that a regular changes in the figure of graphical presentation of the news in the newspapers. If we concerned about the highest and lowest number of sq. cm., used for graphical presentation then it is 85 sq. cm., which is published on First January 2018 and 34 sq. cm., lowest published on 16 December-2017 i.e. and we predict the total sq. cm., published news in graphical presentation then it 1857 sq. cm. of the total sq. cm., area of news published in said newspaper.

Table-3: Dainik Jagran (From 15 December-2017 to 15 January-2018)

S. No.	Date	Sq. cm.	S. No.	Date	Sq. cm.
1	15-December-17	58	18	1-January-18	34
2	16-December-17	88	19	2-January-18	54
3	17-December-17	76	20	3-January-18	54
4	18-December-17	90	21	4-January-18	56
5	19-December-17	120	22	5-January-18	76
6	20-December-17	150	23	6-January-18	62
7	21-December-17	24	24	7-January-18	89
8	22-December-17	12	25	8-January-18	77
9	23-December-17	24	26	9-January-18	23
10	24-December-17	76	27	10-January-18	90
11	25-December-17	34	28	11-January-18	73
12	26-December-17	45	29	12-January-18	49
13	27-December-17	25	30	13-January-18	29
14	28-December-17	65	**31**	14-January-18	48
15	29-December-17	30	**32**	15-January-18	60
16	30-December-17	100		TOTAL	1914
17	31-December-17	23			

Sources: Authors Compilation

Graph-3: Dainik Jagran (From 15 December-2017 to 15 January-2018)



Sources: Authors Compilation

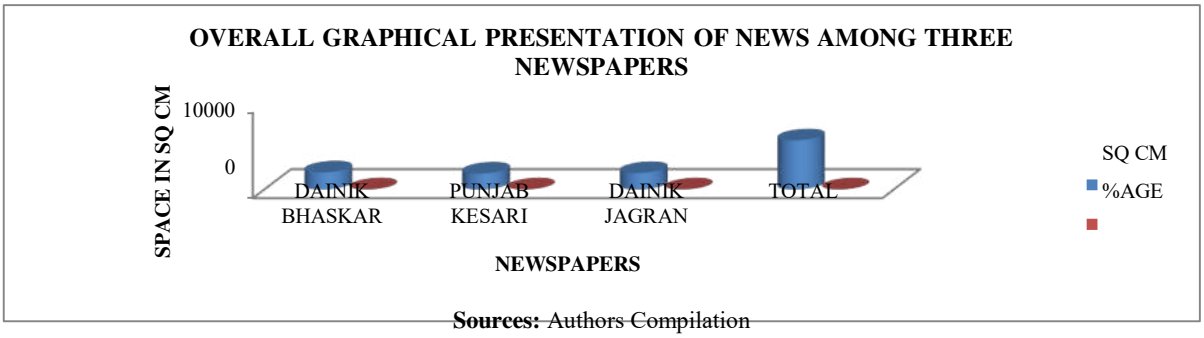
Graph-3 predicts the graphical presentation of Dainik Jagran. Interpretation shows that a regular changes in the figure of graphical presentation of the news in the newspapers. If we concerned about the highest and lowest number of sq. cm., used for graphical presentation then it is 150 sq. cm., which is published on 20 December 2017 and 23 sq. cm., lowest published on 09 January-2018 i.e. and we predict the total sq. cm., published news in graphical presentation then it 1914 sq. cm., of the total sq. cm., area of news published in said newspaper.

Table-4: Overall Graphical Presentation of News among the Three Newspapers

S. No.	Name of Newspaper	Sq. cm.	% Age
1	Dainik Bhaskar	1992	35%
2	Punjab Kesari	1857	32%
3	Dainik Jagran	1914	33.38%
	Total	5763	100%

Sources: Authors Compilation

Graph-4



Sources: Authors Compilation

Graph-4 predicts the overall graphical presentation of Dainik Jagran, Dainik Bhaskar and Punjab Kesari. Data and Figure shows that Highest use of sq. cm. for the news as graphical format is made by Dainik Bhaskar i.e. 1992 sq. cm. It is 35% of the total newspaper used the sq. cm. area of newspaper for the graphical presentation of news. On the second number Punjab Kesari is the newspaper which used 1857 sq. cm. for the graphical presentation of news i.e. also the 33% of the total area used by all three newspapers for the graphical way of news analysis in their newspaper. Next and last research paper is Dainik Jagran, data shows that Dainik Jagran published the 1914 sq. cm. of the total sq. cm. published as graphical presentation. And it is the 33.38 % of the

Volume 7, Number 1, January – March' 2018
ISSN (Print): 2319-9016, (Online): 2319-9024
SJIF (2016): 7.368, SJIF (2017): 7.418

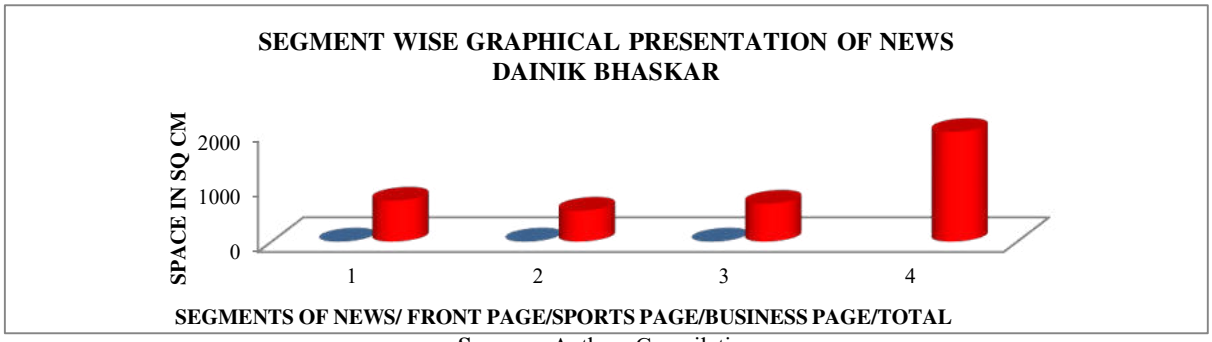
total sq. cm. published for the graphical presentation of news among the all three newspaper. The research's data hence proved that Dainik Bhaksar is the only paper among these three newspaper which used the maximum space for the graphical presentation of the news and the Punjab Kesari is second newspaper which used this method of graphical presentation of the news in his newspaper.

Table-5: Segment/page wise Graphical Presentation of News in Dainik Bhaskar

S. No.	Name of Segment	Sq. cm.	% Age
1	Main News/Front Page	743	37%
2	Sports News/Page	561	28%
3	Business News/Page	688	34.53%
	Total	1992	100%

Sources: Authors Compilation

Graph-5



Sources: Authors Compilation

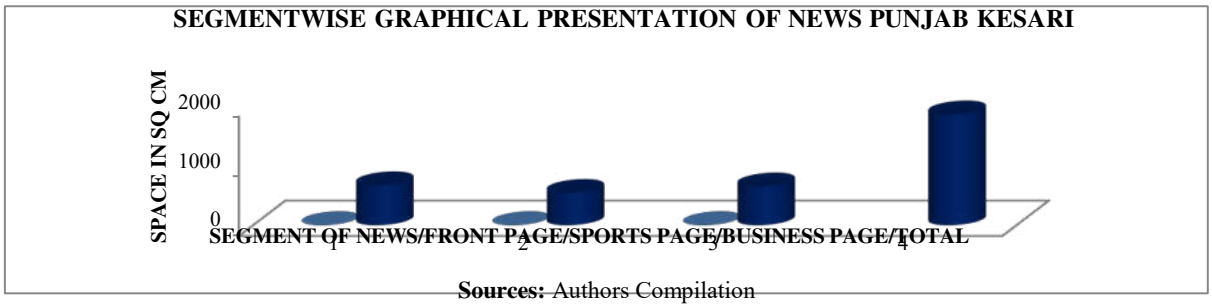
Graph-5 predicts the segment or page wise graphical presentation of news in Dainik Bhaskar. It shows that in 1992 sq. cm. which was published by Dainik Bhaskar 743 sq. cm. area was published on front page or for the main head line i.e. the 37% of the total sq. cm. area published. 561 sq. cm. space published for the sports page i.e. 28% of the total published area. It means for the sports page 561 sq. cm. has been used by the newspaper in terms of graphical presentation of the sports news. At last remaining 688 sq. cm. space published for business/financial page or business news. In terms of %age it is the 34.53% of total area to be be published for the news in shape of graphical presentation.

Table-6: Segment/page wise Graphical Presentation of News in Punjab Kesari

S. No.	Name of Segment	Sq. cm.	% Age
1	Main News/Front Page	668	36%
2	Sports News/Page	540	29%
3	Business News/Page	649	34.98%
	Total	1857	100%

Sources: Authors Compilation

Graph-6



Sources: Authors Compilation

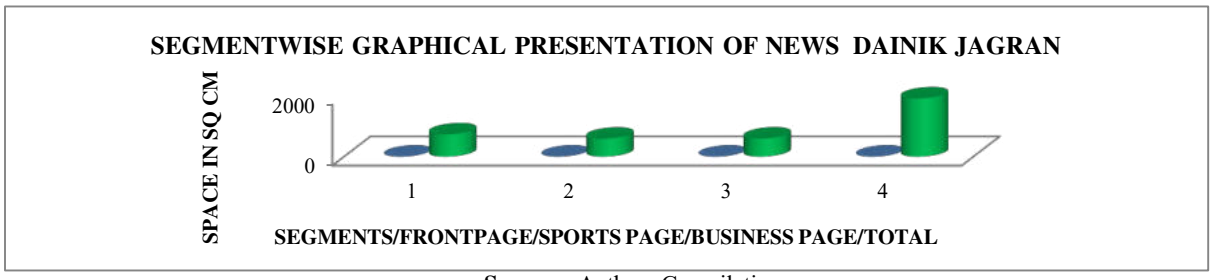
Graph-6 predicts the segment or page wise graphical presentation of news in Punjab Kesari. It shows that in 1857 sq. cm. which was published by Punjab Kesari 668 sq. cm. area was published on front page or for the main head line i.e. the 36% of the total sq. cm. area published. 540 sq. cm. space published for the sports page i.e. 29% of the total published area. It means for the sports page 649 sq. cm. has been used by the newspaper in terms of graphical presentation of the sports news. At last remaining 649 sq. cm. space published for business/financial page or business news. In terms of %age it is the 34.98% of total area to be published for the news in shape of graphical presentation.

Table-7: Segment/page wise Graphical Presentation of News in Dainik Jagran

S. No.	Name of Segment	Sq. cm.	% Age
1	Main News/Front Page	730	38%
2	Sports News/Page	590	31%
3	Business News/Page	594	31%
	Total	1914	100%

Sources: Authors Compilation

Graph-7



Sources: Authors Compilation

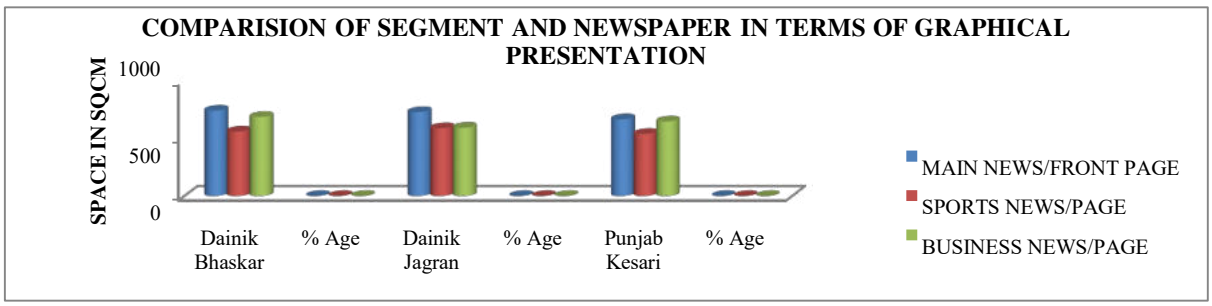
Graph-7 predicts the segment or page wise graphical presentation of news in Dainik Jagran. It shows that in 1914 sq. cm. which was published by Dainik Jagran 730 sq. cm. area was published on front page or for the main head line i.e. the 38% of the total sq. cm. area published. 590 sq. cm. space published for the sports page i.e. 31% of the total published area. It means for the sports page 590 sq. cm. has been used by the newspaper in terms of graphical presentation of the sports news. At last remaining 594 sq. cm. space published for business/financial page or business news. In terms of %age it is the 31% of total area to be be published for the news in shape of graphical presentation.

Table-8: Comparison of Segment and Newspaper in Terms of Graphical Presentation

S. No.	Name of Segment	Dainik Bhaskar	% Age	Dainik Jagran	% Age	Punjab Kesari	% Age
1	Main News/Front Page	743	37%	730	38%	668	36%
2	Sports News/Page	561	28%	590	31%	540	29%
3	Business News/Page	688	34.53%	594	31.00%	649	34.98%
	Total	1992	100%	1914	100%	1857	100%

Sources: Authors Compilation

Graph-8



Sources: Authors Compilation

The Graphs shows that Dainik Bhaskar is the paper who published the Main Page news in graphical format in maximum space i.e. 743 sq. cm. (37%) in comparison to Dainik Jagran (730 sq. cm.), (38%) and Punjab Kesari (668 sq. cm.), (36%). If we talk about the Sports page then Dainik Jagran stood first position i.e. (590 sq. cm). (31%) which published their sports news in the graphical format. Rest of the two paper stood second and third position i.e. Dainik Bhaskar (561sq. cm. (28%) and Punjab Kesari (540 sq. cm. (29%). And at last The Business Page, here again Dainik Bhaksar become number one by using 688 sq. cm. (34.53%) space for the graphical presentation of the business or finance news. Rest of two like Punjab Kesari (649 sq. cm. 34.98%) and Dainik Jagran (594 sq. cm. (31%) used their space for publishing the news in graphical format.

FINDINGS

Study shows that Dainik Bhaskar is the maximum user of graphical presentation of their news. Dainik Jagran and Punjab Kesari also follow him on second and third position. In other finding researcher found that Front Page / Headlines are maximum present in the way of graphics. Then the Business page on second number to whom newspaper used for the maximum graphical presentation of the news for their readers. Last is sports page news which are published maximum in the graphical format. One another findings also founded that Dainik Bhaskar is the only newspaper which publish the news in graphical format on Front Page or main head line. Dainik Jagran displayed or published the Sports News by using the maximum space in comparison with another newspaper. Again Dainik Bhaskar stood first for the publishing of Business News on Business Page in graphical format in comparison with other newspapers.

REFERENCES

Bilgin, T., Çamurcu A. Y. (2008). ***Çok Boyutlu Veri Görselleútirme Teknikleri, 10***. Akademik Biliúim KonferansÕ, Çanakkale Onsekiz Mart Üniversitesi

Bounegru, L. (2011) Notes from Visualizing Europe Conference: the power and potential of data visualization. ***Masters of Media***. Retrieved from http://mastersofmedia.hum.uva.nl/2011/06/24/notes-from-visualizing-europe-the-power-and-potential-of-data-visualization/

Cleveland, W. S. (1994). The Elements of Graphing Data, Revised Edition. New Jersey: Hobart Press. Friendly, M. (2007). A brief history of data visualization. ***Handbook of Computational Statistics: Data Visualization***, Volume 3, 1-34. Heidelberg: Springer-Verlag.

Cooke, L. (2005). A visual convergence of print, television, and the internet: charting 40 years of design change in news presentation. ***New Media and Society***, 7 (1), 22-46

Franklin, B. (2008). The future of newspapers. ***Journalism Practice,*** 2(3), 306-317.

Akanda, A. K. M., Eamin, Ali, Hoq, Kazi, Mostak Gausul, & Hasan, Nazmul. (2013). Reading Habit of Students in Social sciences and arts: A case study of Rajshahi University. ***Chinese Librarianship: an International Electronic Journal,*** 35. Retrieved on September 22, 2013 from http://www.iclc.us/cliej/cl35AHH.pdf

Chauhan, P., & Lal, P. (2012). Impact of Information Technology on Reading habits of College Students. ***International Journal of Research Review in Engineering Science and Technology.*** Retrieved on September 22, 2013 from http://ijrrest.org/issues/?page_id=1

Noor, N. M. (2011). Reading Habits and Preferences of EFL Post Graduates: A Case Study. ***Indonesian Journal of Applied Linguistics,*** I(1). Retrieved on October 08, 2013 from http://balaibahasa.upi.edu/wp-content/uploads/2011/07/01_Noorizah-Reading_habit-edited.pdf

Retrieved from http://dergipark.ulakbim.gov.tr/jlls/article/view/5000084296

Retrieved from http://iitg.ac.in/design/

Retrieved from http://ijrrest.org/issues/?page_id=1

Retrieved from http://www.journals.aiac.org.au/index.php/IJALEL/article/view/2151

Retrieved from http://www.white-clouds.com/iclc/cliej/cl35AHH.pdf

Retrieved from https://dhanushka1996.wordpress.com/2010/11/14/newspaper-as-a-source-of-information/

Retrieved from https://manipal.edu/foa/department-faculty/department-list/department-of-interior-design.h...

Retrieved from https://projectchampionz.com.ng/2016/07/28/impact-graphic-presentation-newspaper/

Retrieved from https://rscitexam.com/category/rscit-exam/

Retrieved from https://rscitexam.com/chinese-calendar-28-january-2017-15-february-february-2018-year/

Retrieved from https://www.coursehero.com/file/16469314/cl35AHH/

Retrieved from https://www.merriam-webster.com/dictionary/understand

Retrieved from https://www.scribd.com/document/158431434/The-current-state-of-graphics-in-British-newspap...

*****

Editor-In-Chief
Pezzottaite Journals
Saraswati Lane, Adjacent Nataraj Dance Academy, Near Modern Dewan Beverages, Jammu Tawi – 180002,
Jammu and Kashmir, India.
(Mobile): +91-09419216270 – 71
editorinchief@pezzottaitejournals.net,contactus@pezzottaitejournals.net