Home

O UGC

Q Search

Journal Details

Journal Title (in English Language)	Journal of the Oriental Institute (print only)	(Current Table of Content)
Publication Language	English
Publisher	Oriental Institute, Maharaja Sayajirao University of Baroda
ISSN	0030-5324
E-ISSN	NA
Discipline	Arts and Humanities
Subject	Arts and Humanities (all)
Focus Subject	Religious studies
UGC-CARE coverage years	from January-2020 to Present

Journal of The Oriental Institute

Estd. 1949

Accredited Grade 'A' by NAAC

Oriental Institute

The Maharaja Sayajirao University of Baroda
Vadodara

Editor
Sweta Prajapati

सत्यं शिवं सुन्दरम्

Estd. 1949

INDEX

A STUDY ON THE IMPLEMENTATION PROCESS OF BACKUP SOLUTIONS AND TYPES OF BACKUP STRATEGIES USING CLOUD TECHNOLOGY BY SME'S/SMB'S.

Dr. Ravindra Gadge, Professor, Pune (INDIA),
Dr. Umesh S Kollimath, Associate Professor AIMS Baramati,
Dr. Shriram S. Badave, Asst. Prof., AIMS Baramati,
Dr. Shalini M. Swamy, Asst. Prof., Dept. of MBA, ICER,Wagholi,Pune,
Prof.Suvarna Hatole, Asst. Prof., JDBIMS, Pune

Abstract:

The objective of this project is to assess the key aspects for implementing a backup solution Backup-exec that uses traditional methods and cloud based integrated online backups from its predecessors and why the concept has gained currency in the recent past.

Internal trainings material with OPERATIONS EXCEL for backup and restores of various applications like SQL, Exchange, and SharePoint and Windows Server/Client, Cloud based strategies etc.

There are many ways to classify research designs, but sometimes the distinction is artificial and other times different designs are combined. Nonetheless, the list below offers a number of useful distinctions between possible research designs.

The primary data is a first-hand data which is collected by survey, filling questionnaires, by interviewing or by the field work etc.

The secondary data is the readymade data which provides the information that is not obtained by any agencies

For the current project, descriptive research was the most relevant method for the study.

Majority of the respondents believe the Backup and recovery strategy implemented in the organization is adequate. People have got awareness towards the public cloud services which generates the types of economies of scale and sharing of resources that can reduce costs and increase choices of technologies

Key Words: SQL- structured query language, DS-Descriptive Research, SMEs: small and Medium-sized enterprises, PC-Personal Computer, SMB- Small and medium business (SMB), SaaS - Software as a Service (SaaS)

INTRODUCTION OF RESEARCH TOPIC

The amount of data used by businesses has increased exponentially, in the past five years alone. Corporate scandals, international unrest and glaring security flaws in computer operating systems and software applications have resulted in intense and detailed analysis of data, as it enters and leaves an individual's PC/enterprise computer.
The objective of this project is to assess the key aspects for implementing a backup solution Backup-exec that uses traditional methods and cloud based integrated online backups from its predecessors and why the concept has gained currency in the recent past.

IMPORTANCE OF BACKUP SOFTWARE IN IT INDUSTRY

Businesses of all sizes are witnessing an explosion in the volume of data they hold. Whether it is the result of the Internet, email, or increasingly heavy and media-rich application software, there is a massive growth in the volume of data all around. Conservative estimates from IDC in October 2016, place data growth at approximately 80% per year. Data is increasingly being recognized as one of the real assets of a company, and losing this data would cause severe damage to any organization.

Data loss can be very costly, particularly for organizations in the small and medium business (SMB) market where the difference between survival and closure can rest on the ability to recover from a disaster. At the very least, critical data loss will have a financial impact on companies of all sizes.

"American businesses lost over $8 billion due to computer viruses in the first six months of 2015." Source: Computer Economics 2016

In today's time, technology has been revolutionized at a maximum speed, providing solutions for everything. The demand for efficiency of work, computer and Internet was introduced. And nowadays, nothing can be done without having a computer and the Internet connection. However, with many advantages, there are some areas of concern. During the time of system crash, theft, floods or fire, the working environment can get hampered as the professionals will not get to access the valuable information stored

This is when the need of remote (cloud) backup service comes into picture. Once the data is stored in a secured location, it becomes easy for the professional to recover all the critical data within a few minutes. You too can make use of this powerful service. You can also get assistance from online backup services that ensure infallible and effective features if you are uncertain about the online backup solutions effectiveness because of Internet trespassing and theft that has endangered everyone.

A business without a backup and recovery strategy is asking for trouble and taking an unnecessary risk. IT staff should never allow this to happen. There are no excuses; backups should be given as much importance as the overall protection of the organization's network. Hyperbole? Imagine for a moment that one day you go to work to find that all your company data – meaning your email, your Word and Excel documents, PDFs, databases, contact lists, accounting data, billing information, etc. – has simply vanished, permanently. Gone is everything that makes your company what it is and that has allowed it to operate and grow as a business since its inception. How will your company recover? Are you going to recreate years' worth of data in a few months, all the while trying to support and manage your current business obligations? For most businesses, small, medium or large, this will probably be too much to bear – 90% of all companies that suffer a major data loss go out of business within two years (London Chamber of Commerce). Permanently losing data is a completely preventable disaster, all it takes is a backup and recovery strategy. The irony is that most businesses recognize the importance of having backups. A recent survey of small and Medium-sized enterprises (SMEs) by Rubicon Consulting rated backup as their second-highest computing priority, after defense against viruses and other malware; and ahead of issues like reducing costs and deploying new computers. Yet nearly one-third of SMEs surveyed do nothing to back up their data. At the same time, while they are struggling with explosive data growth, the backup processes SMEs have put in place often create a false sense of security that puts data and the company, at risk. The Rubicon survey found that92% of companies have deployed some form of data backup

technology, yet 50% of them have lost data. Of the companies that lost data, approximately one-third lost sales, 20% lost customers, and one-quarter claimed the data loss caused severe disruptions to the company. Criminal negligence or incompetency? When your company shutters its doors for good because it can't service customers, bill or conduct essential business, does it really make a difference?

The financial impact on a company is a combination of loss of business, low productivity, legal action, and the cost of re-creating data. In 2016, a study from Ontrack, a company that provides data recovery services, showed that the cost of re-creating just 20 MB of data can be extensive:

Data type	Time to re-create 20 MB	Cost
Sales and marketing	19 days	$17,000
Accounting	21 days	$19,000
Engineering	42 days	$98,000

Table: 1: Creation of data, its cost and time taken to create the data

At its worst, critical data loss can result in business collapse. Studies by the National Archives and Records Administration showed that 80% of companies without well-conceived data protection and recovery strategies go out of business within two years of a major disaster.

A disruption of key primary or support operations can cause a crisis for any business. It need not be a catastrophic failure like those caused by a bomb; it could be an outage to a single circuit that carries patient records or payroll information. All computer data is at risk from threat or damage. Even with the most reliable equipment and the most secure operating environment, there is always the possibility of something going wrong.

The On track survey in 2016 shows the following to be the most common causes of data loss.
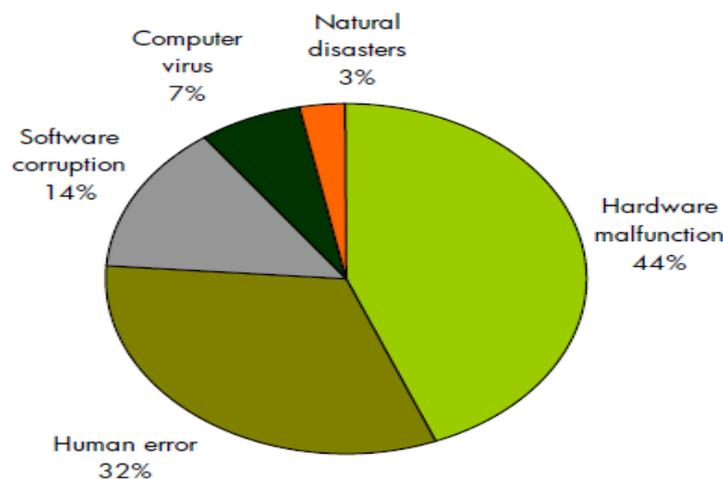

Fig:1.1 Cause of Data Loss

Advantages And Disadvantages Of Data Backup To Cloud

Data is the ultimate lifeline for a business. You need your data protected and you need copies of it that serve as backups of the original files, to ensure smooth and uninterrupted business operations.

According to Network Specialists, only 50% of businesses are confident that their data is backed up, regularly and properly. Businesses feel that they lack the technical expertise and equipment to ensure proper backups. It is important that you take the care necessary to back up files, as a disaster may strike at any time. There are numerous risks from external and internal sources that may corrupt your data.

Cloud backup is another option that has emerged over recent years. Technology has opened the way to higher bandwidths and optimized capacity. It has become a popular online option compared to portable media such as external hard drives. Two approaches exist to create cloud backups Software as a Service (SaaS) and cloud storage services.

Implementing A Backup Strategy

Having decided to implement a backup system, thought must be given to choosing the most appropriate strategy. Disk drives must be backed up comprehensively on a regular basis, or the backup gives nothing more than a false sense of security. There are some important considerations.

Determine your system requirements:
Every system that holds valuable information must be protected. In addition to databases that are clearly mission critical, it is important to remember the more mundane and routine systems. Decide which parts of the system are critical and which parts you may choose not to back up, for example an individual user's C: drive.

Selecting the right tape drive solution:
Choosing the right tape drive will be linked to business priorities where SMBs will be more concerned to find a cost-effective, easy to use solution, while larger businesses might prioritize performance and ongoing cost of ownership. Consequently, the choice of tape technology is likely to depend on the scale of business needs.
• DAT/DDS provides the optimum price: performance ratio for most SMB server environments.

• LTO Ultrium delivers ultimate performance for high-end and enterprise servers and networks.

• SDLT and DLT VS80 provide backward compatibility to customers who have already invested heavily in these technologies.

Selecting the right backup software:

Backup software should enable customers to immediately install and begin backing up their system. This software provides all the functionality required for general backup applications. However, if more sophisticated features are required, Symantec Backup Exec sharing tape drives and libraries among multiple systems in heterogeneous environments and provides central management and control. There are several major features to be considered when evaluating backup/recovery software packages.

• Centralized administration: the software package should allow for the administration of multiple backup servers and devices from a single interface if your environment requires this.

• Usability: the application interface should be intuitive and easy to use, while simultaneously providing the power and flexibility to meet your needs.

• Scalability: the backup software should support any additional hardware required in the future. For example, if you are choosing a software package to back up local servers, be sure that it supports autoloaders if you might decide to upgrade in the future.

• Options and agents: ensure that you have full access to files even when they are open to ensure that even files in use get backed up.

• Compatibility and support: finally check that your tape drive and operating system is fully supported, that the pricing model includes full licenses for the whole network rather than a single server, and that technical support is fully available to you.

Planning The Backup

There are three key ways in which backup can be performed—full backup, differential backup, and incremental backup as illustrated in the following diagram.
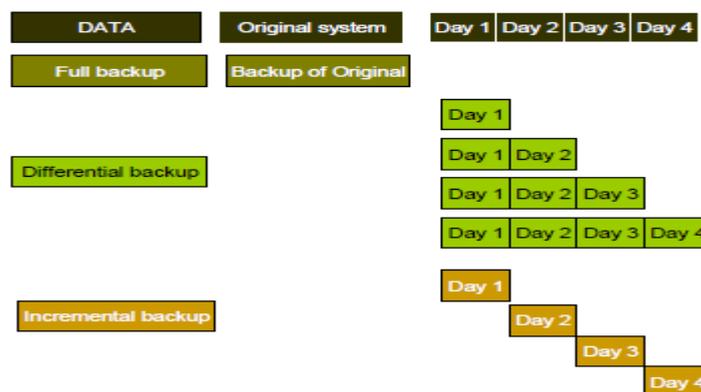

Fig: 1.3 Planning the Backups

Full backups:

All data on a system is backed up. Full backups are done periodically to ensure that all data resides on a single piece or a single set of media so that, when restoring information, only the full backup media is required. A full backup is the basis for all other types of backup.

Advantages:

• All files are easily found when needed—all the information can be found on the last backup tape.

Disadvantages:

• Since most system files rarely change, a good deal of the backup is redundant. Full backups take time to perform and so backing up static information is wasting time.

• If full backups are not performed frequently, then data restored may be well out of date.

Differential backups:

A differential backup stores all files that have changed since the last full backup. When restoring differential backups, the full backup media and the latest differential media are needed.

Advantages:

• The method requires less time than full backup.

• Undertaken daily, it means that there is a more current set of data to restore.

• Restores are more efficient than incremental backups, as only two sets of tapes are required—the full backup and the latest differential backup.

Disadvantages:

• Because each differential tape contains the data that has changed since the last full backup, a good deal of redundancy occurs and this requires more capacity. However, if your differential backup still fits on one piece of media, this should not matter.

• Increasing amounts of time are required as you get further from the full backup.

Incremental backups:

An incremental backup stores all files that have changes since the last backup. When restoring from incremental backup schemes, the last full backup plus all incremental backup sets are required.

Advantages:

• It uses fewer medium: only files that were created or changed since the last backup are included.

• Backups require less time to conduct.

• It reduces the backup "duty cycle" of the device (the number of hours per week it runs).

Disadvantages:

• Multiple tapes might be needed when restoring data, making the process more complex.

• It takes more time to carry out the restore process.

Good housekeeping:

Good housekeeping is essential to the validity of the backup. The following steps should be taken.

Manage the media rotation:

A tape rotation scheme and schedule is vital to the reliability of the backup process. The following schemes are the most common in use; however, depending on the value of the media, the quantity of data, and the backup device in use, a schedule may be devised specifically for your needs.

1. Grandfather-father-son (GFS) media rotation strategy:

The Grandfather method is one of the most common media rotation strategies. It is simple to administer and comprehensive enough to allow easy location of Files when they need to be restored.

In the Grandfather scenario, four media are used Monday through Thursday for Incremental or differential backups; another three media are used every Friday For full backups.

The remaining 12 media are used for monthly full backups and are kept offsite.

Grandfather Backup Strategy:
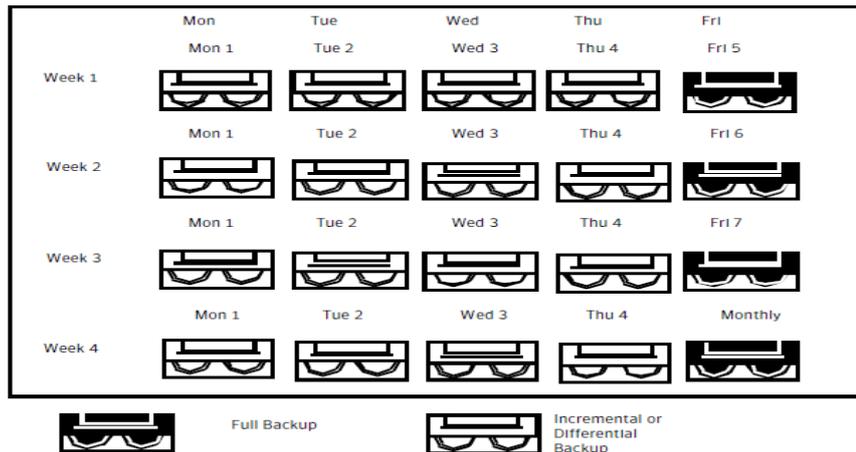
Fig: 1.4 Grandfather Backup Strategies
Cloud even is a better Strategy for Backup and Disaster Recovery

Small and medium businesses are coming around to see how cloud services can be leveraged for disaster recovery. What makes it attractive is its low cost. If you don't have the resources to maintain your own IT task force or data center, then this is a great alternative.

Objective

The study is designed and conducted to accomplish the following objectives at Operational excel, Pune:

o   To implement different backup methodologies, retention, agents & and options available/used with the Backup, a backup application.

o   To reduce/eliminate the downtime which may occur due to data loss?

o   To implement best practices for faster recovery or point in time recovery.

o   To enhance affordability in terms of operating cost by providing cloud based solution.

HYPOTHESIS

•   H1: Having Backup software in place & implementing best practices for faster recovery which reduces downtime.

•   H0: Having Backup software in place & Implementing best practices for faster recovery which does not reduces downtime.

•   H1: The cloud solution does enhance affordability in terms of operating cost.

•   H0: The cloud solution does not enhance affordability in terms of operating cost.

RESEARCH METHODOLOGY

- Understanding what is Digital data with reference to backup and restore and how it is carried out in various organizations.
- Understanding types of backups and restores.

RESEARCH METHOD

There are many ways to classify research designs, but sometimes the distinction is artificial and other times different designs are combined. Nonetheless, the list below offers many useful distinctions between possible research designs.

- Descriptive (e.g., case-study, naturalistic observation, Survey)
- Correlation (e.g., case-control study, observational study)
- Semi-experimental (e.g., field experiment, quasi-experiment)
- Experimental (Experiment with random assignment)
- Review (Literature review, Systematic review)
- Meta-analytic (Meta-analysis)

For the current project, **Descriptive Research** was the most relevant method for the study as such used descriptive research methods.

Descriptive research methods are pretty much as they sound — they describe situations. They do not make accurate predictions, and they do not determine cause and effect. There are three main types of descriptive methods: observational methods, case-study methods and survey methods.

Sampling method

In statistics, quality assurance, & survey methodology, **sampling** is concerned with the selection of a **subset of individuals from within a statistical population to estimate characteristics of the whole** population. Each observation measures one or more properties (such as weight, location, color) of observable bodies distinguished as independent objects or individuals. In survey sampling, weights can be applied to the data to adjust for the sample design, particularly stratified sampling. Results from probability theory and statistical theory are employed to guide practice. In business and medical research, sampling is widely used for gathering information about a population.

The sampling process comprises several stages, defining the population of concern

- Specifying a sampling frame, a set of items or events possible to measure
- Specifying a sampling method for selecting items or events from the frame
- Determining the sample size
- Implementing the sampling plan
- Sampling and data collecting
- Data which can be selected

Secondary Data is based on

1) COMPANY MANUALS
2) ONLINE JOURNALS
3) BOOKS AND LITERATURE ONLINE

Q.1) Which backup software is used in your organization for backing up the data?
INTERPRETATION

75 % IT Managers are of the opinion that Symantec Backup exec is the Backup software which should be used.25 % of IT manager believes Veeam Backups or Druva Software should be used for backup and recovery. None of the IT Managers recommended EMC Networker.

Q.2) What in your opinion is the best way of backing up digital data?
INTERPRETATION
44% of respondents believe best way for Digital data is having a good backup and restores ready using the latest backup and recovery software. 30% respondents believe the data should be kept on the servers without backups. 13% each respondent believes they can use traditional methods for managing the information on the servers. 10% respondents are of the opinion to store the information on a NAS device.

Q10) WHICH IS THE FASTEST RECOVERY METHOD OF RESTORE TO REDUCE DOWNTIME?
INTERPRETATION
16% of respondents feel cloud based method is the fastest means of restoring data a major chunk which is 52% think that the disk based backup can be restored faster 28 % of respondents think that tape based backup can be restored faster while as very small respondent 4% believe it is cps.

11) Is the backup & restore performance fast and complete in its time window?
INTERPRETATION
75% of respondents do not feel that the system runs slow during backup the process. 25% respondents feel that the system goes slow.

Q.12) which backup devices are best to do a faster recovery?
INTERPRETATION
16% of respondents feel cloud based method is the fastest means of restoring data a major chunk which is 52% think that the disk based backup can be restored faster 28 % of respondents think that tape based backup can be restored faster while as very small respondent 4% believe it is cps

Q15) What are the enhancements that help in reducing the operating cost with cloud based solution?
INTERPRETATION
48% of respondents feel Network Availability is an enhancement while 21% of respondents believe it high cost involvement there are 16% who think resiliency is an issue while as only 15% of respondents think it as a concern with bandwidth.

Q16) "Security" provided with cloud based backups in terms of affordability, is an enhancement?
INTERPRETATION
60% of respondents strongly agree and feel that cloud based solution has security enhancement 21% agree to it there are 15% neutral respondents and 4% of them completely disagree to it .

Hypothesis Testing:

Hypo1
H1: Having Backup software in place & implementing best practices for faster recovery which reduces downtime.
H0: Having Backup software in place & Implementing best practices for faster recovery which does not reduces downtime.

Q.10) which is the fastest recovery method of restore to reduce downtime? * Q.3) which backup software is used in your organization for backing up the data?

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.368[a]	5	.045
Likelihood Ratio	12.504	5	.028
McNemar-Bowker Test	.	.	.[b]
N of Valid Cases	125		

a. 7 cells (58.3%) have expected count less than 5. The minimum expected count is .26.

b. Computed only for a PxP table, where P must be greater than 1.

The SPSS software analysis with above analysis researcher received the Chi-Square value is **11.368[a]** and degree of freedom is **5** hence as per the Carl-Pearson the p-value (Pearson Value) as **0.045** Since **P** value is very smaller than **0.05** which is the Standard value of Chi-Square test, so from the above result researcher conclude that backup software is used in your organization for backing up the data which fast for recovery of restore to reduce downtime. **Q.10) which is the fastest recovery method of restore to reduce downtime? * Q.6) Rate the backup strategies implemented by the organization?**

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.356[a]	3	.039
Likelihood Ratio	6.203	3	.102
McNemar-Bowker Test	.	.	.[b]
N of Valid Cases	125		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .52.

b. Computed only for a PxP table, where P must be greater than 1.

The SPSS software analysis with above analysis researcher received the Chi-Square value is **8.356[a]** and degree of freedom is **3** hence as per the Carl-Pearson the p-value (Pearson Value) as **0.039** Since **P** value is very smaller than **0.05** which is the Standard value of Chi-Square test, so from the above result researcher conclude that backup strategies implemented by organization for backing up the data which fast for recovery of restore to reduce downtime. From above statements it is infers that if any organization **having Backup software in its place & implementing best practices/strategy applied leads to faster recovery which reduces downtime.** Hence null hypothesis is rejected and alternate hypothesis is accepted.

Hypo2
H1: The cloud solution does enhance affordability in terms of operating cost
H0: The cloud solution does not enhance affordability in terms of operating cost.

Q.15) what are the enhancements that help in reducing the operating cost with cloud based solution? * Q.10) which is the fastest recovery method of restore to reduce downtime?

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.386[a]	3	.040
Likelihood Ratio	6.203	3	.102
McNemar-Bowker Test	.	.	.[b]
N of Valid Cases	125		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .52.

b. Computed only for a PxP table, where P must be greater than 1.

The SPSS software analysis with above analysis researcher received the Chi-Square value is **8.386[a]** and degree of freedom is **3** hence as per the Carl-Pearson the p-value (Pearson Value) as **0.040** Since **P** value is very smaller than **0.05** which is the Standard value of Chi-Square test, so from the above result researcher concluded that enhancements that help in reducing the operating cost with cloud based solution.

Q.16) "Security" provided with cloud based backups in terms of affordability, is an enhancement? * Q.10) which is the fastest recovery method of restore to reduce downtime?

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	24.011[a]	9	.004
Likelihood Ratio	25.261	9	.003
McNemar-Bowker Test	59.998	6	.000
N of Valid Cases	125		

a. 10 cells (62.5%) have expected count less than 5. The minimum expected count is .76.

The SPSS software analysis with above analysis researcher received the Chi-Square value is **24.011[a]** and degree of freedom is **9** hence as per the Carl-Pearson the p-value (Pearson Value) as **0.004** Since **P** value is very smaller than **0.05** which is the Standard value of Chi-Square test, so from the above result researcher concluded that with cloud based backups in terms of affordability, is an enhancement which is fastest recovery method of restore to reduce downtime.

From the above it is concluded that the cloud solution does enhance affordability in terms of operating cost compare with other alternatives.

Hence null hypothesis is rejected and alternate hypothesis is accepted

Hypothesis	**Status**

H1: Having Backup software in place & implementing best practices for faster recovery which reduces downtime.	Accepted
H0: Having Backup software in place & Implementing best practices for faster recovery which does not reduces downtime.	Rejected
H1: The cloud solution does enhance affordability in terms of operating cost.	Accepted
H0: The cloud solution does not enhance affordability in terms of operating cost.	Rejected

FINDINGS

• Majority of the respondents are of the opinion that the Backup and recovery strategy implemented in the organization is adequate.

• Most of the respondents are of the opinion that the data is backed up on a timely basis and does not impact the production hours of the employees.

• Majority of the employees are of the opinion that the data is restored on time in case of a restore request.

• All the employees are of the opinion that the quality of the data is maintained once restored.

• Three fourth of respondents were in favor of Symantec Backup-exec and one fourth where in favor of Veaam/Druva as a backup software

• Online backup vendors catering to needs of a specific niche segment or an industry vertical. Ex: Iron Mountain Live vault caters to specialized server backup needs.

CONCLUSION:

• From above statements it is infers that if any organization **having Backup software in its place & implementing best practices/strategy applied leads to faster recovery which reduces downtime.**

• Researcher concluded that with cloud based backups in terms of affordability, is an enhancement which is fastest recovery method of restore to reduce downtime.

From the above it is concluded that the cloud solution does enhance affordability in terms of operating cost compare with other alternatives

• It is concluded that that the data is backed up on a timely basis and does not impact the production hours of the employees.

• It is found that Backup and recovery strategy implemented in the organization is adequate and need of hours.

- It is find out that the essence of data safety in the field information technology it would not be untrue to say that without the extent of backup and restore the IT industry would be in nonstop threat of data loss as such with the presence of Backup and restore machinery the industry can fell comforted to continue function flawlessly.
- It has been resolute the quality of the data is maintained once restored

LIMITATIONS

The topic, protection of Digital data backup is vast. The project lasted for only two months, hence it was not possible to learn, understand and implement Digital data backup and restore in depth. The project was done concentrating on the Backup and Recovery strategy for OPERATIONS EXCEL. The challenges and advantages at different organization may vary depending the criticality and the type or data they are backing up and the frequency of restore

Following are the project Limitations

- In the event of Disaster Recovery (DR) the data backed-up on any media is not sufficient to achieve or restore data.
- Other resources like computer hardware, network and software media are required too.

BIBLIOGRAPHY & REFERENCES

BLIOGRAPHY / REFERENCES

Buyya, R., Voorsluys, W. & Broberg, J., 2011. Introduction to Cloud Computing, in Cloud Computing: Principles and Paradigms. 1st ed. Hoboken, NJ, USA.: John Wiley & Sons, Inc. Bryman, A. & Bell, E., 2007. Business Research Methods. 2nd ed. London: Oxford University Press. Bouwman, H., Van Den Hoof, B., Dijk, J. V. and Van De Wijngaert, L. (2005) Information communication technology in organizations : adoption, implementation, use and effect . London: Sage. Burns, B. R. (2000) Introduction to Research Methods. 4th edn. London: Sage Caldeira, M. M. & Ward, J. M., 2003. Using resource-based theory to interpret the successful adoption and use of information systems and technology in manufacturing small and medium-sized enterprises. European Journal of Information Systems, 12(2nd), pp. 127-141. Cloud Times (2013) 'The State of Cloud Computing Around the World: India'. Available at: http://cloudtimes.org/2013/01/06/cloud-computing-around-the-world-india/ (Accessed: 28 July 2015)
ENISA, 2009. BENEFITS, RISKS AND RECOMMENDATIONS FOR INFORMATION SECURITY. [Online] Available at: www.enisa.europa.eu/act/rm/files/deliverables/.../fullReport [Accessed March 2013]. Forbes (2013) The Cloud Revolution and Creative Destruction. Available at: http://www.forbes.com/sites/oracle/2013/02/12/the-cloud-revolution-andcreativedestruction/ [Accessed March 2013]. Forbes (2014) 'India Cloud Opportunities Reignite in 2014'. Available at: http://www.forbes.com/sites/alexanderhaislip/2014/01/14/india-cloud-opportunities/ (Accessed: 28 July 2015) Forbes (2015) 'India's Economic Revival Confirmed by New Harvard University Study'. Available at: http://www.forbes.com/sites/timtreadgold/2015/05/20/indias-economicrevival-confirmed-by-new-harvard-university-study/ (Accessed: 28 July 2015)

Federico, E. (2011) The Economics of Cloud Computing, The IUP Journal of Managerial Economics, Vol. IX, No. 2

Abdulaziz, A., 2012. Cloud Computing for Increased Business Value. International Journal of Business and Social Science, 3(1), pp. 234-239. Accenture Technology Vision 2013 (2013) Available at: http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Technology-Vision2013.pdf (Accessed: 19th February 2013). Aljabre, A. (2012) Cloud Computing for Increased Business Value. International Journal of Business and Social Science. 3 (1) January. Armbrust, M. Fox, A. Griffith, R. Joseph, A. D. Katz, R. H. Konwinski, A. Lee, G. Patterson, D. A., Rabkin, A. Stoica, I. and Zaharia, M. (2009) Above the Clouds: A Berkeley View of Cloud Computing, Technical Report No. UCB/EECS-2009-28, February 10, available: http://www.eecs.berkeley.edu/Pubs/TechRpts/2009/EECS-2009-28.pdf, (Accessed: 11 November 2012). Boguslavsky, M., 2011. How to move to the cloud in an emerging market. [Online] Available at: http://memeburn.com/2011/07/how-to-move-to-the-cloud-in-an-energingmarket/ [Accessed 06 2013].

Internal training material provided by OPERATIONS EXCEL

http://www.howtogeek.com

https://education.emc.com

http://www.emc.com/data-protection/index.htm

http://en.wikipedia.org/wiki/Backup_and_Restore

https://www.veritas.com/product/backup-and-recovery/backup-exec

BIBLIOGRAPHY

Research Methodology - Harish Gupta

Research Methodology: Methods and Techniques: C. R. Kothari

Business Information Systems - Elizabeth Hard castle

IT Management - David McKean

Backup &Recovery: Inexpensive Backup Solutions for Open Systems - W. Curtis Preston