ISSN (Online) : 0975-1432
ISSN (Print) : 0975-153X
DOI: 10.18311/gjeis

Vol 2 | Issue 2 | July-Dec 2010

global Journal of ENTERPRISE INFORMATION SYSTEM

GJEIS

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Editor-In-Chief

www.gjeis.com

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Scholastic Seed Inc.
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Critical Success & Failure Factors of EIS

Message from the Editor-in-Chief's Desk

After a brilliant reception of three preceding issues published in a regular intervals i.e Jan-2009, July-2009 & Jan-2010, respectively and finally now on the verge of finalizing Dec 2010, we are privileged for your overwhelming responses and also making faith in the GJEIS fraternity. We know that it's an academician around the globe who had made this successful. The credit also goes to our editorial board who had taken lots of effort from inception to accomplishment.

We once again throw a light and recall you that GJEIS is an **Internationally Recognized Referred J**ournal which takes into consideration Blind and Peer Review process. The USP of the Journal is it's inclination towards Enterprise Information System and free access. **The journal had massive hits, which impact we can see through Google Scholar.**

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On Behalf of an editorial Board of GJEIS **http://www.ejournal.co.in/gjeis** we are appreciating the authors for putting faith on us. Due to Overwhelming response and **further leads towards a quality p**ublication we are making this journal a Peer Reviewed with the help of Electronic Review process so that we should follow Paper less Movement and in totality Save the Environment.

It's my **right** to **greet** you all **formerly yet again to rejoice the most recent issue** of GJEIS after publishing two vital issues in a year 2009 **and one in 2010**. The theme dedicated to this issue itself is "Critical Success & Failure Factors of EIS". This is a **last issue** of 2010 valid from **July-Dec** 2010.

I **once again appreciative for your support and endeavor to furnish GJEIS to enormous height and broaden** into information based **archive in order to benefit academia and industry in totality.**

Dr. Subodh Kesharwani Editor-In-Chief [GJEIS]

31st October 2010

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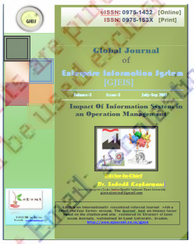
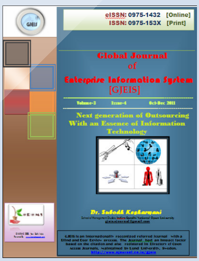
3	Vol-3 Iss-3	Impact Of Information System in an Operation Management	
4	Vol-3 Iss-4	Next generation of Outsourcing With an Essence of Information Technology	

Global Journal of Enterprise Information System

July 2010-Dec 2010

Volume-1 Issue-2

CRITICAL SUCCESS FACTORS IN ERP SYSTEM IMPLEMENTATION: *RESULTS FROM AN EXPLORATORY STUDY*

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ABSTRACT

This paper reports the findings from an exploratory study conducted prior to a formal study into the critical success factors that can play a role during the implementation process in Malaysian organizations. A survey was carried out to identify top 10 critical success factors from a list of 27 critical success factors compiled from past research. Information Technology directors from 10 different manufacturing organizations in Penang, Malaysia rated the list and top 10 critical success factors were identified for further research. The top ten critical success factors identified are Top management support, Business Plan & Vision, Teamwork & Composition, Project management, Project champion, Learning competency, User training and education, Change readiness, Vendor support and Communication. The Friedman test was significant (χ^2 = 135.35, p< 0.01) indicating that the managers ranked the 27 critical factors differently with some ranked much more important as compared to the others. A further test of concordance was carried out and the results also show that there is an agreement among the ratings among the 10 managers where the Kendall's W test was significant (χ^2 = 135.35, p< 0.01) with a coefficient of 0.621 (a value closer to 1 indicates total agreement). Thus we can conclude that the 10 most important critical success factors identified are common factors that the ten managers mutually agreed upon. Thus the next step will be for a formal study to be carried out developing a proper instrument to measure the 10 critical success factors identified.

KEYWORD

Critical Success Factors [CSF]	Malaysia Internet
Exploratory	Concordance
Manufacturing organizations	Business

Preface

The business environment has become increasingly complex and the marketplace has changed from local to global. Constant pressure is applied on the management to improve competitiveness by lowering operating cost and improving logistics. Organizations therefore have to continuously re-adjust or realign their operations to meet all these challenges by being responsive to the customer and competition. A useful tool that businesses are turning to in order to build strong capabilities, improve performance, undertake better decision-making and achieve a competitive advantage is Enterprise Resource Planning [Mudimigh, & Al-Mashari[i], 2001]. Enterprise Resource Planning (ERP) system is a packaged business software system that enables a company to manage the efficient and effective use of resources (materials, human resources, finance, etc) by providing a total integrated solution for the organization's information processing needs [Nah et al.[ii], 2001]. ERP as a business solution aims to help the management by setting better business practices and equipping them with the right information to take timely decision. The Star, Jan 15th 2002 [The Star[iii], 2002] reported that ERP has become the pre-requisite for companies to compete in global economies, especially in the e-commerce era. Based on a survey by AMR Research, ERP application is expected to grow by 32% over the next 5 years and total market value will reach USD66.6 billions by 2003 which represents 43% of the application budget of the organizations [AMR Research[iv], 1999]. In May 2001, Boston-based AMR Research predicted that total ERP Company's revenue will grow at a 14 % compounded annual growth rate, increasing to USD36 billion in 2005 from USD 21 billion in 2001.

Many researchers prior to this have done research on the critical success factors and out of these there has been a long list of critical success factors identified [Nah et al.[ii], 2001; Somers, & Nelson[v], 2001; Nah et al.[vi], 2003; Esteves, & Pastor[vii], 2000; Akkermans, & Helden[viii], 2002; Zhang et al.[ix], 2002; Holland et al.[x], 1998]. Nevertheless, the use of that many factors would prove cumbersome and not parsimonious. As such an endeavor was undertaken to first embark on an exploratory study to identify a smaller list of critical success factors that are applicable in the context of Malaysia before a formal research is carried out. This paper reports the findings from that exploratory study.

CRITICAL SUCCESS FACTORS

Previous research [Somers, & Nelson[v], 2001], views critical success factors as situated exemplars that help extend the boundaries of process improvement, and whose effect is much richer if viewed within the context of their importance in each stage of the implementation process. Table 1 summarizes the CSF's and the studies. From this table, factors such as top management support, and project management seems to be a broad consensus among these researchers.

A list of 27 CSF's were compiled from the past research done by some authors [Mudimigh, & Al-Mashari[i], 2001; Nah et al.[ii], 2001; Somers, & Nelson[v], 2001; Nah et al.[vi], 2003; Esteves, & Pastor[vii], 2000; Akkermans, & Helden[viii], 2002; Zhang et al.[ix], 2002; Holland et al.[x], 1998; Somers et al.[xi], 2000; Markus, & Tanis[xii], 2000; Jafari et al.[xiii], 2006; Stratman, & Roth[xiv], 2002]

Table 1: Critical Success Factors Mentioned in the Literature

	Critical Success Factors (CSF's)	a	b	c	d	e	f	g	h	i	j
1	Appropriate business and IT legacy systems				X	X			X	X	X
2	Architecture choices	X			X	X			X		
3	Business Plan & Vision		X	X	X	X			X	X	
4	Business Process Reengineering	X	X		X	X		X	X		X
5	Careful package selection	X				X	X	X			
6	Change readiness & Culture	X	X	X	X	X		X	X		X
7	Clear Goals & Objective	X				X	X				
8	Communication	X		X	X	X	X		X	X	X
9	Data analysis & conversion	X						X			X

10	Education on new business processes	X				X				X	
11	Empowered decision makers					X					
12	Learning competency	X	X								
13	Management of expectations	X					X				
14	Minimal customization	X				X					
15	Monitoring and evaluation of performance				X				X		
16	Organizational Trust between partners					X	X				
17	Partnership with vendor	X									
18	Project champion	X			X	X	X		X		
19	Project management	X	X	X	X	X	X	X	X	X	X
20	Strategic IT Planning		X			X				X	
21	Teamwork & Composition	X	X		X	X	X	X		X	
22	Top management support	X	X	X	X	X	X	X	X	X	X
23	Use of consultants	X				X					
24	Use of steering committee	X									
25	Use of vendors' tools	X									
26	User training and education	X	X	X		X		X			X
27	Vendor support	X					X	X		X	X

Legend:
Studies: a: Somers & Nelson, (2001); b: Stratman & Roth, (2002); c: Al-Mudimigh, Zairi & Al-Mashari, (2001); d: Nah, Zuckweiler & Lau, (2003); e: Esteves-Sousa & Pastor-Collado, (2000); f: Akkermans & Helden, (2002); g: Zhang, Lee, Zhang & Banerjee, (2002); h: Nah & Lau, (2001); i: Holland, Light & Gibson, (1999) ; j: Jafari, S.M, Osman, R.M, Yusuff R.M & Tang S.H. (2006).

Result of the survey can be found in the Table 3, with the top 10 CSF's italicized.

METHODOLOGY

Information Technology directors from 10 different manufacturing organizations in Penang, Malaysia were requested to rate this list. The profile of the 10 organizations is presented in Table 2.

Table 2: Profile of the organizations

Company	Country of Origin	Number of Employees	Products	Duration ERP Implemented
1	Foreign	3500	Hard disc	8
2	Foreign	1500	LED's and Philips Lighting	4
3	Foreign	8000	Network Communication	8
4	Foreign	800	Tape Drive	5
5	Local	4300	Wafer	3
6	Foreign	600	Audio	4
7	Foreign	1500	RF products, electronics	3
8	Foreign	2200	Circuit board maker	4
9	Foreign	3500	Network communication	7
10	Foreign	7500	LED's & display, RF microwave & wireless components	5

The profile shows that these companies have implemented ERP between 3 to 8 years. Thus the experience gained from the implementation would be most valuable when rating the critical success factors.

Table 3: Ranking of Critical Success Factors

Critical Success Factors	Mean Rank
Top management support	2.00
Business Plan & Vision	2.30
Teamwork & Composition	6.70
Project management	7.50
Project champion	8.00
Learning competency	8.40
User training and education	9.40
Change readiness	9.70
Vendor support	12.30
Communication	12.45
Clear Goals & Objective	13.00
Use of steering committee	13.20
Data analysis & conversion	14.80
Monitoring and evaluation of performance	15.15
Management of expectations	15.30
Business Process Reengineering	16.20
Partnership with vendor	16.85
Careful package selection	16.95
Empowered decision makers	17.30
Education on new business processes	17.30
Use of consultants	17.70
Architecture choices	18.50
Use of vendors' tools	20.10
Minimal customization	20.60
Organizational Trust between partners	20.60
Appropriate business and IT legacy systems	22.50
Strategic IT Planning	23.20

Note: Lower rank means the factors is consistently ranked important as the ranking is based on 1=the most important with 27=the most unimportant.

From Table 3, it can be seen that the top 10 critical success factors identified are Top management support, Business Plan & Vision, Teamwork & Composition, Project management, Project champion, Learning competency, User training and education, Change readiness, Vendor support and Communication. The Friedman test was significant (χ^2 = 135.35, p< 0.01) indicating that the managers ranked the 27 critical factors differently with some ranked much more important as compared to the others.

Next a concordance test (Table 4) was run to test whether the raters, ie; the 10 managers agreed on the importance rating for each of the factor. If the concordance coefficient is closer to 1 then we can conclude that there is total agreement and if the value is close to 0 then there is no agreement at all. The Kendall's W test was significant (χ^2 = 135.35, p< 0.01) with a coefficient of 0.621 (a value closer to 1 indicates total agreement). Thus we can conclude that the 10 most important critical success factors identified are common factors that the ten managers mutually agreed upon.

Table 4: Test of Concordance

	Critical Success Factors	Mean Rank
1	Top management support	2.00
2	Clear goals and objectives	2.30
3	Project team competence	6.70
4	Dedicated resources	7.50
5	Project management	8.00
6	Business plan and vision	8.40
7	Project champion	9.40
8	Interdepartmental cooperation	9.70
9	Careful package selection	12.30
10	Empowered decision makers	12.45
11	Vendor support	13.00
12	Interdepartmental communication	13.20
13	Use of steering committee	14.80
14	Monitoring and evaluation of performance	15.15
15	Data analysis and conversion	15.30
16	Management of expectations	16.20
17	Partnership with vendor	16.85
18	Business Process Reengineering	16.95
19	Change management	17.30
20	User training on software	17.30
21	Education on new business processes	17.70
22	Use of consultants	18.50
23	Architecture choices	20.10
24	Use of vendor tools	20.60
25	Minimal customization	20.60
26	Organizational trust between partners	22.50
27	Appropriate business and IT legacy system	23.20

Note: In concordance testing we are interested in the agreement/disagreement between the raters on one factor as opposed to the Friedman test whether the comparison is between the 27 factors on the raters.

DISCUSSION AND CONCLUSION

The purpose of this exploratory research was to identify a smaller number or manageable number of critical success factors that can be further developed for a formal study on successful implementation of ERP systems in Malaysia. The exploratory study found ten critical success factors which are Top management support, Business Plan & Vision, Teamwork & Composition, Project management, Project champion, Learning competency, User training and education, Change readiness, Vendor support and Communication which are directly relevant and critical in the Malaysian environment.

The results are consistent with the literature and enhance the understanding of the critical success factors leading to ERP implementation success. Appropriate resources should be allocated to each of these factors to reduce the likelihood of ERP implementation failures [Nah et al.[vi], 2003]. Thus the next step will be for a formal study to be carried out developing a proper instrument to measure the 10 critical success factors identified.

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Global Journal of Enterprise Information System

July 2010-Dec 2010

Volume-2 Issue-2

Impact of formal Inspection to Software Requirements Specification For Software Quality Assurance

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ABSTRACT

Software Development involves a series of activities which are prone to errors. These errors may occur at an early stage of the development process when user requirements are incorrectly or incompletely defined, and also at later stages when design and programming faults are introduced. To overcome such errors, software development should always be accompanied by Quality Assurance (QA) activities. Requirements inspection and software testing are the two most important quality assurance activities. These activities are often used in different phases of the software development life cycle (SDLC).

KEYWORD

Software	Formal Inspection
Quality Assurance	Software
Testing	SDLC
Graphical User Interfaces (GUIs)	

Preface

The incorrectness, ambiguity, hidden & missing functionalities and errors in requirement specification documents reflect in multifold as the system development progresses and worst results can be observed when system is fully operational. Thousands of software bugs and failures are reported worldwide due to theses minor or major defects.

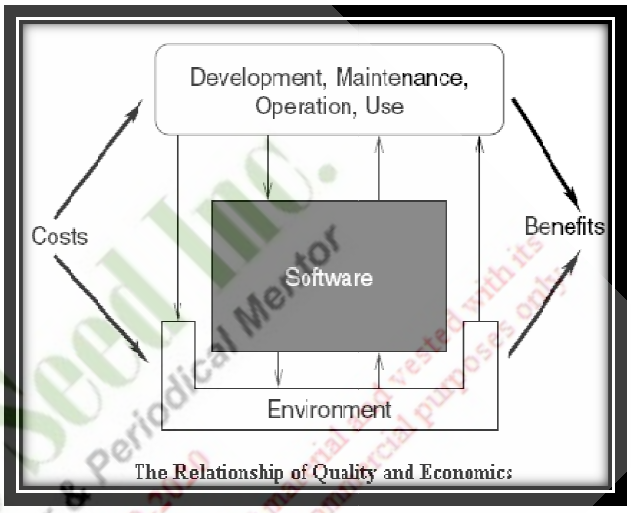
Software Development involves a series of activities which are prone to errors. These errors may occur at an early stage of the development process when user requirements are incorrectly or incompletely defined, and also at later stages when design and programming faults are introduced. To overcome such errors, software development should always be accompanied by Quality Assurance (QA) activities. Requirements inspection and software testing are the two most important quality assurance activities. These activities are often used in different phases of the software development life cycle (SDLC).

The formal requirements inspection is carried at an initial stage of SDLC to find defects, problems and see what's missing mostly in specification documents and also help in deciding test plans, test cases etc. It is one of the most cost effective methods to ensure Software Quality. On the other hand, testing is usually done at a later stage of SDLC to check for program faults after coding. As the purpose of requirement inspection and testing is different so these are treated as "separate" and "unrelated" tasks by software developers.

One of the most reliable methods of ensuring problems, or failure, in software project is to have properly documented requirements specification document. Requirements are the details describing an application's externally-perceived functionality and properties. Requirements should be clear, complete, detailed, cohesive, attainable, and testable.

It has been now proposed after lots of researches to apply through review and testing techniques to requirements specification at an initial phase of the SDLC. The idea is to uncover requirements defects well before programming starts. Thus, the possibility of inadvertently developing software based on an incorrect specification can be reduced or avoided.

The benefits of such proposals are excellent for small projects as they can fix almost every possible cause of error as well as for large-scale projects where the specifications are complicated and may easily contain many requirements defects, and the costs of repairing these defects at later stages of the SDLC are typically tens or hundreds of times greater than if the defects are corrected early [8].



The Relationship of Quality and Economics

Also, it has been observed that a large amount of unexplained variance in the data indicating that other factors must be affecting inspection performance. The nature and extent of these other factors now have to be determined and identified to improve the efficiency of inspections & quality of the software. The hypotheses that the "inputs" into the inspection process (reviewers, authors, and code units) were significant sources of variation **[Adam, 1996].**

Above discussions underline a direct impact on the Cost, Quality and Reliability and directly affect the time schedule and budget of the overall system. There is clearly a relationship and a need to manage cost, quality and reliability in combination. Moreover, economics should be the basis of any analysis **[Wagner, 2007].** To support this proposal various concepts are defined in this paper to apply inspections to requirement specifications, keeping the motive to improve the quality of the specification before software design commences for Quality Assurance.

Let's have an outline of the basic concepts of requirements specification and testing.

1.1 Requirements Specification

A requirements specification is an important document produced at the initial stage of SDLC. It defines the functionality, scope, and constraints of the software. It also serves as a basis for contracts as well as communication between the software developer and the user. The importance of the specification cannot be over-emphasized. If the development is based on an incomplete and incorrect specification, then even with well written code, the software will still be unsatisfactory and unable to fulfill user requirements. In addition, defects in a vague specification will be propagated to subsequent phases of the SDLC. At best, developers will eventually catch these defects, but at the expense of schedule delays and additional costs. At worst, the defects will remain undetected, resulting in the delivery of a faulty software system to users.

[Fagan[i], 1986] of IBM is credited with introducing the use of inspections in software development. Although many programmers use informal peer reviews of their code, Fagan made formal inspection an integral part of the development process, for locating defects in code or in other documentation such as requirements specifications and designs. Inspections are team activities; the basic idea is to formally inspect the item by one or more reviewers, typical in a meeting after individual preparations. Other members in the inspection team include the producer of the item to be inspected and a moderator who facilitates the inspection process.
Various forms of inspections are now adopted in the software industry. The cost-effectiveness of inspections in revealing defects has been extensively reported. For example, Doolan observed a 30-fold return on investment for every hour spent on inspecting specifications. Russell also reported a similar return of 33 hours of software maintenance saved for every hour of inspection. **[Chen Et al, 2006]**

A common practice to do software inspection is to use a checklist, which provides reviewers with a list of items to check. However, well written checklists are not generally available. In addition, most checklists do not help reviewers to focus on particular aspects of a specification, implicitly treating all the information in the specification as equally important. As a result, reviewers are left with an ill-defined responsibility of detecting all defects in the entire specification.

1.2 Software Testing

Testing is commonly regarded as a predominant software quality assurance activity. It is a major means to detect software faults and to prevent them from propagating through to the final production system, where the cost of defect removal is far greater. Unlike inspections, testing can evaluate how well a software system actually performs its function in its intended or simulated environment. Statistics have shown that the cost and time spent on testing in software development projects are significant.
There are various forms of testing for discovering different types of faults and effects in software. For instance, testing may be done by the end-user to evaluate the usability or human-interaction issues of the software [8]. Also, performance testing is often done to assess the behavior of software under special usage scenarios such as when the system is under heavy stress of data loading.

Typically, testing consists of a series of tasks, namely: (a) defining testing objectives (b) designing and generating test cases (c) executing the software with the generated test cases and (d) analyzing the result by comparing the actual and the expected outputs. In particular, task (b) will significantly affect the scope of testing and, hence, the chance of detecting software faults.

Two main approaches for test case generation exist: white-box and black-box. The white-box approach generates test cases according to the information derived from the source code of the software under test. Examples are control flow testing and data flow testing. The black-box approach, on the other hand, generates test cases from information derived from the specification, without requiring the knowledge of the internal structure of the software. Nevertheless, neither the white-box nor the black-box approach is sufficient; they complement each other.

The white-box and black-box approaches are general and applicable across all environments, architectures, and applications, but unique guidelines and approaches to testing are sometimes warranted, such as when testing graphical user interfaces (GUIs), client/server architectures, and

real-time systems. Also, although our discussions below focus on the techniques for functional correctness testing, other testing techniques may in principle also be applied. Pressman has given more details of techniques for other forms of testing, such as usability and performance testing [8].

1.3 Fault detection in Requirements Specification

The initial stage of the software development process involves a thorough and careful review of the Requirements specification document. Requirements specification document contains the description of the functionality and performance characteristics of the proposed software product, and it serves as a contractual agreement between user and developer. A complete and accurate Requirements specification document is essential to the success of any project and key for quality assurance. As omissions, inconsistencies, ambiguities, or contradictions not discovered during the initial investigation will propagate through the SDLC and can result in either an improperly functioning system or an expensive and time-consuming redesign. Detection and correction of faults at early stage in the Requirements specification document is the key to keeping development costs down and to building correct, reliable software. According to **[Boehm, 1987],** and many other researchers,

"Finding and fixing a software problem after delivery is 100 times more expensive than finding and fixing it during the requirements and early design phases." Famous software engineering book author Fairley said that,

"it is 5 times more costly to correct a fault at the design stage than during initial requirements, 10 times more costly to correct it during coding, 20 to 50 times more costly to correct it at acceptance testing and 100 to 200 times more costly to correct that problem during actual operation."
Based on these observations, it is easy to see why it is so important to identify the maximum number of faults in the Requirements specification document. This would definitely reduce the time needed to complete the system and lower the overall cost of the final software.

2. Techniques used in Inspecting Requirements Specification Document

A large number of formal and informal techniques have been developed to aid both the avoidance and detection of requirements faults. These types of error avoidance systems attempt to minimize the faults getting into a requirements document. Irrespective of the techniques opted i.e. formal or informal, faults can still occur, and need to utilize more error detection techniques to locate and remove faults present in the completed requirements specification document. This technique depends on the project, cost factor, team size, client's specifications and many more other factors. Some of these techniques, possible types of errors and factors effecting the inspection are discussed here to support the paper.

2.1 Formal Walkthroughs

The most popular technique for validating Requirements specification document remains the relatively simple and straightforward method of formal inspections. Formal inspections, also called Structured Walkthroughs, are a manual review of a requirements document in a group setting using formal review procedures **[Boehm, 1987].**

This inspection includes:
(1) A well-defined team structure with each team member having an assigned role;
(2) A checklist specifying what each team member must do to prepare for the inspection process;
(3) A formal agenda specifying how the inspection will be carried out; and
(4) A procedure for reviewing the results and conclusions reached by the inspection team.
Inspections are an easy method to understand and implement; its supporters claim that Inspection is a highly effective method of fault detection. Fagan and many other researchers discussed a lot on the formal inspection & review process. According to **[Boehm, 1987],**

"The structured walkthrough (software inspection) has been the most cost effective technique to date for eliminating software errors. Walkthroughs catch 60 percent of these errors."
Formal inspection techniques have most commonly been used for design and code reviews; they can

also be applied to the validation of user requirements documents.

2.2 The N-fold Inspection Method

N-fold inspection method is a revised new approach to the formal inspection of user requirements documents, called N-fold inspection. In this technique, the formal inspection process described in the previous section is replicated in parallel using N independent teams along with a single "moderator" who is responsible for coordinating and merging their efforts **[Michael, 1992].**

The N-fold inspection method is based on the hypothesis that the N separate inspection teams finds a significant number of Requirements specification faults not located by other teams. If this hypothesis is true, then the total number of faults detected by all N teams will be much higher than the number found by any one team during a single review. Furthermore, a parallel replication of inspections is preferred over sequential replications because of the potentially large time delay caused by carrying out N formal inspections, one after the other **[Michael, 1992].**

The average number of Requirements specification document's faults found by any one team was about 25-27%, the total number of faults found after 5 parallel replications was about 65%, and after 10 replications it was about 80%— a three fold improvement(27% to over 80%). In fact, the replication of the inspection process with only one additional team (i.e., N=2) raised the fault detection rate from 27% to about 39%. So, it could be worthwhile to invest that much time if the Requirements specification document fault-detection rate increased from 25-30% to 60-80%. [**[Michael, 1992].**

Furthermore, the data gathered thru N-fold Inspection technique could be used to answer additional questions about the requirements analysis phase of the software life cycle: specifically,

–how successful is the traditional single-team inspection at locating Requirements specification document errors?

–how much variability is there between inspection teams in locating Requirements specification document errors?

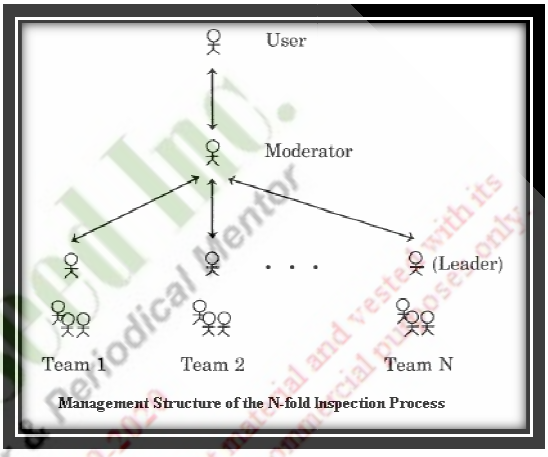
–are certain types of Requirements specification document faults inherently more difficult to find than others?

Faults commonly occurred have with the following characteristics:

—they reflect fault types that commonly occur in Requirements specification documents;

—they include faults selected from those located during the initial screening process, as well as some which we created to provide a balance of fault types; and

—they are all serious errors, which the reviewers unanimously agreed could, if not corrected, lead to later design and/or implementation problems.



Management Structure of the N-fold Inspection Process

The screening operation resulted in a user requirement document containing a known number of faults of specific types to be resolved at later stages of SDLC.

2.3 The Perspective-Based Reading Method

Basili **[Shull, 2000]** have developed a technique known as perspective-based reading (PBR), which operates under the premise that different information in a specification has different levels of importance for different uses of the document. More specifically, PBR focuses on the point of view of the people who will make use of the specifications. One reviewer may read from the perspective of the software designer, another from the perspective of the software tester, and yet another from the perspective of the end user of the software. Each of these reviewers then produces a model that can be analyzed to answer questions based on the perspective. For example, Reviewer 1 reading from the designer's perspective would consider questions related to high-level design. Similarly, Reviewer 2 reading from the tester's perspective would consider questions arising from activities related to test case

generation, and Reviewer 3 representing the end user would consider questions related to the completeness and correctness of the requirements with regard to system functionality. The premise is that these perspectives together will provide a more comprehensive coverage of the specification. As each reviewer is responsible for a relatively narrowly focused view of the specification, the reading should lead to more in-depth analysis of any potential defects in the specification.

3. Faults Types

There are two types of faults found in the user requirements document:

Type 1=Faults: These are caused as necessary and critical information missing in the Requirements specification document. These are called Missing Information faults.

Type 2 =Faults: These are caused by the inclusion of incorrect, inconsistent, or ambiguous information in the requirements specification document. These are called Wrong Information faults.

These are further classified into six specific subtypes.

3.1.1 Type 1 Faults- Missing Information

(a) Missing Functionality or Missing Feature (MF): **Information describing the desired internal operational behavior of the system has been omitted from the requirements specification document.**

(b) Missing Interface (MI): Information describing how the proposed system will interface and communicate with objects outside the scope of the system has been omitted from the requirements specification document.

(c) Missing Performance (MP): Information describing the desired performance specifications has either been omitted or described in a way that is unacceptable for acceptance testing.

(d) Missing Environment (ME): Information describing the required hardware/ software/ database/ personnel environment in which the proposed system will run has been omitted from the requirements specification document.

3.1.2 Type 2 Faults- Wrong Information

(e) Ambiguous Information (WA): An important term, phrase, or sentence essential to an understanding of system behavior has either been left undefined or defined in a way that can cause confusion and misunderstanding.

(f) Inconsistent Information (WI): Two sentences contained in the requirements specification document directly contradict each other or express actions that cannot both be correct or cannot both be carried out.

Martin **[Michael, 1992].** explained some examples of fault types in user requirements documents of Centralized Traffic Control (CTC) System of North American Railway.

Case (a)

Text: In the case of two oncoming trains, each of which has access to a siding of adequate length, the slower one is to be routed onto the siding while the faster one continues on the main track.

Error: There is no information about what to do if the two trains are moving at exactly the same speed as measured by the wayside location.

Fault Type: WI, inconsistent information

Case (b)

Text: Each wayside location is to be identified by a unique unsigned three-digit integer. wayside location number 2288 must inform control that . .

Error: This 4 digit number is inconsistent with the earlier statement that wayside locations are identified by unique 3-digit values.

Fault Type: WI, inconsistent information

Case (c)

Text: Each wayside location is periodically asked to report the current status of its devices. A polling timeout failure occurs when a location fails to respond to this status request.

Error: There is no information about how often the polling should be done or how long the central system should wait before it decides that there has been a polling timeout failure.

Fault Type: MP, missing performance information

Case (d)

Text: All CTC device command messages transmit two 8-bit bytes. The meaning of the 16 bits of information received from the wayside computer is as follows: byte 0, bit 0 1 when this track section is occupied 0 otherwise, byte 0, bit 1 …….

Error: There is no clarification, either via text or picture, whether the bits and bytes of the Control devices command message are numbered from left to right or from right to left.

Fault Type: WA, ambiguous information

The following table summarizes the number of faults from each of these six fault classes that were placed in the completed requirement Specification.[Michael, 1992]

Fault Type	Abbreviation	Number

		Included
Class 1. Missing Information		
Missing Functionality	MF	34
Missing Interface	MI	11
Missing Performance MP	MP	7
Missing Environmental	ME	9
Total Number of Class 1 Errors		61
Class 2. Wrong Information		
Ambiguous Information	WA	15
Inconsistent Information	WI	23
Total Number of Class 2 Errors		38
Total Number of Errors Present In Requirement Specification		**99**

3.2 Other Case: e.g. Correlation

According to Law's of Correlation, there are four conditions that must be satisfied before factor A can be said to cause response B:

(1) A must occur before B.

(2) A and B must be correlated.

(3) There is no other factor C that accounts for the correlation between A and B.

(4) A mechanism exists that explains how A affects B.

4. Factors Affecting Inspections

According to Porter [6], there are several other factors which affect reviewer and author performance and code unit quality that might systematically influence the outcome of the inspection. And for accurate inspections resulting in correct and defined requirements specification documents we must take care of these factors.

4.1 Code Unit Factors

Some of the possible variables affecting the number of defects in the code unit include size, author, time period when it was written, and functionality.

4.1.1 Code Size: **The size of a code unit is given in terms of non commentary source lines. It is natural to think that as the size of the code increases, the more defects it will contain.**

4.1.2 Author: The author of the code may inadvertently inject defects into the code unit. The number of defects could depend on the author's level of understanding and implementation experience.

4.1.3 Development Phase: The performance of the reviewers and the number of defects in the code unit at the time of inspection might well depend also on the state of the project when the inspection was held. There can be a number of defects which may be found over time of system development. A large number of issues are raised at every step but the total number of issues did not. This might indicate that either the reviewers' defect detection performance was weakening in time, or the authors were learning to prevent the true defects but not the other kinds of issues being raised.

4.1.4 Functionality: Functionality refers to the compiler component to which the code unit belongs, e.g., parser, symbol table, code generator, etc. Some functionality may be more straightforward to implement than others and, hence, will have code units with lower number of defects.

4.1.5 Pre-inspection Testing: The code development process employed by the developers allows them to perform some unit testing before the inspection. Performing unit testing before the inspection would remove some of the defects prior to the inspection.

4.2 Reviewer Factors

It is a fact that different reviewers affect the number of defects detected. But it is important to look at effect on the number of defects found in preparation, because the effect as a group is different in the collection meeting's setting.

4.2.1 Reviewer: Reviewers differ in their ability to detect defects. Some reviewers find more defects than others. Even for the same code unit, different reviewers may find different numbers of defects. This may be because they were looking for different kinds of issues and their view point may vary.

4.2.2 Preparation Time: The amount of preparation time is a measure of the amount of effort the reviewer put into studying the code unit. Even if preparation time is found to be a significant contributor, it must be noted that preparation time depends not only on the amount of effort the reviewer is planning to put into the preparation, but also on factors related to the code unit itself. In particular, it is influenced by the number of defects existing in the code, i.e., the more defects he finds, the more time he spends in preparation. Hence, high preparation time may be considered a consequence, as well as a cause, of detecting a large number of defects.

4.3 Team Factors

Team-specific variables also add to the variance in the number of meeting gains.

4.3.1 Team Composition: Since different reviewers have different abilities and experiences, and possibly interact differently with each other, different teams also differ in combined abilities and experiences. Apparently, this mix tended to form teams with nearly the same performance. Most of the time, the two teams found nearly the same number of defects. This may be due to the mutual interactions among the team members. However, because teams are formed randomly, there are only a few instances where teams composed of the same people were formed more than once, not enough to study the interactions.

4.3.2 Meeting Duration: The meeting duration is the number of hours spent in the meeting. In the meeting, one person is appointed the reader, and he or she reads out the code unit, paraphrasing each chunk of code and centering the meeting. At any time, reviewers may raise issues related to the particular chunk being read, and a discussion may arise. All these contribute toward the pace of the meeting. The meeting duration is positively correlated with the number of meeting gains. As with the case of preparation time, the meeting duration is partly dependent on the number of defects found, as detection of more defects may trigger more discussions, thus lengthening the duration.

4.3.3 Combined Number of Defects Found in Preparation: The number of defects found prior to going into the meeting may also affect the number of defects found at the meeting. Each reviewer gets a chance to raise each issue he or she found in preparation as a point of discussion, possibly resulting in the detection of more defects.

5. Some Other Factors in Requirements Inspection

As discussed, inspection and review should cover the functional and non-functional aspects of software. Most of the aspects are related to the functional aspect of software, it is also proposed to apply through review of requirements specification is also applicable to the non-functional aspect of software, such as performance, security, reliability, and recovery. The evaluation of "non-functional" quality of software is important, because the software must be functionally correct in order for it to serve its designated purpose and be accepted by the acquirer.

Take performance testing as an example. Many software systems have specific performance or efficiency requirements, normally stated in terms of system's response times and throughput rates under certain workload and configuration conditions. A major purpose of performance testing is to assess how the system runs under peak and continuous loads.

Obviously, an important prerequisite for performance testing is to include the relevant software performance or efficiency requirements in the specification in a precise manner. Otherwise, the software tester will have no basis to conclude whether the actual software performance meets user's expectation. Hence, reviewer will naturally ask the following questions when inspecting the specification from the perspective of system performance:

- **Are all expected processing times specified?**
- Is all data transfer rates specified?
- Is the required level of system performance clearly specified for all different usage scenarios?
- Are all system throughput rates specified?

Now, consider reliability testing, which is another type of non-functional testing. In today's competitive environment, every software system is expected to be reliable. In particular, ultra-high reliability is expected for "safety critical systems" such as those used in nuclear plants, weapon systems, aviation equipment, and medical devices. When software testers inspect the specification from the perspective of reliability testing, they will naturally ask the following questions:

Is the expected bound for the mean time between failures or a similar metric specified?
Are the consequences of software failure specified for each requirement?
How will the system be expected to behave under exceptional or adverse input conditions?
Does the specification contain enough information to determine how the reliability testing should be performed?
Is a strategy for error detection specified?
Is a strategy for error correction specified?

In short, when software testers & reviews inspect the specification from a specific testing perspective, such as functional testing, performance testing, and reliability testing, this inspection approach will automatically provide some clues to the testers as to which types of information in the specification should be focused during the review process. In this way, potential defects in the specification will have a higher chance of being spotted **[Chen Et Al, 2006].**

6. Conclusion

The quality of a requirements specification is of vital importance because it critically affects the quality of the resultant software system. In the field of software engineering, requirements inspection and analysis is one of the most important stages of SDLC with regards to developing reliable, robust, and cost-effective software. Faults caught during requirements analysis take the least time and effort to correct, whereas those remains in the requirements specification propagate to downstream phases of the SDLC can have serious consequences for the finished product. Thus, the specification should be inspected for errors at an early stage of the SDLC before it is used for software design so that the development work will not be based on an incorrect specification. The requirement specification inspection is a simple, effective, and least expensive way of detecting and removing defects from requirement documents. The primary fault-detection technique used during requirements analysis has been formal inspection.

This paper discusses the importance of formal inspection and reviews of the requirements specification. Also, various types of errors (faults) and their possible causes and their after affects are briefly explained. Still 20-25 % of the faults present in the specification remain undetected and these faults need to be located during the design, implementation, or testing stages using additional formal reviews & tests. A thorough inspection also helps in deciding the test plans and cases to be used in different software testing at later stages.

The surveys reported in this paper have shown that formal inspections to requirements specification by a single independent development team is only able to detect about 35% of the faults present while multiple teams can give 60-80% of fault detection. This could have a significant impact on overall software reliability, robustness, and cost & of course the software quality. There are many factors which affects the inspection process, and if these factors are properly administered the result of the inspection may be much higher than our expectations. The overall focus is on to the Quality, Reliability and Cost. These fundamental concepts in software development are closely related. A thorough management of one of these implies the consideration of the other factor. There are several problems in research and practice today that hamper the modeling and evaluation of these relations ***[Wegner, 2007].*** *In summary, this paper conveys three important messages to the software community:*

(a) Requirements inspection is important and has to be done as earlier as possible in the SDLC,
(b) Requirements inspection is more effective when performed with the support of a systematic approach to improve the defect-finding capabilities of inspections, and
(c) Correct inspection will be very helpful in terms of cost, schedule, reliability and quality with minimum possible efforts.

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http://www.karamsociety.org

Global Journal of Enterprise Information System

July 2010-Dec 2010

Volume-2 Issue-2

The Impact of Design Characteristics and Support Services on the Effectiveness of MIS: *An Empirical Study*

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ABSTRACT

Based on empirical data, the impact of five specific variables, namely:
a) System quality,
b) Information quality,
c) Quality of the Marketing Information System [MIS] technical support,
d) The Marketing Information System compatibility, and lastly
e) The Marketing Information System flexibility, on the effectiveness of Marketing Information System was investigated.

The effectiveness measurement is based on the Competing Value Model (CVM) model which allows the definition of effectiveness on four basic dimensions. The results define the positive impact of these factors on the several dimensions of the effectiveness. Implications for practice, study limitations, and directions for future research are discussed.

KEYWORD

MIS	Support Services
Information Quality	

A great number of companies today are confronted with a continuously changing and highly competitive environment. As a result, the value of information increases since it becomes one of the most valuable assets in ranking the competitive rivalry of the modern markets. This, in turn, calls for a systematic organization and development of *Marketing Information System* which can effectively collect, process and diffuse the necessary information available both to the internal and external levels.

However, although the development and the organization of the company's *Marketing Information System* has received considerable attention, particularly during the 1990's (e.g. [Kotler[i], 1994], [Proctor[ii],1991], Marshall and La Motte, 1992, Sisodia, 1992, Talvinen, 1995, Li, 1995, Van Bruggen et al., 1996, Wierenga and Ophurs, 1997, Wierenga et al., 1999) the scope has been limited to four main groups: a) the definition of Marketing Information System, b) the possibility to classify in specific and distinctive types of Marketing Information System, c) the match between the demand side (the decision processes to be supported) and the supply side (the functionality of Marketing Information System employed) and finally d) the importance in strategic planning and day-to-day operations

These efforts have, undoubtedly, advanced our understanding regarding Marketing Information System but, on the other hand, have missed an area of crucial importance: That of Marketing Information System's effectiveness. Efforts towards this direction are sporadic (e.g. (Sääksjärvi and Talvinen, 1993, Panigyrakis and Chatzipanagiotou, 2003) and a lot of work is further required.

Having identified a significant gap in the existing body of knowledge, the aim of this study is to initiate an attempt to bridge it and to help managers and researchers understand the meaning of the Marketing Information System effectiveness and specifically the impact of five of its variables, namely: a) system quality, b) information quality, c) quality of the Marketing Information System technical support, d) the Marketing Information System compatibility, and finally e) the Marketing Information

System flexibility.

The rest of this paper is organized as follows. Firstly, the relevant literature review and associated research hypotheses that address the relationships between the Marketing Information System effectiveness and the five specific factors under investigation are studied. The sample and measures employed in the study are then discussed, followed by the results and the discussion section. Finally, some limitations of the study are highlighted and suggestions for future research are proposed.

LITERATURE REVIEW

Defining the Effectiveness of Marketing Information System

A great number of studies have attempted to assess the effectiveness of IS, especially in the general IS field. The majority of the research on the IS effectiveness is limited to the financial indices measurement, such as ROI, ROA, etc (Qing and Plant, 2001, Krishnan and Sriram, 2000, Ryan and Harrison, 2000, Thatcher and Oliver 2001), the market share and the cost study (Gurbaxani and Mendelson, 1990, Railing and Housel, 1990), the productivity analysis (Qing and Plant, 2001, Hitt et al., 2002, Grover et al.,1998), the profitability (King 1998, Hitt and Brynjolfsson, 1996).

According to Grover et al. (1996), all the studies of IS effectiveness could be classified into four groups: a) Criteria demonstration research, b) Measurement research, c) Criteria relationship research, d) Antecedents of IS Effectiveness research. The first group includes criteria demonstration studies, namely the theoretical development and justification of effectiveness criteria, which are mainly financially oriented (e.g. Matlin 1979, Money et al. 1988). The second group is comprised of studies aiming at statistically developing and evaluating measures for assessing the IS effectiveness (e.g. Baroudi et al. 1986, Davis, 1989, Galeta and Lederer 1989), while the third group is composed of studies that attempt a linking between theory and statistical evaluation of various instruments employed for assessing the IS effectiveness (Ein-Dor et al. 1981, Sabherwal and Kirs 1994).

Finally, the fourth group is comprised of studies that focus on the antecedents of the company's IS effectiveness (e.g. Montazemi 1988, Raymond 1990). Interestingly enough, an extensive examination of subsequent studies in IS effectiveness shows that the four pillars identified by Grover et al. (1996) remain as the dominant logic of

scholar inquiry on effectiveness. For instance, the work of Qing and Plant (2001) as well as of Krishnan and Sriram (2000) take a financial perspective on IS effectiveness, the studies by Dishaw and Strong (1999), Mahmood and Mann (2000), and Jiang et al. (2002) focus on developing financial measures for assessing IS effectiveness, whereas Jiang et al. (2001), and Negash et al. (2003) attempt to link the development of specific measures with the underlie theory on effectiveness. Finally, Ragowsky et al. (2000), Tallon et al. (2000), and Heo and Han (2003) attempted to investigate the antecedents and the consequences of the IS effectiveness.

Nevertheless, despite the fact that the IS effectiveness has become the object of many empirical researches; it remains still one of the most important "unknown" issues in the literature. A possible explanation for this may be the lack of an empirically derived, reliable and integrated measure for assessing the effectiveness of IS. In fact, while most of the studies focus on assessing the effectiveness of the company's Management Information Systems (MIS), its Decision Support System (DSS) or its Executive Information Systems (EIS), no particular attention has been drawn on the Marketing Information System (Marketing Information System) and its effectiveness.

A rather interesting exception to that can be found in Sääksjärvi and Talvinen (1993), who use the *Competing Values Model* for the Marketing Information System effectiveness measurement.
The Competing Values Model (CVM) appears to be a particularly attractive framework for assessing the effectiveness of the company's Marketing Information System. It is based upon the notion that "effectiveness" is a construct which is composed by a number of partial meanings such as the efficiency, the productivity, the information management, the flexibility, etc (Cameron, 1978).
Following the CVM (1983), a company can be placed along three axes: a) focus, b) structure, and c) means-ends (Figure 1). These three dimensions allow the definition of four basic models regarding the priorities pursued by the company: the *Human Relations Model*, the *Open System Model*, the *Internal Process Model* and the *Rational Goal Model*.

According to the CVM, effectiveness, at the macro-level, is associated with well performance on all four models-priorities (Quinn and Rohrbaugh 1983).

The selection of CVM for the Marketing Information System effectiveness measurement is adopted in the present article since the said model is integrated and totally comprising all the types of measurement valid in the literature, according to the theoretical model of Grover et al. (1996) (Figure 2).

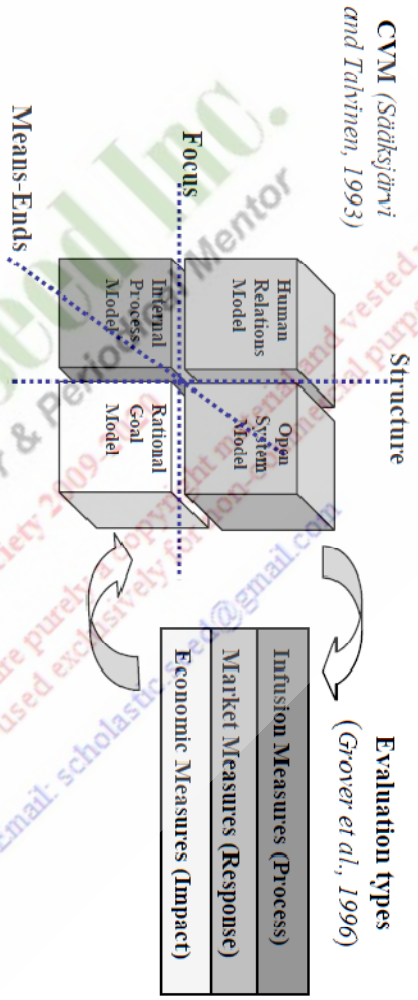

Figure 1: CVM Fits With All Evaluation Types In The Literature

This is because it includes a) indicators of effectiveness with regard to the processes, and more specifically to the effectiveness of the information management, the internal communication, etc. (Internal Process Model~

Infusion Measures), b) indicators of effectiveness regarding the response the enterprise encounters from both its human resources (Human Relation Model ~ Market Measures) and customers, competitors (Open System Model ~Market Measures) and, finally c) indicators with regard to the effect the Marketing Information System has on economical magnitudes, such as productivity, efficiency, etc. (Rational Goal Model ~ Economic Measures).

The Factors Effects Marketing Information System Effectiveness And Research Hypotheses

One common element in most studies (Shannon and Weaver, 1949; Mason, 1978; Wierenga and Ophuis, 1997; Seddon 1997; Garrity and Sanders, 1998; Wierenga et al. 1999; DeLone and McLean, 1992; 2003) is that effectiveness has been conceived as a function influenced by multiple variables.

In evaluating the contribution of information systems to the organization, a strong research stream has focused on the processing system itself. Within this framework, most measures tap engineering-oriented performance characteristics such as the usefulness of specific functions (Hiltz and Turoff, 1981), the stored record error rate (Morey, 1982), the response time (Belardo, Karwan and Wallace 1982), its flexibility (Mahmood, 1987), the convenience of access, (Bailey and Pearson, 1983). Furthermore, Adams et al. (1992) underline the ease in using the system as a system quality measurement variable by making known issues regarding the use facility the users anticipate (Franz and Robey, 1986) and its friendly working environment (Doll and Torkzadeh 1988, Hendrickson et al., 1993, Chin and Todd, 1995, Seddon, 1997).

They suggest that an information system containing state-of-the-art technology and software along with functional features such as accuracy, process speed, high responding time, easy access, easy use, friendly working environment, is the base of an effective functional information system.

The importance of information quality has been recognized by many researchers as a key ingredient in evaluating a successful system. It concerns the dimensions of the information in particular, as suggested by Bailey and Pearson (1983), the accuracy, format (Magal 1991; Rainer and Watson, 1995; Myers et al. 1998), currency, timeliness (Mahmood, 1987), precision, completeness, conciseness, reliability, relevance.

Those two variables, system quality and information quality seem to be among others the design characteristics of the system that determine the Marketing Information System effectiveness in organizational level (Wierenga et al., 1999).

Furthermore, Pitt et al. (1995), state that the IS effectiveness is highly dependent on the information quality the Information Systems Department provides to users.

They underline the fact that the role of the department has been continually developed from one of the Product Developer to the Services Provider. This can be concluded by the fact that their role is no longer limited to the installation of new software programs or the settlement of technical problems only. The introduction of personal computers in a company and their diffusion to nearly every department results in the almost daily communication, of the users with the information systems support department as they wish to ask for both relative information and services.

Subsequently, many researchers (Kettinger and Lee, 1997, Li, 1997, Wilkin and Hewitt, 1999, DeLone and McLean, 2003) agreed on the fact that the quality of the services rendered by the IS support department should be the main objective in the pursuit of measuring the information systems' effectiveness. This is due to the fact that the support the users receive is of a vital meaning to the way they could : a) get acquainted with the information systems, b) integrate them in their business concept, and, lastly, c) transform the potential benefits they entail into personal ones and, consequently, into business benefits.

Nevertheless, despite all the relevant important disputes and arguments, the majority of the above mentioned researchers converge on the fact that the major variables affecting the information systems effectiveness, are: a) the system quality, b) the information quality and c) the technical support services' quality.

Based on the above discussion and state on the fact that Marketing Information System is a specific type of an Information System it was hypothesized that:

H1: The system quality, the information quality and the support service quality have a positive impact on the Marketing Information System Effectiveness

Moreover, Wierenga et al.(1999) note that the system integration is another design characteristic which affects the Marketing Information System system effectiveness. Also, another interesting

research of Sääksjärvi and Talvinen (1993) mentions the need for the Marketing Information System integration. They divide the Marketing Information System integration in two axes, namely: a) the *technical integration* by defining it as the need for all of the IS existing in a company to work, from the technical point of view, harmonically and effectively together, b) the *functional integration*, as the need for a systematic redesign of several functions a Marketing Information System entails.
They support the ascertainment that the functional integration in an effort of radical processes' re-definition attuned with the technical integration results in the Marketing Information System effectiveness increases. The benefits deriving from the Marketing Information System integration are important and they are mentioned on many levels, such as: the improvement of targeting potential customers and already existing ones, the enhancement of service quality rendered both to the personnel (internal) and the customers (external), the successful anticipation of sales as well as their increase, and lastly, cost reduction (Graham, 1987, Townend 1989, Burns and Ross, 1991).

The Marketing Information System compatibility with the rest of the information systems of a company as well as the Marketing Information System flexibility of adapting to the marketing departments future needs are the basic factors regarding the Marketing Information System (Sääksjärvi and Talvinen, 1993) effectiveness definition.
The compatibility and the communication with the rest of the IS that either exist or pre-exist in a company (e.g. *Transaction Processing System, Management Information System, Decision Support Systems, Executive Information Systems* e.t.c) are vital presuppositions in order for the issues the marketing executives are called to respond to, present a better and more integrated picture. For instance, *Transaction Processing Systems* are used for the automation of daily repeated transactions, but nevertheless they could also be characterized as a source of information for the rest of the marketing informational system's sub-systems, as for the data Marketing Reports Systems, for example.
Furthermore, the flexibility of adapting to the marketing departments needs constitutes a fundamental variable of defining the systems' effectiveness. The company's needs, and in particular those of the marketing department are continuously re-defined. This actually reflects the constantly changing competitive environment in which the companies are currently operating. Therefore, the Marketing Information System flexibility is an important object of research with reference to the effort of responding to the marketing executives needs.
Based on the above discussion, the research hypotheses are as following:
H2: The more Marketing Information System compatibility with the rest of IS in the company, the more the Marketing Information System effectiveness increased
H3: The more Marketing Information System flexibility of adapting in the marketing department future needs, the more Marketing Information System Effectiveness increased.

RESEARCH METHODOLOGY

Data Collection

Data was collected from five star hotels in Greece. The selection of the tourist field was based on the fact that in this field information is of a vital meaning, which justifies the IS extended use and application on behalf of every interested party, namely the tourist services' providers and consumers. Prior to being posted, the questionnaire was "pilot-examined" in order to increase the content validity of the research instrument. For this purpose, 50 personal interviews were conducted with managers who agreed not only to fill in the questionnaire but also to comment on the scales employed.
Of the 780 questionnaires that were eventually administered (including the 50 pilot personal interviews), 307 were returned. However, 53 were empty, due to various reasons (address unknown, temporary shut down because of expansions, refurbishment, etc), which reduced the effective sample to 254 and the population to 727 (Response rate 35%).

Variables Measurement

Marketing Information Systems Effectiveness

The Marketing Information System effectiveness scale was based on the *CVM* model and on the work of Sääksjärvi and Talvinen (1993), in particular. The CVM model reflects all the levels in which a company seeks its improvement through the Marketing Information System. Nevertheless, according to the suggestions of executives' who helped in the development of the research instrument, the scales were enriched with items aiming to capture the Marketing Information System effectiveness in relation to certain dimensions of the marketing mix, such as promotion, communication, pricing, etc. The scale included 28 items and the respondents were asked to answer on a 7-point scale (1="I strongly disagree" to 7'= "I strongly agree").

Table I: Exploratory Factor Analysis Of The Marketing Information Systems Effectiveness Dimensions

Factors Produced by the Analysis (Varimax Method)	Items Loading in Each Factor	Loadings	Cronbach's Alpha Coefficients
Factor 1: ***Internal Process Model*** (Explaining 27 % of total variance)	Improved control	*0.894*	0,835
	Improved marketing planning	*0.681*	
	Improved marketing reporting	*0.896*	
	Improved decision making	*0.684*	
Factor 2: ***Human Relation Model*** (Explaining 26% of total variance)	Time saving, lower level of routine work	*0.747*	0,831
	Improved sales work and customer service	*0.986*	
	Improved internal communication	*0.663*	
Factor 3: ***Open Systems Model*** (Explaining 22% of total variance)	Improved market sensitivity	*0.657*	0,925
	Improved customer satisfaction	*0.592*	
	Improved sales	*0.597*	
	Improved customer knowledge	*0.824*	
Factor 4: ***Rational Goal Model*** (Explaining 7% of total variance)	Marketing programmes cost savings	*0.712*	0,937
	Quickest development of new services in the market	*0.758*	
	Improved sales promotion activities	*0.794*	
	Direct and more effective marketing research	*0.864*	

Kaiser-Meyer-Olkin Measure of Sampling Adequacy: 0.896,
Bartlett's Test of Sphericity: $X^2 = 4210.84$ significant 0.000
Total Variance explained: 83%

Next, Exploratory Factor Analysis was employed in order to investigate possible dimensions underling the original 28 items. This analysis produced a 4-factors solution, namely Internal Process Model, Human Relations Model, Open System Model, and finally, Rational Goal Model that accumulatively interpreted the 82.6% of the total variance in the initial variables (Table I). As these 4-factors are perfectly in line with the dimensions of organizational effectiveness suggested by Quinn and Rohrbaugh (1983) additive scales for each factor were developed and employed in subsequent analysis since when checked for reliability using Cronbach's Alpha they all well exceeded the suggest all threshold (α coefficients ranging from at least 0,83 to 0,93 at most).

System Quality

The System Quality was measured through the criteria used by Bailey & Pearson (1983) and Hendrickson (1993). To be more specific, the scale included questions (items) with reference to the functional features, such as: accuracy, processing speed, time of response, easy access, easy use, friendly working environment, as well as the one corresponding to the query whether the Marketing Information System includes hardware and software of the latest technology. The respondents were called to indicate their agreement with each item using a 7-point agreement scale. An acceptable level of Cronbach Alpha (α=0,788) allowed us to create an additive scale which was used in subsequent analysis

Information Quality

Information quality was measured using the scale developed by Bailey and Pearson (1983). Respondents were again asked to indicate their agreement with each item using a 7-point agreement scale. An acceptable level of Cronbach Alpha (α=0,909) allowed us to create an additive scale which was used in subsequent analysis.

Support Service Quality

Despite the fact that the SERVQUAL model is used in the majority of researches for the quality measurement, the extensive literature review (Babakus and Boller 1992, Carman 1990, Cronin Taylor 1992, 1994, Teas 1993, Dyke, Kappelman and Prybutok, 1997), led to the conclusion that the SERVQUAL usage as the IS support services quality measurement instrument has many problems, both methodological and practical.

In this study, in order to measure the technical support services quality a different approach was adopted. This, due to the fact that the greatest part of the IS support services are not provided by a specific department operating within the company, but by external companies which take over both the IS planning and implementation along with their support (Caldwell 1996, Lacity and Willcocks, 1998, McLellan et al. 1995, Palvia 1995). This outsourcing choice is based on the fact that the IS evolution requires a high level know-how, adaptability, something difficult and costly, therefore unadvisable when supported by a company's specific department (Chen and Soliman, 2002). Thus, the IS support services are considered as

industrial ones and they should be evaluated as such.

Based on the aforesaid conclusions, this study makes use of the INDSERV (Gounaris S. and Venetis K., 2002), an industrial services quality evaluating model.

According to this instrument, perceived support quality is comprised of five basic elements: 1) *Hard Quality* (what is being performed during the service process) 2) *Soft Quality* (how the service is performed during the service process) 3) *Potential Quality* (the perception of the customer, regarding the ability of the provider to meet his needs 4) *Immediate Outcome Quality* (success of the provider to provide the client with a solution to a problem) and 5) *Final Outcome Quality* (the effects that the solution created for the client). Respondents were then asked to use a 7-point scale to assess the performance 7= "excellent", 1= "Poor".

For the verification of the scale's reliability the Cronbach's alpha reliability coefficient was used, which showed that the scales for the corresponding dimensions are internal consistent, and in particular: *Hard Quality (α=0,880), Soft Quality (α=0,859), Potential Quality (α=0,816), Immediate Outcome Quality (α=0,905), Final Outcome Quality (α=0,820). Compatibility and Flexibility of the Marketing Information System*

For the measurement of the Marketing Information System's compatibility and flexibility, the respondents were called to answer two questions on the whole, which defined the Marketing Information System total compatibility and flexibility.

Another important issue that should be examined was the multicollinearity, namely the existence of high correlations amongst the independent variables. Nevertheless, the highest correlation noticed, does not exceed the 0,536 (*Pearson Correlation Coefficient)* which is much below the acceptable limit of 0,90 (Hair et al. 1995). Having successfully passed these two initial tests, the regressions were run. The results are shown in Table II. As shown from the results of our research, the system quality, the information quality, the support systems quality, are statistically significant (p=0.000), which leads us to the acceptance of H1.The results of the multiple regressions are shown in Table II.

On the other hand, the Adjusted R Square high percentages indicate the crucial meaning of the three factors in the interpretation of the Marketing Information System effectiveness.

The H2 hypothesis was examined through the *t* test conduct (independent samples t-test), a test for the average rates statistic importance and the four dimensions of the effectiveness in the cases where the Marketing Information System are compatible with the rest of the company's IS and in the cases where such does not exist. The results of this analysis are shown in the following Table III.

Table II: Four Regressions Coefficients Of Support Quality, System Quality And Information Quality With Each Of The 4 Models Of Marketing Information Systems Effectiveness As Dependent Variable

Method (ENTER)	1) Multiple Regression Rational Goal Model	2) Multiple Regression Open System Model	3) Multiple Regression Internal Process Model	4) Multiple Regression Human Relations Model
	Stand. Beta	Stand. Beta	Stand. Beta	Stand. Beta
(Constant)	0,663	0,441	1,999	2,067
Support Quality	0,505*	0,438*	0,562*	0,391*
System Quality	0,554*	0,363*	0,218*	0,71*
Information Quality	0,716*	0,595*	0,387*	0,275*
Adjusted R Square	0,512**	0,441**	0,484**	0,289**

*p<0,05, **p<0,01

Table III: The Result Of The *T* Test Analysis For The Effectiveness Of Compatible And Not Compatible Systems

	Means		Levene's Test for Equality of Variances	
	Compatible (N=179)	Not Compatible (N=75)	t-value	Sig.
Internal Process Model	6,01	5,38	5,927	0,000**
Improved control	6,07	5,39	4,020	0,000**
Improved marketing planning	5,88	4,97	6,660	0,000**
Improved marketing reporting	6,08	5,76	3,076	0,002**
Improved decision making	6,04	5,40	5,398	0,000**
Human Relations Model	5,683	4,897	7,060	0,000**
Time saving, lower level of routine work	6,03	5,35	6,066	0,000**
Improved sales work and customer service	5,73	4,95	5,402	0,000**
Improved internal communication	5,29	4,40	7,478	0,000**
Open System Model	5,98	5,23	5,981	0,000**
Improved market sensitivity	5,93	5,23	7,463	0,000**
Improved customer satisfaction	6,04	5,43	4,775	0,000**
Improved sales	5,83	5,07	5,302	0,000**
Improved customer knowledge	6,11	5,47	3,977	0,000**
Rational Goal Model	5,73	3,84	9,599	0,000**
Marketing programmes cost savings	5,85	4,80	5,094	0,000**
Quickest development of new services in the market	5,72	3,75	9,075	0,000**
Improved sales promotion activities	5,86	3,61	9,921	0,000**
Direct and more effective marketing research	5,53	3,20	10,644	0,000**

*p<0,05, **p<0,01

FINDINGS

For the H1 examination, 4 analyses of multiple regressions with dependent variable every partial model of the Marketing Information System effectiveness, and independent variables the system quality, the information quality and the support services quality were run. It should be noted that prior to each one of the multiple regression analysis conducted, a control was made to examine whether the relations between the one dependent and the rest of independent variables were efficient for the linearity case with the use of scatter diagrams, that showed that there weren't any intense non-linear relations.

On the other hand, service's support quality has a stronger impact on effectiveness dimensions, especially when they are related to internal company's processes (Internal Process Model). This seems justified from the continuously changing environment which imposes the company to reexamination and reformulation of some of its process. The spreading of information amidst the departments / functions of the company is attained with the harmonious co-operation of the company's IS. The high quality of the said information actually leads the marketing executives to locate all the possible parameters of an issue. Subsequently, helping them to make the right decision both in the stage of marketing programs planning and development and in the stage of the control and adjusting actions required.

The Table III results show us that the Marketing Information System compatibility with the rest of the IS that exists in a company effects positively the Marketing Information System effectiveness, a fact that leads us to the H2 hypothesis acceptance.
Finally, for the H3 research hypothesis control, a *t test* was conducted (independent samples t-test) to define the statistic importance of the average rates, and the four dimensions of the effectiveness, in which the Marketing Information System are flexible to adapt to the marketing department future needs, and in the cases where no such flexibility exists. The results of this analysis are presented in the following Table IV.

CONCLUSIONS

Currently, researches have headed towards the IS measurement of effectiveness in general, without a relevant documentation through empirical research regarding their conclusions and without proving the application of these conclusions on specific type systems, such as the Marketing Information System. The results of the research give us empirical data regarding the issue of the Marketing Information System effectiveness.
The results of the analyses make evident that the partial variables, while being of a statistical significant to all the levels of effectiveness, play a different role in the goals achievement that every dimension of the effectiveness defines (Human Relations Model, Open System Model, Internal Process Model and the Rational Goal Model).

Although, information quality is of crucial importance for the four effectiveness dimensions, it seems to be a key factor for increased effectiveness of: a) Rational Goal Model (marketing programs cost savings, quickest development of new services, improved sales promotion activities, direct and more effective marketing research), b) Open System Model (improve market sensitivity, improve customer satisfaction, improve sales, improve customer knowledge).

Table IV: The Result Of The *T* Test Analysis For The Effectiveness Of Flexible And Not Flexible Systems

	Means		Levene's Test For Equality Of Variances	
	Flexible (N=204)	Not Flexible (N=50)	t-value	Sig.
Internal Process Model	6,05	4,91	10,311	0,000**
Improved control	6,27	4,24	12,983	0,000**
Improved marketing planning	5,94	4,26	12,787	0,000**
Improved marketing reporting	6,04	5,74	2,547	0,011*
Improved decision making	5,96	5,42	3,843	0,000**
Human Relations Model	5,67	4,55	9,267	0,000**
Time saving, lower level of routine work	6,00	5,12	6,945	0,000**
Improved sales work and customer service	5,76	4,42	8,747	0,000**
Improved internal communication	5,25	4,12	8,484	0,000**
Open System Model	6,04	4,59	11,652	0,000**
Improved market sensitivity	5,94	4,44	10,967	0,000**
Improved customer satisfaction	6,04	5,10	6,664	0,000**
Improved sales	5,90	4,40	10,251	0,000**
Improved customer knowledge	6,28	4,44	12,081	0,000**
Rational Goal Model	5,76	2,78	15,971	0,000**
Marketing programmes cost savings	5,96	3,82	10,278	0,000**
Quickest development of new services in the market	5,75	2,60	15,274	0,000**
Improved sales promotion activities	5,74	3,24	13,743	0,000**
Direct and more effective marketing research	5,50	2,18	15,153	0,000**

p<0,05, **p<0,01

Furthermore, these process adjustments actually reflect the marketing executives' needs and are often correlated to the co-operation amidst partial projects. Thus, promoting the communication among

the marketing department people and the communication amidst the several departments. The promotion of the communication and the definition of the proper processes improve the daily repeated procedures and the services to the customer.

The definition of the following five factors: a) the system quality, b) the information quality, c) the support services quality, d) the compatibility, and e) the Marketing Information System flexibility of adapting to the marketing department needs helps marketing executives to: a) evaluate the existing Marketing Information System, b) make decisions for the necessary adjusting actions, c) manage the Marketing Information System in the aim of better serving their employees and customers, d) be awakened to the opportunities the use of these systems produces and make effective advantage of them, and lastly, e) harmonize the Marketing Information System investment with the total strategy of the company.

Alas, this study is not free of limitations. However, without diminishing its contribution, future research may easily address them. One first limitation is the national context which may pose, constrains on the ability to generalize the findings in the context of other national frameworks. A second limitation pertains to the structure of the sample. This study focused on a single industry. Thus, a possible direction for future research which would be particularly welcome is to examine the relationships that this study has identified along a wider sample comprised of companies from different industries.

This study looked at the Marketing Information System effectiveness of a company at one moment in time. However, Marketing Information System develops over time, both as a result of experience with Marketing Information System in companies and the fast development of Marketing Information System technology. It will be interesting to carry out observations at the same companies at different moments in time. However, because no such empirical evidence has yet been produced, future research in this direction would be more than welcome.

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The significance of Business Intelligence in deepen the role of Business Decision Makers

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ABSTRACT

In today's rapidly changing business environment, the need for very sensible and effective business information is acknowledged as being crucial for organizations not only to succeed, but even to survive. Business intelligence (BI) is a concept which refers to a managerial beliefs and a tool that is used in order to help organizations to manage and purify information and to make more precious business decisions.

This research aims to demonstrate the role of BI in the decision making process in the Bahraini commercial organization.

Based on results of the questionnaire and employees opinions, solutions and available choices can be considered to improve BI used by organizations in the Kingdom of Bahrain.

This research is recommending that using BI applications are based on personalized and Web-enabled information analysis, knowledge management, and decision support system technologies, and will lead to meaningful and high quality information that decision makers need.

KEYWORD

Business	Intelligence
Management	Information
Strategic	Enterprise
Decision	Planning

Empirical Article

Preface

Managing Enterprise Systems have been changing dramatically in the last two decades. As a result, a need has arisen to organize and control the flow of information, as information considered a power in conducting business, in order to enhance and support the decision making processes.

Due to the importance of information age, companies that leverage, exploit and maximize their information assets have a strategic advantage over their competitors. Business today moves at the speed of information; getting the right information into the right hands at the right time is essential in order to make wise, accurate and timely decisions.

A good decision can be defined as one that enables organizations move closer to its objectives. But how do managers make sure that the decisions they are about to make will help the enterprise meet its goals?

To achieve these goals, organizations should first analyze the way they make decisions and think about the information that managers need to facilitate for more confident and more rapid the decisions, as well as how they would like that information to be presented to them.

With the help of information technology nowadays, there are so many ways to improve business effectiveness especially in the decision making process. Business Intelligence (BI) is one of the latest developments in information technology by using Decision Support Systems. It offers important tools for analyzing and presenting data to managers so they can make more informed decisions.

Business intelligence (BI) is a data-driven DSS that merges data gathering, data storage, and knowledge management with analysis to provide input to the decision process. Business intelligence emphasizes analysis of large volumes of data about the firm and its operations. It includes competitive intelligence (monitoring competitors) as a subset under its umbrella.

Organizations normally, keep large amount of operational data, generated by daily transactions, in databases. These databases contain detailed information whereas managers need specific, summary information in decision making process. Using Business Intelligence, the data from separate source systems is loaded into a data warehouse through a process of extraction, transformation, loading and data is then transformed to useful information and knowledge.

Organizations nowadays apply BI to enhance decision making, decrease costs and identify new business opportunities. BI is not just corporate reporting or a set of devices to build up data out of enterprise systems.

With today's BI tools, business people can take the plunge and begin analyzing data themselves, more willingly than wait for IT to generate multipart reports. This independency in accessing required information would actually facilitate users to endorsement business decisions and make it based on solid facts rather than on gut feelings and anecdote.

Moreover, it had been noted by executive business people that building an organizational strategic plan, would be more successful if it had been developed based in timely and accurate information. Such timely and accurate information can be obtained through the use of BI.

The aim of the research is to discuss, evaluate and find out the factors that inhibit using BI on Bahraini Business organizations. Is it the poor quality and irrelevant data, or huge and vague of data or is it management resistance, or confuse between BI and traditional IT?

By presenting this study of Business Intelligence usage in organizations to facilitate decision making process, a further contribution towards strengthening the dramatic expansion which has opened the door to benefit from such Business Intelligence (BI) systems by the suppliers, customers, and other business stakeholders of an organization for customers relationship management, supply chain management, and other e-business applications and to provide the key business information and the analytical tool for managers, business professionals and stakeholders.

The purpose of our paper is to discuss, evaluate and find out the factors that inhibit using BI on Bahraini Business organizations.

The results of this research were based on the analysis of a questionnaire that was distributed among different levels of employees in different organizations in Bahrain to have an overview of their

knowledge about how BI facilitates decision making process in an organization. The data was analyzed using SPSS package to test the hypotheses.

In order to form a clear framework and address the objectives of this research, the research can be divided into five sections.

Section 1 introduces the topic. Section 2 presents the significant literature review of the topic by valued previous studies. Section 3 introduces the research methodology that was followed to investigate the research questions. Section 4 demonstrates the findings and results of the test. Section 5 discusses some of the challenges that were revealed through the research and recommendations to the problems introduced in the previous section. Finally, section 6 provides a conclusion on the research findings.

Literature Review

For an extensive review and a deeper understanding of the subject under study – BI – various literatures have been reviewed. The different literatures investigated and their significant points gathered could be summarized as follows:

What is Business Intelligence and why we need it?

According to Kulkarni et al., (2007) Business intelligence system is a "strategic information system that provides actionable information using a centralized data warehouse, which is taken from many sources, and then converted into meaningful information through BI analytical tools, leading to informed decisions. Business intelligence highlights analysis of large amount of data about the organization and its operations. The major goal of BI is to improve the correctness and the quality of the input to the decision process". Negash (2004) also refers to business intelligence systems as systems that "combine data gathering, data storage and knowledge management with analytical tools to present complex internal and competitive information to planners and decision makers".

In 2009, Tobias Bucher, Anke Gericke and Stefan Sigg defined the process-centric business intelligence (PCBI) as "all BI capabilities that are dedicated to the analysis as well as to the systematic purposeful transformation of business-relevant data into analytic information and that have been, at the same time, embedded into an operational process."

This definition indicates that data and information are connected to the source, which is the operational process that have generated these data and information, therefore, such information should be extracted and provided in real-time or at the nearest possible.

Elbashir et al. (2008) believes that offering opportune, relevant and easy-to-use information and to increase the ability to analyze business information for the sake of improving decisions made by managers among a broad range of business activities is the main purpose of BI. The aim of such systems is to support knowledge workers at different levels in organizations

In 2002, W. F. Cody, J. T. Kreulen, V. Krishna, stated in their article published in IBM systems Journal, that the Business Intelligence (BI) and the Knowledge Management (KM) are the two technologies that have been essential in improving the quantitative and the qualitative value of the knowledge available to decision makers.

Moreover, they have stated that BI has applied the functionality, scalability, and reliability of modern data base management systems in order to construct larger data warehouses and utilize the data mining techniques to mine business advantage from the huge amount of available enterprise data. On the other hand, KM technologies are capable of combining today's management systems and the web with hugely improved searching and text mining capabilities to derive more value from the explosion of textual information.

In addition, this article argued that the ability of an enterprise in taking advantage of all available information as a critical and crucial component for success.

Matteo Golfarelli, Stefano Rizzi and Iuris Cella, argued the area beyond the data warehousing in business intelligence and they have referred to it as Business Performance Management which was defined by the authors as a set of processes that help organizations optimize business performance by encouraging process effectiveness as well as efficient

use of financial, human, and material resources.

Moreover, they stated that the data warehousing is quantifying business information in order to make them promptly available and certified, but the Business Performance Management is quantifying the enterprise strategy and targets to decentralize the decision making, and claim that the data warehousing is not enough for the decentralization of decision making because of the unsuitability of its technology for grain as well as for the freshness of the collected information which should quickly flow vertically and horizontally through the levels of the enterprise. In this research we agreed the the definition introduced by Kulkarni et al., (2007) is the most appropriate and closest in terms of concept and harmony of this research.

Why to measure BI?

The measurement of business performance has long traditions in organizations. It is a practical managerial tool that can be applied in various situations and for different purposes. In the context of Business Intelligence, too, some authors have identified its measurement as a common view among researchers, in that the measurement of BI is difficult to carry out (Gartz 2004; Hannula and Pirttimäki 2003) and only few organizations have any mechanism in place to measure the value of BI (Marin and Poulter 2004). Thus, measurement is considered an important phase of BI but at the same time it is believed hard to carry out in practice.

According to Lönnqvist and Pirttimäki (2006), there are two main purposes for measuring BI: "the assessment of BI in order to prove that it is worth the effort and the measurement of BI activities in order to help manage a BI process".

All the related literatures reviewed confirmed that business intelligence "combine data gathering, data storage and knowledge management with analytical tools to present complex internal and competitive information to planners and decision makers". The above literatures provide the same idea that these systems supply actionable information delivered at the right time, right position and in the right format to aid decision-making process. The main purpose is to improve the quality of input data, in order to improve decision making.

Research Methodology

Research scholars have identified three main purposes for any research, which are exploratory, the descriptive and the explanatory purposes (Saunders et al., 2000).

Initially, the current study shall adopt a descriptive purpose to answer the research questions, and to test the proposed hypotheses.

Research Questions and proposed hypothesis

This study, aims to demonstrate how BI facilitates decision making process in an organization. It further aims to answer these questions:

- Why an organization still prefers traditional IT (spreadsheets) than Business Intelligence?
- What are the barriers that make an organization hesitate in dealing with Business Intelligence?
- Do people aware of Business Intelligence, its core components, and its important contribution in decision making?
- What are the solutions that reduce this problem and motivate the organization to use Business intelligence?

These questions, are correlated to our research objectives, are essential to the testing of the hypotheses and are important for the answering of the research questions. Notably, these questions are descriptive in its nature, which shall be answered by a descriptive research type.

Moreover, the current study developed three main alternative hypotheses:

Hypothesis (1): Lack of data leads to improper decision

H_0: Lack of data doesn't influence decisions

H_1: Lack of data influence decisions

Hypothesis (2): there is a significant effect of Implemented systems, good management, on Decision making.

H_0: there is no significant effect of Implemented system, good

management, on Decision making

H_1: there is a significant effect of Implemented system, good management, on Decision making

Hypothesis (3): Training, updated knowledge, awareness of market competitors are factors affect BI and thus decision making.

H_0 Training, updated knowledge, awareness of market competitors do not affect BI and thus decision making

H_1: Training, updated knowledge, awareness of market competitors do affect BI and thus decision making

To achieve the goal of this research, we prepared an online questionnaire, which has been deployed among different levels of employees in different organizations in Bahrain.

Understanding the advantages and disadvantages of questionnaire as a data gathering technique is used in order to enhance the outcome of the research.
We have used the tabulated questions in the questionnaire to direct the research to a certain conclusion. There were 65 respondents for this research, which have been asked to fill up the questionnaire.

Profile of Respondents

The sample of our research consist of 62 employees working at different organizations in Bahrain under both the private and public sectors 55% of them are Males and 45% are females. The adults represent 87% of the surveyed sample.

They are at various level of education ranging from PhD to less than diploma. 75% of the samples are normal staff, but we have a 25% of managers and senior managers.

Findings and Results

The findings of 62respondents of the research of Business Intelligence as a tool in facilitating decision making in an organizations, indicates factors affect decision making, and further the factors of BI, moreover, the problems affect BI.

These could be summarized as follows:

Table 1, Gender

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Male	34	54.8	54.8	54.8
	Female	28	45.2	45.2	100.0
	Total	62	100.0	100.0	

Table 2, Age

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	less than 25	9	14.5	14.5	14.5
	25 - 35	45	72.6	72.6	87.1
	35 - 45	6	9.7	9.7	96.8
	above 45	2	3.2	3.2	100.0
	Total	62	100.0	100.0	

Table 3,Degree

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	PhD	3	4.8	4.8	4.8
	Master	20	32.3	32.3	37.1
	BSc	35	56.5	56.5	93.5
	Diploma	2	3.2	3.2	96.8

	Others	2	3.2	3.2	100.0
	Total	62	100.0	100.0	

According to people awareness of what BI is, Out of the 62 of the respondent, (73%) of them know what Business intelligence is, while (27%) them do not know the meaning of BI.

Table 4, Question 1: You are aware of what Business Intelligence is (BI)

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Yes	45	72.6	72.6	72.6
	No	17	27.4	27.4	100.0
	Total	62	100.0	100.0	

BI factors that affect decision making process:

Data: Almost 92 % of the research respondents have agreed that Business intelligence is using computer techniques to analyze business data to lead to a better decision while 8% were at neutral since some people do not know what business intelligence is.

Table 5, Question 2: Business intelligence is:" Using computer techniques to analyze business data to lead to a better decision".

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	8.1	8.1	8.1
	Agree	40	64.5	64.5	72.6
	Strongly agree	17	27.4	27.4	100.0
	Total	62	100.0	100.0	

Table 6, Question 3: Do you think that your organization face lack of data problem?

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	3.2	3.3	3.3
	Disagree	17	27.4	27.9	31.1
	Neutral	10	16.1	16.4	47.5
	Agree	27	43.5	44.3	91.8
	Strongly agree	5	8.1	8.2	100.0
	Total	61	98.4	100.0	
Missing	System	1	1.6		
	Total	62	100.0		

94% of the sample believes that lack of data leads to improper decision, but only 52.5% of the surveyed employees have admitted that their organizations are at lack of data problem. The first figure shows that sufficient data is the backbone of business intelligence and thus decision making.

Table 7, Question 4: Do you think that lack of data leads to improper decisions in an organization?

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	1.6	1.7	1.7
	Neutral	3	4.8	5.1	6.8
	Agree	27	43.5	45.8	52.5

	Strongly agree	28	45.2	47.5	100.0
	Total	59	95.2	100.0	
Missing	System	3	4.8		
	Total	62	100.0		

Implemented system: 65% of the respondent agreed that implemented system (i.e: DSS, AI, OLAP and MIS) is a core component of BI. Meanwhile, 31% were at neutral.

Table 8, Question 8: Implementing system is a core component of BI.

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.6	1.7	1.7
	Neutral	19	30.6	31.7	33.3
	Agree	28	45.2	46.7	80.0
	Strongly agree	12	19.4	20.0	100.0
	Total	60	96.8	100.0	
Missing	System	2	3.2		
	Total	62	100.0		

Good Management: 86% believe that good management is a core component of BI. Good management means flexible and up-to-date management.

Table 9, Question 9: Good Management is a core component of BI.

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	11.3	11.7	11.7
	Agree	39	62.9	65.0	76.7
	Strongly agree	14	22.6	23.3	100.0
	Total	60	96.8	100.0	
Missing	System	2	3.2		
	Total	62	100.0		

Problems affect BI

As concluded from the survey shortage of data, management reluctant, cost of implementation and IT illiterate employee are all problems facing Business Intelligence; which proves the said argument.

Other Factors affects BI

Question from 12 to 17 in our questionnaire, revolve around providing timely, relevant and easy-to-use information (market and competitor information), along with knowledge workers (trained staff) in order to achieve BI goals. An average of 85% agreed that knowledge and training is a crucial factor of BI to lead to a better decision making.

Table 10, Question 12: Do you think updating your knowledge with emerging new technologies in the field of your business and the features and benefits of these technologies are crucial to BI?

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	4	6.5	6.7	6.7
	Agree	41	66.1	68.3	75.0
	Strongly agree	15	24.2	25.0	100.0
	Total	60	96.8	100.0	
Missing	System	2	3.2		
Valid	Neutral				
	Agree	62	100.0		

Table 11, Question 13: Awareness of the benefits of business intelligence, market knowledge and Reporting information relating are important for employees to contribute to BI process?

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	3.2	3.3	3.3
	Neutral	4	6.5	6.7	10.0
	Agree	35	56.5	58.3	68.3
	Strongly agree	19	30.6	31.7	100.0
	Total	60	96.8	100.0	
Missing	System	2	3.2		
Total		62	100.0		

Table 12, Question 14: Organizations should train employees gathering and reporting information from customers, relating to their problems, product and service needs, and industry trends to support BI?

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	4.8	5.2	5.2
	Agree	30	48.4	51.7	56.9
	Strongly agree	25	40.3	43.1	100.0
	Total	58	93.5	100.0	
Missing	System	4	6.5		
Total		62	100.0		

Table 13, Question 15: Organizations team members should maintain a network of external industry contacts to help them gather and interpret business intelligence information?

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	3.2	3.4	3.4
	Neutral	11	17.7	19.0	22.4
	Agree	26	41.9	44.8	67.2
	Strongly agree	19	30.6	32.8	100.0
	Total	58	93.5	100.0	
Missing	System	4	6.5		
Total		62	100.0		

Table 14, Question 16: Before launching a new product, market research and reviews to address issues such as competitiveness, market size, price points and barriers to entry of a competitor are essential to BI process?

	Freq	Percent	Valid Percent	Cumulative

				ent	Percent
Valid	Disagree	1	1.6	1.7	1.7
	Neutral	5	8.1	8.5	10.2
	Agree	26	41.9	44.1	54.2
	Strongly agree	27	43.5	45.8	100.0
	Total	59	95.2	100.0	
Missing	System	3	4.8		
	Total	62	100.0		

Table 15, Question 17: Validating key competitive information with independent sources before making significant business decisions is an important factor for BI?

		Freq	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	3.2	3.3	3.3
	Neutral	8	12.9	13.3	16.7
	Agree	37	59.7	61.7	78.3
	Strongly agree	13	21.0	21.7	100.0
	Total	60	96.8	100.0	
Missing	System	2	3.2		
	Total	62	100.0		

Analysis and Results of the proposed hypothesis of the study:

Hypothesis (1): Lack of data leads to improper decision
H0: $\mu<3$ (H0: Lack of data doesn't influence decisions)
H1: $\mu>3$ (H1: Lack of data influence decisions)

According to question 4 in the survey, we've conducted the One-sample test, and the mean of the respondents' answers was 4.3>3, which indicates that there is a significant effect of data on decision making.

Table 16, One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H1	59	4.3729	.74042	.09639

Hypothesis (2): there is a significant effect of Implemented systems, good management, on Decision making.
$Y= \alpha+\beta1\ X1 + \beta2\ X2 + \varepsilon$
Where:
Y=Decision making
X1 = Implemented system
X2 = good management

H0 = $\beta1 = \beta2 = 0$ (H0: there is no significant effect of Implemented system, good management, on Decision making)
H1= $\beta1 = \beta2 \neq 0$ (H1: there is a significant effect of Implemented system, good management, on Decision making)
$Y= 3.339+0.232\ X1 + 0.026\ X2$
We will reject H0 and accept H1.
All independent variables affect with 91% in the dependent variable

Table 17, ANOVA[b]

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.939	2	.970	2.816	.068a
	Residual	19.281	56	.344		

	Total	21.220	58			

a. Predictors: (Constant), Q9, Q8

b. Dependent Variable: Q6

Table 18, Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.339	.585		5.710	.000
	Q8	.232	.108	.293	2.154	.036
	Q9	.026	.139	.025	.185	.854

a. Dependent Variable: Q6

Table 19, Model Summary

	Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
cirersi	1	.302a	.091	.059	.58678

c r c					

a. Predictors: (Constant), Q9, Q8

Hypothesis (3): Training, updated knowledge, awareness of market competitors are factors affect BI and thus decision making.
H0: μ<3 (H0 Training, updated knowledge, awareness of market competitors do not affect BI and thus decision making)
H1: μ>3 (H1: Training, updated knowledge, awareness of market competitors do affect BI and thus decision making)
According to questions (12, 13, 14, 15, 16, 17) in the survey, we've conducted the One-sample test, and the mean of the respondents' answers was 4.1 > 3, which indicate that there is a significant effect of Training, updated knowledge, and awareness of market competitors on decision making.

Table 20, One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
H3	61	4.1923	.43798	.05608

Table 21, One-Sample Test

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
H3	21.262	60	.000	1.19235	1.0802	1.3045

Discussion and recommendation

The research findings have conclude that the good decision making is accomplished with the perfectness use of BI tools, as similarly identified in the related literature review in section 2.

All mentioned literature reviews agreed on the definition of business intelligence, and its impact on the decision making process. By referring to our research respondents who are also approved that Business intelligence is a sunshade term which refers to a variety of software purposes used to analyze an organization's unprocessed data. BI as a discipline is made up of several related activities, including data mining, online analytical processing, querying and reporting which leads to improve the correctness and the quality of the input to the decision process. According to the survey (Q4, Q8, Q15) most of the respondent agreed with what Kulkarmi suggested that BI is an actionable system that use centralized data warehouse. Also the majority of them agreed with him that the goal of BI is to improve the quality of input to decision making, (Q6, Q11, and Q15). Business Intelligence and data warehouse have been developed enough to support both business analytical and operational needs. An organization should have an open mind and apply the technologies smartly to meet any business challenges.

Awareness of the benefits of Business Intelligence and training of employees are crucial factors affect BI as concluded by our survey, which also supports Elbashir review. With the help of BI systems, employees adjust their individual and team work practices, which leads to improved performance among the gathered data and reports. (Q12-17)

Q11reported that decisions might go wrong in an organization because of several factors affected by poor quality of data, poor implementation, and insufficient data. This notion is support the review of Kulkarmi's and Eppler, which leads to poor decision making. Respondents agreed that their organizations were having wrong decision because of insufficient and due to poor implementation.

To implement a BI system, organizations should first analyze the way they make decisions and consider the information that executives need to facilitate more confident and more rapid decision-making, as well as how they'd like that information presented to them (for example, as a report, a chart, online, hard copy). Discussions of decision making will drive what information companies need to collect, analyze and publish in their BI systems.

Conclusion

To be conclude with, Organizations use BI to improve decision making, cut costs and identify new business opportunities. BI is more than just corporate reporting and more than a set of tools to entice data out of enterprise systems. CIOs and managers use BI to identify inefficient business processes that are ripe for re-engineering. Executives have to ensure that the data feeding BI applications is clean and consistent so that users trust it and used it for proper decision making. Therefore, everyone involved in the process of decision making must have full access to information related to business case.

BI projects should start with top executives, to the normal employees. They should be more likely to grip the tool which is facilitating their work.

Good BI systems need to give context. They need to explain what factors influencing the business, when implemented strategically, ought to fundamentally change how companies operate and how people make decisions, CIOs need to be extra attentive to users' feelings.

Proper decision making process

This is a prerequisite for consistently sound decision making. The greater you understand of your organization, your competitor and your environment, the more you can move from guess work to making strategic choices.

Employees need access to good technology and training

Access to advanced information system is crucial to improved decision making, as well as training in helping employees to make full use of them. Such tools must also be easy to use.

Sound judgment

Decision-making processes, whether formal of not, need to leverage the strengths of human intuition. Data does not run organization; people do.

Trust

To gain employees' confidence in management decisions, establishing

transparency and trust is at least as essential as a good track record.

Flexibility

Approaches to decision making, and even to the use of data, need to reflect the fact that the world is a diverse place, and one size does not always fit all.

We also recommend more tips for getting BI right one of them is analyzing how executives make decisions, consider what information executives need in order to facilitate quick, accurate decisions.

Moreover they should pay attention to data quality as mentioned above and the devise performance metrics that are most relevant to the business. Provide the context that influences performance metrics. Due to improvements in the technology and the way CIOs are implementing it, BI now has the potential to transform organizations. CIOs who successfully use BI to improve business processes contribute to their organizations in more far-reaching ways than by implementing basic reporting tools.

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Global Journal of Enterprise Information System

July 2010-Dec 2010

Volume-2 Issue-2

Impact of CRM in Mechanizing University's Process, Business and Productivity

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ABSTRACT

All universities and educational institutions seek to maintain information of all its currently enrolled students, affiliated colleges, Departments, alumni and participants. Moreover in the modern scenario it has become the need of Universities to consider their students as eCustomers for providing them 100% satisfaction. As a result of increasing enrolments day by day, there is a need of support system to better manage the ever increasing data and work processes. Currently, day to day operations of a university are carried out by manual process. Also, to monitor any activity sometime it requires the physical appearance of the user. Therefore, there is a great need to automate the university's manual processes using the CRM. It will optimize its operations by automating routine tasks and standardizing best practices to improve the day to day activities and of course the students/management satisfaction level. It will also enable authorities to make faster decisions through enhanced tracking of course enrolments and will give the ability to plan for new opportunities.

KEYWORD

CRM	Process
Business	Productivity
eCustomers	University

Preface

This paper provides an insight to the application of CRM to automate the university processes to enable them better manage their existing resources.

This paper is presented into 4 sections,

Section 1 is the introduction,

Section 2 discusses the current situation,

Section 3 describes the possible solution and Section 4 describes the benefits of the CRM.

1. INTRODUCTION

Educational institutions worldwide are undergoing fundamental shifts in how they operate and interact with their "customers": students, alumni, donors, faculty members, and staff members. Kotler and Fox (1995) state that "the best organization in the world will be ineffective if the focus on 'customers' is lost. First and foremost is the treatment of individual students, alumni, parents, friends, and each other (internal customers). Every contact counts!"

During the mid-1990s and the late 1990s, many colleges and universities began restructuring and reengineering their operating processes to cut costs and become more efficient while responding to increased competition. Yet these organizations also realized that building the in-house technology necessary to achieve these goals was expensive, difficult, and time-consuming. As a result, many turned to enterprise resource planning (ERP) applications. These applications helped them automate and optimize their internal business processes—in areas such as finance, grants management, student information, enrollment, inventory management, and human resources and freed them from some of the minutia found in day to-day operations. The focus is currently shifting from improving internal operations to concentrating more on customers. Higher education customers are demanding more attention and immediate service—that is, "Internet time." Proactive institutions are now adjusting their practices by refocusing their efforts externally. Because of the need to concentrate more on customers, many institutions are once again turning to technology— this time to customer relationship management (CRM) software. Similar to ERP, CRM solutions focus on automating and improving processes, although the focus is on front office areas, such as recruiting, marketing, customer service, and support with lesser cost compared to ERP systems. CRM goes several steps further than ERP by helping institutions maximize their customer-centric resources.

2. Current Situation

> "The solution supports end-to-end customer interactions, from the initial enquiry right through to the completion of the course and marketing of future courses."
>
> Lew Choong Heong , Director, Business Process Solutions

Currently universities websites are the only source to provide the information to the existing students enrolled in the various courses, announcements and other activities but it is a one way communication as students can't interact with the websites but only get relevant information from them. Also, if we look into the **"Contact Us"** section of most of the universities they just provide contact details of the University departments and don't have any separate "Student helpdesk/Support" units to resolve the students concerns on daily basis. In the modern era universities are treating their students as "eCustomers", that is why it has become the basic need of every university/institute to improve its workflow systems by providing better support and strengthen customer support to its internal and external day to day operations. Improved workflow would enable any organization to better connect with its students, deepen its understanding of participant profiles, and provide support for effective marketing and management campaigns. It is also necessary to make the system as open as possible to its users to avoid possible discrepancies and also promote resource sharing among the internal users.

Distance education is also a challenging vertical for the universities where they need to do a lot to grab the students from the open market. Also to retain them for future courses would also be a challenge in this competitive market. This can be done by proving them top level support using the CRM operations.

Though the IT has grabbed into all spheres of the University operation but we have some admin operations that are still manual and the person

needs to get them done personally which is very exhaustive and time consuming. For example, in current scenario, if there is some discrepancy in the result of a student he/she has to personally visit the university administration department many times to get his/her work done. Student/University interactions such as issue of certificate/letter from the University, Clerical operations, work monitoring by the higher authorities, result discrepancies, mismatch data entries, operations to get the affiliation or accreditation by the colleges etc. These are the small things but plays major role in its day to day operations. CRM implementation can ease the life of an individual in such scenarios by enforcing a transparent ownership model which can also be monitored by the higher authorities, if required, for the smooth and fast processing.

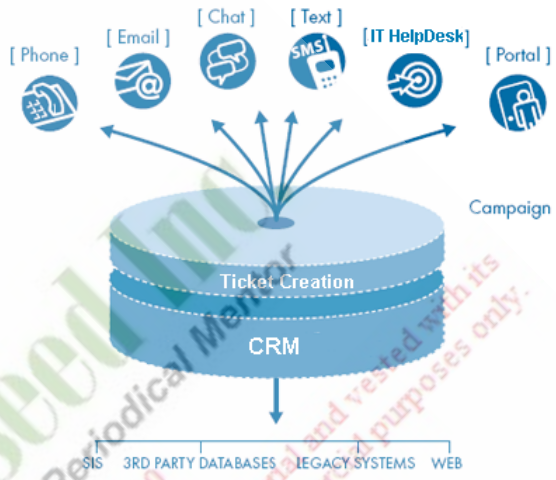
CRM Solution

IT support has become a critical issue for universities, which are offering a greater range of computing resources to students and faculty members who, in turn, have become increasingly dependent on those resources in their daily activities. Fast, effective technical support is essential to optimize the educational experience and ensure the university realizes the full value of its considerable technology investments.
While there are surely many approaches being espoused in the market today, we believe there are seven main strategies that any University can employ to survive and improve student loyalty like:

1. **Implement Ticket System for solving day to day issues**
2. **Automated Email routing /Case creation via mail**
3. **Phone call routing**
4. **Chat**
5. **SMS Text messages**
6. **IT help Desk**
7. **Integrate Knowledge base/ Portal with CRM**

Institutions typically have identified and understand the key metrics which define "at-risk" criteria and the impact on losing students, but lack the ability to leverage that information to save the student before it is too late. CRM provides the vehicle to automate communication plans, targeting the highest-risk, highest value students with hands on activity such phone or face-to-face meetings with advisors, while incubating low-risk students with personalized communications via low-cost channels such as email and SMS text messaging.

Pre-defined workspaces proactively present at-risk students to your advisor, based on risk level scores in order to highlight their risk before they leave campus. Dynamic workflows add at-risk students to pre-determined communication plans that automate timely communications via multiple mediums.



Ticket/Case Creation

The universities providing distance learning courses have lot of queries/concerns from the students on daily basis. Result discrepancy or attendance discrepancy and data discrepancy are the quite common issue faced by the students. Currently, either student needs to rush to the university personally or write them. There is no transparency in the existing system; a student doesn't know who is looking after his/her case or how long it is going to take to get resolved. There is no way to access the accountability of the concerned staff for the management. Using CRM operations a support application can be created for the generation of tickets/case for their problem and their efficient handling. A ticket is nothing but a summary of the problem with all the required information to get it processed. Every student can be identified by his/her enrollment number uniquely. Using the Support web application a user (student) can log in by providing his/her enrollment number as login id. CRM system will automatically fetch all the information of that student. Now the student is supposed to provide his/her problem description and also supply some mandatory information to the system so that the ticket can be dispatched to the queue of concerned department. Here, the "queue"

represents the "work group" of the same skilled personals. Queue can be configured according to the department like Examination, finance, Administration, Affiliation department etc. Employees would be the member of these appropriate queues. Once a case is dispatched in the appropriate queue, any employee can accept the case and start working on case resolution. As soon as a case is "accepted" by an employee the mail would be sent to the student regarding the status of the case till its closure. If no employee accepts the case with in time frame then CRM automatically can send the **escalation** mail to higher authority. This process will improve the accountability as well as will provide the quick resolution of the problems.

However, Some SLA (service level agreement) needs to be implemented in the University before implementing the CRM such that the **escalation** process can be carried out if no one is taking care of the issue within the SLA defined time frame.

Email

A CRM can be integrated to the Email server which can offer a quick, professional, cost-effective way to handle growing inbound inquiry email, Web form, and online application volumes at colleges and universities. A problem ticket can also be created via email by proving the necessary information. CRM system can parse the email and Case can be created against the student. Also a comprehensive, **rules-based** email response management system, improves constituent satisfaction with tools to provide timely, relevant, and accurate responses. An intuitive user interface and powerful productivity tools help staff members provide outstanding service levels.

Improve staff response time with intelligent routing and automation

CRM can automatically route each incoming email message to the appropriate staff member based on specified parameters, such as email subject and its content, language, staff member workload, constituent-staff associations or relationships, geography, code, agent skills, and time zones. As a result, the staff members can provide precise responses... quickly.

Enhance staff productivity

Powerful productivity features, including a comprehensive library of pre-built response templates and a knowledge base of articles and FAQs, ensure staff members provide personalized, consistent, accurate answers to all inquiries in a manner that is grammatically correct and approved by internal resources.

Phone

Phone lines can also be integrated with a CRM which can empower colleges and universities to efficiently and cost-effectively manage telephone interactions by merging data from disparate sources and threading a constituent's entire interaction history into a single comprehensive system. Phone benefits tele-recruiting, tele-counseling, fund raising, IT help desk, and other groups that interact with constituents over the phone.

Provide top-notch constituent service with an optimized desktop

CRM linked Phone provides a powerful, optimized single workspace with access to all phone features, functionality, call controls, and resources necessary to provide helpful, efficient service. Students can be connected to **IVRs(Interactive voice response).** Users can configure a desktop view based on their specific workflow requirements.

Provide consistent answers with dynamic call scripting features

CRM enabled Phone offers Dynamic Call Scripting, allowing your staff to build a script library using a simple graphical user interface. Easily personalize scripts by adding a name or inserting specific content. Recruit and retain students and facilitate donation telemarketing.

Enhance productivity with caller identification and screen pops

CRM integrates with interactive voice response (IVR) systems to enable sophisticated, customizable caller identification and notification features ("screen pops") that provide unified contact history access. Calls and contact information arrive simultaneously into the phone workspace.

- Access the entire contact history from all channels in a single click

- Easily log call details to enable consistent support

Improve staff performance with better call control and management features

- Use automatic employee availability settings to accept, reject, transfer, and terminate calls
- Configure login mechanism to the automatic call distributor (ACD) based on user's call load and availability
- Perform warm-call transfers to another user or conference others in; transfer all associated context and data to that new user

Offer efficient third-party application access

CRM integrated phones can easily be accessed by external applications within the same screen pop. Integrate any ActiveX component, existing third-party applications, and many Web-enabled legacy systems. Students can be connected to **IVRs**, ACDs, and phone switch telephony equipment using industry-standard methods.

Chat

CRM integrated Chat enables institutions to communicate in real-time with online visitors, providing a dynamic way to answer questions, offer immediate assistance, or proactively engage visitors on the Web site. A cost-effective solution, staff members can proactively or reactively interact concurrently with multiple people while delivering personal and immediate attention to enhance the constituent's experience.

Optimize communication with instant text dialogue and collaboration functionality

Web site visitors can initiate a chat session from a Web site link, or your staff can proactively initiate the chat invitation based on predetermined visitor data attributes or actions. All chat session transcripts are automatically logged and added to the constituent's unique contact record. For added security, CRM encrypts sensitive information, such as credit card details and Social Security numbers.

Enhance staff productivity and improve constituent satisfaction

In addition to built-in routing and assignment strategies, staff have 24x7, single-click access to a unified view of all previous constituent interactions from any communication channel. Employees can quickly respond to inquiries using a knowledgebase of FAQs, response templates, Web links, and documents. As needed, employees can conference individual or multiple staff members into a chat conversation.

Supervise employees for consistently high levels of service

Train and supervise staff by auditing chat sessions, seamlessly taking over a chat session if necessary, or "whispering" information to the employee that is invisible to the constituent. Supervisors have a special chat workspace to view current queue status and chat session reports to monitor employee performance and load levels.

Ensure constituents have a positive chat experience

Set expectations by displaying queue position and wait times. Encourage a continued connection by notifying each party when the other is typing information.

SMS Text Messaging

Mobile device can also used to create the tickets in the form of text message. CRM will automatically parse the text message and route them in a default queue. Also, CRM integrated SMS Text Messaging allows you to broadcast short messages and reminders. For example, admission changes the timing for a recruiting event; they will then be able to notify all attendees through an SMS blast about the updated timing, based on segmenting prospects by the region or by more specific class criteria if applicable. Financial Aid wishes to remind qualified students of application deadlines. Student Services needs to communicate an emergency notification, in real-time SMS Text Messaging can be leveraged by most any department on campus.

IT Help Desk

A typical help desk has several functions. It provides the users a central point to receive help on various issues. CRMs have the separate module for help

desk which typically manages incident (ticket) tracking system that allows them to track user requests with a unique ticket number. The help desk can often be an extremely beneficial tool for the universities when used to find, analyze, and eliminate common problems in a university environment.

Information Portal

Every university maintains its information through its internal web site or portal. CRM can be also be targeted to University's portal and the knowledgebase, which would be a powerful and robust system ,that enables constituents to instantly locate correct answers to their specific questions 24x7 via the Web site. Using CRM we can offer the facilities like FTS (Full text search) to the students. Also, the web site can also be integrated with the CRM to create the tickets from there and also the students can see the resolution status of there tickets as well.

Increase constituent satisfaction

CRM enabled Knowledgebase offers an intuitive user interface and flexible workflow experience that supports individual problem-solving approaches, improving first-time resolution rates. Inquiries are easily answered, as the solution actually opens the appropriate document and highlights the respective answer.

Conclusion

Faced with widespread economic, technological, and cultural change, academic institutions are looking to enhance the value and effectiveness of their existing customer relationships, while attracting new and loyal customers. As institutions begin embracing ebusiness and e-learning, the driving forces behind CRM will become even stronger. The notion of effective customer information management as a productivity issue is being replaced by the need for effective customer management as a competitive advantage. Tomorrow's systems will go far beyond productivity-related features (such as Web-based student registration) to the development of customer information as a strategic advantage. The concept of students, alumni, faculty members, and staff members as "customers" will become a competitive imperative with profound impact on how colleges and universities attract, retain, and serve customers of all types.

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ABSTRACT

Supply chain management information systems (SCM IS) have become vital tools for synchronizing information among the customers and suppliers of a supply chain. However, recent advances in inter-enterprise systems and e-business technologies have led to a confusing variety of SCM IS alternatives, each with varying capabilities used to determine the levels of support an SCM IS should provide to enable operational efficiency, flexibility, and planning and analysis capabilities.

Potential of Information System in Supply Chain management

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KEYWORD

Information Systems (IS),	Supply Chain Management (SCM),
Just in Time (JIT),	Manufacturing Resource Planning (MRPII)

Preface

Companies have consistently tried to enhance their business efficiency and effectiveness by reassessing their internal business operations such as purchasing, warehousing, materials management and distribution. These processes commit huge time and financial resources and therefore companies are continually striving to make them more effective in order to improve their financial standing and market positions. This has involved manufacturers using techniques such as Manufacturing Resource Planning (MRPII) and Just-In-Time (JIT). However, businesses in today's highly competitive global market place require to reassess their business operations and examine both internal processes and external linkages with business partners to satisfy the changing needs of their customers, react to the actions and new business models of their competitors and opportunities afforded by new technologies. They must offer products, which fully satisfy customer demands as well as trying to anticipate future demands. Therefore supply chain management (SCM) is coming under increasing scrutiny in trying to achieve this competitive advantage as it provides many opportunities for reducing operating costs and improving customer service and satisfaction.

More common and accepted definitions of Supply Chain Management are:

- **"Supply chain management is the management of the interconnection of organisations which relate to each other through upstream and downstream linkages between the different processes that produce value in the form of products and services to the ultimate consumer"**
- Supply Chain Management is the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole
- Global Supply Chain Forum - Supply Chain Management is the integration of key business processes across the supply chain for the purpose of adding value for customers and stakeholders.

Supply chain management (SCM) is a broadened management focus that considers the combined impact of all the companies involved in the production of goods and services, from suppliers to manufacturers to wholesalers to retailers to final consumers and beyond to disposal and recycling. This approach to managing production and logistics networks assumes all companies involved in the process of delivering goods to consumers are part of a network, pipeline, or supply chain. It encompasses everything required to satisfy customers and includes determining which products they will buy, how to produce them, and how to deliver them. The supply chain philosophy ensures that customers receive the right products at the right time at an acceptable price and at the desired location.

Increasing competition, complexity, and geographical scope in the business world have led to this broadened scope and continuing improvements in the capabilities of the personal computer have made the optimization of supply chain performance possible. Electronic mail and

the Internet have revolutionized communication and data exchange, facilitating the necessary flow of information between the companies in the supply chain.

Companies that practice supply chain management report significant cost and cycle time reductions. For example, Wal-Mart Stores Inc. announced increases in inventory turns, decreases in out-of-stock occurrences, and a replenishment cycle that has moved from weeks to days to hours.

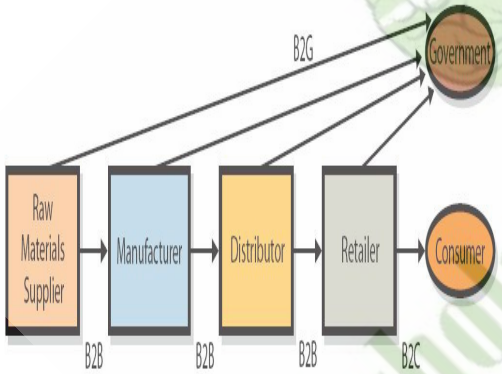

Figure -1 Simple Supply Chain

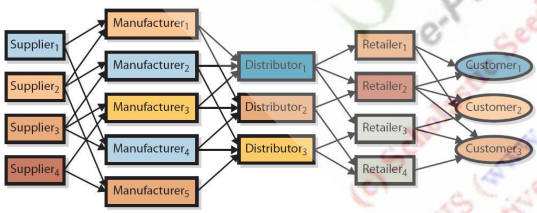

Figure-2 Complex Supply Chain

Benefits of SCM:

- **Reduces production and distribution costs**

- More information

- less inventory, less lead times needed

- Improves timeliness of shipments

- Increases supply chain "velocity"

- More accurate fulfillment

- Improves "visibility" of supply chain

- Fewer employees needed to manage supply chain

- Better customer satisfaction: less stock-outs

- Strategic relationship with suppliers, enables new business partnerships:

- Collaborative Planning, Forecasting, and Replenishment systems (CPFR).

- Collaborative downstream customer service, marketing, and relationship management.

Supply Chain Management Decisions Levels

- **Strategic Level**
- **Tactical Level**
- **Operational Level**

Figure -3 shows the three level of decisions as a pyramid shaped hierarchy. The decisions on a higher level in the pyramid will set the conditions under which lower level decisions are made

Figure -3 Hierarchy of Supply chain Decisions

Strategic Level- On the strategic level long term decisions are made. These are related to location, production, inventory, and transportation. Location decisions are concerned with

the size, number, and geographic location of the supply chain entities, such as plants, inventories, or distribution centers. The production decisions are meant to determine which products to produce, where to produce them, which suppliers to use, from which plants to supply distribution centers, and so on. Inventory decisions are concerned with the way of managing inventories throughout the supply chain. Transport decisions are made on the modes of transport to use. Decisions made on the strategic level are of course interrelated. For example decisions on mode of transport are influenced by decisions on geographical placement of plants and warehouses, and inventory policies are influenced by choice of suppliers and production locations. Modeling and simulation is frequently used for analyzing these interrelations, and the impact of making strategic level changes in the supply chain. On the tactical level medium term decisions are made, such as weekly demand forecasts, distribution and transportation planning, production planning, and materials requirement planning. The operational level of supply chain management is concerned with the very short term decisions made from day to day. The border between the tactical and operational levels is vague. Often no distinction is made.

The components of Supply Chain Management are:

- **Demand planning(forecasting)**
- Demand collaboration (collaborative resolution process to determine consensus forecasts)
- Order promising (When one can promise a product to a customer taking into account lead times and constraints)
- Strategic network optimization (what plants and DC's should serve what markets for what products) (monthly - yearly)
- Production and distribution planning (Coordinate the actual production and distribution plans for a whole enterprise) (daily)
- Production scheduling (For a single location create a feasible production schedule) (minute by minute)
- Transportation planning (For multiple supply, manufacturer, distributor and warehousing points in a network)
- Transportation execution (Enactment of long term plans on a per shipment basis, typically performed by focused organizations called forwarders)
- Tracking and Measuring (An ever increasing aspect of supply chain management designed to highlight potential against the plan and possible process improvements)
- Plan of reduction of costs and management of the performance (diagnosis of the potential and the indicators, the organization and planifiaction strategic, masters dysfunctions in real time, evaluation and accounting reporting, evaluation and reporting quality)

Classification of Supply Chain Management

Classified into two types:

a).Supply chain planning system:

- Generate demand forecasts for a product.
- Develop sourcing and manufacturing plans for that product
- Make adjustments to production and distribution plans, and
- Share that information with relevant supply chain members.

One of the most important supply chain planning functions is demand planning, which determines how much product a business needs to make to satisfy all of its customers' demands.

b) Supply chain execution system:

Physical flow of products through distribution centers and warehouses to ensure that products are delivered to the right locations in the most efficient manner

Supply Chain Business Process Integration

Successful SCM requires a change from managing individual functions to integrating activities into key supply chain processes. An example scenario: the purchasing department places orders as requirements become known. The marketing department, responding to customer demand, communicates with several distributors and retailers as it attempts to determine ways to satisfy this demand. Information shared between supply chains partners can only be fully leveraged through process integration. Supply chain business process integration involves collaborative work between buyers and suppliers, joint product development, common systems and shared information. According to Lambert and Cooper (2000), operating an integrated supply chain requires a continuous information flow. However, in many companies, management has reached the conclusion that optimizing the product flows cannot be accomplished without implementing a process approach to the business. The key supply chain processes are:

- **Customer relationship management**
- **Customer service management**
- **Demand management**
- **Order fulfillment**
- **Manufacturing flow management**
- **Supplier relationship management**
- **Product development and commercialization**
- **Returns management**

The Management Components of SCM

The SCM components are the third element of the four-square circulation framework. The level of integration and management of a business process link is a function of the number and level, ranging from low to high, of components added to the link. Consequently, adding more management components or increasing the level of each component can increase the level of integration of the business process link. The literature on business process re-engineering, buyer-supplier relationships and SCM suggests various possible components that must receive managerial attention when managing supply relationships. The following components are:

- Planning and control
- Work structure
- Organization structure
- Product flow facility structure
- Information flow facility structure
- Management methods
- Power and leadership structure
- Risk and reward structure

Supply Chain Management Information System (SCM IS)

Supply chain management helps a company get the right products to the right place at the right time, in the proper quantity and at the acceptable cost. The goal of SCM is to efficiently manage this process by forecasting demand, controlling inventory, enhancing the network of business relationships a company has with customers, suppliers, distributors and others, and receiving feedback on the status of every link in the supply chain. Supply chain management is a Cross-Functional Inter-enterprise System that uses information technology to help support and manage the links between some of a company's key business processes and those of its suppliers, customers and business partners. The goal of SCM is to create a fast, efficient and low cost network of business relationship, or supply chain to get a company's products from concept to market. The objective is to significantly reduce costs, increase efficiency, and improve their supply chain cycle times. SCM software can also help to improve inter-enterprise coordination among supply chain process players. The result is much more effective distribution and channel networks among business partners.

Objectives of Supply Chain Management Information System (SCM IS)

Supply Chain Management (SCM) enables collaboration, planning, execution, and coordination of the entire supply network, empowering firms to adapt your supply chain processes to an ever-changing competitive environment. SCM can help transform a linear, sequential supply chain into a responsive supply network – in which communities of customer-centric, demand-driven companies share knowledge, intelligently adapt to changing market conditions, and proactively respond to shorter, less predictable life cycles.

Objectives of Supply Chain Management

- **To maximize the overall value generated. The value a supply chain generates is the difference between what the final product is worth to the customer and the effort the supply chain expends in filling the customer's request.**
- To achieve maximum supply chain profitability. Supply chain profitability is the total profit to be shared across all supply chain stages.
- To reduce the supply chain costs to the minimum possible level.
- To ensure smooth flow of material, information and financial between and among stages in a supply chain to maximize total profitability

The basic objective of SCM IS is to ensure value for both the business and the customers

Benefits of Supply Chain Management Information System (SCM IS)

- **Increase in overall efficiency**
- Fast order processing
- Reduction in cycle time
- Eliminate wastage
- Provides flexibility
- Provides competitive advantage
- Eliminate inventory quality problem
- Provides business intelligence tools like Data Mining etc.
- Gives new ways to access the enterprise information for daily activities
- Enhances inter enterprise and intra enterprise coordination
- Strengthens firm's relationships with suppliers, distributors, wholesalers, retailers.
- Reduction in cost
- Order tracking made easy
- Quicker transportation of material to market
- Strategic relationships with suppliers
- More accurate order processing
- Demand forecast made easy

Information to be Contained in Supply Chain Management Information System (SCM IS)

1) **Production**-What products does the market want? How much of which products should be produced and by when? This activity includes the creation of master production schedules that take into account plant capacities, workload balancing, quality control, and equipment maintenance.

2) Inventory- What inventory should be stocked at each stage in a supply chain? How much inventory should be held as raw materials, semi-finished, or finished goods? The primary purpose of inventory is to act as a buffer against uncertainty in the supply chain. However, holding inventory can be expensive, so what are the optimal inventory levels and reorder points?

3) Location-Where should facilities for production and inventory storage be located? Where are the most cost efficient locations for production and for storage of inventory? Should existing facilities be used or new ones built? Once these decisions are made they determine the possible paths available for product to flow through for delivery to the final consumer.

4) Transportation—how should inventory be moved from one supply chain location to another? Air freight and truck delivery are generally fast and

reliable but they are expensive. Shipping by sea or rail is much less expensive but usually involves longer transit times and more uncertainty. This uncertainty must be compensated for by stocking higher levels of inventory. When is it better to use which mode of transportation?

5) Information—how much data should be collected and how much information should be shared? Timely and accurate information holds the promise of better coordination and better decision making. With good information, people can make Thus an SCM IS should consist of information regarding the above mentioned components via each supply chain member i.e. manufacturer, supply distributor, warehouse, retailer and customer.

Future

Supply chain management information system is an evolving process. It is much like the philosophies of total quality management (TQM) or business process reengineering in that there is no stopping point. Emerging technologies and successful supply chain management techniques used by companies today are the foundation of future improvements in techniques and technologies. Supply chain management can provide great payoffs in cost and efficiency to the organization.

Enabled with improving technology and a broader view of the organization, supply chain management addresses the issues of complexity and competition by exploiting and enhancing the chain to provide strategic, financial, and competitive advantage.

Conclusion

World is shrinking day by day with advancement of technology. Customers' expectations are also increasing and companies are prone to more and more uncertain environment. Companies will find that their conventional supply chain integration will have to be expanded beyond their peripheries. The strategic and technological innovations in supply chain will impact on how organizations buy and sell in the future. However clear vision, strong planning and technical insight into the Internet's capabilities would be necessary to ensure that companies maximize the Internet's potential for better supply chain management and ultimately improved competitiveness. Internet technology, World Wide Web, electronic commerce etc. will change the way a company is required to do business. These companies must realize that they must harness the power of technology to collaborate with their business partners. That means using a new breed of SCM application, the Internet and other networking links to observe past performance and historical trends to determine how much product should be made as well as the best and cost effective method for warehousing it or shipping it to retailer. One of the biggest benefits technology has given to the supply chain concept is the ability for companies to collaborate. These collaborations are designed for the mutual benefit of all parties.

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Global Journal of Enterprise Information System

July 2010-Dec 2010

Volume-2 Issue-2

KAIZEN CULTURE: ENABLING ORGANIZATIONAL CHANGE MANAGEMENT FOR SUSTAINABLE COMPETITIVE ADVANTAGE

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ABSTRACT

Competition has brought about profound changes to Indian corporate sector. Organizations have changed their very outlook to business because the advent of MNCs has radically altered the rules of the game. The better Indian organizations have fought with their backs to the wall and survived the competition. However, majority of Indian organizations are still struggling to cope up with pace, speed and rate of change that liberalization, privatization and globalization has gifted to Indian economy. With this backdrop this paper examines the conceptual possibility of helping organizations manage and sustain change through the Kaizen route. The authors posit that a Kaizen culture brings incremental changes and brick by brick builds the competitive edifice of organizations. Once this foundation structure is built it impacts upon the super structure and to reap long term benefits of organizational competitiveness, by default organizational change is ushered in – seamlessly and soundlessly with least pain and agony. This provides organizations the much needed competitive advantage to lead the industry rather than follow it.

KEYWORD

Kaizen	Business Environment
Exploratory	CSF
Manufacturing organizations	Global

Preface

For the past three to four decades, ever since Japanese products started challenging American and European products in global markets, organizations, world over, have been focusing on an enabling culture that would drive productivity and efficiency among employees. Among various drivers of organizational culture, zero defect culture, quality culture and continuous improvement culture have been quiet prominent. No wonder, Japan has been the leading light in propagating these cultural drivers in the world. Among many contributions of Japan in the world of management of product and service quality, Kaizen has had a very high impact in boosting organizational productivity and efficiency. Kaizen is nothing but a system of continuous improvement in quality, technology, processes, company culture, productivity, safety and leadership. This paper is an attempt to look at Kaizen from a perspective of change management and how it can lead organizations to sustainable competitive advantage. The approach of this paper is a conceptual and theoretical appreciation of the topic without, any attempts, whatsoever, to go the empirical way. The reasons for this limited focus is to first bounce off the idea of a conceptual relationship between Kaizen culture, organizational change and competitive advantage take back necessary feedback and inputs then convert the same into a empirically testable model. Further, the conceptual framework is based on Indian organizational realities, and economic environment.

Thus the paper is divided into two main sections. The first section attempts to bring to perspective the competitive environment prevalent in India, how change management affects organizational competitiveness, and the nuts and bolts of a Kaizen culture. The section ends with three short Indian case studies to illustrate implementation of Kaizen culture in organizations. The second section focuses on a conceptual model relating Kaizen culture to change management that would lead to competitive advantage for organizations. The paper concludes on a note to practicing managers as to how such a theoretical model can be of help to them.

The Reality of Competition in India

A paradigm shift occurred in India in 1991 when the then Finance Minister, Dr. Manmohan Singh ushered in the first winds of a liberalized, privatized, and globalized economy. Despite many faltering steps which India took to integrate with the world economy, amidst severe internal political opposition, today India is a proud citizen of the global village. However, this was at a cost. The cost was of the comfort of a supply driven market, monopolistic practices of Indian companies, and of course the appropriation of profits by enterprise owners without any plough back, what-so-ever, for research and development, quality improvement, etc. that would benefit customers. Post liberal India saw the fire of competition in Indian markets with multinationals establishing base in India by hoards. In such a situation the survival of Indian industry depended upon their ability to accept the challenge and respond in a manner that added value for money, far more than the average customer's expectation. Such a syndrome was accentuated by the competitive reality which organizations, Indian or otherwise, have been facing since the last one decade or so. It is the reality of fast changing technologies, products, markets and even competitors. In this competitive reality of change another variable that has played havoc with the stability and competitive supremacy of organizations is the exponential growth and use of World Wide Web. Today all factors of production are available at the click of a mouse from the cheapest corners of the world thus leaving little for organizations to derive competitive advantage from. In such a scenario, perhaps, the only differentiating factor that is lending uniqueness and competitiveness to companies is the quality of final product and services rendered to customers. Harari (2007, p.25) a Professor at the University of San Francisco and author of the book "Leapfrogging the Competition: Five Giant Steps to Market Leadership" echoes these thoughts when he says, "…in every industry competition is becoming fiercer, emanating from every nook and cranny in the planet, providing consumers with myriad choices." He goes on to assert:

"…….when customers sit in front of their PCs, they really are kings and queens. They can instantaneously draw upon a wide sample of comparative research on cars' features and quality, they can contact car brokers anywhere, they can

access dealers' rock-bottom invoice prices, and they can bypass any dealer of any automotive product anywhere, while putting together a customized package that fits their unique, idiosyncratic needs – all in the comfort of their living rooms".

Needless to say quality of products and services has emerged as the reigning hero of a liberalized, privatized and globalized Indian economy like any other developed economies of the world. Notwithstanding this fact a 2008 United Nations Industrial Development Organization [UNIDO] report has placed India at 41st rank in terms of competitiveness of Indian industries, among a list of 100 economies. In sharp contrast, China, a close competitor of India as regards industrial growth is concerned has been ranked way ahead at 26th position. This reality of competition is a bitter truth which is not only difficult to digest but also dangerous for the future of Indian organizations in a global economy. To make the grades Indian organizations have no other choice but to embrace change proactively.

Change: The Road Less Travelled

Change management can be defined as continuous process of aligning an organization with its market-place and doing it more responsively and effectively than competitors (Berger,1994). Therefore, change is a phenomenon of strategic importance. It is a process of taking feedback from people, processes and systems within and outside the organization (Useem, 1994). The consequences of change is to move an organization from its current state to a more desirable, improved state, which essentially means that there is a "before" state and an "after" state [Ragsdell, 2000]. Therefore, success of any change effort directly corresponds to the amount invested in mobilizing an organization to get behind the new, let go the old, and strive together to reach the desired state and ensure a continuous commitment to change. The perceived problem with change is, it tries to shake people out from their comfort zones and hence, is almost always faced with resistance. However, it may not be the case always since, people are frequently ready to change, if there's something in it for them, and if they participate in creating such changes. So, it's up to leaders of an organization to articulate how change is beneficial to employees, and then to help employees create necessary changes. It is well known that fear of resistance is a big reason for organizations not to travel the road of change so often when in contrast the reality of competition demands that organizations travel only on the path way of quick, fast and market responsive change. One sure way of introducing, leading and sustaining change in organizations is to start with incremental small efforts and then over a period of time, snowball the same into revolutionary paradigm shifts so as to take competition by its horns. A good place to start with change is continuous improvement of everything that's worth its salt in an organization's journey towards competitiveness, profitability and growth. It is recommended that Kaizen be one of the solutions to break away organizations from the jinx of inertia and fear for change.

Navigating Change through Kaizen Culture

As suggested in the preceding section a culture of change can be ushered in by cultivating a habit for continuous improvement, or as they call it in Japan Kaizen. Time and again several organizations have reported that by implementing continuous improvement concepts, like Kaizen, has resulted in improvements in quality of products, efficiency and productive levels of employees, while lowering of costs and bringing in transformational changes (Scotchmer, 2007; Ortiz, 2006; Chapman, 2006). Kaizen is the effort put in to get everyone involved in improvement processes. Getting everyone involved is mission critical for creating a culture. Hofstede (1999) defines culture as "the collective programming of the mind that distinguishes the members of one group or category of people from another". He goes on to add that the foundations of any culture are values which are "broad tendencies to prefer certain states of affairs over others". Hence, corporate culture, as is well known, is the collective behavior of people using common corporate vision, goals, shared values, beliefs, habits, systems, and symbols. It is created when majority of organizational members' value organizational vision, goals, habits, systems, symbols, process, etc. When people start valuing such things they start to exhibit the same in their actions, since action is nothing but a mirror image of one's thoughts. Value proposition is created in the mind and crystallizes as a thought which translates into similar behavior and actions by all organizational members thus creating a culture. A Kaizen culture is created when small, steady, incremental changes are initiated and sustained in

organizations. As people collectively get engaged in Kaizen activities in teams and groups, they start valuing such activities which further reinforces their behavior patterns which gets repetitive and over a period of time Kaizen culture becomes ubiquitous in an organization. Creating a Kaizen culture isn't easy as it is transformational and revolutionary as against being transactional and incremental in its implementation. However, once established it becomes a way of life. In this backdrop let us now refresh our understanding of Kaizen and steps involved in its implementation.

The Concept of Kaizen

Kaizen comes from two Chinese words "Kai" meaning an ongoing change and "Zen" which means for the better. For Ortiz (2006, p.31) "Kaizen events are opportunities to make focused changes in the workplace….A company Kaizen program helps create a foundation for change that will enable a company to sustain process improvements for the life of the company." Neese and Kong (2007) believe that Kaizen describes the process of orderly continuous improvement. "Kaizens are characterized as short bursts of intense activity driven toward resolving a specific problem or achieving a specific company goal in a short period of time" (Chapman, 2006, p. 27). Similarly, Melnyk et al, (1998), contend that Kaizen involves short-term, team-based, highly action-oriented, focused, results-driven and repetitive-in-nature process improvement activities. It needs to be noted that while Kaizen is about continuous improvement it is not innovation. Drawing the difference between both, Gopalakrishnan (2006, p.2) remarks, "While large-scale innovation would involve huge investments and radical reengineering of existing processes, Kaizen aims at taking small steps toward improvement. Unlike innovation, Kaizen is not dramatic. It is simple and inexpensive, and aims to use brain, rather than financial brawn, to make gradual improvements." Thus the sum and substance of Kaizen is to keep improving in all aspects of product, services, processes, systems, procedures, etc. so that wastes of all types and nature are eliminated, costs of all types are minimized, inconsistencies everywhere and anywhere are done away with, safety standards are maximized, productivity is enhanced, employees are highly engaged and customers and investors get maximum value for money.

The Process of Creating a Kaizen Culture

Neese and Kong (2007) have articulated the steps that can help organizations in creating a Kaizen culture. They recommend three essential steps – Creating a synergy between Management and the shop floor / operations team, mapping results to processes and trystorming. In the first step, the CEO must spearhead Kaizen initiative by an expressed demonstration of his own passion and enthusiasm for establishing a Kaizen culture in the organization. Management must commit required funds, time and other resources for all employees' right from grass root levels to top to learn, live and sustain the Kaizen way of continuous improvement in the organization. In the second step processes are required to be set up to give a vivid picture to organizational members whether results of a particular Kaizen initiative can be directly attributed to that initiative. This will give a chance to everyone to "visually identify, analyze and assess whether a Kaizen event provided a better solution. If the intended objective was not met, employees must return to the original process, revisit opportunities and provide alternative solutions" (Neese and Kong, 2007, p.57). In the third step, organizational members need to brainstorm ideas and then implement outcome of such brainstorming sessions so that everyone is able to see the problem and try solutions. This process of brainstorming with action, Neese and Kong (2007) prefer to call as "trystorming". All the above steps when repeated with religious regularity will soon become a way of life in organizations and thus a culture of continuous improvement will come to prevail and become the dominant organizational culture. When such a thing happens, just-in-time inventory, zero defects, quality circles, suggestion schemes, etc. which are all but different means to achieve Kaizen will prosper and flourish. Small incremental innovations when implemented will eliminate everything that is wasteful in organizational processes and systems. In Japanese, waste is called as "muda" and connotes everything that does not add value (Scotchmer, 2007). For instance, in a typical manufacturing environment "mudas" like waste of motion, time delay, unnecessary transporting and material handling, making defects, over processing, over producing, storing inventory and missed

opportunities are all eliminated with surgical precision.

Embedding Kaizen Culture in Organizational Mosaic

Once a Kaizen culture is created, it is very important to institutionalize it. Unless adequate steps are taken to institutionalize the same all enthusiasm and progress of initial days will fizzle out in due course. For this Ortiz (2006) suggests fours essential steps – establish the champion, establish a governing committee, start communication boards and newsletters, and regularly track Kaizen activities on a dash board. A champion would be a person with requisite project management and supervision skills whose sole job role would be to drive Kaizen culture in the organization. The role of governing committee would be responsibility "for ensuring the success of the Kaizen teams and clearing any obstacles or constraints that would impede improvement efforts" (Ortiz, 2006, p.32). Communications boards and newsletters are used to propagate the achievements, challenges, and hero and heroines of Kaizen culture in the organization. They are powerful vehicles to reach out to entire organizational community and interact with them on Kaizen and only Kaizen so that there is continuous reinforcement about the significance of this culture building effort for the entire organization. The champion should ideally be responsible for all such communication media. A Kaizen dash board is required to track Kaizen projects and evaluate implementation progress, track deadlines, measure success and document challenges. This will help all employees in tracking and reaching their Kaizen objectives while simultaneously keep peer pressure on for everyone.

Kaizen Culture in Action: Three case studies

In India though Kaizen culture may not be very popular, it is found in various hue and shades at least among major manufacturing companies. Let us take a look at three specimen companies where Kaizen culture is practiced – Larsen & Toubro, Mahindra & Mahindra and Vikram Ispat. This data is picked up from secondary sources and is being used here solely to meet purposes of illustrating Kaizen implementation, thus far and no further.

Larsen & Toubro, Powai, Mumbai

L&T has a long history of Kaizen culture. It all started in 1994 as part of Total Quality Movement activity. There is one central Coordinator, who champions the cause and maintains all records. He is assisted by shop-floor level coordinators who are foremen level employees. Kaizen projects are handed over to Kaizen coordinator at shop floor which is taken up in the weekly Kaizen coordinator meetings held on fixed day and time with Department Heads. Good Kaizen projects are displayed on Kaizen Gallery (Display board for Kaizen) at shop floor. A certificate signed by Vice President of the Division is given as recognition to those who have contributed more than 50 Kaizen projects per year.

Mahindra & Mahindra Ltd. Kandivali, Mumbai

M&M is a name to reckon with in the automobile sector. In the year 2000 continuous improvement teams [CITs] were introduced by way of agreement between Management & workers. It was mandatory for every employee to become a member of a CIT that normally consisted of 4 to 5 members. The members were allowed to take out 1 hour of their time every week for CIT activities. A target of solving at least 1 problem each quarter was given to each CIT. By year 2003-2004 a total of 3274 problems were solved by CITs. Members of CITs document problems which they solve and pass in on to Accounts Department which calculates cost savings accruing to that particular Kaizen project. They certify the results of the Kaizen. Due rewards are then passed on to CIT members having highest cost saving for the organization.

Vikram Ispat Ltd., Salav, Alibaugh, Maharastra

A member of Birla Group of Industries, Vikram Ispat follows the group's World Class Manufacturing Excellence model. There are 14 Key Manufacturing Focus Areas [KMFAs] as detailed below.

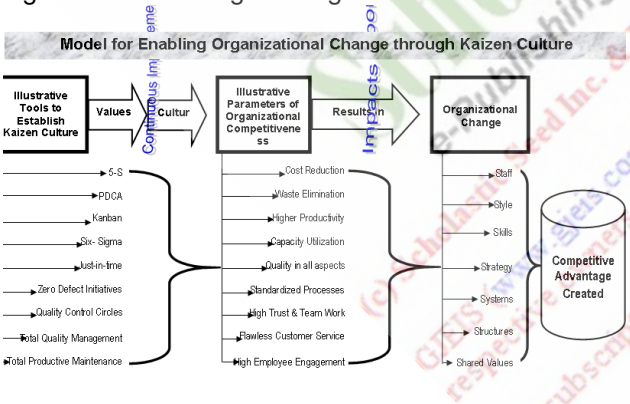
1. Work environment and MUDA elimination
2. Autonomous maintenance
3. Focused improvement and innovation (suggestion scheme)
4. Visual management including visual controls
5. Planned maintenance
6. Strategic quality management and bench marking
7. Initial flow control / up-stream management
8. Market orientation and customer driven: internal & external
9. JIT (Just in Time) / Supply chain management
10. Safety health and pollution control
11. Liaison, team force and skill development
12. Information and system
13. Technology
14. Cash flow, information and systems

Vikram Ispat has formed several teams which cover all its employees. Each team continuously is engaged for bringing about improvements in their respective areas. A General Communication

Meeting is held once in a month with people from Top Management where in different teams present their progress relating to improvements done in their areas with respect to Kaizen. The presentations are judged and rewards are distributed to the best Kaizen team. Improvements are displayed in the communication boards in respective section / control room. Co-ordination and record keeping of Kaizen activities is done by WCM Secretariat.

Enabling Change through Kaizen Culture

As discussed earlier change is a necessary must to survive in a hyper competitive environment. Unfortunately, we have also discussed, change is, more often than not, a road that is less travelled. This is where the challenge lies – How can organizations embrace change so that it becomes a matter of natural habit rather than being perceived as a necessary evil in times of crisis? We posit that embracing change, as a matter of strategic choice, will lead to competitive advantage since not many organizations take to the road less traveled. Therefore, those organizations that can, through a Kaizen culture, make change a non-negotiable part of every employee's DNA would be much more agile, flexible and responsive to business environment changes than their competitors. Such organizations would be able to leverage their ability to manage change as one, among many others, source of competitive advantage. Figure 1 below depicts a conceptual model of enabling organizational change through **Kaizen culture.**



Tools Used to Create Kaizen Culture

Different organizations use few or all of the illustrative tools mentioned in Figure 1 to create a Kaizen culture. The tools mentioned are illustrative and not exhaustive. However, all of them are focused at improvement of the current state of affairs, be it systems or processes, etc. A quick look at what these mean will drive home the point.

5S: This comes from the Japanese words Seri [sort], Seiton [set in order], Seiso [shine], Seiketsu [standardize] and Shitsuke [sustain]. These words are actually by themselves action steps to reduce waste, streamline operations, and ultimately increase productivity. Seri involves sorting and organizing items as critical, important, frequently used and useless. Seiton implies to keep back items is that one place from which it was taken. Seiso involves cleaning the work place and keeping it spic and span. Seiketsu means to develop standard processes to keep machines, pathways, etc. clean. Finally, Shitsuke is about inculcating self-discipline among employee of an organization.

PDCA: Conceived by Walter Shewhart in the 1930s and popularized by W. Edwards Deming in the 1950s, this involves a discipline of planning, doing, checking and acting in whatever one does. It provides a framework for improvement of a process or system so that sources of variations that cause products and services to deviate from customer requirements are eliminated. The four stages weave into a continuous feedback loop for managers to identify and change the parts of the process that need improvements thus enhancing productivity, efficiency, accuracy and customer satisfaction.

Kanban: This is a Japanese system that ensures continuous supply of inventories in exact quantity, location and time of demand in the shop floor, be it a manufacturing facility or a supermarket. Kan in

Japanese means visual, and ban means cards. Simply speaking it is a system of sending across visual cards to different supply points to ensure the right quantity of inventory is send to the right demand point at exactly the right time. It results in a production system that is highly responsive to customer needs while at the same time eliminating wastages and cost of stock piling inventories.

Six Sigma: In 1986, Bill Smith of Motorola, developed a set of practices to improve manufacturing processes based on the Greek letter Sigma denoting standard deviation in statistics. Anything that could possibly lead to customer dissatisfaction was treated as a defect. The goal which Six Sigma aimed at was to relentlessly try to achieve stable and predictable process results thus reducing process variations and thereby ensuring defect free products and services. It promises to produce, over the long term, defect levels below 3.4 defects per million opportunities.

Just-in-time: JIT, as it is popularly known, was pioneered by Taiichi Ohno at the Toyota car assembly plant in the early 1970s. It is a supply chain system which revolves around the philosophy that raw material inventory will be supplied to the assembly line just at the time when it is required. It is applicable to all aspects of business and helps in cost reduction, improving delivery, adding flexibility to operations, thereby lending considerable competitive advantage to organizations.

Zero Defect Initiatives: Recommended by Quality Movement Guru Philip Crosby, these are business practices that aim to reduce and minimize the number of defects and errors in a process. The ultimate aim is to do things right the first time so as to ensure wastages are eliminated, quality of product and service is impeccable, customer is delighted and there is high profitability. Zero defect philosophy firmly believes that it is cheaper to eliminate defects the first time than to rectify the same once committed.

Quality Control Circles: Once again pioneered by one Japanese named Ichiro Ishikawa in 1962, these are participative forums of employees in an organization voluntarily formed to define and solve a quality or performance related problem. These employees normally form a 6 to 12 member team from the same work unit and meet on a pre-set day of the week to analyze their section's processes, outputs, etc. with an aim to detect quality issues and resolve them for better product / service quality. Being participative, these circles provide high employee engagement and ownership.

Total Quality Management: TQM, as it is popularly known, is yet another approach to ensure that quality of products and services is enhanced by involving all processes, procedures, and systems in an organization. It is a long term strategy to guarantee customer satisfaction by involving all members of an organization. The philosophy of TQM is that if quality standards are maintained in all aspects of business then only business will be able to deliver a quality product or service.

Total Productive Maintenance: Its, history can be traced back to the 1950's Japanese manufacturing plants. Abbreviated as TPM, its aim is to maximize plant and equipment effectiveness so that wastages are avoided, product quality is not compromised,

and cost of production is reduced, among other benefits.

The Journey from Tool to Culture

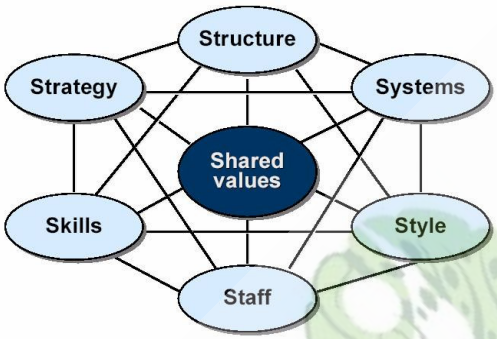
When a child is first asked to brush his/her teeth by using a tooth brush, a common reaction is of resistance since bristles prick gums. However, mothers choose brush that has funny faces, shapes and sizes which attract attention of a child. Soon the child's focus is on the cartoon character embedded on the stem of the brush rather than on its prickly bristles. Thus a child uses a brush because he/she has developed a broad tendency to prefer [value] looking at a funny face on the stem of a brush early in the morning. As a child grows he/she, by repeated use develops a habit of using a brush and starts valuing the real utility of a tool called a brush.

A similar thing happens when Kaizen tools are introduced in organizations. After an initial resistance, people start valuing the co-operative effort, brain storming session, ideation process, tangible results, rewards associated with Kaizen events, delivery power of different tools, etc. Over a period of time what once was a habit gets converted into collective programming of mind of majority employees in an organization by which they are easily distinguishable from their competitors who do not use any of these tools or at best use them for cosmetic purposes. A Kaizen culture thus gets established in organizations. Such a culture continually translates itself into myriad competitive parameters some of which are illustrated in Figure 1.

Organizational Change and its Sustainability

When parameters of organizational competitiveness are achieved to sustain them for a long period of time, by default, organizations look at the 7Ss of McKinsey's 7-S framework, some of which would already have been impacted by Kaizen tools. This is an inevitable fall out of competitive parameters because new objects that yield desired results or are successful need to have new infrastructure to sustain them over a long period of time. For instance, Government of India, threw open the airlines sector to private players. It was another step towards privatization. Thanks to competition, today an erstwhile railway traveler is able to take a flight because of low air-fare structures. However, Government of India also had to restructure the hard-ware and soft-ware of airport management to sustain the improvement caused due to privatization of airlines sector. Hence, Airports Authority of India had little choice but to throw open modernization of airports to private party, thus introducing radical organizational change in all the 7Ss. Likewise, to sustain organizational competitiveness organizations indulge in restructuring exercises focusing on all the 7Ss of the McKinsey model. While conducting a holistic examination of how Japanese organizations were so successful, Richard Pascale and Anthony Athos first conceptualized this model, depicted in Figure 2, in 1981 in their book "The Art of Japanese Management". Ever since, McKinsey consulting firm has used this framework as the fundamental diagnostic tool to guide organizational change all across the globe. Let us examine how each of these 7Ss is impacted upon thereby ushering in organizational change.

Figure



To sustain gains derived from a Kaizen culture organizations keep evaluating quality of staff required. The difficulty level of selection process goes up to ensure staff that can quickly internalize a culture of Kaizen and contribute to strengthening it. Management style is re-engineered so as to encourage people to be more thinking and creative. For instance, it becomes imperative to tolerate mistakes to so that employees fearlessly go on experimenting with myriad ways of improvement. Similarly, skill sets are impacted and organizations invest resources to develop and enhance capability of human resources. Allocation of scarce resources, which is strategy all about, is looked afresh. For instance, if an organization was following a sales strategy to push its products and services, may like to move over to marketing led strategy and pull customers by building a brand value around zero defect products. It may also consider launching a price war strategy with its new found margins from Kaizen efforts. Like wise organizations would like to bring radical changes to systems like recruitment, promotion, performance appraisal, information systems, etc. For instance, if earlier promotion was based on only meeting targets, now it may have an added parameter, say like how creatively targets were met so as to reduce cost accruing to the same. Much in similar fashion organizational structures need to be re-looked to make the organization more agile and flexible to enable ideation process among employees and quick translation of ideas into application. Hence, hierarchical barriers may be torn down to make organizations more flat. Finally, organizational values may change to reflect a new reality and a new commonality among its people and the quality of products and services they produce. All these 7Ss are intertwined as shown in Figure 2 and changes in one impact changes in others. Such organization wide change would transform an organization from a mechanical entity with nuts and bolts that just needs to be maintained to run efficiently into a "Living" entity as described by Arie De Gues in his classic book "The Living Company". De Gues(1997) describes a "Living" company as being sensitive to business environment changes, having the ability to learn and adopt, and having cohesion and identity. Such organizations embrace change as a way of life rather than as a quick-fix solution to a crisis. Needless to say such agile, flexible and nimble organizations create for themselves a huge competitive advantage and lead competition rather being led by it.

Implication for Managers

Lewin (1951) had famously said, "Nothing as practical as good theory". Even then, it is easy to trash the above analysis as arm-chair theory. Yet,

be it known that before gathering empirical evidence on any phenomena managers in organizations need to completely understand the subject of their investigation. The above analysis servers this purpose precisely. Hence, managers may find lot of utility in the highly theoretical and conceptual discussion that has happened above. First, and foremost, managers can derive inspiration to push an agenda, and may be a justification for why to relentlessly implement a Kaizen culture in their organization, be it manufacturing or service producing. As seen in preceding sections Kaizen, is to organizational change as are little drops of water to a might ocean. Second, managers will certainly get more clarity on how to drive, built and nurture values and thereby organizational culture. It is easy to loose oneself in the prevalent culture of an organization and crib that nothing can be done about it. In contrast, this paper has forcibly argued that show value to your employees in some activity and once sold, it is just a matter of time before it becomes a dominant culture. For laggards to the world of quality management, this paper gives bird's eye view to an illustrative list of tools that can be useful. By documenting the illustrative parameters of organizational competitiveness the authors have painted a compelling picture of what to measure to ensure effective implementation of Kaizen events. Last but not least, managers can derive lot of value in understanding the linkages between Kaizen culture, its outcome and how it impacts upon the 7 critical Ss of an organization's fabric thus making organization a "Living" entity.

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Global Journal of Enterprise Information System

July 2010-Dec 2010

Volume-2 Issue-2

Security Threats in E-Business with Safety and Dependability

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ABSTRACT

Security is the main considerable part for any and every architectural quality. Critical software must be safe, secure, and dependable. Confidentiality and availability constitute part for measurement of quality consideration along with integrity. Security and most important dependability are particularly the essential part of qualities while dealing with threats in e-business. Architectural tactics, or architectural design decisions, that enhance one aspect of dependability can decrease security and vice versa. The quality attributes are measured on various scales of references. These scales are sometimes not quantitative. This makes it multi-scale problem. This paper proposes a qualitative approach to manage the transactions and exchange among the attributes used to define security threats in e-business.

KEYWORD

Durability	Confidentiality
Interoperability	System Quality
Soft Goals	Grap3

Preface

To support products security, addressing the functional and non-functional requirements of e-business, a well definition of system architecture is required. There is requirement for quality-driven techniques for explicitly considering non-functional quality attributes. Techniques described by **[Kazman[i], 2004]** are used to identify the desired quality attributes of a system. Designing the architecture with various quality attributes interacting with each other, is very hard. This is because an architecture decomposition that boosts one attribute may disgrace another. While managing the tradeoffs among qualities, it is hard for several reasons. The quality attributes involved in a particular system are not measured quantitatively, though others are quantitative. For example, security is not measured quantitatively in e-business. Many reasoning frameworks assist the architect in quantitatively analyzing the quality attributes like performance. Few techniques for qualitatively represented attribute reasoning like security are available. This paper presents a qualitative approach to reasoning about security at the architectural stage.

2. Traditional Approaches with Deficiencies to modern approaches

Producing correct software, according to **[Iwasaki,1997]**, needs three approaches process, product and testing. Process approach includes personnel certification with assessments of the software development process. Product approach includes going through the real software product and concerned artifacts by inspections, reviews, tracing, etc. Testing product is reviewed by working the software in its real platform. It is important as inspections and proofs make simple assumptions about the platform. For the correctness **[Kazman[ii], 2004]]** provides a good discussion of practical approaches. There are three more approaches: manage complexity, manage change, and manage rationale. Complexity has an inverse relationship to correctness. It is established that up to 90% of project effort goes into maintenance for corrections and enhancements. Heaping changes upon changes creates fragile software. Modifying a legacy system needs attest design rationale. In designing with safety the rationale behind design decisions becomes more important in case security, safety and dependability otherwise it may lead dangerous situations of maintenance of e-business. Zero defect approach is the critical applications **[John D. McGregor, 2007]**, against a reliability growth to eliminate faults in early stages maximization of process and product methods. There is a requirement for the defensive program to guide design of dependable software, abstraction hiding, fault tolerance and integrity. These may require formality and abstraction for creation of right things and recovery from wrong things.

2.1 Dependability is the trust justified on a computer system. It includes the qualities of safety, reliability, integrity, availability, confidentiality with maintainability **[Algirdas Avizienis, 2004]**. This paper , on designing dependable systems, identified four interactions among the qualities within dependability involving qualities related to security threats in E-Business, these are –

2.1.1 Safety vs. Confidentiality **[Schneier, B, 2003]**

2.1.2 Safety vs. Integrity **[Schneier, B, 2003]**

2.1.3 Availability vs. Confidentiality **[Warns, 2005]**

2.1.4 Availability vs. Integrity **[Warns, 2005]**

As shown in the Fig:2.1.1

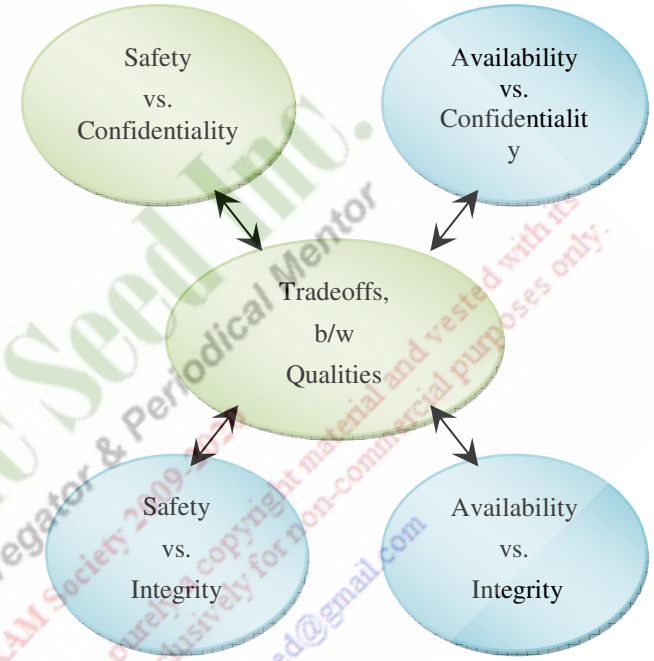

Fig: 2.1.1 Dependability involving qualities related to security threats in e-business

2.2 The tradeoffs, between qualities while designing a dependable system, must be evaluated as qualities are defined in terms of other qualities. These qualities are measured on different scales, some of which are not quantitative, are not readily handled by existing techniques. Security is not measured on a scale, a goal based scale is used to support design reasoning **[John D. McGregor, 2007]**. The goals are called softgoals because there is no precise, objective definition of the goal for satisfying them. A softgoal **[Chung, L.K. Nixon, B. and Yu, E, 2000]** will not capture the level of detail found in performance models but it will provide qualitative "indicators" to guide the architect.

3. Qualitative Reasoning for Security

3.1 Qualitative techniques adopt some type of ordinal scale because Qualitative reasoning **[Iwasaki, 1997]** provides a means of making decisions involving attributes that cannot be expressed quantitatively.

The reasoning rules use –

3.1.1 a current position on an ordinal scale

3.1.2 an indication of whether the attribute is changing its value .

3.2 Security attribute of a software might be rated on an ordinal scale as "very" secure. Qualitative reasoning supports building models to represent these relationships between qualitative values and support inferences about how the values change over time and how they cause other values to change. The model must consider the direction of change for each quality and the inequality relationship that exists among tactics tactic influencing the qualities comprising security. Many strategies are considered to improve confidentiality, integrity, security **[Steel, C. Nagappan, R. and Lai, 2005]** and availability etc. Net effect of these strategies can not be assessed on the degree to which the resulting system is secure since relative magnitudes of the "-"(weak satisfying) effect of replication and the "+" (weak) effect of a validator can not be compared.

3.3 The complexity in reasoning about these strategies is present partially because these attributes are not quantitative and partially because the measures are on different scales. It can be overwhelming to keep track of how each strategy influences each sub-quality of security threats and how each strategy relates to other strategies. For this reason, we are developing a modeling technique to assist the architect in reasoning about security threats in E-Business.

4. Satisfying security requirements: An Example

4.1 The qualities that are of most important to web-service are the following:

4.1.1 Confidentiality
4.1.2 Integrity
4.1.3 Reliability
4.1.4 Availability

Fig: 4.2 Software Qualities in E-Business

4.2 This paper chooses two strategies the first one implementing security and the second one introducing replication. Figure 4.2 describes influence of above said strategies on confidentiality and integrity in different directions. Any how the confidentiality and integrity of the overall system would have decreased after the application of both the strategies, it is due to an inequality relationship between the strategies (it was determined that "replicated elements %" has a greater impact on confidentiality and integrity than "security %").

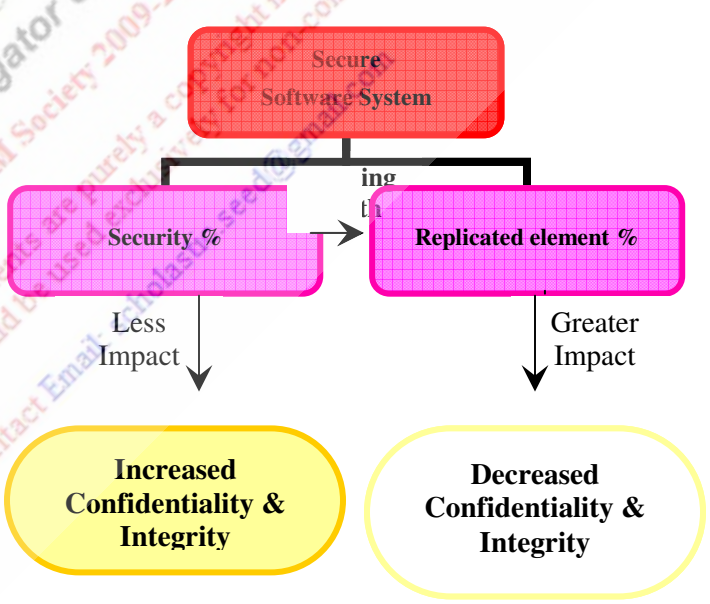

Fig: 4.2.3

4.3 The software architect is intended to take a decision on the inequality relationships between strategies which change

depending on the method of application. Garp3 is a workbench for building, simulating, and inspecting qualitative models. Garp3 is implemented in SWI-Prolog and seamlessly integrates three previously developed software components, including: Garp2 for simulating models, Homer for building models, and VisiGarp for inspecting simulation results. Integrating these tools has led to one new tool that incorporates all of the original functionalities, and thus incorporates the advantages of each tool, but also adds interoperability and an easy to use uniform user interface. Garp3 uses a diagrammatic approach for representing model content, and graphical buttons to communicate the available user options and manipulations. Garp3 can be freely downloaded and used. This paper uses Garp3 tool for generating all possible cases if no inequality is specified. To facilitate the application of qualitative reasoning to security a qualitative model of security is needed which describes the influences of strategies to the quality standards of the security. It will provide a knowledge base for qualitatively reasoning about security threats in e-business and also contain the necessary data for reasoning about security in a broader context like dependability and availability.

5. Conclusion

This paper is the hard work in the direction of establishment that simple models are always superior and supporting in decision making and for prediction purposes. The research **[Hastie, R. and Dawes, 2001]** shows that qualitative research methods reasoning for security threats in e-business are not accurate and simple though they appear so in comparison of simple modeling **[simulation model, 2005]**. This research paper presented the influence of dependability on security architectural strategies and influence of security architectural strategies on dependability. This paper elaborates a reasoning methodology of selecting architectural strategies for the software architect to get quality of system. This is also established that some security strategies register resistances against dependability targets of system. Through this paper it is proved that Garp3 tool incorporates all of the original functionalities, and thus incorporates the advantages of each goal, but also adds interoperability **[Narendra Kumar Tyagi , 2009]** and an easy to use uniform user interface.

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Animated Models and it's Global Impact: A Dynamic Approach

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ABSTRACT

The present study examines the relationship of animated model and its impact in context of every area surrounding globally. The paper tries to understand how the animated models are much powerful than still models. The models are very useful in areas like education, training, research, simulation [Wade & Parent , 2000], modeling, Fashion Designing etc.

This paper is conceptual in nature and tries to initiate a more in-depth and detailed discussion on designing of still-to-animated models.

For the purpose of the study the author has itself created some useful animated simulation models and observe that these models has more impact on any person or student than still models.

KEYWORD

Virtual visual Art	Dynamic Physical Model
Animation	Design
Model	3D & 2D
Science	Object

Preface

Animation is a virtual visual art [8]; which display the innovation and creation of an artist. Mostly in all fields the 2D and 3D animation play their vital role in presentation of the related topics. In this scenario the animated model is necessary in some useful research area like medical science[5], space research science, air-craft designing[5], fashion designing, education, film and cartoon scripting, market research, physical modeling, chemical bonds designing etc. According to my research any one can easily understand the principal of working of any object display by animated models than still models. The still models don't show the behavior of the object of machine but it is easily observe by animation. Designing of 2D models is easier than 3D models but the 3D models are more realistic than 2D models.

- Limitations of Still models:

The still models are created in the file format like .gif, .jpeg, .bmp and .png etc. Whole concepts are displayed in one time. These models not suited for presenting the nature and behavior of anything. It can't show the step-by-step presentation of required items.

- **What is an Animation?**

It is a frame-by-frame presentation of the still images. It is both single layered or multilayered consisting motion and sound effects. If there are 15 frames moved in just 1 second then our eyes can't differentiate between still image and movie image.

- **Still models Vs Animated models:**

a) Still models:

In still models everything displayed at once. It can't show the steps of the model. Designing of that model is very simple and also cheapest in cost but the user can't understand the behavior of the model. He/She doesn't know from which corner the model start and how it shows their functions.

b) Animated models:

The animated models are useful in term that though it one can easily observe the step-by-step behaviour of any real world entity. The cost of animated models depends upon the complexity which it shows. Benefit is that no further training or documentation required with animated models because it is self explanatory in nature using the following concept:

"A picture can worth thousands of words."

- **Fields where Animation used:**

There are rich interest areas where we use the animated models. Here I focus some technical areas like:

Drafting and looking the samples in fashion designing,
Understanding the behavior and complexity of different levels in game simulation [8],
Developing the educational items for students and trainees,
Observing the behavior of a complex machine,
Construction of a dam, bridge or fly-over,
Nature and Architecture of pilot projects.
Simulation of Aviation, Real time systems etc.

- **Animations Types:**

Mostly there are two types of animated models as:

a) 2D Animation:

Only x and y axis is defined in 2D animations. Designers can't show the depth of the model because z axis is absent in this model. Drafting of 2D model is easy. It takes less cost and simply defines the nature and behavior of the objects.

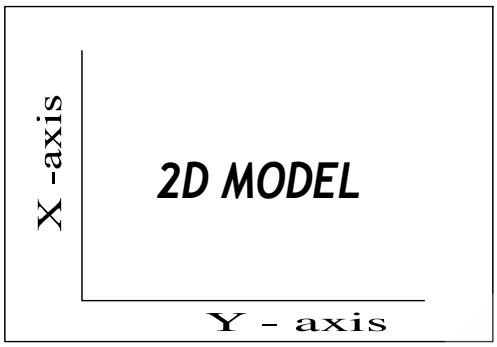


Figure – 1 2D Model Architecture

a) 3D Animation:

These models are more realistic than 2D models because the z axis is defined with other axis to show the depth or height in the model. 3D models are closer with user thus they fell much comfort with these models than 2D models [6].

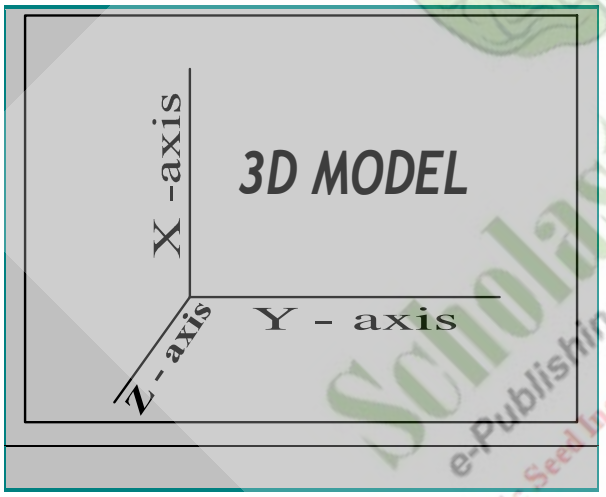
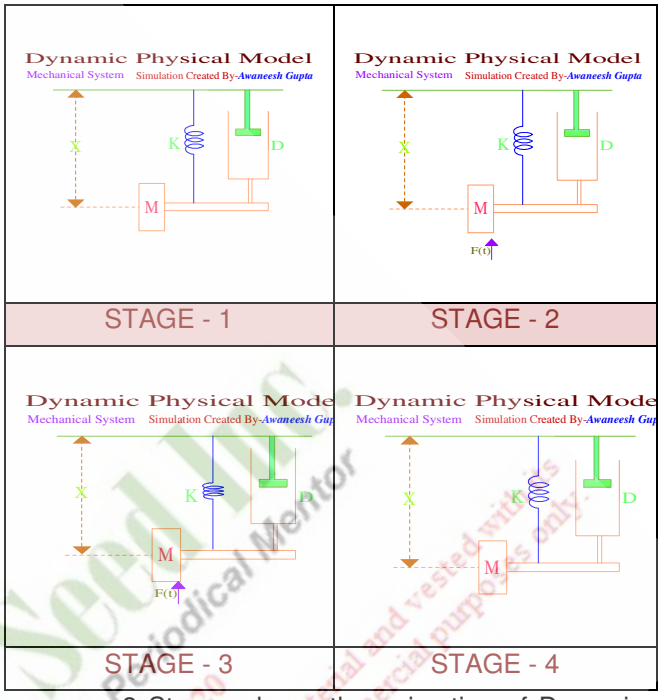


Figure – 2 3D Model Architecture

- **Scope and importance of 2D Animation:**

Models easily created by animators. After rendering it is available for subject. Simply shows the behaviour of any machine or objects in less effort and time.



Figur – 3 Stages shows the animation of Dynamic Physical Model.

The above model represent the suspension of an automobile wheel when the automobile body is assumed to be immobile in a vertical direction[9]. It can be shown that the motion of the system is described by the following differential equation:

$$Mx + Dx + Kx = KF(t)$$

If we design a luxury car then if the value of torque is less then 1 (value < 1), then we make smooth drive. The all 4 stages shows the behaviour of Dynamic Physical Model of designing of a luxury car.

- Scope and importance of 3D Animation:

Create real effects in human mind. The person [4] feels that the model is live [1]. Ex-Dinosaur presents in most popular film Jurassic park [7].

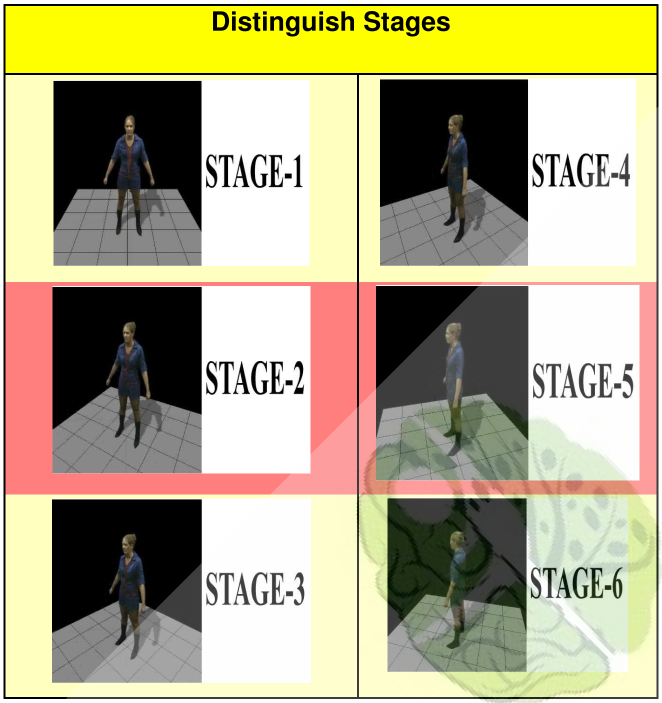


Figure – 4 Real Time Display of the movement of a person.

- Difference between 2D models and 3D models:

Z axis not defined in 2D model but these models are easily created and used anywhere in less effort. It support by all motherboard and not required to install separate graphics card.

3D model shows look and feel concept [6]. It is more realistic than 2D models but tedious in term of designing and modeling. It requires enhanced graphics facility therefore the graphics card pre-installed in machine where the model design or simulate [3].

- **Research Analysis:**

According to research I observe that if both the still and animated model available; than the peoples prefer animation. The reason of their choice is:

- Feel original,
- Easily understandable,
- Represent step-by-step behaviour,
- Self explanatory in nature,
- No documentation needed,
- Start-to-end activity display by model,
- Use multiple time,
- Consistent,
- Unambiguous,
- Easily traceable,
- User interface is simple.

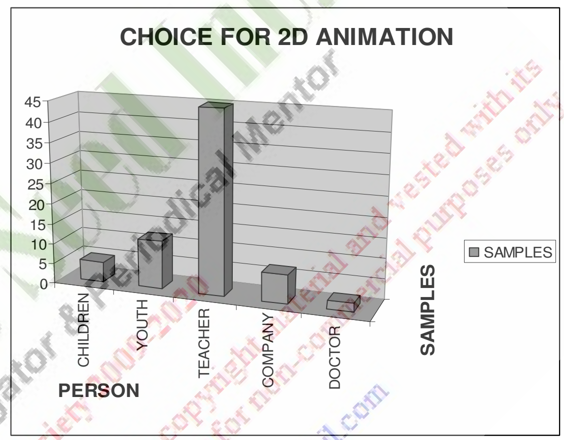


Figure – 5 Samples of Person using 2D Animation.

Mostly teachers and student use 2d animated models. Doctors and children prefer 3D models [3, 6].

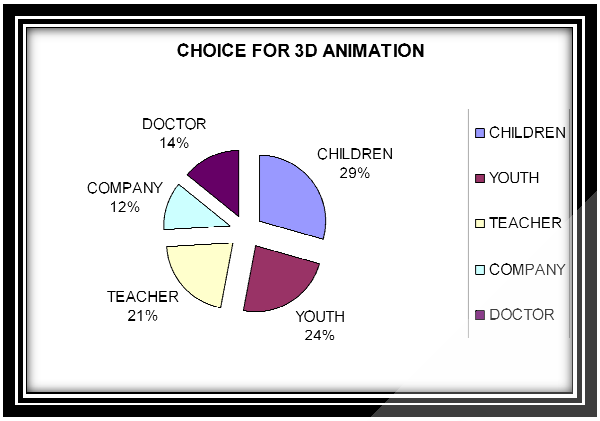


Figure – 6 Percentage of Person using 3D Animation.

- **Impact of Animated Models:**

- Increased learning capability.
- New innovations & ideas.
- Represent rear species and things in low cost.
- Media related animations.
- Advertisement Films
- Animation Films.
- Research Laboratories to represent chemical bonds and reactions.
- Biotechnology etc.

- **Process of Animation:**

System Analysis → System Designing → System Postulation

Figure – 7

DISCUSSION:

Think about the system	Create a Model	Observe the Behaviour of the Model

Tools to be used in Creating Animations:

A number of tools present for creating animations. Some of them are for creating 2D animation and others are for 3D animations. The names of popular tools are hereunder:

- **Macromedia Flash Mx: - Creating 2D models.**
- Win Morph: - Creating Morphing and Wrapping effects.
- Animation Pro. : - Creating 2D models.
- 3D Studio Mx: - Creating 3D models.
- Abrosoft Penta Morph:- - Creating Morphing and Wrapping effects.

The field of animation required high end graphics designing, sound editing, and innovative capabilities. The animator observer the things, their functions and create scripts. According script he/she make the objects and related functions. All objects fit at their proper timelines and when the whole work combined and render then an animation will be created.

The animation is both 2D and 3D. Among of all the 3D models are most popular because these are looks real [6]. Companies, Doctors, Research Scholars, Children prefer 3D-Modeling while Institutes, Teachers, Students prefer 2D-models.

The field of animation is not undemanding. It is a very tedious and time consuming process, required high end imaginations, knowledge and editing capabilities. The animators keeping the idea in their mind that:

- **Who use the animation?**
- What are their age groups?
- What is the basic knowledge required?
- What are the benefits of watching animations?
- How the animation beneficial for the society?

The above questions solved by animators by their creations. Animations are pure virtual but their

impact is no doubt tremendous. A recent study on the animation industry by NASSCOM [10] shows that the global animation production market is set for major growth. India is gradually positioning itself as a significant provider of animation production services mostly the low cost animation services. By all account, the animation production industry in India has the potential to grow into a major export engine for the country.

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Global Journal of Enterprise Information System

July 2010-Dec 2010

Volume-2 Issue-2

Data Mining: A Competitive tool in Retail Industries

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ABSTRACT

The data mining process used to be a highly technical process requiring mathematicians to build the analysis for companies. Today's data mining technology offers retailers the tools they need to make sense of their customer data & apply it to business. Data mining is the process of extracting previously unknown information, typically in the form of patterns and associations, from large databases. Today's organizations are realizing the numerous advantages that come with data mining. It is a valuable tool-by identifying potentially useful information from the large amounts of data collected, an organizations can gain a clear advantage over its competitors. Data mining can help companies in better understanding of the vast volume of data collected by the CRM systems. In the past, many organizations have recognized the vital importance of the information they have on their customers.

KEYWORD

Data Mining	Tool
CRM System	Retail
Marketing	Risk Management

Preface

Data Mining:

Data mining involves the use of sophisticated data analysis tools to discover previously unknown, valid patterns and relationships in large data sets These tools can include statistical models, mathematical algorithms, and machine learning.methods (algorithms that improve their performance automatically through experience, such as neural networks or decision trees). Consequently, data mining consists of more than collecting and managing data, it also includes analysis and prediction.

Data mining can be performed on data represented in quantitative, textual, or multimedia forms. Data mining applications can use a variety of parameters to examine the data. They include association (patterns where one event is connected to another event, such as purchasing a pen and purchasing paper), sequence or path analysis (patterns where one event leads to another event, such as the birth of a child and purchasing diapers), classification (identification of new patterns, such as coincidences between duct tape purchases and plastic sheeting purchases), clustering (finding and visually documenting groups of previously unknown facts, such as geographic location and brand preferences), and forecasting (discovering patterns from which one can make reasonable predictions regarding future activities.

Tasks can be Performed with Data Mining:

Many problems of intellectual, economic, and business interest can be phrased in terms of the following six tasks:

- **Classification**
- Estimation
- Prediction
- Affinity grouping
- Clustering
- Description and profiling

Examples of classification tasks that have been addressed using the techniques include:

- **Classifying credit applicants as low, medium, or high risk.**
- Choosing content to be displayed on a Web page.
- Determining which phone numbers correspond to fax machines.
- Spotting fraudulent insurance claims.
- Assigning industry codes and job designations on the basis of free-text job

Examples of estimation tasks include:

- **Estimating the number of children in a family.**
- Estimating a family's total household income.
- Estimating the lifetime value of a customer.
- Estimating the probability that someone will respond to a balance transfer solicitation.

Examples of prediction tasks addressed by the data mining techniques discussed include:

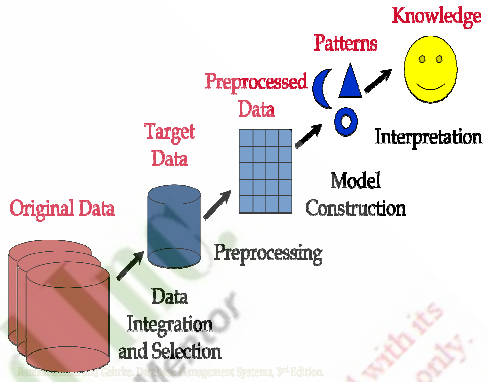
- Predicting the size of the balance that

will be transferred if a credit card prospect
accepts a balance transfer offer.

- Predicting which customers will leave within the next 6 months.
- Predicting which telephone subscribers will order a value-added ser- vice such as three-way calling or voice mail Affinity grouping can also be used to identify cross-selling opportunities and to design attractive packages or groupings of product and services.
- People who buy cat food also buy kitty litter with probability.
- People who buy kitty litter also buy cat food with probability.

In the narrow sense, data mining is a collection of tools and techniques. It is one of several technologies required to support a customer-centric enterprise. In a broader sense, data mining is an attitude that business actions should be based on learning, that informed decisions are better than uninformed decisions, and that measuring results is beneficial to the business. Data mining is also a process and a methodology for applying the tools and techniques. For data mining to be effective, the other requirements for analytic CRM must also be in place. In order to form a learning relationship with its customers, a firm must be able to:

- *Notice* what its customers are doing
- *Remember* what it and its customers have done over time
- *Learn* from what it has remembered
- *At* on what it has learned to make customers more profitable



Data mining in Retail Industry:

The retail industry is realizing that it is possible to gain a competitive advantage utilizing data mining. Retailers have been collecting enormous amounts of data throughout the years, just like the banking industry, and now have the tool needed to sort through this data and find useful pieces of information. For retailers, data mining can be used to provide information on product sales trends, customer buying habits and preferences, supplier lead times and delivery performance, seasonal variations, customer peak traffic periods, and similar predictive data for making proactive decisions. Here are some examples of how the retail industry has been utilizing data mining effectively.

Marketing:

Areas of data mining for the retail industry, as in the banking industry, is marketing. 'Market basket analysis' is a marketing method used by many retailers to determine optimal locations to promote products. Simply stated, it is the study of retail stock movement data recorded at a Point of Sale (PoS)—to support decisions on shelf-space allocation, store layout, product location and promotion effectiveness. In fact, it uses information about products already purchased by customers to predict which products they would be likely to buy if given special offers or even if they are just made aware of the products. Knowing where to locate products and promote them effectively can increase store sales. Another marketing tactic employed by many retail stores is the use of 'loyalty' cards. Rewarding customers who are frequent buyers encourages them to do even more of their shopping at that store, and make them less likely to buy from competing stores. Coupon printers at checkout stands of supermarkets provide an additional way to target customers. These printers are beneficial to brand managers who may not know which customers to target for their brand of products. The coupon printer at the checkout stand can be programmed to print out a coupon for their particular brand when certain products are purchased.

Risk Management:

It is another area where data mining is used in the retail industry. However, not as much research has been done in this area as in other areas. Retail organizations use data mining to understand which products may be vulnerable to competitive offers or changing customer-purchasing patterns. Previous purchasing patterns of customers are analyzed to identify those customers with low product or brand.

A majority of banks in developing countries (particularly in the public sector) are not usually known to exploit their information 'asset' for deriving business value through data mining and gain competitive advantage. But with progressive liberalization of rules on entry for private and foreign multinational banks, under the GATS framework of WTO, competitive pressure on domestic banks is increasing.

Loyalty, Data mining enables retailers to remain competitive and reduce risks by helping them understand what their customers are really doing. Retailers can then target those customers who are more likely to buy a certain brand or product and also be able to promote products in stores where and when they are needed.

Fraud Detection:

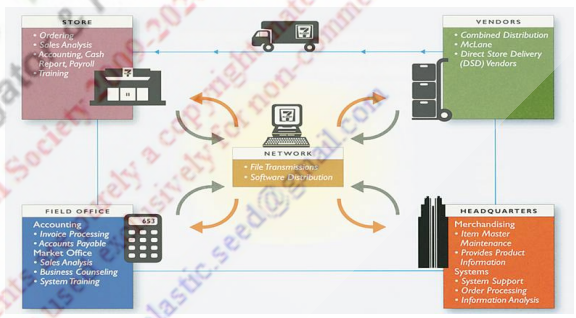
Retail industries must also be aware that fraud detection in absolutely necessary. Fraud occurring at POS terminals is a concern for retailers but this can be reduced by using data mining. It is estimated that 38% of retail shrink occurs because of dishonest employees. And with about 25 paise of every shrink Rupee traceable to PoS fraud, It is no wonder that retails continue to look for ways to reduce the number of dishonest cashiers.

Some supermarkets have begun to use digitized closed circuit television (CCTV) systems, along with PoS data mining, to enable retail loss prevention managers to expose cashier stealing and sweet hearting assemble convincing evidence, and deal with these situations as a matter or routine. The managers decide what constitutes suspicious behavior and sends software to detect it. This is called 'exception based reporting. The system flags PoS transactions that are the most susceptible to fraud refunds, credits, discounts, no sale rings, and the like and compiles them in a report that identifies the date, time, and checkout lanes where they took place. Managers can then look at the videotape to see exactly what happened; they do not even have to be anywhere nears the store.

Customer Acquisition and Retention:

Data mining can also help in acquiring and retaining customers in the retail industry. The retail industry deals with high levels of completion, and can use data mining to better understand customers' needs. Retailer can study customers' past purchasing historical and know with what kinds of promotions and incentives to target customers. Also, if a store has seen a number of people leave and go to some petitions, data mining can be used to study their past purchasing histories, and use this information to keep other customers from doing likewise.

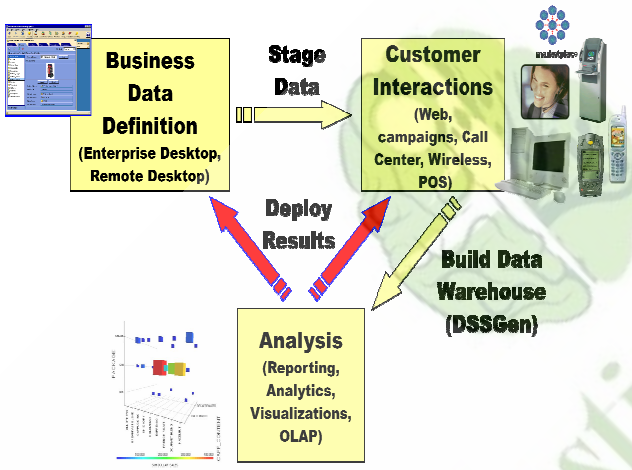
Retailers collect terabytes upon terabytes of information every day - anything from transactional data, to demographics, to product sales based on seasons. But what do they do with it all once it is neatly organized into a database? The concept of data mining is just as it sounds. Companies drill holes through 0s and 1s to come up with relationships and patterns in customer habits. To a retailer this information can be more valuable than mining for gold, because the results are almost a guarantee. The data mining process used to be a highly technical process requiring mathematicians to build the analysis for companies. But today's data mining technology offers retailers the tools they need to make sense of their customer data and apply it to business. Mark Smith, president of Quadstone, a predictive marketing software company, and Peter Urban, senior research analyst at AMR Research, discuss the advantages of analyzing data from all sources and customer channels - including the Web.



The best sources of customer information for retailers:

The best source is turning POS (point of sale) transaction data into measurements of customer behavior. The problem for many retailers is that they lack any information on specific customers, and hence are trapped analyzing data at the product and basket level. The rise of loyalty programs, mail

order, and the Internet has provided retailers with real access to customers for the first time. This allows retailers to study the purchase behavior of customers in detail, tracking changes in purchases as affected by their marketing and CRM (customer relationship management) programs. Thus, retailers understand how they can grow the value of individual customers to their businesses.



Different levels of data mining:

Directed data mining allows users to specify what they are interested in discovering, such as finding good targets for a product. Undirected data mining uses a clustering approach that looks for pure statistical patterns that show why customers are like each other in any way, but often not in a business-focused way. A third set of techniques uses association of "basket" analysis to discover links between different products. This approach is not customer focused at all. The most famous example of this is when a super market spotted customers buying beer and diapers on certain days of the week. It was thought this was because men were making a diaper run after work and while they were there, picked up some beer. Seeing this pattern, the supermarkets placed the expensive beer right next to the diapers. This technique can be very useful for such product- focused wins, but can add even more value when such linked purchases are tied to the customer details.

Data mining for every retailer:

Almost any retailer could gain some value from analyzing their data. The main driver for whether or not to do so will be the scale potential benefits and return on investment (ROI) compared to the cost of collecting, storing, and analyzing the data. Thus a specialist retailer, with very few products and customers, may gain little insight from data mining over and above their own knowledge of their business.

Category management in the retail market:

The retail market is an especially dynamic one. This is traditionally due to the similarity in the offered products since all retailers have access to more or less the same range of products via their distributors. In the last years the internet allowed new business concepts and further intensified internationalization and increased competitive pressure. For the application of a typical data mining process many, mostly anonymous data of the customer behavior is

available, which can be used for the optimization of the offers.

The problems arising in category management can be separated into four **different** areas:

- campaign optimization (i. e., selection of target groups and customers).
- cross- and up-selling (i. e., additional sales to customers).
- assortment optimization (i. e., product assortment and categories).
- price optimization (i. e., optimization of product prices and promotions).

A few years ago retailers started to apply mathematical approaches for the analysis of customer behaviour, but its use is sporadic and differs according to the line of business and the marketing activity. While the e-business shows a remarkable adoption of, arguably often too simple, algorithms, the mail order business uses mathematics to a large degree only for the optimization of mailing ctivities, that is the selection of customers with a high response probability to special offers. Last is the stationary retail market, but exactly here the current technological revolution of interactive digital shopping devices opens up new interesting possibilities for the development and application of new mathematical methods for the category management.

The high degree of customer interaction in retail is beneficial for the use of mathematical approaches since a large amount of customer data is available. At first the use of mathematics proved useful in some classical data mining fields. Here, it is very common to use classification algorithms for the optimization of mailings. Clustering methods for the segmentation of customers into thematic groups are increasingly successful. Other areas like real-time analysis and of- fers only apply the simplest methods. In the strategic field of management of commodity groups, that is the optimization of the range of products and their prices, the use of modern mathematical instruments is still the exception. But exactly here is, in combination with real-time approaches of optimal control, an important upcoming application area for the interdisciplinary cooperation of business, computer science and mathematics. Further information on data mining approaches in retail, marketing and customer relationship management can for example be found in [2]. In the following, we focus on the first two problems, i. e., campaign optimization and cross- and up-selling, and existing success stories of the use mathematical approaches in these fields.

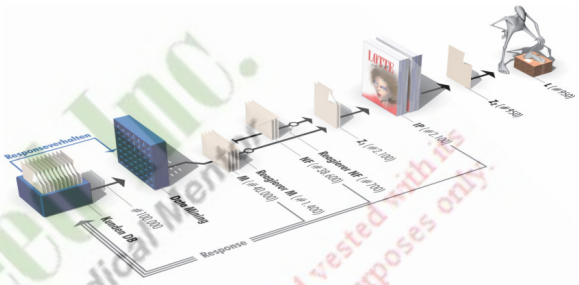
Optimization of campaigns :

With regard to the use of mathematics the optimization of campaigns is the most advanced. The goal is to apply marketing campaigns with a clear focus on the target customers. This concerns both, the definition of the aims and procedure of the campaign, as well as the analysis of the results. One distinguishes here between target group (segmentation) and target customer (individualization). While target groups are strictly defined according to one or several attributes (for example female), target customers are selected

based on an individual as- sessment in form of a numerical value, the score. An example for segmentation is the mailing of a catalogue of sporting goods only to customers interested in sports, i. e., those who bought sporting goods before. For the individualization on the other hand each customer is checked for affinity to this specific catalogue of sporting goods, independent of being part of the segment of sport affine cus- tomers. For segmentation mostly clustering algorithms are used, while for the individualization mainly classification and regression algorithms are applied. In the following we will discuss the case of mailing optimization in more detail.

For simplification the revenue is considered profit.To select only the customers with the highest response probability by means of data mining can increase the overall profit. The historical mailings for a catalogue are analysed based on the existing customer data. Models for the response probability are machine- learned based on the customer profile and then are evaluated on the 100.000 prospective recipients. This results in a list of scores out of whichthe 40.000 with the highest score (that is with the estimated largest response probability) are selected and sent the catalogue. If done correctly such a data mining approach can achieve more than twice the conventional response rate, here we assume 950 responders (ca. 2.4 %). The calculation of profit shows that, in comparison to the classical mailing campaign, in the end a higher profit of ca. 297.000 EUR instead of ca. 140.000 EUR is generated with less income. As an additional benefit customers overall receive less catalogues. Such personalized mailing campaigns are successfully used by several mail order companies The optimization of a mailing campaign is based on the classification of customers using a model which is learned from existing customer data. An example for such a classification method is described in Fig..

Figure : The phases of an optimized mailing campaign



it is based on an approximate reconstruction and evaluation of functions over a high dimensional state space of customer attributes. Here, the method of sparse grids [5, 11] can be used for the approximation of such high dimensional functions. Alternatives are for example kernel based approaches with radial basis functions or neural networks.

Cross- and up-selling :

As a second example for category management in the retail market we consider cross- and up-selling. Every salesperson knows that it is easier to sell additional products to an existing customer than to gain new customers. Cross- and up- selling addresses this core topic of increasing the customer value. The goal is to offer additional products (cross-selling) or higher valued products (up-selling) to existing

customers based on their preferences which are indicated by their interests or former purchases. Besides the increase of revenue for the merchant good cross- and up-selling also leads to higher satisfaction of the customer. Since the customer is receiving offers he is actually interested in he can save time and can avoid searching on his own.

Cross-selling starts with the disposition of the products into the market. This is traditionally the role of the category manager, although mathematical approaches are being used for several years as well. In particular, clustering approaches are used for basket analysis. These methods work transaction based and analyse for example cashier data with regard to cooperative sales. Products which are frequently bought together can therefore easily be placed near to each other in the store. Alternatively content based methods are used to analyze products and categories according to their attributes (colour, description, sound,...) and appropriate product clusters are formed. In addition to the disposition of products the e-business brought new forms of interactive and automated cross-selling: recommendation engines and avatars lead the customer to related products and services. Well known and at the fore-front is the online shop Amazon.com. While they are shopping customers are presented with overviews of related products based on their current shopping basket and product searches ("customers who bought this product also bought..."). Although the early algorithms of Amazon.com were based on simple co-relation analysis, they led the way for modern recommendation engines and adaptive analysis systems. Recommendation engines are nowadays established in e-business and are used in generalized forms for a wide range of applica- tions like searches, matching, personalized pages, and dynamic navigation. At the same time it became the topic of academic research and meanwhile a large amount of publications exists. Current methods range from clustering and text mining, Bayesian nets and neural nets up to complex hybrid solutions. Although the mathematical foundation of many approaches is still lacking, there is no doubt that currently an exciting research topic for applied mathematics is built here. In the following we discuss this example of dynamic programming for product recommendations in more detail.

Success story - Product recommendations:

Recommendation engines nowadays play an important role for automated customer interaction. A recommendation engine offers, based on click and purchase behaviour of a customer, automatically related product recommendations. The recommendation engine learns online directly from the customer interaction. Recommendation engines increase the sales up to 20 % and lead to enlarged customer satisfaction. But their application is not limited to this, modern recommendation engines vary design, product assortment and prices dependent on the user and allow totally new possibilities of personalization.

In stationary retail the use of automatic recommendation engines appeared until now technically infeasible, although interest exists since

most buying decisions take place in the store. But change is on the horizon. In the first shopping malls electronic tools like the personal shopping assistant are available, a device which is placed on the shopping cart. Customers can access detailed information for a product from the shelf by using the scanner of the personal shopping assistant, the display then shows the corresponding information and addition- ally related product recommendations. Such systems allow for the first time fully automatic interaction with the customer in the store, for example in form of real time couponing on the receipt depending on the purchases or in form of dynamic price changes using electronic displays. This results in an interest.

Discussion:

Data mining is a tool used to extract important information from existing data and enable better decision-making throughout the banking and retail industries. They use data warehousing to combine various data from databases into an acceptable format so that the data can be mined. The data is then analyzed and the information that is captured is used throughout the organization to support decision-making.

It is universally accepted that many industries (including banking, retail and telecom are using data mining effectively. Undoubtedly, data mining has many used in industries. Its practical applications in such areas as analyzing medical outcomes, detecting credit card fraud, predicting customer purchase behavior, predicting the personal interests of Web users, optimizing manufacturing processes etc. have been very successful. It has also led to a set of fascinating scientific questions about how computers might automatically learn from past experience. The retail industry is also realizing that data mining could give them a competitive advantage.

A majority of the banks in developing countries (particularly in the public sector) are not usually known to exploit their information.

Data mining typically involves the use of predictive modeling, forecasting and descriptive modeling techniques. By using these techniques, an organization can proactively manage customer retention, identify cross-sell and up-sell opportunities, profile and segment customers, set optimal pricing policies, and objectively measure and rank which suppliers are best suited for their needs.

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http://www.karamsociety.org

AN EMPIRICAL "KAP" STUDY OF STUDENTS' DD-GYAN DARSHAN CHANNEL PROGRAMMES: DISTRICT GAUTAM BUDDHA NAGAR

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ABSTRACT

ICT plays a vital role in imparting education not only in formal education but also in informal education like distance education. ICT is extending support to learner of distance education with the use of internet, videoconferencing, e-learning, online learning and teleconferencing through Edusat etc.

KEYWORD

Channel	Gyan Darshan
KAP	U learning
Modern Technology	Device

Preface

It is the era of U learning. A student has access to learn any where any moment and anything with the help of e learning, m learning and U learning. These are new devices of modern technology which has made education not only hi tech but also knocking the doors of the learner. U learning is the advanced form of the E- learning and also the advantages of E – learning and M-learning can be seen in U learning which is flexible more than other devices (Muthuchamy et al, 2009). The student can take liberty to learn and study in their learning environment at any time at any place. ICT has made drastic revolution in the area of education. A learner may never loose his/her work until or unless he/she deliberately deletes them. A learner has an advantageous edge of ICT that learner has access of his/her documents, video and information which can not be handled by any third person. Right now the learners have not to bother to carry the information with them. Besides these they have access to interact with teachers and experts and they can get right information at right time at right place with the required source of information.

All these information can be available under the new technology and under one umbrella i.e. U - learning. It consists of Mobile based learning (MBL), Web Based Training (WBT), Technology Based Learning (TBL) etc. In nutshell it can be described that its access is available 24/7/365 days. It doesn't require surroundings of the four walls. It is one of the fastest means of communication system (Wutoh et al., 2004, Mishra and Sharma,2005,Peak and Berge 2006, Rathore, 2009 and Thiyagu, 2009).

Gyan Darshan is also one of the educational television channels. It is relayed from different Doordarshan Kendra in different languages. It telecast curriculum based programmes. Educational Media Research Centres (EMRC), 'produce programmes at different places for the university students. DD Gyan Darshan is an exclusive Educational TV channel programme. It was started in 2000 with collaboration of IGNOU, Ministry of Human Resourse Development and Prasar Bharti.. It telecast from 6 am to midnight. Undoubtedly the success of the programme is being assessed on the basis of enrollments of the students in distance education programmes. Now a humble effort has been endeavored to asses its viability through the study of Knowledge, Awareness and Practice (KAP) of Gyan Darshan programmes.

OBJECTIVES

The main objectives of the paper are (i) to know the level of knowledge, awareness and practice of the students regarding Gyan Darshan programmes.and (ii) to make comparative analysis of students' perception towards Gyan Darshan programmes.

The paper is organized as follows: Section 1 deals with introduction section 2 methodology and database. Section 3 provides Emperies of the study, followed by the conclusion and policy implications to section 4

SAMPLE AND METHODOLOGY

The study has been conducted in rural area of District Gautam Buddha Nagar, Uttar Pradesh. From the district, two villages i.e. Accher and Kasna were selected by random sampling method. From each selected village, 100 those students were selected by convenient sampling method who were pursuing atleast undergraduate programmes.

Thus total 200 students were undergone for comprehensive study and only those sampled students were taken understudy who had shown favorable attitude towards Gyan Darshan I.

The selected students of both areas were given a set of questionnaire consisting six statements related to Presentation, Quality and Communication. They were asked to respond on the basis of Likert scale – 5 points for strongly Agree (SA), 4 points for agree (A), 3 for neutral (N), 2 for Disagree (DA) and 1 for strongly Disagree (SD).

ECONOMETRIC TOOL

To make comparative analysis of students' perception of two areas – Accher and Kasna, the following model: Dummy variable regression has been used.

$$Y_i = \beta_1 + \beta_2 D_i + U_i$$

Y_i is denoted for students' perception score. D_i is dummy variable. $D_i = 1$ is defined for students of Kasna area and $D_i = 0$ for the students' perception of Accher –area.

Mean score of students' perception of Accher = Y_i E (Y_i | D_i = 0) = β_1
Mean score of students' perception of Kasna = Y_i = E (Y_i | D_i = 1) = $\beta_1 + \beta_2$
+ means Mean Score of students' perception of Kasna is higher than the Mean Score of students' of Accher

- Means Mean Score of students' perception of Accher is higher than Mean score of students' perception of Kasna
- But the magnitude of the distribution is β_2

$$-\hat{\beta}_2$$

$$H_0 : \hat{\beta}_2 = 0$$

$$t = \frac{\hat{\beta}_2}{SE(\hat{\beta}_2)}$$ is calculated value of statistics.

If calculated value of t is greater than the relevant table value then difference between two means will be statistically significant.

EMPIRCIS

From analysis of the sample the following facts have been observed.

- The sample comprised 18 percent students belong to the age group 20-22 years old while rest of them is in the age group of 23- 25 years old.

KNOWLEDGE ABOUT GYAN DARSHAN PROGRAMME

Sl. No.	About Gyan Darshan	No.	Percent
1	Have Heard the name of the programme and have knowledge also	71	35.5
2	Have Heard the name of the programme but no knowledge about the programme	49	24.5
3	No Knowledge of the program,me	80	40.0
4		200	100.0

The analysis of the field observation reflects that only 35.5 percent students have heard the name and having the knowledge about the programme while 24.5 percent students have heard the name but no idea of the programme, Rest of them have no knowledge about the programme.

THE SOURCE OF INFORMATION

Percentage Distribution of Students According to Source of Information

Sl.No.	Source of Information	Percent
1	Friends	50.7
2	College/Coaching	23.9
3	Newspaper	15.5
4	T.V.	09.9
		100.0

As per above table friends and relatives have been found a great source of information. This shows that the word of mouth is still a very popular source of information. It has accounted for 50.7 percent. The contribution of newspaper and Television raise a question mark on the success of the programme while media plays a vital role in dissemination of knowledge and publicity of the programme. College and coaching are also proved a good source of interaction place where students have opportunity to share their views. 23.9 percent students have revealed that they have come to know about the programme in either coaching or college.

REGARDING AWARENESS OF THE PROGRAMME

- Out of 35.5 percent students only 35.2 percent students have given right information regarding daily telecast of Gyan Darshan Channel.

Further they were asked about the duration of the programme only 28.16 percent students have told that this channel runs up to midnight.

STATUS STUDENTS'VISIT ON CHANNEL

Status of Viewers	Percentage
Regular Viewer	21.1
Thrice in a Week	09.9
Twice in a Week	05.6
Off and On	45.1

- Only 21.1 percent students are regular viewer of the Gyan Darshan channel. Majority (45.1%) of them make visit on this channel off and on.
- The students were interrogated regarding about the availability of the programme on Gyan Darshan related to their classes, majority of them cut a sorry figure because they were found not a regular viewer of Gyan Darshan channel. Even they have no knowledge about the schedule of the programme.

ABOUT THE PROGRAMME OF GYAN DARSHAN CHANNEL

The students were asked to give their opinion regarding the effectiveness of the programme of Gyan Darshan channel with respect to Presentation, Communication, Content and Coverage.

The following observation has been recorded-

- 71.8 percent students accept that the presentation of the programme is very effective.
- Regarding communication, the opinion was not found very effective. Reason is obvious that students belong to heterogeneous group of the community and have different socio-economic and cultural background. It is accounted only 39.4 percent.
- 78.8 percent students expressed their views satisfactory.
- 59.1 percent students feel coverage is good enough as per course curriculum.

COMPARATIVE ANALYSIS OF STUDENTS' PERCEPTION TOWARDS GYAN DARSHAN PROGRAMMES

The students have been asked to give their opinion on being given a set of questions which were related to Gyan Darshan Channels programme.

	Do you get influenced by	Mean Scores
1.	The art of presentation of subject matter in Gyan Darshan Channel programme is very effective.	**4.02+ 0.08 D_i (1.542)**
2.	Communication skill is good	**4.02 + 0.02 D_i (1.41).**
3.	Gyan Darshan Channel Programmes'	**3.98 + 0.06 D_i (1.674)**
4.	Quality in terms of presentation, content, communication is unmatched. To meet the mission of Gyan Darshan channel, it has to be publicized more	**4.12 – 0.34D_i (0.669)**
5.	Gyan Darshan Channel is more **informative.**	**4.00 – 0.21D_i (0.1.35)**
6.	**Delivery methods and mechanism of class room lectures are presented well**	**4.64–0.03D_i (0.412)**

Note – In parenthesis t value given

At a glance it can be inferred from above table that students of both areas Accher and Kasna have the similar opinion. The mean score of each statement represent strongly their opinions. Statistically two means of their opinions have no significant difference. It therefore, may be concluded that students' opinion of both areas are alike.

GYAN DARSHAN- PROSPECT AND RETROSPECT

The Gyan Darshan programmes blended entertainment with enlightenment and have great academic value for students. However the language used in various programmes appear to be quite tough for the common students and layman to comprehend. Intermixing of Hindi and English words and sentences by the presenters naturally creates a lot of difficulty in comprehension especially in the context of rural viewer students.

There should be provision of repeat telecast of important programmes so that those viewers who missed the earlier programmes can benefit from the repeat telecast.

In rural area of our states, the households receive electricity for less than 12 hours per day. Therefore rural students are unable to get the access of Gyan Darshan programmes in totality.

By sheer coincidence, most of the important academic programmes are telecast in the morning hours when rural students are busy in their household works.

Hence important Gyan Darshan programmes should be rescheduled keeping in mind the leisure hours of the rural as well as urban viewers.

To make the mission of Gyan Darshan success the publicity of the programmes is necessary and it should be publicized as like other commercial advertisements.

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Global Journal of Enterprise Information System
July 2010 -Dec 2010
Volume-2 Issue-2

Essence of Software Process Reengineering in SME's: Towards Process Customization and Automation

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ABSTRACT

Software Process Reengineering is the core kernel of software process improvement (SPI). Today, the very promising small scale software enterprises (SME's) are striving for standardization of their software development processes. They are carrying out improvement processes but not a proper set of processes. Lack of experienced process engineers and activities which lead them to have a good CMM level is a big issue to be resolved. There are no underlying problems for large scale software industries due to enough resources like available budget, trained as well as experienced and dedicated software professional's team for software process improvement programs, required set of efficient tools and technology for actual implementation. And top of the all required infrastructure, proper understanding and mindset for applying software reengineering initiative. Unfortunately, there is limited adoption, absorption, adaptation and assimilation of software process improvement models in SME's due to lack of know-how and available resources in terms of money, time, perceived benefits, quality focus. Unavailability of required automated tool sets, in-house software process assessment. In nutshell, there is limited adoption, absorption, adaptation and assimilation of software process improvement models in SME's due to lack of know-how and available resources in terms of money, time and perceived benefits. This paper explores as SPI has evolving nature, there is a need of Cost-effective framework which provide customization of tools and techniques w.r.t prevalent technologies encompassing agility, object orientation, component based modeling and reuse, architecture centric approaches, configuration and risk management, heterogeneous project types and sizes.

KEYWORDS

Software Process Reengineering	Software Process Automation
SPI	CMM
SME's	Software Process Customization

Preface

Software Process Reengineering is thought of as a vehicle which has the ability to carry the organizations achieves higher capability levels. The efficient and qualitative software project management totally finds its success in managing the triple constraint i.e. scope, time and cost. But, Software Process Reengineering adds some more dimensions to software project management at a higher level of abstraction i.e. at process level. It guides and directs the available set of processes to be reengineering e.g. adding more effective and efficient software processes, deleting ineffective set of processes, reordering the processes and activities in process set, configuring i.e. adapting and changing the processes according to the project requirements. Therefore SPI is really an indispensible cog in the gears of software process standardization and continuous software quality enhancement. This paper's objective is to find the state of art in SPI in Small Scale Enterprises SME's, sieve the essential parameters from existing approaches towards SPI which focus on SMEs. Further, these parameters can be studded into SPI which can be used to add a new vision to SPI. The explored factors will be able to characterize the relevant technology, tools, methods, software process automation according to the needs of the SME's. A further objective is that of discussing the significant issues related to this area of knowledge, and to propose different strategies from which innovative research activities can be thought of and planned. As small and medium-sized software enterprises (SMEs) because are not capable of bearing the cost of implementing these software process improvement programs. Implementation of software engineering techniques is difficult task for SMEs as they often operate on limited resources and with strict time constraints. There are number of methodologies to address these issues. In this paper, various SPI methodologies for SMEs are discussed. This will lead towards maturity of software process improvement in SMEs and also facilitates in development of automation tools for SPIs in future.

Standard Approaches

The evolution of Software Process and Quality Frameworks described by (Sheard, 2001)[i] represented the multitude of frameworks and standards used to derive one from other shows the usage of one framework in developing another. For example, the Systems Engineering Capability Maturity Model (SE-CMM) of EPIC1 developed from the Capability Maturity Model (CMM) for Software, the International organization for standardization (ISO) Software Process Improvement Capability dEtermination (SPICE), MIL-STD-499B (draft), and the Institute of Electrical and Electronics Engineers standard for systems engineering [IEEE 1220]. The SE-CMM was subsequently used in creating the Integrated Product Development CMM [IPD-CMM], the Security Systems Engineering CMM (SSECMM), and a merged Systems Engineering Capability Model (SECM) that is currently being developed with facilitation from the Electronics Industries Association (EIA). Incoming Arrows in following figure 1 shows how one standard is derived from other different SPI standards.

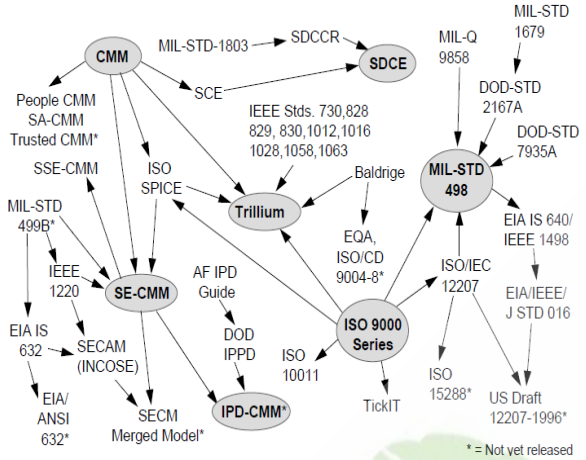

Figure 1: The Frameworks Quagmire (Sheard, 2001)[i]

(a) Capability Maturity Model (CMM): Capability Maturity Model (CMM) proposed by the US Software Engineering Institute (SEI) to measure a contractor's ability to develop quality software (Humphery W. , 1989) [ii]

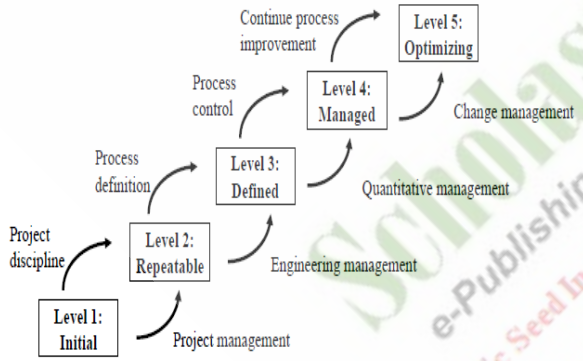

Figure 2:CMM (Adopted from (Humphery W. , 1989)[ii])

The Capability Maturity Model (CMM) developed at the Software Engineering Institute is based on the premises that maturity indicates capability and to obtain continuous process improvement it is much better to take small evolutionary steps rather than revolutionary innovations. it aims at guiding software organizations in selecting process improvement strategies by first determining their current process maturity before identifying their organization's critical quality and process improvement issues. These five developmental stages are referred to as maturity levels, and at each level, the organization has a distinct process capability. By moving up these levels, the organization's capability is consistently improved.

(b) Capability Maturity Model Integration (CMMI): Capability Maturity Model Integration (CMMI) is a process improvement approach that provides organizations with the essential elements of effective processes. It is a model that consists of best practices for system and software development and maintenance. The model may also be used as a framework for appraising the process maturity of the organization. CMMI has features like Integration of software engineering and system engineering, Treating an each process very minutely, Focusing on continuous improvement (Crosby, 1979)[iii]

Level	Focus	Process Areas
5 Optimizing	Continuous process improvement and resolution	Organization innovation and development, Casual Analysis
4 Quantitative managed	Quantitative management	Organization process performance Quantitative process management
3 Defined	Process standardization	Requirements development, Technical solution, Product integration, Verification, Validation, Organization process focus, Organization process definition, Organization project management, Integrated supplier management, Risk management, Decision analysis and resolution, Organization Environment for integration, Integrated training
2 Managed	Basic project management	Requirements management, project planning, Project Project monitoring and control, Supplier agreement management, Measurement and analysis, Process and product quality assurance, Configuration Mgmt
1 Performance	None	

Figure 3: CMMI (Adopted from (Crosby, 1979) [iii]).

(c) Software Process Improvement and Capability dEtermination (SPICE): SPICE stands for Software Process Improvement and Capability dEtermination. Capability determination however is concerned with assessing an organization or project in order to determine risks to the successful outcome of a contract, development or service delivery (Dorling, 1993)[iv]. The objective is to assist the software industry to make significant gains in productivity and quality, while at the same time helping purchasers to get better value for money and reduce the risk associated with large software projects and purchases (Route and Terrence, 1995)[v]Model is depicted in Figure 4.

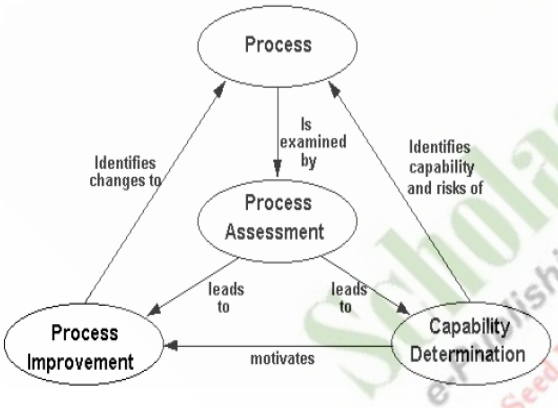

Figure 4:SPICE Adopted from (Route and Terrence, 1995)[v])

(d) BOOTSTRAP: BOOTSTRAP methodology can be applied to small and medium size software companies or software departments within a large organization. A new release (Release 3.0) of the BOOTSTRAP methodology has been developed to assure conformance with the emerging ISO standard for software process assessment and improvement (Hasse, 1994)[vi].The BOOTSTRAP methodology explored by (Kuvaja, 1994)[vii] provides support for the evaluation of process capability against a set of recognized software engineering best practices, include internationally recognized software engineering standards, identify organization's process strengths and weaknesses, support improvement planning with suitable and reliable results and also support the achievement of the organization's goals by planning improvement actions.

Current Trends and Approaches to Software Process Customization

(a) Software Product Line Practices: The software engineering product line practices argued by (Jones, 2002)[viii] include those practices necessary to apply the appropriate technology to create and evolve both core assets and products as follows:

Architecture Definition, Architecture Evaluation, Component Development, COTS utilization, Mining Existing Assets, Requirements Engineering, Software System Integration , Testing, Understanding Relevant Domains. Technical management practice: Configuration Management, Data Collection, Metrics, and Tracking, Make/Buy/Mine/Commission Analysis, Process Definition, Scoping, Technical Planning, Technical Risk Management, Tool Support. Organizational Management Practices: Building a Business Case, Customer Interface Management, Developing an Acquisition Strategy, Funding, Launching and Institutionalizing, Market Analysis, Operations, Organizational Planning, Organizational Risk Management

(b) Software Process Customization: (McCormick, 2001)[ix] emphasizes "What's needed is not a single software methodology, but a rich toolkit of process patterns and 'methodology components' (deliverables, techniques, process flows, and so forth) along with guidelines for how to plug them together

to customize a methodology for any given project." In (Moitra, 2001)[x] opinion Quality in the Indian software industry is also reflected in the high maturity of Indian software companies. India has the highest number of CMM level 5 companies. More than half of all CMM level 5 companies in the world are located in India. In addition, (Asundi, 1999)[xi] finds most Indian software companies have achieved ISO 9001 certification. Other quality certifications such as COPC, SixSigma, and People-CMM have also been achieved by a large number of Indian software companies. It is noticed by (Bhatnagar, 1987)[xii]that India has many domestic challenges to overcome such as poverty and illiteracy, the Indian software industry has matured and is predicted to play a significant role in software services and product markets .The existing skilled human resource has remained one of the most important reasons for companies to outsource to India.

(c) The PrIME Project: The Process Improvement in Multimodel Environments (PrIME) project will span a breadth of topics that are needed for an organization to be successful with process improvement in multimodel environments explored by (SEI). The project will concentrate on several subsets of models and standards that are commonly used in industry, such as Six Sigma, CMMI, Lean, and Agile methods.

(d) Intel's Idea of Customization: Accelerated Software Process: *Intel's* Information Technology (IT) department (Brodnik, 2008)[xiii]explored the idea of ASP[1] Improvement. They found that small projects which are less than six months have small teams, limited scope, and low risk need not to be appraised like large projects. Small projects should have different set of simplified version software processes clubbed into their software improvement initiatives. So, variety of project sizes should not have a single set of processes. Software processes must be tailored and customized according to the perspective of key stakeholders, engineers, process coaches, and auditors

(e) Wipro's Idea of Customization: veloci-Q: veloci-Q (Subhramanyam, 2004)[xiv] enabled the delivery of quality products and services without slowing down the system i.e. in time and quick delivery. In figure 5, the Unified Quality System veloci-Q removed outdated information and duplications that had accumulated over time. Introduction of Six Sigma concepts increased the customer and business focus of project execution processes. veloci-Q complies with the coveted Capability Maturity Model Integration for Systems Engineering, Software Engineering, and Integrated Product and Process Development (CMMI-SE/SW/IPPD), V1.1 and ISO 9001:2000 frameworks

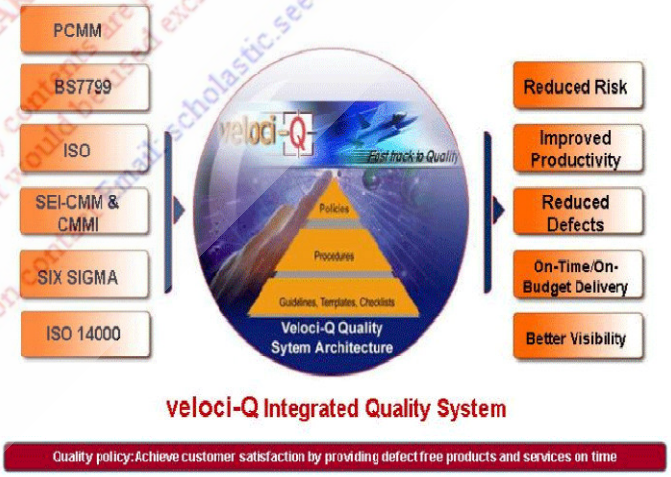

Figure 5: Unified Quality System (Subhramanyam, 2004)[xiv]

(f) PRISMS Project: Process Improvement for Small to Medium Software enterprises (PRISMS). The model (Commision of Software Standards, 2009)[xv] enables individual SMEs to tailor the software process improvement to the organization's business objectives. It works towards identifying key process areas and customizing and assessing these processes on ordinal scale according to their degree of conformance to the defined process. Figure 6 shows that assessment methods helps to aims at finding and prioritizing the essential set of processes based upon which the organization works towards maturity.

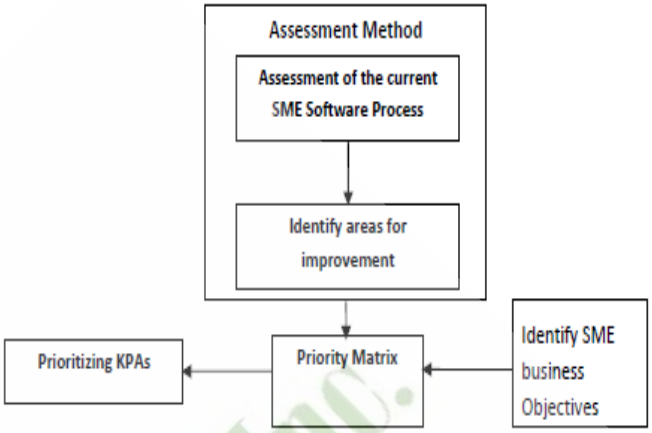

Figure 6: SMEs Area's for Improvement Prioritization Framework (Commision of Software Standards, 2009)[xv]

Multidimensional Approaches to Software Process Reengineering:

Thrust Area	Major Contribution
Software Process Improvement using Service Oriented Approach (Park, 2007)[xvi]	SIR-CM to store and manage heterogeneous assets which produced from software process improvement tools and adapted the Service Oriented Approach to construct the repository for connecting many different types of software process improvement tools. Configuration management method is also integrated to control and manage the assets.
A Gradual Approach for Software Process Improvement in Small and Medium enterprise (Alexandre, 2006)[xvii]	The approach proposes a gradual Software Process Improvement framework based on a series of gradual assessments: a micro-evaluation, an OWPL-evaluation and a SPICE or CMM assessment. It allows SMEs to start SPI in a much targeted manner, to quickly progress within a limited budget and, eventually, to reach an acceptable level according to SPI standard models such as CMM and SPICE.
Process and infrastructure oriented improvement	Both CMMI and MPS Model-based assessment

initiatives in Small Settings (Montoni, 2007)[xviii]	techniques indicates the TABA Workstation (Process-centered Software Engineering Environment) as a significant strength for the SPI implementations. The main objective of TABA Workstation is to provide an infrastructure to overcome inherent difficulties of SPI implementation initiatives like lack of financial resources. Moreover, the knowledge required for executing the improved processes is captured within the TABA workstation knowledge base.
Requirements Engineering Process Assessment and Improvement (Sommerville & Ransom, 2005)[xix]	To generate the greatest increase in RE maturity for the lowest cost without compromising organizational profitability or operations, following pragmatic proposals for maturity improvement: (1) Focus improvements on areas of requirements engineering where the company is weak as suggested by the Area/Strength matrix. (2) Consolidate and standardize practices that are already in use in the company. (3) Only introduce new practices where the cost of introduction is low
Framework-Based Software Process Improvement (Jalote, 2002)[xx]	Lessons learned regarding managing the CMM initiative in an organization: -Treat each SPI initiative as a project. -Have a schedule of one year or less for SPI initiative -Manage the risks to the SPI project
Return on Investment for implementing a SPI (Humphery W. S., 1991)[xxi]	Potential return on investment (ROI) for implementing a continuous software process improvement program can be as much as 8:1 within the first 2 years-$8 saved for every $1 invested-thus providing the needed stimulus and motivation.
Organizational-level software process improvement model (O-SPIM) (Xiaoguang, 2008)[xxii]	SQMSP Software Quality Management and Support Platform (SQMSP), which was used in some medium-sized enterprises in China. Organizational level software process improvement model is an object-oriented model, which mainly supports the software products development and business control from balancing, implementing and supporting the organizational level business. It covers the business processes for multi-product, multi-project comprehensive quality assurance

	features This model gives solutions for organizational-level requirements assigning, project balancing and resources balancing.
Best practices in implementation of software process improvement (Galinac, 2009)[xxiii]	The SPI implementation strategy consists of 14 best practices deriving from agile methods, exploiting ideas of incremental deliveries, short iterations with frequent reviews and close collaboration with customers, which are intended to be suitable for global software development (GSD) organizations. It also emphasizes that improvement teams implementing the strategy are more likely to have better progress and achieve better effectiveness in terms of improvement deployment within development teams.
Software Quality and IS project performance improvements (Girish, 2007)[xxiv]	IS implementation strategies – executive commitment and prototyping – have a significant impact on both software quality and project performance, training had a significant effect only on software quality and simplicity has a significant effect only on project performance.
Software Release Planning: an evolutionary and iterative approach (Greer & Ruhe, 2004)[xxv]	EVOLVE uses a genetic algorithm to derive potential release plans within redefined technical constraints to achieve higher flexibility and to better satisfy actual customer requirements. It takes as input a given set of requirements with their effort estimations and their categorizations into priorities by representative stakeholders.
Goal-Driven Agent-Oriented Software Processes (Cares, 2006)[xxvi]	i* framework represents the software process using an agent-oriented language to model it and a goal-driven procedure to design for improving the quality of software processes which require their explicit representation and management.
Measurement Practices at Maturity: Levels 3 and 4 (Alain, 2008)[xxvii]	Evaluation and continuous improvement of software maintenance are key contributors to improving software quality. The software maintenance function suffers from a scarcity of the management models that would facilitate these functions
IT Performance Improvement (Mallette, 2005)[xxviii]	Using COBIT with SEI CMM combines the best of both worlds to improve IT performance and drive the results to the business bottom line. The IT Governance. Institute's Control Objectives for Information and related Technology (COBIT) is

generally accepted as the de facto for IT. Sustaining current performance while continuously reducing costs, decreasing exposure to risk and carving out resources to safely improve performance from a budget constantly targeted for cost reduction is the IT challenge.

Conclusion

It has been that small and medium-scale software enterprises hire external Consultants for process appraisals i.e. no in-house software process appraisal .This means higher cost expended for getting appraised from outside consultants. As technology has already come a long way therefore adding process assets reusable libraries, reusable design and code components, reusable verified and validated requirements set and object orientated methods and tools is actually needed to enhance software process improvement small scale enterprises. Agility is another significant feature which can speed up the pace of software development. But to glue agility and reusability of components, design, architecture intact, a process reengineering framework must be developed which can enable process customization according to the project requirement , project scope, project type , size, cost, time and above all quality. Learning modules can be added to the framework to suggest customized set of processes. These learning modules should aim at appropriate process set which can lead the SME's to one higher level of capability in a customized way.

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Global Journal of Enterprise Information System

July 2010-Dec 2010

Volume-2 Issue-2

Enterprise Information Systems:

A great Paradigm Shift in an Enterprise Perspectives

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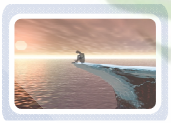
ABSTRACT

Just put out of your intelligence in relation to 2009. That's authentically talk about the foremost enterprise software which by and large recognized for its acronym EIS have to be view right now. The formulations have been battened down, the wagons have been sphere and the write downs have been in black and white. Continue to exist 2009 and beseech that the economy and corporate IT spending rebounds in 2010. I always use to memorize the saying that "When the things get tough the tough get going". Information Systems has been documented as the "enabler" of business in the 21st century. The speedy augmentation of IT within America, India and other parts of the world undertake accomplishment for companies that expand operations worldwide. This might not have been the case a few years back but is unquestionably true of the present. As a teacher(s) of Information Systems I always hear students inquire, "Why the course materials are so quickly outdated?" We tell them that teaching Enterprise Information Systems is like teaching the Big Bang theory in 60 seconds rather a one minute after the event. The future is still being formed. Technology is always on the increase and change is endemic in enterprise system managements. You could do with to be on top of ongoing changes.

KEYWORD

EIS	Teaching
Technology	Big-Bang
Paradigm Shift	Information

Before talking in depth about EIS, we begin with information and systems. Information touches all human activity – it is repeatedly said that we live in the 'information age'. Information is an imperative foundation to an organization. It represents the organization's tangible and intangible resources and all transactions relating to those resources. Information influences the approach an organization operates. The right information, if it is delivered to the right person, in the right fashion, and at the right time, can demonstrate the technique to progress and make organizational efficacy and capability more assured. Software has always been enthusiastic to a single purpose: delivering leading-edge job scheduling and application automation solutions to optimize the efficiency of your growing IT operation. The blending of Internet technologies and long-established business concerns is impacting all industries and is in authenticity the most up-to-date chapter in the ongoing evolution of business. Take the automotive industry which entirely follows the zero-inventory concept, for instance KANBAN and KAIZen approach . Since pioneering the division-of-labor approach to manufacturing, the industry has led in embracing innovative approaches by reengineering business processes; implementing materials requirement planning (MRP), manufacturing resource planning (MRP II), and just-in-time (JIT) manufacturing; and installing enterprise resource plans (ERP) software. Today, the Internet is driving the



Businesses have invested billions of dollars cooperatively in enterprise resource planning (ERP) systems with the intention of attaining an imperative business assurance — complete enterprise integration. For companies faced with ill-assorted information systems and inconsistent operating practices, ERP has been a nightmare come factual.

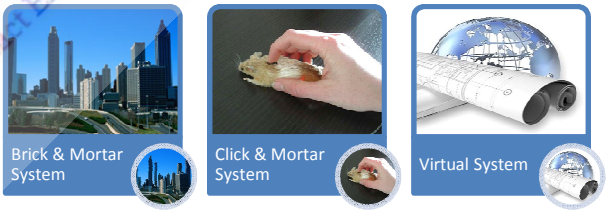
contemporary industry goals of achieving a five-day order-to-delivery cycle, global reach, and personalization. It is behind decisions to outsource manufacturing. It is redefining the responsibility of dealers and their affiliation with the consumer and renewing the role of the brand owner

Today a large portion of technology resources is being dedicated to complying with ever changing regulatory requirements from a myriad of sources. At the threshold of the new millennium, there is a marked shift in the business paradigm. An Enterprise Information System is a breed of computing system characteristically offering a high level of service, dealing with massive volumes of data and capable of supporting complex organizations ("an enterprise"). [Olson & Kesharwani, 2010[1]]. ERP presents companies with the occasion to homogenize and mechanize business processes throughout the organizations, thus increasing productivity and reducing cycle time. Even though ERP systems have delivered value, it is becoming understandable that the ERP model, which wraps organizational processes into one end-to-end application, may no longer be sufficient for today's fast-moving, extended enterprises. With the rapid growth of the Internet, the business environment has changed spectacularly. The need for seamless Enterprise Resource Planning (ERP) and e-business implementation is nothing innovative. What are new are the shorter time frames that now dominate the organizational landscape. Projects that used to take years to complete must now be up and running in a matter of months or even weeks. Moreover, they must be done successfully the first time.

NEW TECHNOLOGIES, NEW OPTIONS

Over the most recent years, e-commerce has turn out to be a widespread movement for numerous enterprises. Some of them dived into this face up to devoid of taking into description the enlightening changes that the state of affairs concerned, as well as the communications essential to persist with the original scheme. Nowadays, most companies are spotlighting their e-business efforts on trouble-free e-buy and e-sell applications. The foremost philosophy is "fabricate it and they will come." Two of the early niche players in these areas-Siebel in customer relationship management (CRM) software and i2 in supply-chain management (SCM) software-are quite large and are squeezing ERP vendors from outside the enterprise. The best example is change in the pedagogy. As we had shifted from Brick & Mortar system to Click & Mortar System.

Paradigm Shift from B&M to C&M and finally virtual



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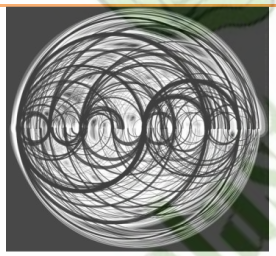
Divergence between ERP Systems and Ecommerce Applications

The users of ERP software are workers of an organization, while ecommerce applications are unwrap to wide-ranging civic. The differences in end-users between the two types of applications have philosophical implications on systems integration. E-commerce applications have built into the new generation of web-based ERP systems which may straightforwardness the integration.

User Interface Design: **ERP software automates multifaceted business processes and transforms the way workers interact. ERP users over and over again go from beginning to end lengthy training sessions to gain knowledge of how to user ERP systems. It is logical to design sophisticated workflow processes to paramount fit organizations' business processes. The user interface design of ecommerce systems, however, has to very intuitive and easy to use. Training should not be required for using ecommerce applications. While ERP users have no choice but to use their ERP systems, ecommerce users have go to your competitors in a few clicks.**

Complexity of System: **A complex system is a system** self-possessed **of** unified **parts that as a** total demonstrate **one or more properties** (performance **among the possible properties) not** understandable **from the properties of the individual parts. The complexity of ERP system demands custom maintenance. It is potential to shutdown an ERP system on weekends or holidays to perform periodical system maintenance and performance tuning since the primary users of ERP system are internal workers. Ecommerce** applications **(such as online storefronts or B2B exchange), on the other hand, serves the general** public **and external partners, suppliers or distributors. They are mandatory to be accessible 99.99% of time.**



Safety Requirements: **ERP systems and ecommerce applications have exceptionally diverse security necessities. Ecommerce applications are normally exterior the firewall though the databases that prop up ecommerce applications are more often than not at the rear the firewall. Organizations take numerous security measures to diminish the risk of exposing responsive internal data to wide-ranging public.**

When we see the things in an Information system perspectives it is the software and hardware systems that shore up data-intensive applications. A majority of workers today are knowledge workers who create, distribute, and/or use information. This includes bankers, coordinators, caseworkers, counselors, community organizers, programmers, insurance advisors, consultants, etc. A critically important question is "Whether there is a need in our organization for an EIS." This is a very difficult question, meriting a great deal of study. The following points bear on this matter:

- **About 80% of an executive's times are devoted to information receiving, communicating, and use.**
- Information is the starting point for virtually all activities performed in an organization.
- Key organizational ingredients in organizations include people and information, and it is critical to success to use these ingredients efficiently.
- Effective utilization of information systems in management is important.
- Productive use of information is also important.
- Information is a source to augment competence, effectiveness and competitiveness of an enterprise.

In short, the Internet will accomplish for the business nowadays what the prologue of the assembly line did for the industry a century ago. On the other hand, without connecting order delivery, manufacturing, financial, human resources, and other back-office systems to the Internet, even companies with long track records of innovation are not likely to succeed. All companies, nonetheless, will necessitate updating their business Infrastructures and changing the mode they effort to respond more instantaneously to customer needs. The Internet, with its capability to unite customers and suppliers at e-speed, is unquestionably a critical component of this change. Web portals will play a foremost role, but they are not the complete reply. The existing internal infrastructures of today's global enterprises symbolize a enormous venture in technology, learning, and business engineering research that has been going on, in some cases, for hundreds of years. In the last 15-20 years, this investment has contributed to the furthermost efficiency gains achieved in view of the fact that the computer.

Global Journal of Enterprise Information System

July 2010 –December 2010

Volume-2 Issue-2

Enterprise Information System: *Contemporary Trends and Issues*

By

David L Olson & Subodh Kesharwani

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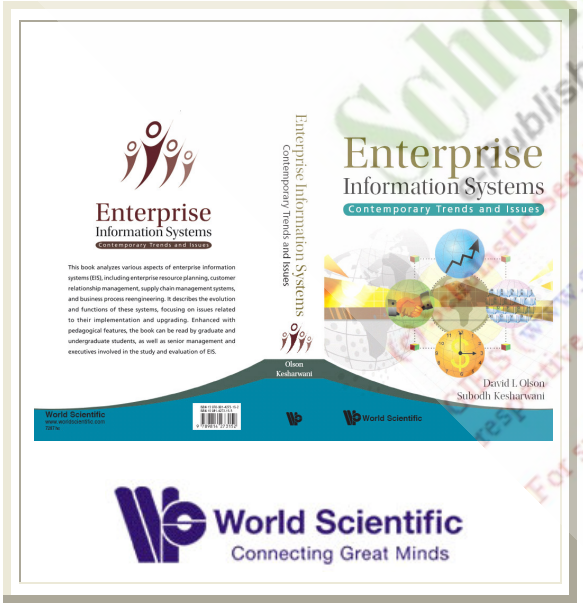
ABSTRACT

This book provides a thorough learning with the chapters and cases covered, it's more of the leap for theory to meet the practical knowledge. It's a really a great reading material according to me for students, technocrats, management students, professionals and existing experts from the similar area on interest like enterprise information systems (EIS), including enterprise resource planning, customer relationship management, supply chain management systems, and business process reengineering, lean manufacturing. It describes the evolution and functions of these systems, focusing on issues related to their implementation and upgrading. This book is just so fresh!



KEYWORD

ERP	EIS
Business intelligence Systems	Supply Chain and EIS
Vendor Profiles	CRM
Maintenance	Critical Success Factors

A book for everyone not just students but for professionals and amateurs.

One reads a book for clearing fundamentals in the subject or area of interest or to just simply learn, I read Enterprise Information Systems –Contemporary Trends and Issues by David L Olson and Subodh Keshwarwani, for the very same reason.

I am still like a kid in choosing books to read, if I find the cover interesting it's a plus one, wow this one has pictures as well another plus one, it isn't that thick which would give me nightmares of being buried under such a huge book, well this point truly made me pic this book out many more tittles around.

From the Preface till the look on my face after I finished this creation, I just loved it!

This was my first book on this topic, though thanks to Internet for providing me knowledge even before a click with 'Google instant' it never showed results without any knowledge to gain. I admit that I am a Computer person, I would read on Laptop rather than opening up bundles of books.

I am not against books but writing books needed Re-engineering to attract readers back to them and this I what this book did to me.

This book provides a thorough learning with the chapters covered; it's more of the bridge between theories to meet the practical knowledge. It's a must read according to me for students, amateurs and professionals and existing experts from the similar area on interest.

From the last 3 days now I have skipped to change my status message and to tweet while this book held me strong.

Let me share my experience with you all before you take thismasterpiece home!

- ***Footnotes throughout the book by Authors have been amazing; they made it sure that we are on the same page of learning.***
- ***The way the Cases has been projected at the beginning of every chapter raised my interest and understanding of the concepts depicted.***
- ***Knowledge flow has been brilliant; it enhanced my existing knowledge of the concepts.***
- ***I believe in practical learning rather I would say active learning and not the legacy passive books which became outdated way before the first copy was sold. Though they have been hard work and learning from the masters but one needs more than what book covered.***
- ***The research analysis depicted is so fresh.***
- ***At times I have come across few books which showcased cases from companies of one region of the world only but this book I would say has been global in cases and research showcased.***
- ***This book cleared many myths and brought the limelight to many new and affective innovative ideas for ERP to EIS.***
- ***Today when, Sap with all due respect, is losing market to new players, especially making way for Open Source Champions, this book depicted it all.***
- ***A book for everyone not just students but for professionals and amateurs.***
- ***It never limited my power to think up tocertain limit rather it made my mind to play freely for more creativity around.***
- ***Charts, Diagrams, images etc. shown are very current and explanatory.***
- ***The language used in this book has been for one and all.***

So this was my experience with this book, I can feel the positive change within for my knowledge and kind of getting excited for using this enhanced understanding of this subject ,after all What I believe is "Knowledge gives one grace to be an ace....so continue learning ;)."

Book Review – BY RACHIT MALIK

Enterprise Information System: ***Contemporary Trends and Issues*** ***David L. Olson & Subodh Kesharwani***

Thanks for your time to finally reach the end of the review, hope it would be useful to you. Please share your experiences, views and of course the reviews for the books and topics of similar interest.

Thank You, Dear authors for a legendary book! One can get more detail about the Book by going through the following website.

http://www.worldscibooks.com/business/7287.html

dolso1@unlnotes.unl.edu

subodhkesharwani@gmail.com

www.ejournal.co.in/gjeis

Vinay Kumar Nangia

Govt. of India Chair Professor in Knowledge Economy.

Professor and Head, Department of Management Studies & Coordinator, Uttarakhand Development Cell

vinaynangia@gmail.com

Dr. Vinay Kumar Nangia, a Distinguished Alumnus of Banaras Hindu University, has over 37 years of managerial experience, including at senior and top levels in India and overseas, in banking, industry and education.

He has multi-functional expertise in Banking, Finance, General Management, Education and Institution Building. This includes experience of raising and deploying financial resources in India and overseas and setting up of new ventures in India and a new industrial project overseas. Banking experience includes exposure in commercial banking, merchant banking, investment banking, trade finance, project finance and training. Experience in education includes active participation in formulation and setting up MBA and MCA programmes in IIT Roorkee.

He has widely travelled across all the five continents for business, training, pleasure and cultural familiarization. He has worked in rural, semi urban and metropolitan areas in government, public and private sectors during his career including having worked in three countries.

Amongst others he has held the position of Head of the Department in IIT Roorkee thrice, Managing Director and CEO of an investment and finance company in Mumbai, Senior Vice President at Essar group at Mumbai, Group Director of a large business and industrial house at Lagos, Nigeria and as an international banker at Singapore.

Professor Nangia is member on various bodies and boards of several academic and other institutions. To name a few, he has been a member of the governing council of DOEACC, and a Government of India nominee on Board of Management of All India Management Association. He is an invited member of the Expert Group on Knowledge Management of Asian Productivity Organisation, Tokyo and he is a panelist on the Knowledge Management Panel as well as on the Corporate Governance Panel of the Bureau of Indian Standards. He is Government of India nominee in the Board of Management of All India Management Association (AIMA)

In the past Professor Nangia has been actively engaged in large scale ICT projects relating to e-governance. He is Principal Investigator of a Rs. 5 crore project "National Competitiveness in Knowledge Economy", awarded by the Ministry of Communications and Information Technology, Government of India.

Volume-2 Issue-2
July 2010- Dec 2010
Biographical Note of the Luminary in an Area of IS

Global Journal of Enterprise Information System

Blockchain Federation of India [BFI]

Blockchain Federation of India is the primary and principal body of blockchain professionals in India. It was founded on 13th March 2019 by a few academician and Cyber professionals including its co-founders Col. Inderjit Singh Barara and Dr. Subodh Kesharwani which has now grown to be the national body representing blockchain professionals on a PAN India basis, in fact informally through social networking cites group exists from 2017 onwards. BFI is a non-profit professional meet to exchange views and information learns and share ideas. The wide spectrum of members is committed to the advancement of theory and practice of Blockchain and Technology Systems, Science and Engineering, Information Processing and related Arts and Sciences. The Federation also encourages and assists professionals to preserve truthfulness and aptitude of the profession and fosters a sagacity of partnership amongst members. Besides formulating the activities held at the chapters and student branches, the society will also conducts periodic conferences, seminars. The society will be in touch with various International bodies of blockchain for an international alliance.

BYLAWS OF BLOCKCHAIN FEDERATION OF INDIA

Blockchain Federation of India known for its acronym (BFI) is an Indian customized international organisation dedicated to raising digital competence standards in the workforce, education and society in blockchain perspectives. BFI have a certain vision and mission:

- To bring all block chain researcher and technocrats under one roof
- Formulation of Block chain Virtual university
- Developed Own Teaching Contents in Block chain

BLOCKCHAIN VIRTUAL UNIVERSITY

Blockchain Federation of India is an international organisation dedicated to raising digital competence standards in the workforce, education and society vis-à-vis blockchain. Our proposed certification programmes, delivered through an active network in multiple countries, enable individuals and organisations to assess, build and certify their competence in the use of blockchain tools to the globally recognized BFI standard, known as BFI worldwide. As a nonprofit social enterprise Blockchain Federation of India (BFI) benefits from the exclusive support of experts from national technical societies and partners international to enlarge vendor-independent standards which define the skills and knowledge required to use blockchain technology in actual fact. We work with education and training partners, local and regional authorities, national governments, international development organisations as well as public and private sector employers in all sectors, in the delivery of our programmes. The quality and reputation of BFI is built on years of expertise earned by it's founders and associated office bearers. Our accomplishment is maintained by our forthcoming innovation in certification programme development, our commitment to rigorous test design methodologies, and consistent adherence to our quality assurance standards. Blockchain Federation of India planning to support the initiatives of National Operators of the programme in various parts of world. All Blockchain Federation of India operations work closely with regional, national and local partners to develop the global network of BFI Accredited Test Centers.

BYLAWS OF THE BLOCKCHAIN FEDERATION OF INDIA

ARTICLE I. NAME

- The name of the Federation shall be the "Blockchain Federation of India", and it shall be incorporated as a nonprofit corporation in Republic of India with a Headquarter in New Delhi.

ARTICLE II. PURPOSE

- The purpose of the Federation shall be to promote Blockchain education through faculty development and to encourage that the teaching and learning \ related to blockchain implementation in various upcoming field.

ARTICLE III. RESTRICTIONS ON ACTIVITIES

- Section 1. No part of the earnings of the Federation shall inure to its members, officers, or other private persons, except that the Federation shall be authorized and empowered to pay reasonable compensation for services rendered in direct support of its purpose.
- Section 2. No part of the activities of the Federation shall be directed towards influencing legislation or intervening in political campaigns.

ARTICLE IV. MEMBERSHIP

- Section 1. The Board may establish and/or change the membership classes. The Board of Directors shall set the dues amount and the criteria for each class of membership.
- Section 2. All individuals who are members in good standing shall have the right to vote, hold office, and serve on committees. To be in good standing, a member must not be more than six months in arrears in his/her dues and financial obligations to the Federation. Individuals more than six months in arrears in their dues will be declared inactive, but retained on the membership rolls for an additional six months. Inactive members can reinstate their good standing by payment of current and all past dues.
- Section 3. Individuals whose dues are more than one year in arrears shall be dropped from the membership rolls.

ARTICLE V. OFFICERS

- Section 1. The Officers of the Federation shall be the President, President-Elect, Secretary, Treasurer, and the Immediate Past-President. The election procedure is as described in Article VII.
- Section 2. President & Secretary. The President and Secretary of BFI is the highest ranking officer of the Federation and are directly accountable to the membership and the Board. The President leads the Board of Directors as a chairperson and Secretary will be the Convener in development of the strategic goals and objectives of the organization and provides direction and leadership. The President serves as the Chair of the Board of Directors, Executive Committee and Annual General Meetings. A detailed position description, approved by the Board, shall be maintained on the Federation's website.
- Section 3. Immediate Past-President. In those years when a new President is elected, the current President assumes the office of Immediate Past-President. The Immediate Past-President remains in office until a new Immediate Past-President assumes the office. A vacancy in the office of Immediate Past-President cannot be filled by appointment. A detailed position description, approved by the Board, shall be maintained on the Federation's website.
- Section 4. President-Elect. The President-Elect is the third highest ranking officer of the Federation and shall support the President and secretary to advance the work of the Federation. At the end of the term, the President-Elect shall assume the office as President of the Federation. In the event that the President is temporarily unable to fulfill her/his duties to the Federation, the President-Elect may be appointed Acting President by the Board of Directors. If the President resigns or is unable to fulfill their duties for an extended period, the President-Elect shall become the President and a new President-Elect shall be elected by a majority vote in a special election of the Board of Directs within 30 days. A detailed position description, approved by the Board, shall be maintained on the Federation's website.
- Section 5. Secretary: The Secretary oversees the recording of proceedings of meetings of the Federation and the Board of Directors, and is responsible for the Federation's correspondence. A detailed position description, approved by the Board, shall be maintained on the Federation's website.
- Section 6. Treasurer: The Treasurer oversees the financial records of the Federation according to standard accounting practices, and, whether performed personally or through the Federation's administrative office, is responsible for safeguarding the Federation's funds. The Treasurer presents periodic reports on the financial status of the Federation to the Board of Directors and a full report to the membership at the Annual Federation Meeting. A detailed position description, approved by the Board, shall be maintained on the Federation's website.

ARTICLE VI. BOARD OF DIRECTORS

- Section 1. The Board of Directors shall be the principal governing body of the Federation. The Board of Directors shall consist of eleven (11) Directors plus four (4) Officers plus the Immediate Past-President,

if the Immediate Past-President is not an elected Director. When the Immediate Past-President is not an elected Director, the Immediate Past-President would be an ex-officio member of the Board of Directors and the Executive Committee until a new Immediate past President assumes the office. In that capacity, the Immediate Past-President has a vote only to prevent a tie (so when an even number of Directors and/or Officers is present).

- Section 2. Directors shall be elected for a three (3) year term. The terms shall be staggered and at least three (3) seats will be elected annually. Directors may not be elected to serve consecutive terms but may be reelected after an absence of one year. The election procedure for Directors is described in Article VII.
- Section 3. The Board shall meet quarterly, or more often if the need arises, at the call of the President or at least three members of the Board. Board meetings may be held in person, by teleconference, or other electronic means. A proposed agenda and supporting materials shall be made available to Board members prior to a Board meeting.
- Section 4. A quorum shall consist of one more than half the current number of Board members and must include at least two members of the Executive Committee.
- Section 5. In the event a vacancy occurs on the Board in a Director position, the President shall, with the approval of the Board, appoint a member to fill the vacancy. These appointed members shall serve out the term of the individuals they replace on the Board. The new Director shall complete the term of the former Director and shall be eligible for reelection if the remaining term is less than two years. Individuals joining the Board of Directors by appointment as a Director shall not serve more than three consecutive years in that office as a Director in addition to the partial term they served as replacement. In the event a vacancy occurs in an Officer position, the Board will immediately elect a new officer to that position in accordance with Article VII. The elected member takes office immediately, shall serve out the term of the individual she or he replaces as an Officer and will still be eligible for one complete term (of two years) in that same Officer position in addition to the partial term she or he served as a replacement.
- Section 6. With the approval of the Executive Committee, the President may recommend that any Board member be removed from office by the following procedure: 1) reasons for the proposed action must be provided in writing to the member, 2) the member shall have 60 days in which to represent themselves at a meeting of the Board, 3) a two-thirds vote of the current number of Board members shall then decide.

ARTICLE VII. NOMINATIONS AND ELECTIONS

- Section 1. Nominations. The Nominating Committee shall on or before January 25th submit to the Federation Manager a list of candidates for each position subject to election in that year. The names of these individuals, and other such supportive materials as deemed appropriate by the Nominating Committee, shall be posted to the Federation's website on or before February 1. The Federation's administrative office shall mail or fax a copy of these materials to those BFI members who have previously indicated they do not have Internet access. Between February 1 and February 15, members may petition for additional candidates to be added to the ballot. Such nomination petitions may consist of either a single document or separate letters. To be nominated by petition, each candidate must have the support of at least 15 BFI members in good standing. All petitions and letters must be addressed to and received by the Federation Manager on or before midnight (IST) of February 15.
- Section 2. Elections. On March 1, a secured, electronic ballot shall be activated on the Federation's website, along with instructions for electronic voting. All ballots must be electronically submitted to the website on or before midnight (IST) March 15 to be counted. Results shall be posted to the Federation's website by April 1. A plurality of the votes cast is needed for election. In the event of a tie, the election shall be decided prior to April 1 by a majority vote of the current number of Board members.
- Section 3. Newly elected Directors will assume their office at the conclusion of the Federation's annual meeting.
- Section 4. The Officers (of the Federation President, President-Elect, Secretary and Treasurer) shall be elected by a majority vote of the Board of Directors by electronic vote before December 15th, and assume their duties on January 1st. If the elected Officer is a current Director, the newly elected Officer must resign as a Director before assuming the role as an Officer. Officers serve a two-year term of office, and may not serve consecutive terms. However, they may be reelected to the same office after an absence of one year. An Officer may be elected to a different position on the Executive Committee immediately following his/her current term. There is no limit on the number of times an individual may serve as an Officer. The President-Elect, Treasure, and Secretary shall be elected by the Board of Directors as described in Section 5 below. Officers may be removed by a two-thirds vote of the entire membership of the Board of Directors.
- Section 5. Nominations for Officers. In the year the Officers are to be elected, a special Officer Nominating Committee will be formed, composed of the Immediate Past-President, President-Elect, two members from the BFI Nominating Committee (elected by the Nomination Committee) and one current Director

(elected by the Board of Directors). No committee member can be a concurrent candidate for an Officer position. The special Officer Nominating Committee shall on or before November 1st submit to the Federation Manager a list of candidates for each Officer position. Candidates must be BFI members in good standing. The names of these individuals, and other such supportive materials as deemed appropriate by the Nominating Committee, shall be posted to the password protected Board website on or before November 7th.

- Section 6. If a conflict arises concerning elections of Directors or Officers, the current Chair of the BFI Nominating Committee and 2 recent Past Presidents will be appointed to resolve any conflicts.

ARTICLE VIII. STANDING COMMITTEES

- Section 1. Membership and Term of Service. Standing Committees are defined in these Bylaws of BFI and can only be removed or redefined by majority vote of the membership. Other committees may be created by the Board to serve specific duties important to the organization
  - Chairs of Standing Committees, except the Executive Committee, are nominated by the President and approved by the Board. They serve three-year terms until the close of the next Annual Business Meeting and may be reappointed.
  - Members of Standing Committees, except the Executive Committee, the Professional Development Committee and the Nominating Committee, are appointed by the committee Chair, who will notify the Board of all committee membership changes. All appointed members shall serve one-year terms until the close of the next Annual Business Meeting and may be reappointed.
- Section 2. Executive Committee. The Executive Committee, which consists of the Officers, shall make decisions and take actions on behalf of the Board in between Board meetings. The President shall call meetings of the Executive Committee.
- Section 3. Nominating Committee. The Nominating Committee shall be responsible for determining a suitable group of candidates for election to the Board of Directors. It shall consist of five members who are neither current members of the Board nor current Committee Chairs. They may not be current candidates for the BFI Board. The President shall appoint a Chair plus two members with the approval of the Board of Directors. Two members shall be nominated and elected by the membership at the Annual General Meeting.
- Section 4. Professional Development Committee. The Professional Development Committee shall be responsible for recommending the overall scientific and educational programs of the Federation to the Board. Membership will include the current BFI President, President-Elect and Chairs of the Publications Committee and of other Committees with missions relevant to professional development activities, as determined by the Board.
- Section 5. Publications Committee. The Publications Committee shall be responsible for oversight and management of all publications of the Federation. They will work in concert with the Editorial Board of the Federation's journal.
- Section 6. Membership Committee. The Membership Committee shall be responsible for evaluating the needs of the membership and recommending appropriate ways to meet those needs. The committee will develop methods and programs for active membership recruitment and retention.
- Section 7. Finance and Organizational Development Committee. The Finance and Organizational Development Committee shall assist the Treasurer, who shall serve as Committee Chair, in maintaining the financial health of the Federation, including preparation of the annual budget. It will also be responsible for pursuing appropriate federal, foundation, corporate, and private funding to support the work of the Federation. The Committee shall be chaired by the Treasurer.

ARTICLE IX. MEMBERSHIP MEETINGS

- Section 1. Annual General Meeting Time, Place, and Purpose. The Annual General Meeting of the Federation shall be held at such time and place as may be selected by the Board of Directors and stated in the Notice of Meeting. The Annual General Meeting shall include the transaction of such other business as may properly be brought before the membership.
- Section 2. Notice of Meetings. The Federation Manager shall give notice of all Federation meetings stating the place, day, and hour of the meeting and, in case of a Special Meeting, the purpose for which the meeting is called. Such notice of special meetings shall be not less than ten or more than fifty days before the date of the meeting. Notice of the Annual General Meeting is to be given no later than the prior Annual General Meeting.
- Section 3. Quorum. A quorum for transaction of business shall be not less than 10% of the total membership in good standing.
- Section 4. Voting and Representation. Each member who is present shall be entitled to one vote at all BFI meetings. A membership roll showing the list of members as of the record date, certified by BFI's Secretary, shall be produced at any meeting of the members upon request. All persons appearing on such membership roll shall be entitled to vote.

ARTICLE X. AMENDMENTS

- Section 1. Amendments of the bylaws may be proposed by a majority of the Board of Directors or by a petition, sent to the Secretary, bearing the signatures of at least 15 members in good standing.
- Section 2. Notice of proposed amendments, shall be posted to the Federation's website on or before March 1. The Federation's administrative office shall mail or fax a copy of these materials and the slate of nominees, described in Article VII, Section 1, to those BFI members who have previously indicated they do not have Internet access. On April 1, a secured, electronic ballot shall be activated on the Federation's website, along with instructions for electronic voting. The Federation's administrative office will mail or fax a ballot containing the proposed changes and the slate of candidates, described in Article VII, Section 2, to those BFI members who have previously indicated they do not have Internet access. All ballots must be electronically submitted to the website or received in the post by the Secretary on or before midnight (IST) of April 30 to be counted. The Secretary shall tally the votes and send the results to the Federation Manager for posting on the Federation's website by May 15.
- Section 3. In the event of an urgent requirement for an amendment, the Board of Directors, by a two-thirds vote, may authorize posting a proposed amendment to the members at any time. Notice of proposed amendments shall be posted on the Federation website for a 30-day period prior to balloting. At the end of the posting period, a secured electronic ballot shall be activated on the Federation's website, along with instructions for electronic voting. The Federation's administrative office shall mail or fax appropriate information and a ballot to those BFI members who have previously indicated they do not have Internet access. All ballots must be electronically submitted to the website or received in the post by the Secretary within 30 days of the opening of balloting. The Secretary shall tally the votes and send the results to the Federation Manager for posting on the Federation's website.
- Section 4. All amendments of the bylaws require an affirmative vote of two-thirds of the members in good standing who submit valid ballots.

ARTICLE XI. INDEMNIFICATION

The Federation shall defend and indemnify any qualified person against any threatened, pending, or completed legal action resulting from actions taken in good faith on behalf of the Federation. Qualified persons shall be present and former officers, employees, and officially elected or appointed members of boards, councils, committees, and other components of the Federation.

Indemnification will not be provided to any person who shall be adjudged in a legal action to be liable for negligence or willful misconduct in the performance of duty, or when such person did not reasonably believe that the action was within the law and in the best interests of the Federation.

Indemnification shall cover cost of defense and any judgments, fines, and amounts paid in settlement actually and reasonably incurred by a qualified person, up to a limit of one-million dollars in any single case except in circumstances expressly prohibiting such limitation under the law. Such indemnification shall be in accordance with the established policy of the Federation.

ARTICLE XII. OTHER PROVISIONS

- Section 1. The fiscal year of the Federation shall be on a calendar year basis (1st April to 31st March).
- Section 2. The Federation shall be governed Income tax rules of Order, as currently revised. In case of a conflict between Rules of Order and these bylaws, the bylaws shall take precedence.

ARTICLE XIII. DISSOLUTION OF THE FEDERATION

In the event of the dissolution of the Federation, the Board shall give all its assets to one or more nonprofit, tax-exempt organizations. If the Board cannot decide, the decision shall be made by the applicable Court in the Union territory of Delhi, India

ARTICLE XIII: MODE OF OPERATION & SIGNING AUTHORITY

Founder President and Secretary will be the whole time signing authority and operates banking transaction physically & virtually jointly

Col. Inderjit Singh Barara
President

Dr. Subodh Kesharwani
Secretary

Scholastic Seed Inc.
e-Publishing Aggregator & Periodical Mentor

SUBSCRIPTION FORM

Blockchain Federation of India

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First Name: .....

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E-mail: ..... **Telephone:** (__).....

Complete Invoice Address (i.e your University/Organization/Company):

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Subscription Fees

Country	Indian Membership			Corporate Membership		
Year	One Year	Two Year	Three Year	One Year	Two Year	Three Year
National	₹ 1800	₹ 4000	₹ 6000	₹ 50,000	₹ 1,00,000	₹ 2,00,000
International	$120	$ 200	$300	$1000	$ 1500	$2000
Membership years run 1st January to 31st December of every year						

Please check appropriate registration fee for BFI:

- Student BFI Member ☐
- Student Non BFI Member (includes 1 year membership) ☐
- Senior/Industry BFI Member ☐
- Senior/Industry non BFI Member (includes 1 year membership) ☐

PAYMENT METHOD

Payments should be made by bank transfer at:

Bank Name	:	IDFC Bank
Bank Account No.	:	10020469746
Payment Favouring	:	Scholastic Seed Inc.
IFSC Code	:	020102
MICR Code	:	110751003
Account Branch	:	New Friends Colony (NFC)

For inquiries, please contact Scholastic Seed Inc.

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Global Journal of Enterprise Information System
Scholastic.seed@gmail.com
Editor-in-Chief : Dr. Subodh Kesharwani
Online ISSN : 0975-1432 | Print ISSN : 0975-153X
Frequency : Quarterly | Published since : 2009
Publisher(s) : KARAM Society & Scholastic Seed Inc.

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WE JUST WANT TO SAY... THANK YOU!

10 Incredible Years of GJEIS 2009-2019

To,

Prospective Contributors & Researchers
Global Journal of Enterprise Information System
Peer Reviewed/Refereed/ Quarterly

Dear Mam/Sir,

2019 is really a benchmark for the GJEIS Journal as it had completed the ten year service of serving the researcher and facilitates learning by and large in totality. GJEIS published four times annually (January, April, July, and October). Accordingly, 40 issues have been published in the first 10 years. GJEIS is a methodological journal that focuses on articles about mixed methods research across the Enterprise, Information & System. GJEIS is also an international and multidisciplinary journal that publishes manuscripts in two various categories: methodological/ theoretical papers and original empirical studies. Although there are other methodological journals that publish mixed methods studies, GJEIS focuses exclusively on mixed methods research and solicitants different types of article in GJEIS Journal which mainly focuses on research issues in the EIS and IT related areas.

1.	Empirical Research Papers (ERP) report on completed EIS research that complies with rigorous scientific standards. ERP present original results of completed research studies with the aim of obtaining feedback from fellow researchers. [Limit 16 Pages]
2.	Theme Based Papers (TBP) are short papers that present the design and preliminary results of ongoing EIS research studies with an endeavor of obtaining early feedback and further guidance from experts and peers. TBP will be evaluated using the same academic standards as regular research papers (except for completeness requirements). [Limit 12 Pages]
3.	Case Study Based Papers (CSBP) describes real-life experiences with EIS that authors wish to share with fellow practitioners and EIS researchers. They focus on problems and solutions in specific contexts. Their aim may be to help other practitioners facing similar problems or to solicit help and possible solutions from other practitioners (or EIS researchers). [Limit 10 Pages]
4.	Review of Literature (RoL) aim is to review of the suitable "literature" (books, journals, magazines, URLs, Videos) discussing the topic one want to investigate. It discusses modus operandi and mechanism that are apposite for investigating the subject matter just a simple summary of the sources, but it usually has an organizational pattern and combines both summary and synthesis with intent to explore gap. Objective behind creating this type of phenomenon in GJEIS is to give grassroots researcher a roof to synthesize and weigh up the guiding notion of research questions. [Limit 8 Pages]
5.	View Point (VP) is a situation for which something is pragmatic or considered as a point of view. The purpose of VP is to share different views about the IT related products and what individual think about that. [Limit 6 Pages]
6.	Research Thought (RT) can refer to the opinion or arrangement of research ideas that effect from thinking, the act of producing thoughts on diverse interdisciplinary collaborative research areas or tools with which researcher can formulate it's research paper, choose a method for undertaking a study, write up for findings and discuss the outcomes in a discussion section. In this head author can throw a light on various research tools which can be helpful in formulating a research paper. [Limit 5 Pages]

7. Student Research Initiatives (SRI) is a research initiative by a grass-root researcher and technocrats. This head facilitate students/learners to pursue independent academic and imaginative effort and engage in research under the supervision of a faculty mentor with an intention to heighten student research as a means of collaborative learning, critical thinking and the establishment of knowledge. [Limit 12 Pages]

8. Dissertation Snapshot (DS) is an excerpt from a researcher's own thesis or dissertation which had been previously published or submitted in the form of research project or its own doctoral work. The rationale is to raise the curtain on an application and thought used by researcher in a brief manner with an intention to promote the future researchers to sequel their thoughts. [Limit 10 Pages]

9. Questionnaire Format (QF) A new philosophy called "Questionnaire Format" had been introduced, in which we are going to publish distinguish questionnaires that navigates the usefulness of it in building research and how to communicate with the respondents. The rationale behind introducing this QF is to give a glimpse about the structure and the pedagogy. QF on the other hand provides a niche to grass-root researcher about their various thoughts related to preliminary research and facilitates them in linking with a respective research papers which the researcher had visualize or going to plan in a coming future. This is a new inventiveness under the GJEIS Academic Social Responsibility (GASR) and would be complimentary/charitable in nature. [Limit 5 Pages]

10. Book Review (BR) is a literary criticism in which a book is analyzed based on content, style, and merit. BR can be a primary source opinion piece, summary review or scholarly review. Books can be reviewed for printed periodicals, magazines and newspapers, as school work, or for book websites on the internet. A book review's length may vary from a single paragraph to a substantial essay. Such a BR may evaluate the book on the basis of personal taste. Reviewers may use the occasion of a book review for a display of learning or to promulgate their own ideas on the topic of a fiction or non-fiction work. [Limit 3 Pages]

11. Biographical Note of the Luminary in an Area of IS We as per our culture acknowledge in every issue a great leader, Entrepreneur, Technocrats, Academician etc., who contribute a lot to a society in an area of IS. [Limit 2 Pages]

12. Great Enterprise Contribution to Society in Information System Perspectives deals with those enterprises contributing a lot to the society, and considering themselves a wizard in the field of Information System, we publish their profile, with the intention that their creation/contribution would be viewed and duly appreciated by the corporate and academics, all-around the globe. The purpose behind this is to broadcast the most visually powerful, immersive and engaging rich media applications on the Web. [Limit 2 Pages]

13. Award is something given to a person or a group of people to identify their fineness in a definite field especially in an area of EIS, it is rather a certificate of excellence for their contribution in academia or in a corporate world. This start throws a light on an entity or a gamut of researcher who had been honored for their extra ordinary input. [Limit 2 Pages]

14. Homage means great respect and tribute, or something done to honor a person. We in GJEIS pay homage to our ancestor's and say prayers in admiration to their memory which includes academicians, technocrats and great thinkers. The special respect would be shown publicly by sharing their achievements and contributions in writing which includes images, excerpts, testimonials, write-up, etc. [Limit 2 Pages]

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About New Submission Policy (NSP) 2019

The NSP-2019 consists of following features:

1. Paper will be strictly submitted online at : **www. gjeis.com**
2. Priority would be given to pure empirical article which revolves around first hand information and backed merely by primary data collection will be accepted promptly as these article uses data based on actual observation or experimentation during formulation.
3. It is mandatory for Indian authors to submit research article along with a foreign co-author as a first author or corresponding authors due to journal global in nature characteristics and its wide international presence and listing in various directories across the globe. The submission by the foreign authors will fulfill the global mandate of journal and facilitate in listing and enhanced impact factor in future course of action. Though the journal have been listed in various directories and had a good impact factor but we expect in 2019 to be listed in few leading indexing.
4. There will be a waiting time of minimum **12 months** from the date of submission i.e. April 2019, as paper require rigorous review by **3 internal reviews** from India and **3 blind reviews from outside India** based on the subject expertise and themes.
5. From April 2019 we are putting a Reviewer comment in a Paper under Category Called: Anonymous Reviewer-1, Anonymous Reviewer-2, and Anonymous Reviewer-3. Though tracking record from Submission to online first would depict with various dates in a paper. Visit sample article and reference style. Journal also publishes a similarity index detail of ithenticate plagiarism report at the end of an article.

Paper Code (DOI): $$$$$ **Originality Test Ratio:** @@%**; Submission Online:** DD-MM-YYYY**; Manuscript Acknowledged:** DD-MM-YYYY**; Originality Check (ithenticate):** DD-MM-YYYY**; Peer Reviewers Comment:** DD-MM-YYYY**; Double Blind Reviewers Remark:** DD-MM-YYYY**; Author Revert:** DD-MM-YYYY**; Camera-Ready-Copy:** DD-MM-YYYY**; Editorial Board Citation:** DD-MM-YYYY**; Published Online First:** DD-MM-YYYY

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11. FTP consist of a features like "Online First" in which article published in a fast track basis and uploaded online without the Volume and Issue date and automatically transfer to the routine forthcoming issue. www. gjeis.com

Subodh K. Kesharwani

Editor-In-Chief
Notified Tenure 2018-2020

Fast track journals are crucial for research articles that are amazingly noteworthy and necessitate essential propagation, or where there is a funding policy raison d'être for urgent publication. Fast-track peer review prioritizes a manuscript and decreases its publication time. GJEIS offers this opportunity by fast tracking as just speedy review and quick publishing. When a paper is marked for fast track during submission line www.gjeis.com it is recurrently reviewed and a publication decision is made swiftly. Fast tracking might also shrink the amount of time allocated for peer review and editing as it will parallel send to blind and peer reviewer and constantly dedicated publishing team would be allocated simultaneously. It typically cuts the overall publication time by at least one-third.

GJEIS have developed fast-track peer review options to restrain some of the needless instance that lapses between a manuscript being submitted and its periodical. GJEIS Fast Track Publication service which better known as FTBS is an **"optional service"** which provides author a platform to publish their papers in **just 9 weeks**, usually a journey time from submission to publication takes 12 Months. The purpose of creating **FTPS** is to facilitate the author in publication of their paper in a prescribe time frame and do all the process in a fast track mode without compromising with quality. There are certain prerequisites which are mandatory to include under FTPS:

- ✓ Article should be Plagiarism Free and pass the Originality Test by http://www.ithenticate.com (Prevention Plagiarism tool) with similarity test index below (10%)
- ✓ Expedited review will be offered, on request, for submitted research articles after the editorial board consist of 5 members approved.

GJEIS has started a non-compulsory speedy examination for fast-track publications to draw attention to noteworthy developments in the various fields of the academic research without compromise with superiority. GJEIS goal is to endow with the research group of people with rapid and on the spot entrée to freshly completed research works in a variety of research vicinity that are speedily developing with great impending impact. The research community as a whole advantageous from the realism that primary edge research is made reachable to a extensive audience more punctually. Kindly note that we acknowledge a limited number of the article under fast track in one quarter due to it's frequency and further email journal's primary contact for the inquiry. After receiving express review request for the article, we will tell to our contributor in a week time whether we can offer rapid review for the submission or not. If we decide not to we may offer to think about your paper either in the normal mode or provide you date from when we can consider it under rapid review.

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3. Facilitate in reviewing the article by the in-house team of experts and 6 subject expert reviewer (3 India & 3 Abroad)
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- Article having Zero% Plagiarism checked by iThenticate a plagiarism detection service with a research orientation automatically comes under waiver list and published within 9 Weeks from the date of Submission or generation of DOI from Crossref USA www.gjeis.com

Note

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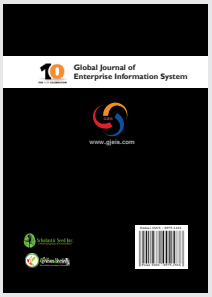

Scholastic Seed Inc. is in the e-publishing business from last one decade. The first creation the group had originated was the Peer Review Research Journal founded in the year 2009 known as Global Journal of Enterprise Information system (GJEIS). At the later stage group has come up with a sequel in the form of a medical journal in collaboration with it academic and research consortium NGO, KARAM Society & MEDANTA Hospital doctors in a name of AGEMS (Annals of Geriatric Education and Medical Sciences). The consortium currently having contemporary out-of-box approach and are now well acknowledge as an e-publishing aggregator and periodical mentor. The company till date had published few journals and facilitates/consulted lots of Brick-&-Mortar periodcials into a digital dynamic format. Till date we had consulted 20 periodical and entered into a book publishing business.

Journal Initiated under Scholastic Seed Ambit

GJEIS-2009
KARAM Society & Informatics Publishing Ltd.

AGEMS-2014
KARAM Society & Innovative Publications

SIRIFORT-2018
Sirifort Institute of Management Studies & KARAM Society

CYBERNOMICS-2018
Scholastic Seed Inc. & KARAM Society

E-GOVERNANCE-2018
Scholastic Seed Inc. & KARAM Society

Scholastic Seed helps to scholar in publishing Paper in an impact factor indexed journal

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- Cross-checking appropriateness and presence of sections
- Content Accuracy & Enhancement, Logical Flow
- Specialized Subject-area Matching
- Formatting and Artwork Editing
- Enhanced Pre-submission Peer Review
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- Review Correction and Re-Submission
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What will happen if you don't involved an aggregator and publishing mentor like scholastic seed?

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How the Credit ability of an institute deteriorated without periodicals

- As we know that Institution creditability would be judged on the basis of the periodicals they published as these periodicals such as newsletters, journals, magazines, annual reports, etc are their front face and if these front face are digitally equipped it would be definitely a win-win stage for the students and the institutions and further by adding a feather in a cap.

Why there is a need of Online Periodicals

- Free access • Self-archiving • Repository • Author foot fall • Pre or post publication irrational fear Eradication

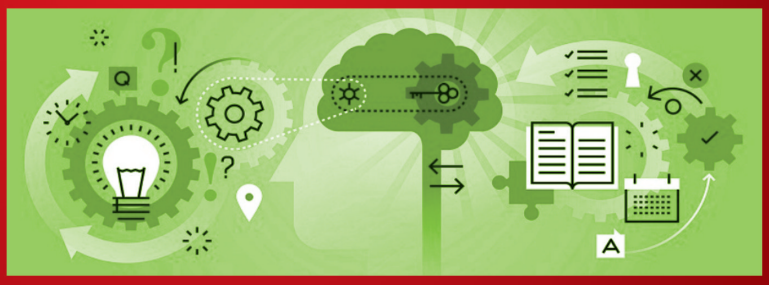
DO's AND DON'T

- Digital Publication is as good as print publication
- Always Prefer Open Source Journal and Digital Format as it circulate fast and perpetual in nature.
- Have a Digital Object Identifier (DOI)
- Have a good team of editorials and reviewers
- Google Scholar and Citation is an important ingredients for choosing a journal
- Scopus, ICI, WoS and UGC Listing is a parameter to select journal
- Always check the H-index of an author
- Know the Impact factor of journal before Publishing an article
- Check the Ethical issue and Privacy Policy of the journal
- Frequency and consistency would be an important ingredient to judge the creditability

- It is suggested to an editor not to publish anything without Originality check
- Don't Prefer Pay and Print Model

Services

How Scholastic Seed Involved with institution in E-publishing and Journal making



- Website Creation includes coding in PHP and SQL Database Ready-to-Run Software with a Source code right transfer model.
- Sub-domain and hosting on a pro-rata basis (domain and hosting will be given to the respective institute with an ownership transfer)
- Digitalizing the Content Electronically and Uploading on Web (Frequency: Monthly, Quarterly, Bi-annually & Annually)
- Online tracking of articles submitted.
- Online manuscript submission.
- Updates about your manuscript delivered via e mail and SMS.
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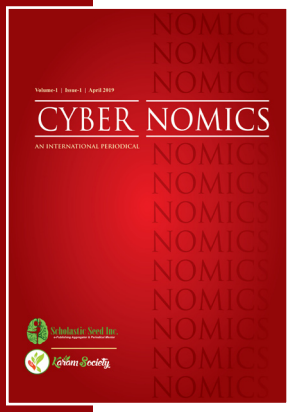
- Process for Both eISSN and ISSN and Documentation
- Facilitate in Getting RNI No. From Registrar Of Newspapers For India

CYBER NOMICS

CYBERNOMICS is being published as a co-published peer-reviewed magazine by KARAM Society and Scholastic Seed Inc. The subjects covered by the magazine are IT linkages in business and management and others field related to cyber and its economics fields. It also covers many aspects in Information System and related areas which are burgeoning. The Magazine provides an international forum for the exchange of ideas, principles and processes concerning the application of diverse topics of Cyber to organizations, institutions and the world at large. CYBERNOMICS considers research submissions in several categories but revolves around Cyber threats, Security remedies, etc.



CYBERNOMICS magazine aims at achieving the growing demands for understanding and addressing issue pertaining to real-worlds Cyber-Attacks, Cyber Threats, Cyber threat Intelligence, Cyber Warfare, Cyber Terrorism, Darknet and Crypto Currencies and threats to information infrastructures critical to the national security of country.

The magazine publishes articles and reviews in the areas including, but not limited to:

- Cyber Threats
- Cyber Warfare
- Darknet and Darkweb
- Cryptography and its applications
- Network and critical infrastructure security
- Hardware security
- Software and System security
- Cybersecurity data analytics
- Data-driven security
- Adversarial Reasoning
- Malware Analysis
- Privacy-enhancing technologies and anonymity
- IoT Security
- Blockchain Security
- Cryptocurrencies
- Machine Learning
- Big Data Analytics
- Artificial Intelligence

Global Journal of Enterprise Information System

GJEIS Indexing till 2019

GJEIS in collaboration with Scholastic Seed Inc. and KARAM Society, publishes a new peer-reviewed open access e-journal in Enterprise Information System (EIS) areas of business which covers IT linkages in business, finance, marketing, management, organizational behaviour, buyer behaviour and other relevant fields. It also covers many aspects in Information System and related areas. The journal provides an international forum for the exchange of ideas,principles and processes concerning the application of diverse topics of EIS to organizations, institutions and the world at large. GJEIS considers research submissions in several categories but revolves around three buzzwords Enterprise Information and System Journal takes into consideration professional plagiarism detection and prevention technology for it's scholarly publication and research article in order to ensure the originality of written text before publication. The GJEIS receives submissions only through it's journal website www.gjeis.com. The journal has a very good impact factor and is listed and indexed in almost fifty directories and libraries all around the globe. GJEIS is also a scholarly publisher that uses services of Crosscheck offered by CrossRef, USA and facilitated by iThenticate software. The journal had implemented a Search Engine Optimization (SEO) and web analytics dedicatedly for it's online portal to provide glimpse about the articles having highest citation. GJEIS is also associated with International DOI Foundation (IDF) USA. GJEIS is also concomitant of Publsher International Linking Association, Inc (PILA) a not-for-profit membership organization. USA.

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Deep Learning Architectures is a class of Machine Learning Algorithms

11TH ANNIVERSARY

Global Journal of Enterprise Information System

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Online ISSN : 0975-1432

Print ISSN : 0975-153X

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