CONTENTS

Examining the relationship between activities (components) of quality management and their impact on quality outputs (case study of industrial estate Company of Kermanshah province)

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Abstract: This study aimed at determining the relationship between activities (components) of comprehensive quality management and investigating direct and indirect effects of these activities (components) on quality outputs in small and medium industries. The objectives of this study are: 1. creating more understanding and insight about the mentioned variables; 2. determining the priority of the measured variables; 3. determining variables that have the greatest impact on quality outputs in this study; 4. utilizing the results in order to increase quality outputs in small and medium industries; 5. Raising the competitive ability given the importance to the variables, that have greater impact on quality outputs. Thus, some questionnaires were distributed among statistical population of the study which were 186 active small and medium companies located in industrial estates covered by industrial estates company of Kermanshah province in 2010. The studied model assumptions were tested that were the relationship between independent variables of total quality management such as leadership, quality tools and techniques, quality planning, human resource management, customer focus, process management, supplier management, continuous improvement and learning and their influence directly and indirectly on quality outputs using statistical method of structural equations. Findings support the relationship between quality management measures and their positive effect on quality outputs.

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Keywords: leadership, continuous improvement, customer-focused, learning, management process, total quality management

Introduction:

Total quality management is one of the most successful management philosophies that has met quality issues, and needs and expectations of the customer, organization and society. This management philosophy is interrelated multiple methods and techniques with a new integrated approach reasonably, such that its main axis is customers of the organization (both internal and external).

This study sought to investigate the relationship between activities (components) of quality management and their impact on quality outputs in small and medium manufacturing industries covered central office of industrial estates Company of Kermanshah province. Thus, the impact of quality tools and techniques are analyzed and evaluated in terms of tool type or quality technique used in the company and its impact on quality outputs and also the impact that variables of quality planning, human resource management, customer-focused, supplier management and leadership on variables of continuous improvement, learning and process management that ultimately leads to the effect on quality outputs through information obtained from the questionnaire. Therefore, the aim of this study is to identify the relationship between activities (components) of quality management and describe their direct and indirect effects on quality outputs. In this chapter an overview of the study including: statement of the problem, review of literature, research objectives and importance, theoretical framework, hypotheses, research scope, model and keywords has been presented.

Literature review

Teriziovski et al found in a study that quality culture affects business performance and also found that personal factor has a greater share on customer orientation (Teriziovski et al, 2003, 580-595). Zahra Danial showed that training needs of nurses in the experimental group was significantly high. Also there is a significant difference between training needs and components of total quality management in providing nursing services (Danial, 1388, 117-120). Anderson et al found in a study that employee's work has a considerable direct impact on customer satisfaction; and also there is no relationship between continuous improvement and customer satisfaction (Anderson et

al, 1995, 637-658). Mohammad Reza Sarmadi et al found in a study that in organizations based on total quality management, considering the customer is not regarded an instrumental attention; and manager and employees while paying particular attention to organizational goals are also committed to the ethical duties in the organization that clarity and honesty, privacy, confidentiality, trust and adherence to contracts and covenant promises can be mentioned as an example (Sarmadi et al, 2009, 99-110). Kaynak showed in as study that total quality management has a positive effect on the company's performance (Kaynak, 2003, 405-435). Merino-Diaz found in a research that there is a relationship between total quality management and performance. However, variables of human resource have a greater share on performance (Merino-Diaz, 2003, 2763-2786).

Hossein Sayadi Turanlu et al concluded during a study that in total, there is a significant difference between expectations and perceptions of the status quo and the optimal state of total quality management in Khorshid hospital of Isfahan. Also expect components of customer orientation, there is a significant gap in other components of total quality management (Sayadi Turanlu et al, 2008, 57-67).

Teskouras et al found in a study that ISO9000 acceptance has no impact on the company's performance (Teskouras et al, 2002, 827-841). Lee et al showed in a study that better quality results can be achieved through navigation channels and quality information and their analysis (Lee et al, 2003, 2003-2020). Hossein Jalili Ranjbari demonstrated in a study that the establishment of quality management system of ISO9001:2000 has increase the satisfaction of employees and customers and reduced the amount of losses in the industry; in other words, the amount of customer satisfaction has increased from relatively low to high and employee satisfaction from relatively low to relatively high; the amount of wastes has also reduced on average 3.07 to 1.64 (Jalili Ranjbari, 125-128). Curkovic et al found that total quality management affects performance; quality management may also affect the performance of company (Curkovic et al, 2000, 855-905).

Agus and Sagir concluded during their study that total quality management has an indirect impact on financial performance through competitive advantage (Agus and Sagir, 2001, 1018-1024). Yadollah Hamidi et al found in a study that the results showed positive changes in organizational culture, teamwork, process-oriented and customer satisfaction in the studied population (Hamidi et al, 2009, 37-43). Changiz Valmohammadi concluded during a research that:

1. After the establishment of ISO9001:2000 standard and receiving the corresponding certification, production and services companies move towards implementing continuous improvement activities in all organizational dimensions to achieve the implementation and deployment of effective and synergistic TQM by accurately performing the requirements and following ISO9004 standard guidance

Uncertainties about concepts, standards and tools of TQM implementation and deployment are removed through this; and a clear framework is determined in order to implement this modern style of management in the country.

2. The importance and priority of TQM criteria and elements must be considered in the TQM implementation and deployment that according to this approach, the most important one is focusing on the customer.

3. by comparative investigation between ISO9000:2000 standards and various approaches of TQM, main criteria and sub-elements and also the priority of each of these criteria and elements have been identified from exports viewpoint. Therefore, organizations and companies performing TQM can use this self-assessment tool in order to measure and evaluate their activities in the early years of its implementation: after evaluation, the areas in which there is shortage are determined and taken appropriate action in order to eliminate them. Thus, it not only will help the organizations but also will increase the quality of their products and services, reduce costs, and provide operating costs, more effective use of accessibility and raw materials, equipment and human resource (Changiz mohammadi et al, 2004, 181-211).

Importance and necessity of the research

Basically, in today's organizations many investments are done to achieve an acceptable level of industrial development and provide optimal services and requested by the customer; in this way obtaining an appropriate share of facilities and human resources of the country from global trade volume, not only is considered the necessity of industrial development but should be done in line with it.

TQM as an important and effective tool with the provided mechanisms has provided an appropriate structure for utilizing experiences, talents, intellectual and rational ability and key resources of the organization and automatically helps the organization management to use the existing ability and potential capabilities of the employees in the future of the organization. TQM can also be used for productivity and coping with rapid changes of the environment and competing in national and international level. The future of global mark is in the hands of those companies which could understand and apply TQM,

because pulse and heart of business and servicing and producing is in the hand of customer; and a company is successful that recognizes the customer and estimates his needs and satisfies the customer with the help of financial-physical facilities and its human resources; and therefore the present study has been conducted relying on the studies and has considered an overall framework of QTM factors affecting quality outputs of manufacturing companies.

Research objectives

1. Creating more understanding and insight about the variables
2. Determining the priority of the measured variables
3. Determining variables that have the greatest impact on quality outputs of this study
4. Utilizing the results in order to increase quality outputs in small and medium industries
5. Enhancing competitiveness given the importance of variables that have a greater impact on quality outputs

Research hypotheses

1. Leadership has a positive impact on quality planning
2. Leadership has a positive impact on human resource management
3. Leadership has a positive impact on quality tools and techniques
4. Leadership has a positive impact on learning
5. Leadership has a positive impact on customer focus
6. Leadership has a positive impact on supplier management
7. Human resource management has a positive impact on quality tools and techniques
8. Human resource management has a positive impact on learning
9. Human resource management has a positive impact on process management
10. Human resource management has a positive impact on quality improvement
11. Learning has a positive impact on process management
12. Learning has a positive impact on quality improvement
13. Quality planning has a positive impact on process management
14. Quality planning has a positive impact on continuous improvement
15. Customer focus has a positive impact on process management
16. Supplier management has a positive impact on process management
17. Process management has a positive impact on continuous improvement
18. Quality tools and techniques has a positive impact on continuous improvement
19. Process management has a positive impact on quality outputs
20. Continuous improvement has a positive impact on quality outputs
21. Quality tools and techniques has a positive impact on quality outputs
22. Human resource management has a positive impact on quality outputs
23. Learning has a positive impact on quality outputs

Statistical population and sampling method

Statistical population of this study is all small and medium active companies located in industrial estate covered by industrial estate Company of Kermanshah province that based on performed investigations about 186 companies were identified as active companies. Since the statistical population is limited to 186 active companies and the questionnaires were distributed between two groups of managers' i.e. senior managers and quality managers of the organization, totally 308 applicable questionnaires were obtained for conceptual model of the research.

In this study using the presented model, once the effect of independent variables (quality tools and techniques, leadership, quality planning, human resource management, customer focus, supplier management) were measured first on the mediator variables (continuous improvement, learning, process management) and then the effect of all independent and mediator variables on the dependent variable (figure 1).

Data collection methods and tools

In this study, questionnaire technology research has been recommended and used as the most appropriate method to collect the required information to examine the relationship between research variables. The questionnaire is composed of four parts:

Part 1: including questions about demographic characteristics of the respondents

Part 2: quality management activities include 8 components with 37 questions

Part 3: quality outputs include 4 components with 15 questions

Part 4: quality tools includes 10 questions

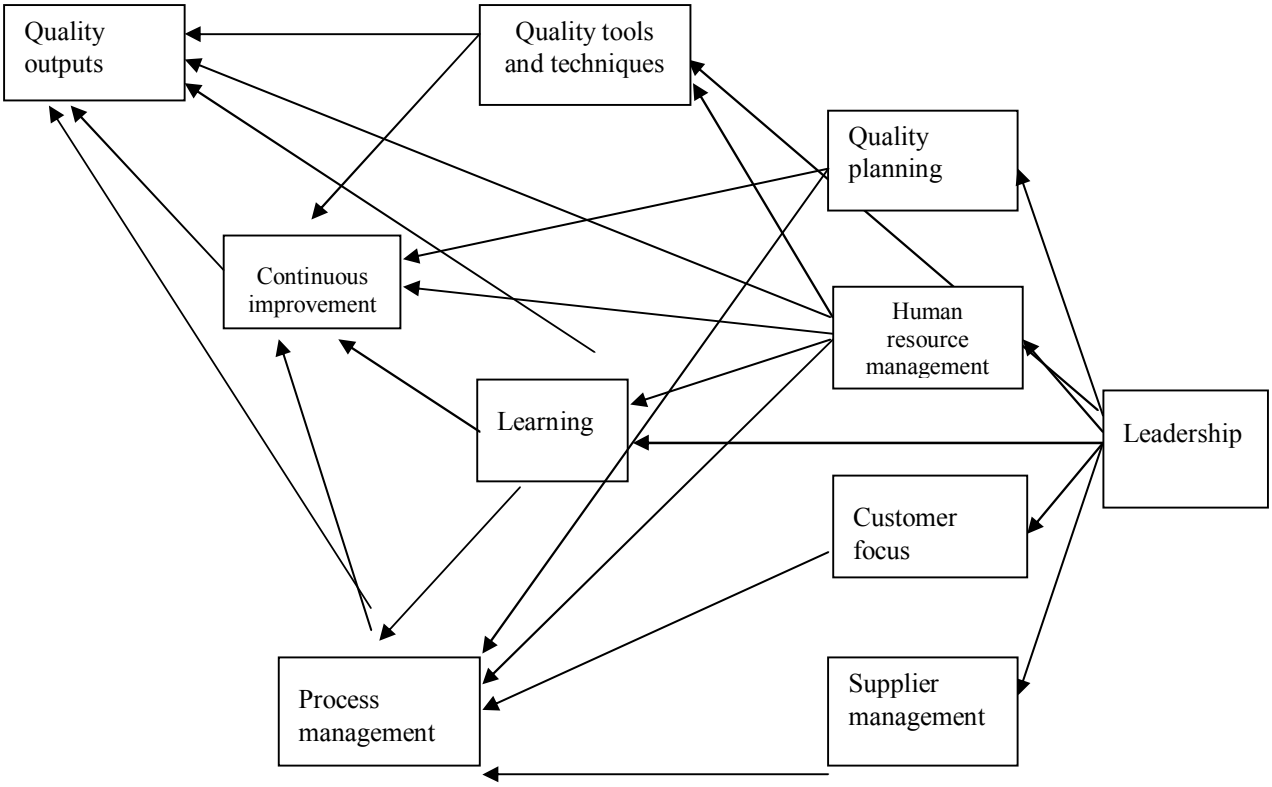

Figure 1. Conceptual model of the relationship between independent and dependent variables (Guan Jose Tari et al, 2007, 458)

Measurement scale

In this study, Likert spectrum has been used to measure the attitude of respondents to questions, and after collecting the questionnaires the spectrum was graded or scored with numbers as follows:

Fairly disagree	disagree	Strongly disagree	No idea	Fairly agree	agree	Strongly agree	Answers
7	6	5	4	3	2	1	Scores

After allocating scores to the questionnaire terms, the total score respondent represents his attitude or reaction to the proposed issue. Therefore, it has been also named total score spectrum.

Statistical methods of data analysis

In this study, structural equations modeling have been used to investigate the relationship between components of the model. Meanwhile, the researcher has used structural equations modeling for confirmatory factor analysis. Lisrel software has been used to analyze the hypotheses; the structural model describes the causal relationship between variables.

In this process, first a causal hierarchy is proposed in which some variables may be a possible cause of other variables, but certainly can not be its effect. In other words, the order of variables is such that the variable which is at the top of this hierarchy may be the cause of the variable in its lower-order, but it is unlikely that the lower variable is the cause of variable above it.

The complete model of structural equation is in fact a mixture of path diagram and confirmatory factor analysis. The path diagrams play a fundamental role in structural modeling. These diagrams like computer flowcharts show the variables that connected together with lines representing causal flow. The path diagram can be considered as a means to show that which variables cause changes in other variables. All independent variables have arrows toward the dependent variable. Weighting coefficient is placed above the arrow. Note that besides showing the linear equation relationship with arrows, the path diagram has several other aspects as well in the structural equation. First, we must know the variance of independent variables to be able to test the structural equation model. Variances are shown in the

diagram by using the curved lines without arrowhead is specified. Such lines are considered as wires. Second, some variables are shown to the form of a circle (or oval) and some others to the form of a square (or rectangle). Circle or oval represents latent variables and rectangle or square represents the measured variables. A typical Lisrel model is composed of two parts:

The measurement model

The measurement model or section of confirmatory factor analysis indicated that how latent variables or hypothetical constructs have been measured in terms of more number of observable variables. In studies aimed at testing a particular model of the relationship between variables, model analysis of structural equations or causal models are used. In this model, data is as covariance or correlation matrix and a set of regression equations is formulated between variables. Then covariances of the measured variables are analyzed.

The structural model

The structural function part or path analysis defines the causal relationships between latent variables. In other words, the measurement model with (λy λx $\theta\delta$ $\theta\varepsilon$) parameters answers questions related to validity and reliability of the observed variables; and structural function model with (γ φ ψ β) parameters answers questions related to the strength or intensity of causal relationships (direct, indirect and total) between latent variables and the value of explained variance in the total model.

Therefore, a Lisrel model provides the possibility for the researcher to evaluate measurement errors in a model and estimate structural parameters at once. On the other side, Lisrel enjoys more capabilities than other statistical tests such as regression and ANOVA techniques which only defines the relationships between the selected variables and is also superior to path analysis; because path analysis is a process consisting of successive separate stages based on multiple regressions while Lisrel analysis is continuous and powerful. Unlike Lisrel, since path analysis can't specify the overall measurement errors between latent observable variables, it assumes that the observed measurements are equal with values of latent variables (while such an assumption is incorrect in practice).

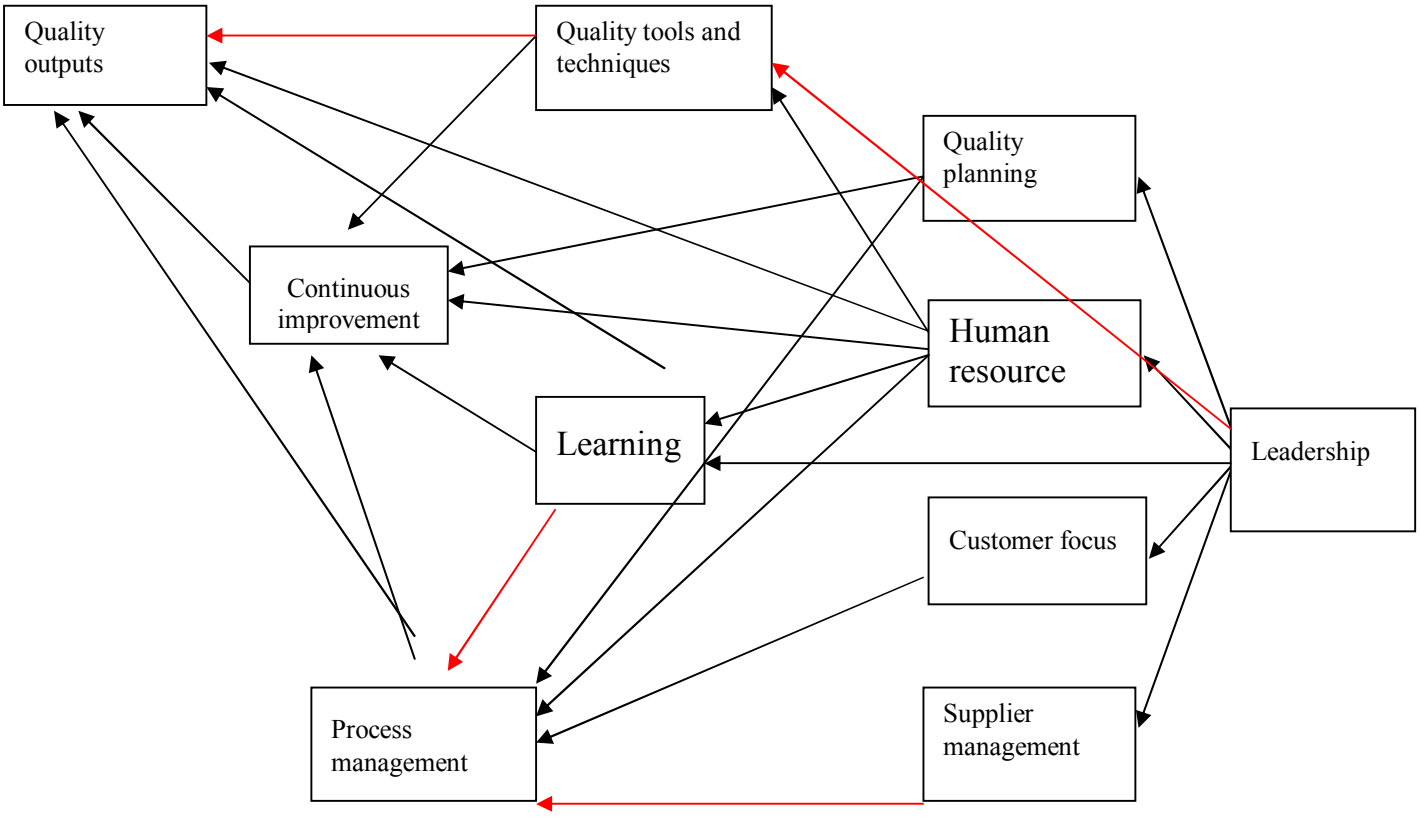

Figure 2. The obtained model using the research results

A summary of results

The proposed study here is a reflection of experimental results which demonstrates that there is a relationship between measures and their effects on qualitative results. Based on the previous studies in this field, the present article provides new results which indicate the importance of this relationship in the current statistical population and is different from the previous statistical population. The role of this study is to determine direct and indirect relationship between total quality management and qualitative results and their generalization.

In the proposed model, 23 relationships has been listed that 19 of them are confirmed directly or indirectly and 4 cases are rejected (the relationship between suppliers management and process management, the relationship between learning and process management, the relationship between leadership and quality tools and techniques, the relationship between quality tools and techniques and quality outputs). In this regard, it can be stated that leaders play a vital role as triggers. They can make goals, investing for employing personal, creating a learning situation, and developing a cooperative relationship with customers possible. These measures affect process management; process management affects continuous improvement and continuous improvement affects qualitative results.

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High Security and Privacy in Cloud Computing Paradigm through Single Sign On

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Abstract: Cloud computing is very emerging technology and have economical computation over the current infrastructure. Cloud computing provides the services on the basis of as you pay as you go. Privacy and security is still at top level risk in cloud data management environment. Privacy of the data is affected as cloud users have not fully aware about the location of the data kept on servers. Data segregation is another problem during the storage of data. Identity management is a big issue that is faced by the cloud users. In the research paper we will propose a model to improve the data security and privacy in the cloud environment. Single Sign On uses the different identity management methods to enhance the privacy and security of the cloud users like OAuth, OpenId, and SAML etc. Securing the identity management is very effective method to secure your authorization and access management that makes surety to providing the secure cloud data management environment.
[Yasir Saleem, Muhammad Munwar Iqbal, Muhammad Amjad, Muhammad Salman Bashir, Muhammad Faisal Hayat, Muhamamd Farhan, Amjad Farooq, Abad Ali Shah. **High Security and Privacy in Cloud Computing Paradigm through Single Sign On.** *Life Sci J* 2012;9(4):627-636] (ISSN:1097-8135). http://www.lifesciencesite.com. 96

Key words: Grid Computing, Utility Computing, Software as a Service (SaaS), Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Cloud Computing

1. Introduction

The term Cloud Computing was coined in 2007, joint hardware and software deployment concept. From the history it is observed that although the word cloud computing is used in 2007 but the fact is that cloud computing concept established long time ago 1960, at that time John McCarthy pointed out that "computation may someday be organized as a public utility"; exactly same as fragments the characteristics and features by using different service bureaus that uses earlier in the 1960s. An interesting fact is that genuine term "cloud" is originally copied from telephony in those broadcastings & telecommunications companies, those companies which till the 1990s era mainly provided the dedicated point-to-point data circuits, initiated new services offering comparably at lower and much cheaper cost of "VIRTUAL PRIVATE NETWORK (VPN)" of almost same level of quality of service. Cloud computing does not bound the service in same borderline but they extend it up to the convers servers as well as network resources and infrastructure and then Software as a Service[11] [14], Infrastructure as a Service and Platform as a Service. Now the cloud is symbol of a publically available service and computing resources from the cloud service provider end to the cloud service user end. There many other aspects are also provides the wonderful result by using cloud computing services like economical cost, green computing etc. Cloud computing facilitate the cloud user to remote access that in independent to locations and elasticity in scalability of services. The user can get access all the cloud computing service though web browser by using the internet facility without taking the headache of managing resources.

From the (Figure 1) it can be observed some demands by the different user and established a new concept that remote access to the application and data is the main desire of every end user. Users always want maximum resources with computing power this concept leads to the Software-as-a-Service (2000) Utility Computing. On the other developer always needed the platforms that provide them the facility to different kind of applications and web services. Developer is more conscious about the different application needed during the development process of different software. While the business always demanding the infrastructure that major component for any organization to run their business. All the above concepts and demands leads towards the cloud computing through the number of steps like Personal Computer (PC) (1970), World Wide Web (1989) Grid Computing (1990), Utility Computing(2000) and Cloud Computing (2007).

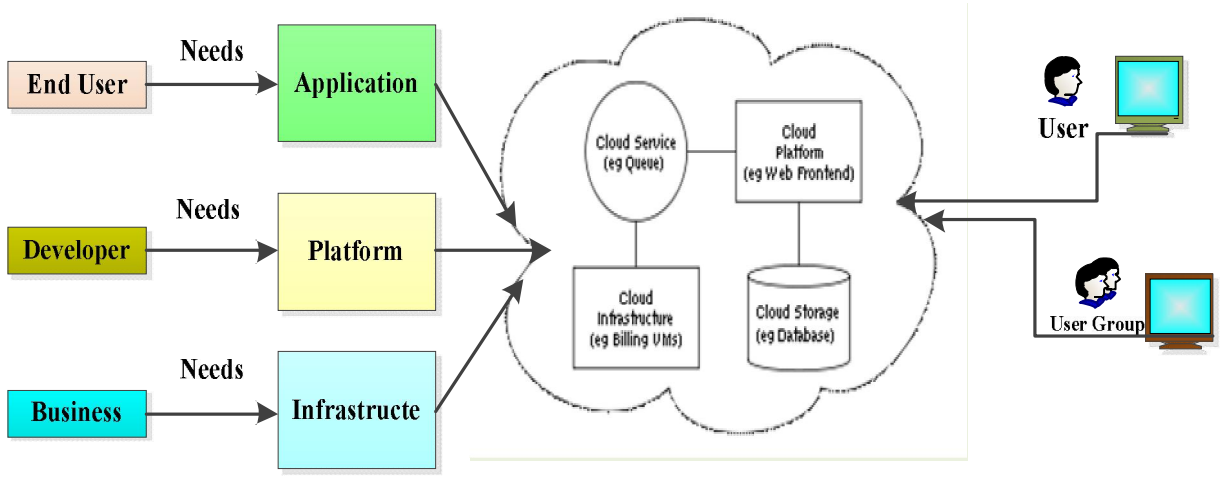

Fig: 01 Cloud Computing Environment

From the (Figure 1) it can be observed some demands by the different user and established a new concept that remote access to the application and data is the main desire of every end user. Users always want maximum resources with computing power this concept leads to the Software-as-a-Service (2000) Utility Computing. On the other developer always needed the platforms that provide them the facility to different kind of applications and web services. Developer is more conscious about the different application needed during the development process of different software. While the business always demanding the infrastructure that major component for any organization to run their business. All the above concepts and demands leads towards the cloud computing through the number of steps like Personal Computer (PC) (1970), World Wide Web (1989) Grid Computing (1990), Utility Computing(2000) and Cloud Computing (2007).

The term Cloud Computing may be defined as "Cloud computing is an emerging model of large scale computing technology that provides the different services like Platform as service (PaaS), Infrastructure as a service (IaaS) and Software as a service (SaaS) etc. through internet on demand from central remote servers to maintain data and applications typically through a measured service archetypal "pay-as-per-use [12]" business model. Another definition by NIST [1]

"Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model promotes availability and is composed of five essential characteristics, three service models, and four deployment models".

Another definition by [2]

Cloud computing paradigm that is abstracted model having virtualization of resources that can be dynamically-scalable and automatically manage the computing power, this paradigm provides the different software, storage, platforms as a service. These services are delivered through internet on demand external customers at the economically "go as you pay" mode.

Cloud computing is a best promotion word intended for tool and technologies which facilitate the data access, computation power, software's and data storage services. Physical locations of the cloud service provider and system configuration are invisible to the end user.

Data is more important for company to his survival and business. Data security and privacy is the main issue in the cloud data management although cloud provides the different services to enhance the business for the companies. Cloud service providers implements the different techniques to provide the secure cloud services such as Infrastructure as a Service (IaaS), Platform as a service (PaaS), Software as a service (SaaS)[15], Communication as a Service(CaaS) and Database as a Service (DaaS) etc. Data security id needed with creation of data and continued till the data is destroys after archiving on the storage media. Data is stored and executed by using the different application services and infrastructure. By making sure the secure authentication and identity management service we can come over the most of the data security issues. Transportation of data must be only used in encryption format and using secure socket layer always over network [3].

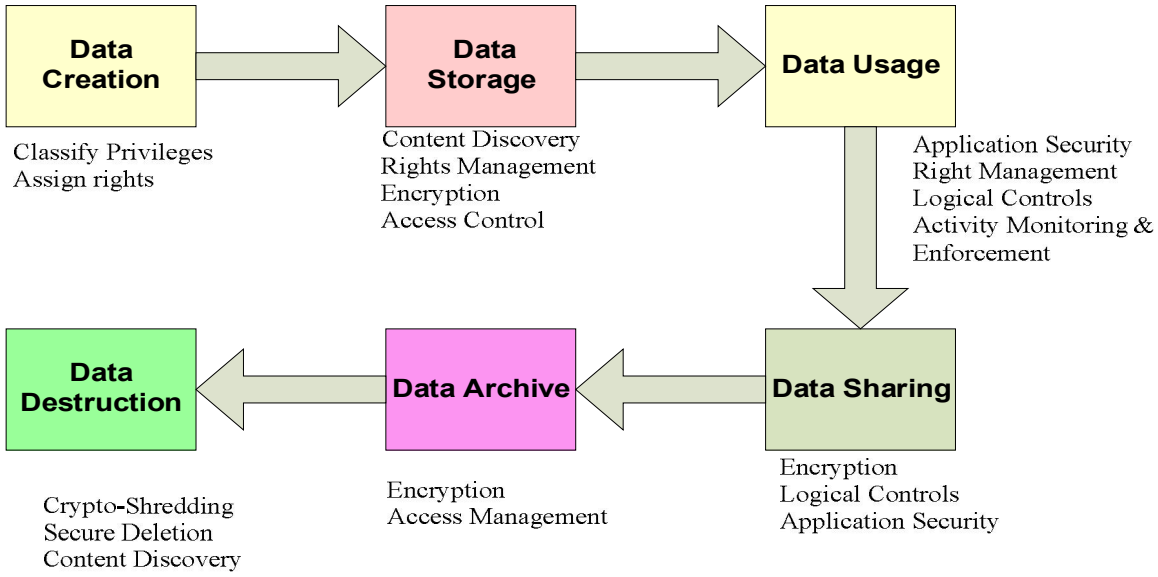

Figure 02: Data Security Lifecycle

Traditional company applications have for all time been extremely complicated as well as very costly. The amount plus variety of hardware and software and hardware necessary to run them are commonly terrifying. . Your requirement is complete team that can aware of the process of installment, configuration, running, testing, securing and update them. It is observed that when you proliferate these efforts through number of application. We infer clearly that why the companies having large and best IT sectors are not accomplishing services they required. Medium and small business doesn't take any chances on this procedure. So the better way to eliminate similar kinds of pain is "Cloud Computing".

This paper is distributed in eight sections. First section is composed of introduction and presents the brief overview and needs of the cloud computing. In Section 2 discusses the literature review and related work. Section 3 addresses the problem description in detail. Sections 4 deals with the purposed solution of said problem and discusses the different authentication methods to improve it a best solution. In the last section presented the conclusion and future work about or purposed solution.

2. Literature Review

Untrusted Storage and Computation is major concern that is faced by the organization using could computing service. Assumed that effort on conversion of solitary regular set data into alternative set which kept in the another set of procedures concerning the affiliates the first set called encryption [9] that make available a solution to computing on encoded information and data, but in cost perspective it is very expensive & costly for using in practical experiences. The literature review shows that related work is limited by space constraints. In the table data trust model and privacy models are discuss in detail.

Table 1: Trust and Data Privacy Model

Model / Feature	Full Trust	No Privacy	Compliance Based Trust	Full privacy	No trust
Encryption	No	No	Yes	Yes	Yes
Third Party Involvement	No	No	May/May Not	Yes	Yes
Sensitivity	Low	Low	Medium	High	High
Data Processing	Normal	Normal	Encrypted	Isolated Container	Isolated Container
Data Storage Format	Simple	Simple	Encrypted	Encrypted	Encrypted
SSL Transformation	Optional	Optional	Mandatory	Mandatory	Mandatory
Encryption Site	No Encryption	No Encryption	CSP End	Customer Side	Customer Side
Key Sharing	No Key	No Key	Yes	No	No

Cloud service user have the utmost level issue of data privacy and security.in the cloud computing environment the privacy of the organizational data suffer badly as client does not know the location of the data servers. Data owned by an organization is completely by the hand of third party that is cloud service provider.

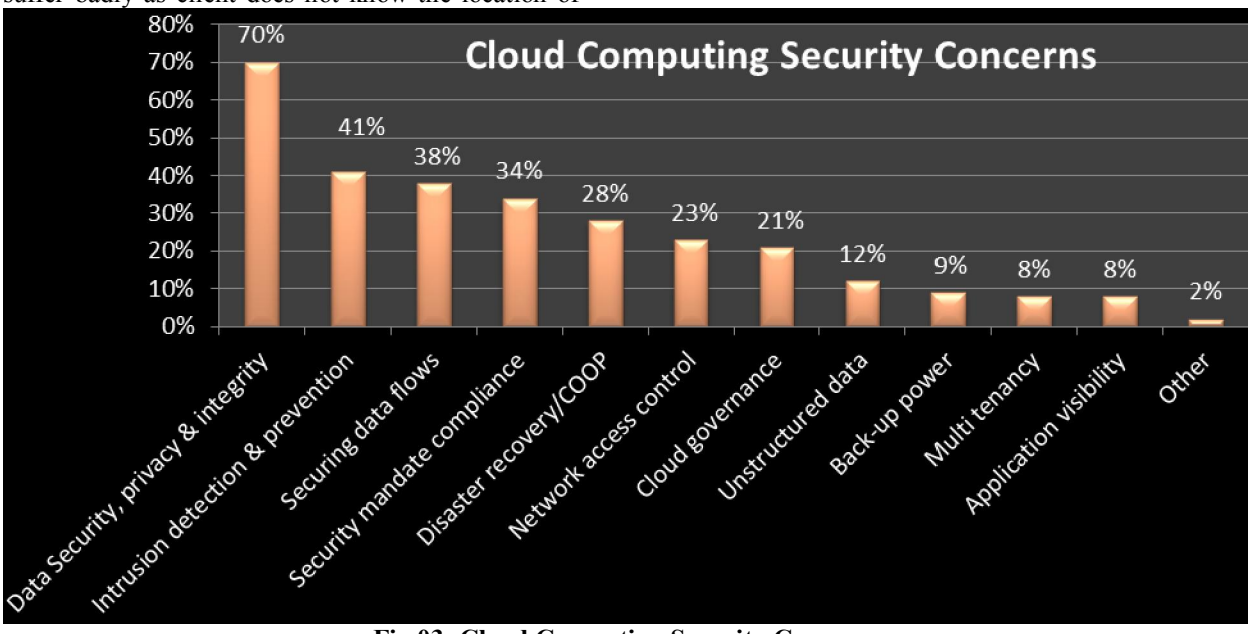

Fig 03: Cloud Computing Security Concerns

In the point view if we want to judge the security privacy and cloud computing issues it is clearly observed from the Figure 3 [5] that Cloud Computing Security mainly concerns with the data security, privacy and integrity.

Table 2: Databases Used by Different Companies

Service / Database	MySql	IBM Informix Dynamic server	BLOB	Microsoft SQL Server Standard 2005	DB2	Google Bigtable	Oracle Database	Table Storage (non-Relational)	SQL Azure,
Force.Com	✔								
IBM					✔				
CISCO							✔		
VMWARE							✔		
Salesforce.com									
GOOGLE Apps						✔			
GOOGLE AppEngine	✔		✔			✔			
MICROSOFT AZURE	✔		✔	✔				✔	✔
AMAZON EC2									
AMAZON WEB SERVICES	✔	✔	✔	✔			✔		

In this table 2 we discuss the "Databases Used by Different Companies" and some cloud service provider comp[anise may uses the more than one databases to facilitate the cloud service user. Different cloud services provider provides the facility to enable a user to store his data by different database storage service. The cloud service provider companies may also provide the Storage as a Service. These data bases may be relation databases or non-relational databases. For example, Microsoft Azure facilitate his service users to use the Storage as a Service by providing different databases like MySQL, Microsoft SQL Server standard 2005 as relational storage database and BLOB and Table Storage (Non-Relation) formats. The most of the companies that provided the cloud computing services are started their work as a cloud service provider from 2006 to 2008. We are no here to discuss their life

but the purpose for the discussion is to elaborate the data remains occupied by cloud service providers after the termination of cloud services by the user. This time duration or backup is lasting form 0 to 90 days. This is also a threat to cloud user that anyone can get access to their confidential data.

3. Problem Statement

Analysis of current security management approaches shows that the most of the companies are facing the problem of user credential mangment issue and data and services privacy and security is always reaming the sword over the head of companies.

Characterstics / Security provider	Credential Management	Adaptability	Expandability	Interoperability Securit	Adoption to Security Pro	Plattform Independ	Identity -Managem	Attribute Manageme	Previlige Manageme	Digital Policy Manag	IA Configuration Ma	Crypto Key Manage	IA Metadata Manag	IA Audit Managemen
CA-Enterprise IT Management	0	10	10	10	10	10	10	10	10	10	0	0	0	10
Checkpoint-Software Blades	0	10	10	10	10	10	10	0	0	10	10	0	0	10
Cisco-Security Management Suite	0	10	5	5	10	0	0	0	0	10	5	0	0	10
Evidian- Identity and Access Management suite	10	10	10	10	10	10	10	5	10	10	0	5	0	5
IBM-Tivoli Suite	0	10	10	10	10	10	10	10	10	10	10	10	0	10
NetIQ- security and Compliance Management	0	10	10	5	10	0	0	0	0	0	0	0	0	10
Novell_Identity and Access Management	0	10	10	10	10	5	10	10	10	10	0	0	0	10
Oracle_Identity and Access Management	0	10	10	10	10	10	10	10	10	10	0	0	0	10
RSA- Security Suite	10	10	10	10	10	10	0	0	10	5	0	10	0	10
Sun-Identity Management	5	10	10	10	10	10	10	10	10	5	0	0	0	5
Symantec-Control Compliance suite	0	10	10	5	10	5	0	0	0	5	0	0	0	10

Legends:
0 NO
5 Partial
10 Full

Fig 4: Cloud Computing Security Concerns Implementations [13]

The above graph depicts that the credential management [13] is a very difficult task and most of the companies are not manage the credential of the cloud service users. The above diagram shows that only two companies Evidien Identity and access management suite and RSA security suite only managed the credential of the user companies. All the other companies does not support credential management.

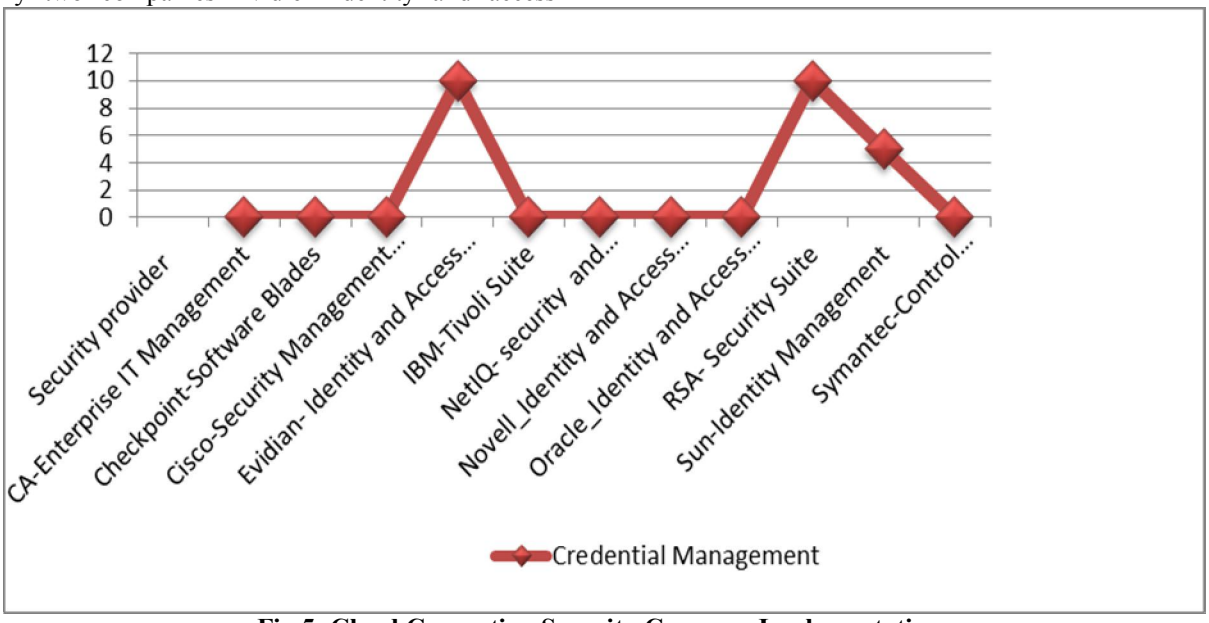

Fig 5: Cloud Computing Security Concerns Implementations

While the credential Metadata management is does not tackled by any credential management company. From above graph it very obvious that if the credentials are managed properly then IDM issue can be resolved easily. We can secure our service and database management by securing the authentication and identity management. This will also reduce the privacy and security threats. Moreover the transportation of the user credential over internet is also a big issue. We should minimize the transportation of cloud user credential over network to make sure the data privacy, data security and data management.

There is an interesting situation is occurred when a cloud user is accessing the services of Window Azure and want o connect Google Docs. There is no such service that can be availed to access the Google docs by using the same login or authentication that is already working with Window Azure. Now another problem stands that what take place if a same cloud user desires to get entrance to the different cloud services that are provides by diverse cloud provider e.g. if there is a condition in which cloud user is potentially using a service of Google docs from Google and that cloud user require to maintaining the databank using additional service facility that is make available by the other cloud service provider say Amazon simple DB or Oracle cloud. Then how user can be used in cooperation the both services commencing from the different cloud service provider? If we think then simple solution is that addressed by the problem is to subscribe the environment of cloud service provider and then be able to get the access to the required service that is facilitated by the different cloud service provider. We have discussed the scenario that is relevant to the traditional cloud service provider and traditional cloud service user exists [7].

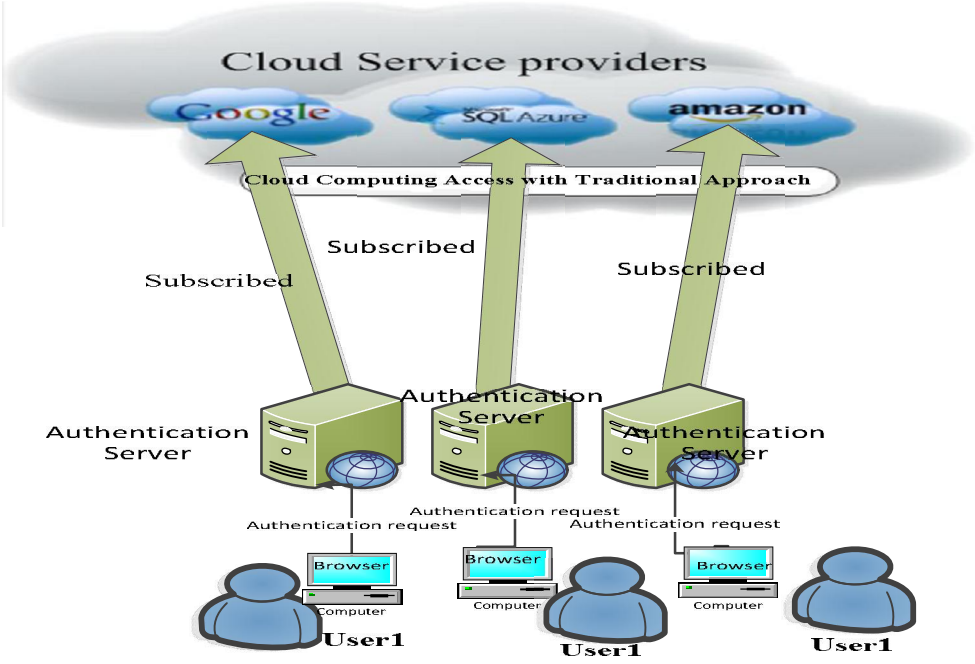

Fig 6: Cloud Computing Data and Services Access in Traditional

4. Proposed solution

The solution we are going to present is that we should use the mechanism that with subscription of the any cloud environment cloud server user can easily access the service of the other cloud service providers. In the given scenarios beyond the traditional cloud service provider environment there are different solution are existing. So in this type of scenario working with traditional cloud computing environment we explain that each cloud service provider is using the same method. The subsequent method intended for the above concern are able to be solve through building one alliance on behalf of the dissimilar cloud service providers as well as through by means of the idea of Single-Sign-On. By means of SSO facility, the users are able to utilize the diverse services which are provided through similar cloud service provider, however, users not utilize dissimilar services provided through diverse cloud services provider.

Secure Identity and Credential Management

Identity and credential management security in cloud computing environment is of great importance

for secure businesses and free the cloud. It's possible only

- Eliminating password dependencies
- Centralized Account Management
- Accessing Controls
- Securing Identities

In order to achieve above goals, we need to highlight 4 A's

- Authentication: who is the user?
- Authorization: what is the user allowed to doing?
- Account management: what can the user access?
- Audit Logging: where has the user been?

Designing security around 4 A's guarantees simple and secure credentials management in the cloud and then integrates with existing Domain Controller like ORACLE (Identity Management) and Windows Server (active Directory). Technologies, security standards related to the above problems are SSO, SAML, OpenID, OAuth [16] etc.

Table 4: Comparison among SAML, Information Card, OpenID and OAuth Methods

	Identifiers Issuance	Full	Front Channel User	Back Channel without user	RP/SP Initiated	IDP Initiated	Registration	Discovery
SAML	Allows for a variety of identifier types	General XML-based syntax for communicating identity attributes	Enhanced Client Profile to supports "smarter" clients than default browsers.	Supported by the SOAP Binding, Communicate directly.	Yes	Yes	No	Optional cookie mechanism that RP/SPs discover IDPs.
Information Cards	IDPs, either self-issued or a third party	CardSpace focuses on personal profile attributes (e.g. name, email, etc.)	IMI facilitates all identity flow	No back channel	Yes	No	Manifested through the installation of managed cards into the Selector	Implicit. RP/SPs request identity attributes of CardSpace
OpenID	Users are identified by a personal URI.	OpenID SREG extension focuses on exchange of attributes typically at registration time.	OpenID authentication protocol relies on redirects and HTML Form POSTs by browser	OpenID 3.0 introduce support for direct communication.	Yes	No	No	Implicit. RP/SP discovers IDP b user URI or email.
OAuth	One-time identifier and service is identified rather than the user	OAuth token is for access to RESTful API services	OAuth's 3-legged flow allows users to approve data flow b/w services.	OAuth's 2-legged flow allows services that already authorized	Yes	Expected for OAuth v2.0	Explicit. Identity services pre-register for a consumer key and secret	Explicit. Service directly labeled and a cessed.

Now we will try to explore all different ways of identity and credentials management along with their related issues and next step with the help of real world scenarios.

In first way let suppose there is an ordinary user who wants to access a web application. He/she provides identity like email address and password for access. At another situation he needs to access another web application with some other identity and so on for third web application. So, there are two major issues with respect to credentials one is the security and other one is the convenience to use. So this way will not result the above said objectives.

Above said two issues can be resolve by the help of user centric technology-Identity Provider. It's a third trustable party whose basic purpose is to manage user credentials with security and establishing a trusty relationship over the cloud.

Scenario is as under, A user wants to access a web site who requires identity, user asks Identity Provider to let it reply for access and it does. Same process for other many websites to whom he/she has access. There is a convenient to use, better security as credentials are not spreaded over different web sites. Securing identities are there but under trust relationship. Here the identity provider can also be known as Relying Party.

Identity as a Service

There is an enterprise user who needs to access cloud based application such as Salesforce, Google etc. Let's suppose he is residing at a hotel room, At first he needs to establish a connection with the corporate network to authenticate user's identity

given by Active Directory with the help of VPN. Then, throughcompany federated server gets access to cloud application by using SAML or OAuth protocols.[16]

Now the driving force for IAM as a service is, as cloud applications are available over the internet and can be accessed at anytime from anywhere, then why he/she goes to VPN into enterprise server and then go to the cloud application? Is there any direct way through which can be used to provide all the below listed characteristics related to secure credentials management.

- User Management and Provision: addition, deletion of user and use provisioning to different users.
- Authentication: better ways to authenticate users like password etc
- SSO Portal:
- Role Management:
- Compliance Reporting: Report of user who accessed service is sent to the related Enterprise.

All above characteristics can be achieved by IAM as a Service over the cloud computing environment. There is no need to go in an indirect way. Just access IAM and through this interface let them access cloud based services. The word SaaS exist with convenience, cost saving and scalability but with some tradeoffs. Because all cloud computing providers like Google, Amazon, Salesforce etc. are surprising and alarming with the lack of tools for managing user access to services. Confidentiality, Compliance requests and Auditing are top of user's concerns and it should be after all accountable to stop from firewall. We must know with certainty who access the cloud based services when and what actions are performed. It is also seen that user use a week password and convenient which is easy to remember. Enforcing strong password requires frequent support for password reset. Our concern is to set automated provisioning, SSO, string authentication, policy enforcement, monitoring, logging and auditing.

SSO Portals for Enterprises

Being a user of an enterprise that provides access to multiple web services from different cloud like Google, Salesforce, WebeX etc. Enterprise user needs to remember the user name and passwords in each case, which is difficult to remember and as already said that it's a chance of week password. So, it's a real problem that how to access these applications without providing credentials over the cloud which is a security risk, we need to have an SSO portal containing icons of different cloud applications. This SSO portal connects with Credential Manager for user authorization, authentication and access control with the help of Active directory. Now, one the main problem attach here with SSO portal to avoid unauthentic access to this page. To solve this, there is a concept of OTP (one time password) that with one or mlti factor password entries at the time of log on.

So for, we presented different ways to secure identities, credential management, accessing mechanism along with some of the flaws in these approaches has been discussed above. Last way seems to be good in order to fulfill all criteria for a satisfied user as well enterprise for better control over most critical data. Now, the environment of client/ user machine in an organization has communicated with domain controller, KTC- a granted ticket service, and ADFS (active directory Federated service). Also, there is a cloud computing environment contains SaaS, PaaA and Iaas. There is an introduction of ACS which acts as a service party as well as relying party when communicate with ADFS and web apps over cloud respectively.

Let's consider a scenario in which a user comes in the morning and access machine, machine interacts with Domain controller to prove its identity. After then, user needs to access a web application over the cloud with HOMEGRAM. Web Applications are over the cloud demands user's identification, credentials, rights and other data for access. For this that web application interacts with the ACS, Here ACS acts like an Identity provider and there is a trusty relationship between these two parties. ACS contains an HRD document that contains all those enterprises who has a trusty relationship with ACS. From where an ACS check pushes back the user's request to ADFS server. ADFS uses KTC for authentication. Ticket Granting Ticket interacts with Domain controller and sends some feedback in the form of ticket. A link has been established among TKT, User machine and ADFS. Domain controller generates an ST and send to KTC from where it reached to ADFS through client. It's a SAML token containing user's credentials and identity. Now this SAML token is signed by ADFS and send to its trusty relationship ACS. ACS validates the signature and removes the signature of ADFS and attaches its own signature and further redirects the user to again send to web application. As soon as web application receives ACS signatory SAML document, access rights are given to user. In this whole procedure, it is evident that all users related information remains centralized. There is no spreading of user's credentials in an unsecure manner. Fine grained Access Management and securing identities.

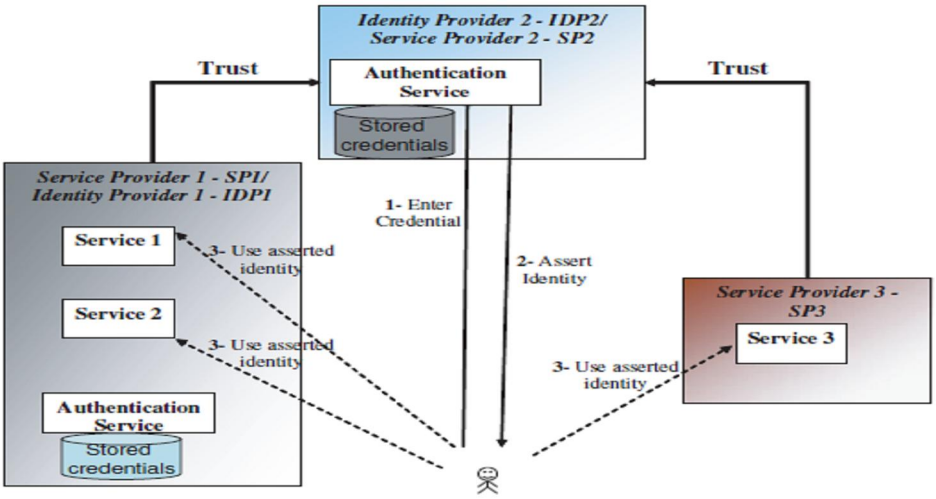

Fig 5: Federate Identity Management [16]

The previously sated problems are able to be solved through developing a federation having customary cloud service providers that offer diverse services as diverse cloud service providers. By the means of supporting Single Sign On procedure, every user is able to get the access to entire services those offered through diverse cloud service provider that are associate with federation alliance. The ways out of customary cloud computing setting are able to be resolve through formulating a universal open cloud federation. The offers solution those are able to be observed as given below. As revealed in above diagram, we are taking an instance of the majority well-known cloud service provider of current time which is Amazon, Google as well as Microsoft SQL Azure. All of these 3 cloud service suppliers are associate with cloud federation, then they can be offer the entire services to e client those are listed as cloud computing alliance. For example we have assessed the matter of customary cloud setting that major part of this cloud federation is offering SSO among the user as well as diverse cloud suppliers those are the official members in this federation.

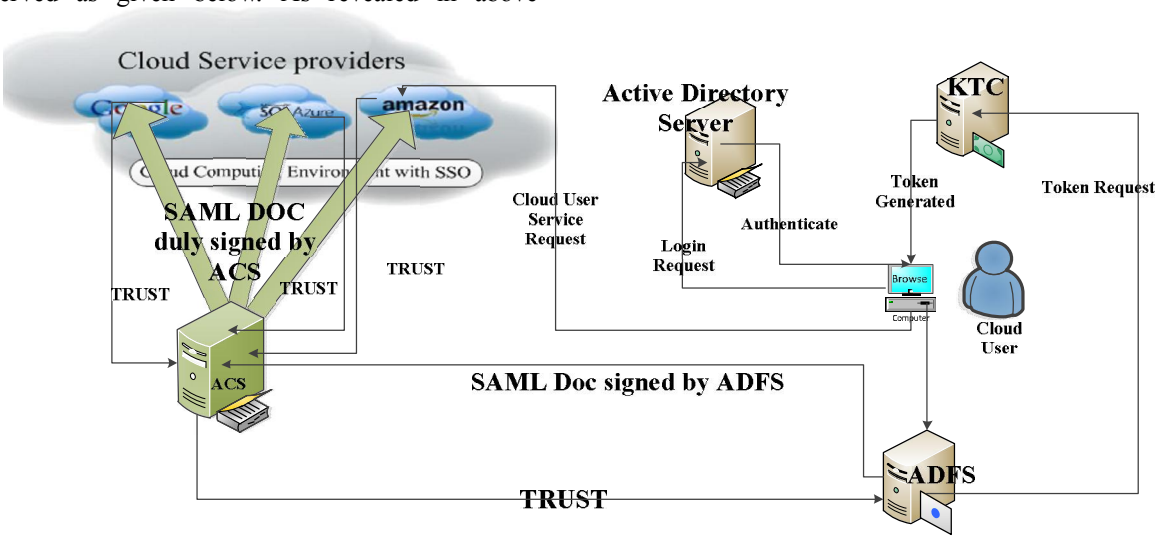

Fig 4: Cloud Computing Access with SSO

Security Issues Related to Cloud Computing federation

There are important security issues that require to must be tackled when recognizing moving serious applications as well as critical data to public plus joint cloud computing settings. Cloud providers have to develop enough panels and controls to provide either similar or better rank security as compared to business. This cloud computing association offers huge conception for distributing services as of

diverse cloud service providers through immediately Single Sign On procedure. The diverse models intended for cloud service release (, PaaS IaaS, SaaS) may hazing dissimilar necessities of the client when it comes to security. Recognizing that who is accountable for what is very important earlier affecting something of value to a cloud [10], [7].

5. Conclusion and future work

Our proposed model will be secure through using different authentication methods like SAML, OpenId and OAuth. Single Sign On provides the secure Identity management mechanism by using the new secure proposed model. The cloud data management is more secure less risky if we use the secure IDM and Authentication services and application through data is managed and execute by Single Sign On. Our idea about formulating a well-organized plus extra precise cloud computing federation alliance which is take away the complication of cloud client in a customary cloud situation. Through utilizing same kind of federation alliance be a worldwide method to offer diverse cloud services by single position as well as user could not require sign-on for diverse geographically and services level cloud for reason that of bringing in the Single-Sign-On federation as well as probing among clouds. Our proposed solution is focused for high-quality federation as well as spotlight on other area of this solution. The problem relating the implementation of safety standard and risk free federation is our future concern.

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A Comparison of Output Waveforms of Different Alternating Current Sources and Uninterruptible Power Supplies of Various Brands

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Abstract: Electrical Energy is the lifeline of domestic, industrial, agricultural and approximately every field of life. Generally available appliances at domestic and industrial levels are of Alternating Current (AC) nature that is they operate on Alternating Current. This type of Current can graphically be shown by pure sinusoidal wave. All of the appliances are designed to operate on pure sine wave but most of the electrical energy sources, converters and various types of Uninterruptible Power Supply (UPS) available in the market give the output which is not of pure sinusoidal wave shape and contains harmonics and interharmonics. These harmonics can cause overheating of the devices and many other problems that ultimately damage the device/appliance or at least decrease the life of electrical gadgets. This research is going to evaluate the shapes of these waveforms, their harmonics and then to establish a hierarchy among the sources on the basis of characteristics of their resultant output waveforms. For the purpose mentioned above, a very high range digital oscilloscope with ultra zoom capabilities has been used. It will provide ease to suggest a new buyer of the energy source in setting priority amongst the available alternatives qualitatively.

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Keywords: harmonics, interharmonics, UPS, AC power sources, power converters, electrical energy sources

1. Introduction

Pure electrical energy is excessively essential for safe working and long life of all electrical and specially electronics appliances. At present, the world is attaining continuous availability of AC electrical energy through electrical power sources and electrical power converters, both locally made and of different international brands, but most of the companies are not taking care of the quality of electrical energy; rather they are concentrating on cheap rates due to the market competition. These low quality sources and converters produce output electrical waveform of impure sinusoidal shape although approximately all available appliances at domestic and industrial levels are designed to operate on Alternating Current having the shape of pure sinusoidal wave as shown in Fig. 1.

Habitually, the commercial power systems were aimed on the basis of preceding engineering practices and information [1]. The impure sinusoidal waveform of low quality power sources contains harmonics and interharmonics in their output waveforms. So, it is the dire need of today to design not only cheaper but also energy sources of very high quality. This will be possible only when a buyer of these products will be well aware of their distorted output waveforms and their drawbacks enabling them more conscious than before about the product quality. So, as a thumb rule, whenever a selection decision is to be made among different alternatives, select not only the cheapest but also a more reliable source [2].

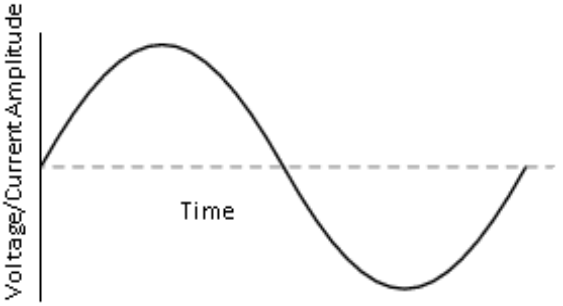


Fig. 1. Pure Sine Wave

Previously, a lot of research has been carried out on harmonics, interharmonics and their hazards but the research in this paper is an effort to give a common man an idea about the selection of the choice of energy source or converter on the basis of these hazards. The experiments were performed on physically and practically existing sources and

converters locally made and of different national and international companies and are mentioned in the paper by the names as Brand 1, Brand 2, and Brand 3 and so on instead of real names of the companies. The actual record is kept with the authors. For this research, the authors used a very high range digital oscilloscope with ultra zoom capabilities and having different features required for the study of different aspects of output voltage. The UPS unit is a vital part of any computer system to promise constant stabilized voltage supply [3]. In any system linking power source, a distribution network and appliances, the characteristics of the system and user equipment interface are mutually dependent upon the design and operation of both [4]. Today's user has neither enough technical knowledge nor much time to check and evaluate every appliance but it's rather easy to choose the most suitable energy source or energy converter. This initial approach is a guide for advance research in this field to evaluate these sources and converters on the more technical basis which will become a complete guide for national and international manufacturers of these sources and converters. The comprehensive results of the research are briefly tabulated in Table 1. This work can be used for further R&D if we make deep analysis of sources and UPS on the basis of voltage regulation and efficiency respectively.

2. Harmonics

The electrical power system has been growing in complexity at a rapid rate in the last few decades [5]. System is becoming more and more polluted due to the intense use of power electronics converters and of low quality power sources which is a major cause of harmonics and interharmonics. Harmonics are the integral multiple of fundamental frequency that is 50 Hz in our case. The voltage driving the current through the load circuit is expressed in terms of frequency and amplitude. If load impedance does not change, the frequency of the current will be the same as that of the voltage. In a linear load (a resistor, capacitor or inductor), current and voltage will be of the same frequency. Provided that the characteristics of the load components do not change, the frequency component of the current will also remain unchanged. When we put up with non-linear loads like switching power supplies, saturated transformers, capacitors which charge to the peak of supply voltage, converters and UPS used in diverse fields change the frequency of current [6]. This changing current results in complex waveform which is due to harmonic and interharmonic components. Fig. 1 shows pure sine wave having only fundamental frequency, but Table 1 shows the wave shapes of different sources which are not identical to the wave shown in Fig. 1 except that of Water and Power Development Authority (WAPDA) source at Sr. No. 11 in Table 1. It means all the sources, except that of WAPDA, generate output voltage which contains harmonics or interharmonics apparent in the column named as "Types of contents" in Table 1.

The Effects of Harmonics:

Power system problems associated with harmonics are not common but it is probable for a number of unwanted effects to occur [7]. Harmonic distortion at high levels can become the basis of such effects as the increased transformer, capacitor, motor or generator heating, improper operation of electronic gadgets specially which relies on voltage zero crossing detection or is sensitive to wave form, wrong readings on meters, the wrong operation of protective relays, intervention with telephone circuits, etc. [7].

Elimination of Harmonics:

Companies can solve the troubles of harmonics inside their operations through numerous techniques [8]. These can be eliminated or at least minimized using isolating transformers, using shunt and series filters and by the increasing number of pulses by rectifiers using 12-pulse rectifier or even higher pulse rectifier for better results etc.

Interharmonics:

Interharmonics are voltages or currents having frequency which is non-integral multiple of the fundamental supply frequency [9]. Interharmonics are present in the power systems which have recently appeared as more significant due to the extensive exercise of power electronic systems. The order of interharmonics is the ratio of the interharmonic frequency to the fundamental frequency. If its value is less than unity, the frequency is also referred to as a subharmonic frequency.

The Effects of Interharmonics:

The most common effects of the existence of interharmonics are variations in root mean square (rms) voltage magnitude and flicker, thermal effects, low-frequency oscillations in mechanical systems, turbulence in fluorescent lamps and electronic equipment operation [9]. In practice, the operation of any equipment that is synchronized with respect to the supply voltage zero-crossing or crest voltage can be disturbed. Telecommunication interference, acoustic trouble and saturation of current transformers (CT) may be the results of interharmonics.

Elimination of Interharmonics:

Presently, there is no limit for the existence of harmonics that are non-integer multiples of the power frequency [10]. The interharmonics generated by some types of nonlinear loads limit the effectiveness of classical passive filter compensation, so active compensation must be incorporated for elimination of interharmonics [11].

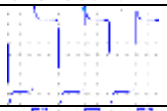
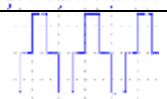
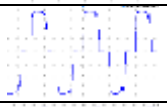
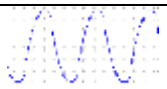
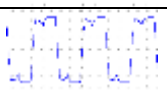
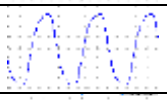
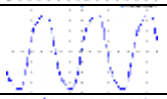
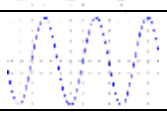
3. Material and Methods

As mentioned earlier, this paper is the outcome of practical work on different types of local made, nationally and internationally branded electrical power sources, converters and complete UPS using a very advance oscilloscope and measuring devices along with deep study of harmonics and inteharmonics related material. First of all, the output waveforms of different electrical power sources with complete information regarding their parameters have been plotted using digital high resolution and highly zoom capability oscilloscope. Their wave shapes are then categorized on the basis of frequencies. The summary of these results is presented in the Table 1.

4. Results and Discussions

The abridged results of research performed on different UPS, Converters and electrical generators of various brands are shown in Table 1.

Table 1. A Comparison of different types of UPS, power converters and AC Sources

Sr. No.	Brand Name	Source Type	Model	Rating	Wave shape	Frequency (Hz)	Type of the contents
01.	Brand 1	Power Inverter	A-1	600W		81.32	interharmonic
02.	Brand 1	Power Inverter	A-2	1kW		178.6	interharmonic
03.	Brand 2	UPS	Nil (Local)	600W		50.25	interharmonic
04.	Brand 3	UPS	B-1	600W		100.00	2nd harmonic
05.	Brand 3	UPS	B-2	600W		476.20	interharmonic
06.	Brand 4	Gas Generator	Nil (Local)	750kW		48.36	subharmonic
07.	Brand 5	UPS	Nil (Local)	750W		52.08	interharmonic
08.	Brand 6	Petrol Generator	C-1	5kW		49.75	subharmonic
09.	Brand 6	Gas Generator	C-2	5kW		48.54	subharmonic
10.	Brand 7	UPS	F-1	2.5kW		70.42	interharmonic
11.	WAPDA	Hydel Turbine Generator	Standard	Depends upon requirement		50.00	No harmonic

To elaborate the results as tabulated above, some of the output waveforms for more understanding with detailed information are shown in the graphs below.

The simplified waveform of Fig. 2 is also shown at Sr. No. 09 as Brand 6 in Table 1.

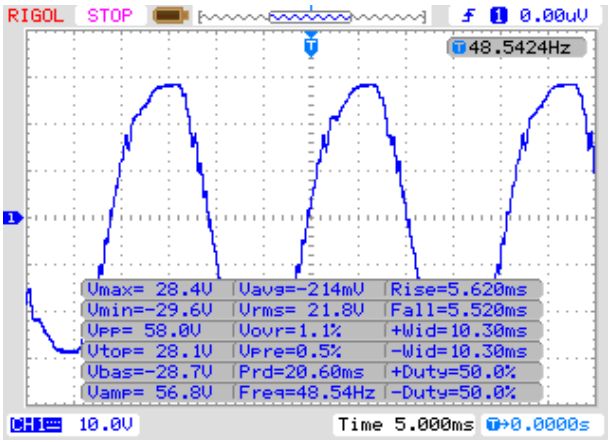


Fig. 2. Output Waveform of Gas Generator

Fig. 2 shows the output waveform of a gas generator containing subharmonics, a type of interharmonics. This is a little bit better waveform as this is not more deviated from standard pure sine wave like that of WAPDA which is shown in Fig. 3 below.

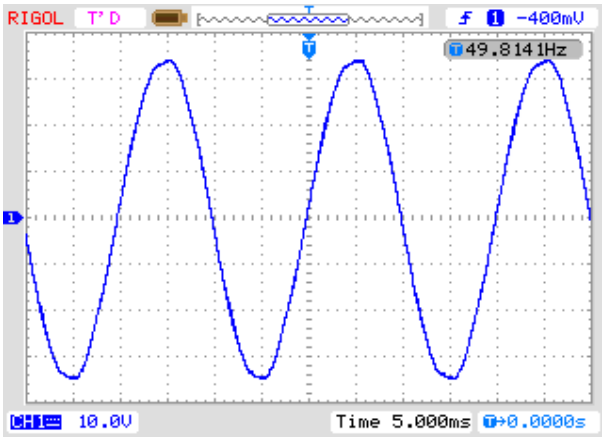


Fig. 3. Output Waveform of WAPDA Power Source

From Fig. 3 it is obvious that WAPDA generated electrical power has approximately pure sine wave like that in Fig. 1. It also has the frequency of 49.814 Hz which can be rounded to 50 Hz. During experiments, WAPDA supply at some locations was found having exactly 50 Hz frequency containing no content of harmonics and interharmonics. The resultant output for petrol generator is shown in Fig. 4 which is better than that of the gas generator but deviating more from sine wave than waveform of the WAPDA source. Most computer systems are linked to the main supply by on-line static UPS units to assure uninterrupted stabilized voltage supply autonomous of mains interruptions [3]. Fig. 5 shows output waveform of the international company made UPS also shown at Sr. No. 4 as Brand 3 in Table 1. In its detailed information it can be clearly seen that output has 100 Hz frequency as encircled in Fig. 5 that is it contains 2nd harmonic, also having very distorted waveform deviated from that of ideal one.

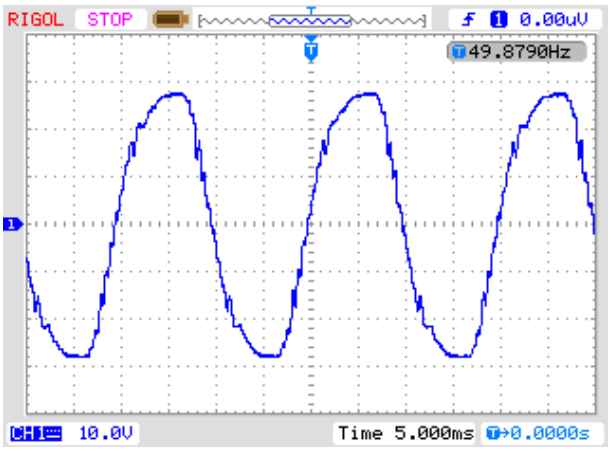


Fig. 4. Output Waveform of Petrol Generator

A second UPS of the same brand and of even same rating shown at Sr. No. 5 in the Table 1 has output waveform having 476.20 Hz frequency which indicates the low quality standard of electrical sources.

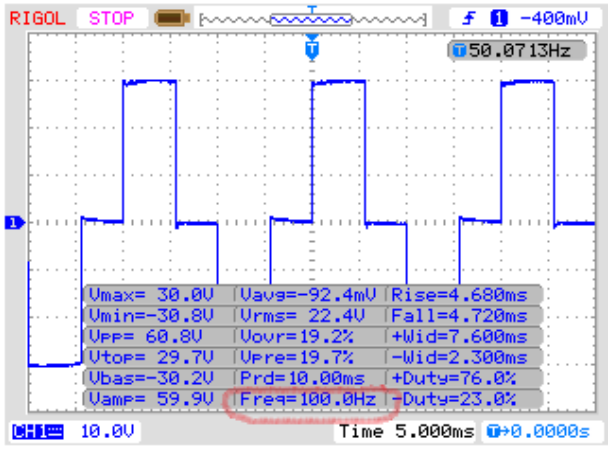


Fig. 5. Output Waveform of UPS

Power electronic converters generate characteristic harmonics, non-characteristic harmonics and interharmonics [12]. Fig. 6 also shown at Sr. No. 2 as Brand 1 in Table 1 shows the output waveform of a power converter having the frequency of 178.6 Hz again made of an international company, means it also contains interharmonics, but from Table 1, it is obvious that a power converter of the same company with different rating at Sr. No. 1 has 81.32 Hz output frequency which again clearly reveals the low quality products having still not up to the mark level of standard instead of a very advanced era of electronics engineering.

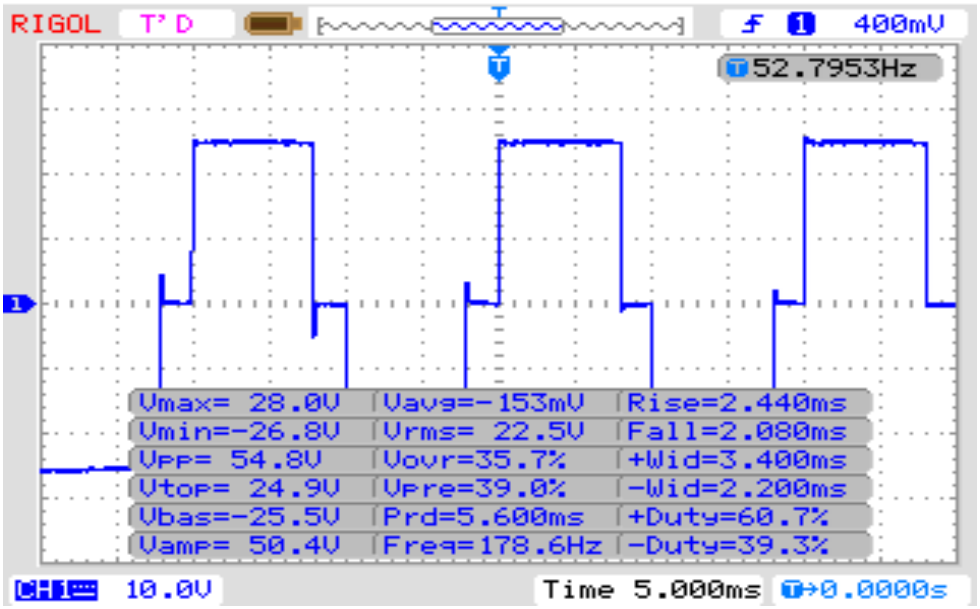


Fig. 6. Output Waveform of Power Inverter

Table 1 shows the results of 11 different power sources, power converters and UPS of different local, national and international companies and research was done on even more than the shown in the Table 1, but to avoid surplus details and for simplicity of the paper only few of the samples have been discussed just sufficient to replicate investigation.

From above discussion and waveforms of power sources, UPS and power inverters of different brands, it is obvious that more safe and suitable electrical energy source is of WAPDA in this research, 2nd preference goes to Brand 7, very costly UPS if affordable, 3rd for Brand 6 Petrol Generator then Brand 6 Gas Generator and rest should be avoided or should be kept in minimum use. More precisely, when we talk about UPS Brand 7 is best and in case of generators Brand 6 petrol generator is the best one. Moreover wave shapes and frequencies of power inverters are poorly deviated from those of WAPDA or any other ideal sine wave, so it is recommended to abandon the use of such inverters. This research is very useful for further R&D if we use the available data and get some more parameters like no load and full load voltage in the case of UPS and converters and input and output powers in the case of generators for the calculations of voltage regulation and efficiency respectively. The output waveforms and their frequencies obtained in this research are also very helpful for the designer of harmonic filters to design active and passive filters for different brands given in the Table 1.

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Population Aging Trend and Necessity of Geriatric Medicine in IRAN.

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Abstract: As the world population is getting older, health care for elderly becomes important. Distribution of specialties related to elderly health care is highly variable. To assess the distribution of specialties related to elderly and the aged population (i.e. over 65 yrs.) a prospective analytical study was designed from 1999-2009. During this 10 year period ageing process was increasing, initially slow but rapid in the last years. Internists, cardiologists, neuro-psychiatrics, and neurologists in the beginning of period had an increasing trend and declined in the mid-period then had decreasing trends. Orthopedic surgeons were almost increasing in all of the decade.In present, the number of geriatricians are fewer than 10 in the whole country, and health policy should move toward health care providing for elderly. Keeping in mind that aging process is increasing recently, number of specialists and physicians caring for elderly should also increase. (abstract: truncated at: 144 words).
[Ali Alizadeh, Mirza Ali Nazarnejhad, Jahan Pour Ali Pour, Gholamali Javidan, Abdolazim Nejatizadeh, Syed Mohamad Moosavi, Tasnim Eghbal Eftekhaari. **Population Aging Trend and Necessity of Geriatric Medicine in IRAN.** *Life Sci J* 2012;9(4):643-648] (ISSN:1097-8135). http://www.lifesciencesite.com. 98

Key words: ageing, geriatrics, population

Introduction:

The world population is getting older. With the increasing elderly population in coming decades, elderly health is one of the country's major health problems(*http://www.behdasht.gov.ir/*). World health organization (WHO) stated that active ageing is 'the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age(*http://www.who.int/*). In the developed countries, 60 or 65 year old persons were considered aged population. Old age in many developing countries is seen to begin at the point when active contribution is no longer possible (*Kowal et al. 2001*).

There is not a unique accepted definition of the process of ageing (*http://www.who.int/*). WHO stated that each person that has 60 years or more is considered as aged person (*Kowal et al. 2001*). In 2000, about 10% of world people were 60 years old or older (*World Health Organization*). The topic of World Health Day in 2012 is *Ageing and health* with the theme "Good health adds life to years". The focus is how good health throughout life can help older men and women lead full and productive lives and be a resource for their families and communities. ((*http://www.who.int/*). The number of 60 years old or older people since 1980 has been duplicated. Usually 65 years is considered as beginning of old age, but other divisions like young old (65-74 years), middle old(75-84 years), and oldest old (older than 84 years) existed(*Peel et al 2004, World Health Organization, Vina et al 2007, Cassim et al 2007*). It is estimated that until 2025 about one-third of Europe's population will be aged 60 years and over, and there will be a also more rapid increase in the number of people aged 80 years and older(*Argen et al 2006*).

According to the United Nations (UN), an acute demographic change in developing countries especially Asia is seen. WHO believes that each country with 8% of the elderly population is faced with the aging phenomenon. The proportions of ageing in developing societies are more seen than in developed societies (*http://www.behdasht.gov.ir/, World Health Organization*). Elderly population over 60 years in Iran in 2007 was 7.3 % and forecast by 2050 increase to 24.9 %. This phenomenon has been likened to a silent tsunami of Iran. Studies showed

that 15 % of physicians' offices visits, 34% of outpatient treatment in hospitals and 89% of the elderly institutions and house maintenance includes elderly (>65) population. Generally, 60% of medical care costs are consumed by this age group (*http://www.behdasht.gov.ir/*). According to Iran Statistical Year Book*)*, total population in 2007 was 70,495,782 people and total population of 65 years and older people was 5,121,043. That is, ageing population was 7.26% *(http://amar.sci.org.ir*). Major chronic condition that affecting older people worldwide special attention is devoted to: cardiovascular disease, hypertension, diabetes, cancer, chronic obstructive pulmonary disease, musculoskeletal and mental health conditions (*Kalache et al, 2003, Boutayeb et al, 2005*).Always physician distribution issue has been main challenge in heath arena of countries (*Koike et al,2009*). Considering this fact, addressing the aging issue seems important and necessary more and more. In this study, the aim was to determine population aging trend between 1996 and 2009 across continuum and need of Geriatric Medicine in IRAN.

Material and Methods

Data Sources and Measures

Iran Statistical Year Book provided data on number of physicians and age of total population in country. Statistical Year Book includes data on all physicians who reside in the Iran, including geographic location, specialty, and demographic information (*http://amar.sci.org.ir*). At present the number of Geriatricians in the country is less than 10 specialists and there is no specialized geriatic hospital in the country. Since 2008, gerontology course with 65-70 students in MPH and 15 students in the Ph.D. degree was established in Iran. Also in recent years a residency course in geriatrics has in the Tehran University of Medical Sciences has been approved (*http://www.behdasht.gov.ir*). For this reason, only physicians who practiced in specialties that were more related to ageing population diseases, were selected which included: cardiology, internal medicine, neuropsychiatry, general surgery, neurology, and orthopedics. Peoples that were aged 65 years old or more were selected as ageing population.

Analytic Strategy

The distributions of geriatricians, and other medical specialties that involved with ageing people per 10,000 county elderly (≥65 yrs) residents were determined according to Iran Statistical Year Book. (*http://amar.sci.org.ir*) Also ageing population process was determined and suggested solutions for dealing with ageing phenomenon.

Results:

Measurement of supply and distribution trend of medical specialist in the period of 1996-2009 in Iran demonstrated that numbers of medical specialists in the mentioned period of time varied and in general this trend will have large fluctuations in the next decade. Distribution trend was varied in various specialists so that numbers of internists, cardiologists, neuropsychiatrics, and neurologists in the beginning of period had an increasing trend and declined in the mid-period then they had decreasing trends. While distribution process of orthopedic population almost was increasing in all of the period. Maximum variability was related to distribution of the general surgeons which experienced consecutive increasing and decreasing trends (Table 1).

Table1. Distribution of medical specialist's population between 1996-2009.

Type of medical specialist	Period of time(between 1996-2009 years)													
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Internal medicine	807	924	982	1080	1081	1002	942	843	852	933	1103	1102	1113	1012
Cardiologist	293	410	419	450	451	370	389	432	473	511	599	604	557	543
Neuropsychiatrics	226	46	248	309	310	303	320	367	400	422	508	509	385	446
General surgery	848	970	986	976	975	820	802	833	865	909	1024	1024	923	794
Orthopedic	382	454	470	481	482	395	451	482	536	561	695	702	670	640
Neurology	239	259	375	421	423	286	301	247	198	276	383	398	233	232

In general ageing population process was increasing. This increase was initially slow but in the end of period was very noticeable, so that ageing population in 1967 was almost 1,800,000 people and up to 5,500,000 people in year of 2009 (Figure 1).

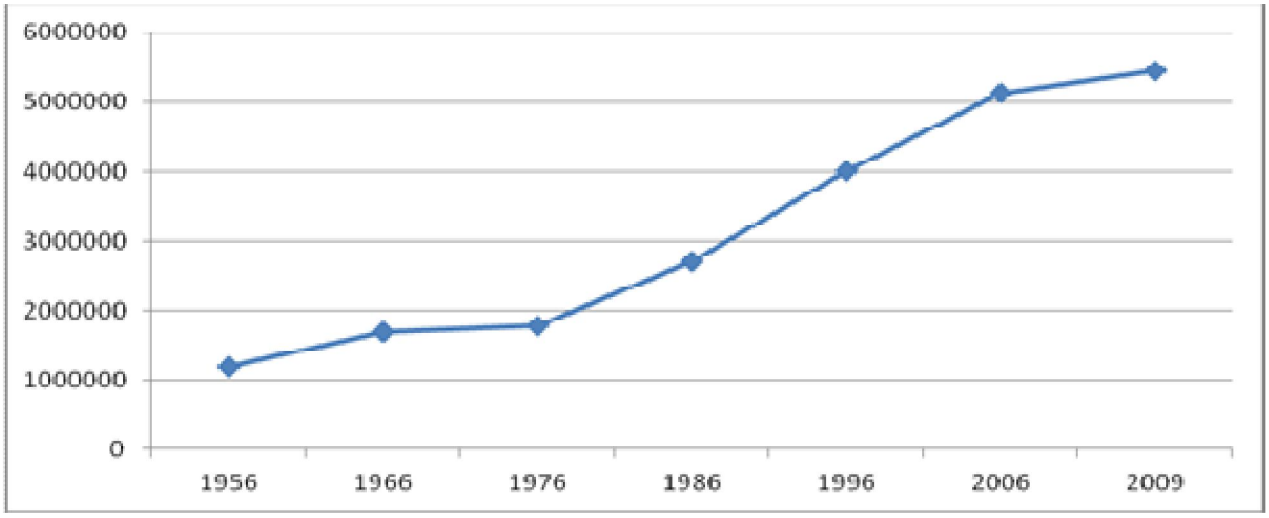

Figure1. Ageing population in Iran between 1996-2009 years

Variation process of proportion of ageing population to total population in Iran between 1956-1966 and 1996-2009 has upward growth while between 1996- 1976 this process was declined, as this proportion in 1956 was %6.2 and up to 6.5% in 1966 then between 1986-2009 this proportion increased almost form 5.5% to 7.3 % (Figure 2).

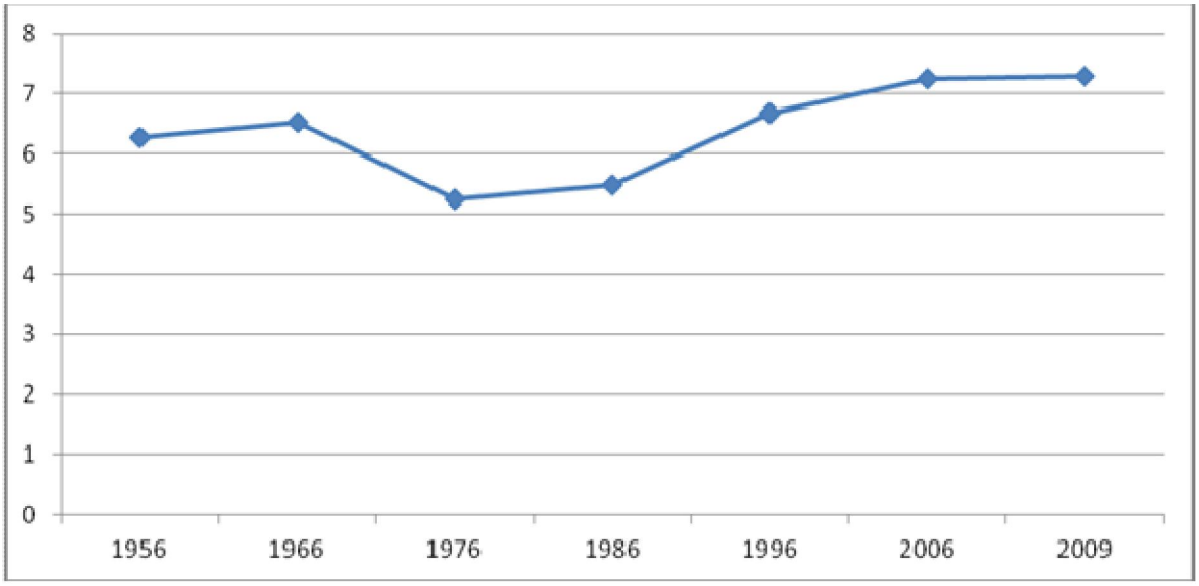

Figure2. Variation process of ageing population proportion to total population in Iran between 1996-2009 years

Results found that internists and general surgeons had partly similar variations on their numbers in decade of 1996-2009. Also cardiologists and orthopedic surgeons had similar variations but neurologists and neuropsychologists had significant disparity in their numbers in mentioned period of time. Almost all specialists were increasing at onset and decreasing in mid-period and then increased in the end of period and all of specialists had a decrease in their numbers at the end of mentioned time(Figure 3).

Internists and general surgeons had a higher proportion than other medical specialists and neurologists and neuropsychiatrists had least proportion. In general the proportion of internist per 10,000 population had decreased from 2 to 1.8 between 1996 and 2009. Specifically this trend in 1997-1998 and 2003-2006 were increasing but in

1998-2002 this trend was decreasing. The proportion of general surgeons per 10,000 populations had decreased from 2.1 to 1.4 between 1996 and 2009. Specifically this trend in 1997-1998 and 2003-2006 were increasing but in 1998-2002 surgeons were decreasing. Proportion of orthopedic surgeons per 10,000 populations in 1996-2009 was increasing and this proportion was increased from 0.94 to 1.46. However this distribution between 1999-2001years was decreasingly but in other of time this trends were increasingly. Cardiologist distribution trend between 1996 and 2009 was raised from 0.72 to 1.8 per 10,000. Although this trend was ascending but it has descended in some years specifically in 1998 and 2001. Trend of distribution of neuropsychologist represent an increase over 1996(0.56 per 100000) and 2009(0.99 per 10000). Also showed that proportion of neuropsychologist per 10000 populations in years of 1998-2002 were steady but for 2003 to 2009 were increasing. Neurologist proportion per 10000 population aged≥65 years had several discrepancies (Figure 4).

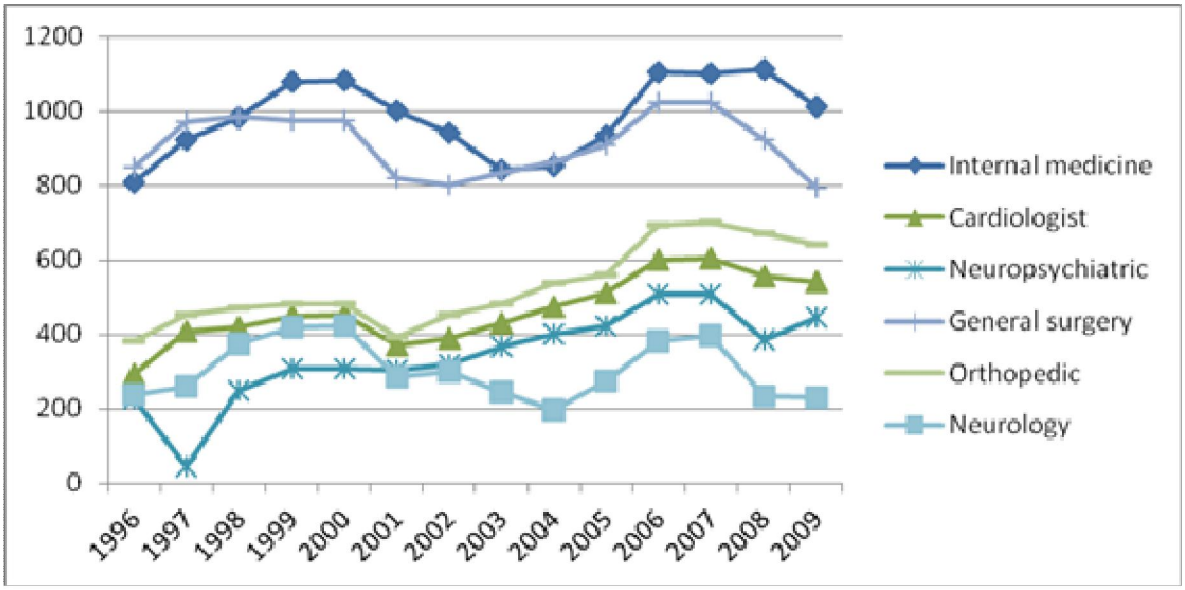

Figure 3. Variations in number of specialists between 1996-2000 years in Iran.

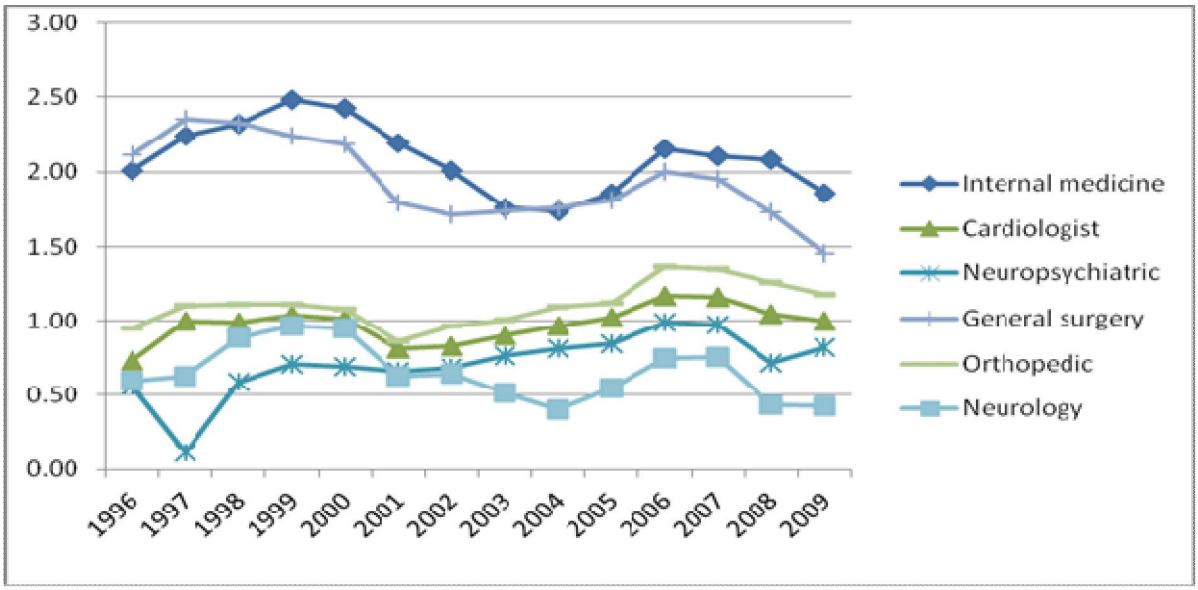

Figure 4. Variations process of specialists Numbers per 10000 population aged≥65 in between 1996-2009 years.

Discussion:

In general ageing population process was increasing in 1996-2009. This population in 1966 was almost 1800000 people and up to 5500000 people in year of 2009.variation process of proportion of ageing population to total population in Iran between 1996 and 2009 was increasing and increased from 6.2 % to 7.3%. However between 1996- 1976 this process was declined. Elderly population over 60 years in Iran in 2006 was 7.3 % and forecast by 2050 increase to 24.9 %.

Today, Europe with at least 16% of the population over 65 years old has the highest proportion of older people in the world, higher than the US and other developed nations (*Winkelmann-Gleed 2010*).

According to the United Nations Population Division, the number of persons aged 60 and over is also expected to increase significantly in many developing countries during the next decades. In India, the population aged 60 and over is forecasted to represent around 21% of the population by the year 2050(*Pascal et al 2004*). Forecasting percentage of total population, age 65 and older show that the process of ageing population will rise about 0.04 (4%) to 0.2 (20%) from 1900 to 2050 in the U.S. population (McGinnis et al, 2006).

In 2000, the proportion of population that is over the age of 65 was 12.7%, 16%, and 16.4% for US, UK, and Germany respectively (*Wiener et al, 2002*). Also studies showed that ageing population (age 65+) growth is very faster than age <65 so that age 65+ between 2005 and 2020 rises to more than 40% in Canada (*Canadian Labour and Business Centre*).

Comparison of this study with other similar studies show that although present process of ageing in Iran is less than other countries but in the future ageing population growth will be faster than other countries.

Almost all number of specialists had increasingly at onset and decreasingly in mid-period and then increasingly process in the end of period and all of specialist had decreased in their numbers at the end of mentioned period of time. While ageing population growth were increased continually at the same time, distribution of specialists per 10000 population aged≥65 for internist, surgeon, and neurologist was declined between 1996 and 2009, at the same time neuropsychologist, orthopedics, and cardiologist has increased very sparingly.

Geriatricians' number in U.S. between 2000 and 2008 were increased from 5157 to 7412 specialists and geriatricians' proportion peer 10000 elderly resident increased from 0.86 to 1.07 at the same period of time. There were 13.94 general internists per 10,000 older adults nationwide (*Peterson et al, 2011*).

The national study conducted by Nicola and Graham indicated that geriatric medicine, general medicine, cardiology, and general surgery respectively have most admitted number of people aged 65 and above (*Peterson et al, 2011*).

Also comparison of geriatric medicine and other specialists related with ageing population problems demonstrated that our country has not enough specialists to provide health care for aged people because there are less than 10 geriatric specialists in country. However number of other related specialists with elder population has slower growth than other countries, while our population is getting older and it's forecasted that in 2050 ageing population will reach to 24.9%.

Conclusion:

Similar to the rest of the world, the Iran is an ageing society. Thus policy makers in health scope will have to cope with the impact of an ageing society. With the increasing number of Iranians aged 65 and older, ageing population will quadruple in the 2050. Health care system in the future affected by different health care needs of elderly people. At present the number of Geriatricians in the country is less than 10 specialists. It is improbable that enough geriatricians could be trained and distributed across the coming years to meet the needs of the aging population in Iran, because at present fewer than 100 students entered in gerontology and geriatric medicine course from 2008. Although focused solely on increasing the numbers of geriatricians is neither sufficient nor practical, it is possible that any solution to providing higher-quality care to older adults would benefit from an increase of the training of geriatricians. Thus more practical solutions should be considered by policy-makers, for better use of other providers in coordinating and providing care for the growing number of elderly adults. At present a key practical solution is distribution of family physicians more evenly across the country.

Conflicts of Interest: None

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EFFECTIVENESS OF EMPLOYEE CROSS TRAINING ON EMPLOYEE RETENTION

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ABSTRACT: Employee retention is the leading problem, which all organizations are now facing in the international aggressive environment. While soaring employee turnover reflects on squat morale and be short of of motivation, entertainingly, seen from a different angle the nonappearance of turnover rapidly results in de-motivation because the opportunity of lateral and forward-motivation is out of action from employees. It is in opposition to human personality to stay static, performing the similar duties day in day out, with no hope of change in regular or opportunities for improvement. Moreover, the routine methods of employee motivation such as financial rewards and perks have been not here at the back in preventing employee turnover. This article reports employee cross training as a significant motivational practice to retain employees, compared to other motivational factors like performance based reward, functioning situation, guidance, perks and perquisites. For this reason a survey was conducted on 100 executives and managers from 20 different companies. The results exposed that cross training significantly prevents turnover.

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KEYWORDS: Employee Retention, Employee Cross Training, Motivational practice, Retain employee.

1. INTRODUCTION:

Employee retention means various things to various people in each organization. There is no particular description of employee retention. Several views mentioned by J. Leslie Mckeown are as under:

- 'Employee retention means stopping poop from leaving this organization.'
- 'Employee retention is all about 'keeping good people.'
- -'Getting our compensation and benefits into line with the marketplace.'
- 'Stock options crèche facilities, and other perks.'
- 'It's got to do with our culture and how we treat people.'

In fact, the thought of employee retention arose in response to rising number of employee's departure the organization due to a variety of reasons.

1.1 DEVELOPING A RETENTION APPROACH IN AN ORGANIZATION.

It is attractive to plan employee retention approach by an organization, which must cover subsequent aspects (J. Leslie. Mckeown):

- 'Recognize and prioritize key employees that present a existing or future retention risk'
- For each key retention cluster, explain reasons for deficient to retain them.
- With each group, use interviews (entry, exit-reasons for his taking the job and reasons for his staying. To ascertain what we need to do to retain the employees in that group such as loss of institutional knowledge, which may go to competitors?
- Make the interviews with employee independently and remain them secret for best results.
- Use the information that is composed to establish comprehensible, experimental retention goals for each group of employees.

1.1.1 SEVERAL AREAS OF EMPLOYEE RETENTION, WHICH NEED PARTICULAR CONCENTRATION FOR ACHIEVING SPIRITED IMPROVEMENT, ARE:

- ✓ A pleasurable work atmosphere.
- ✓ Work content is linked with performance of goals.
- ✓ Career and personal enlargement opportunities as long-term standpoint.
- ✓ Reimbursement and performance associated rewards to be around 30% of total gross pay.
- ✓ The organization culture based on vision, values and a mission. In addition how members do things, are in touch and act together.
- ✓ Employee possession in the organization.

- ✓ Participation and empowerment by hopeful delegation of decision- making.
- ✓ Equal opportunity among employees.
- ✓ Employee centered practices.

1.1.2 A FEW KEY PROSPECTS OF EMPLOYEES ARE:

- Work-life balance.
- Acceptance of their views and opinions.
- Respect for the individuals.

1.1.3 ASSOCIATION WITH THE MANAGER.

- ❖ A Manager to be considered as a counselor and trainer, usually taking responsibility for each other's happiness in relationship building.
- ❖ Manager to place sensible, challenging, and significant goals for employees by association.
- ❖ To implement a practical, challenging, and applicable performance appraisal process.
- ❖ Plan and put into practice an individual enlargement graph for each employee.
- ❖ To act as a bumper between any employee and other managers.
- ❖ To take action as a representative of employees and play key management role.

1.1.4 EMPLOYEES JOB AFFILIATION WITH COLLEAGUES.

Despite the fact that it may be competitive but must make available first-class opportunities for extraordinary interaction, development skills and knowledge. To conclude, a unbeaten strategy starts with the management's accurate way of thinking, which ensures that the approach adds value right through the organization, implementing processes genuinely, that the top management is totally involved and their eagerness in it is of critical significance.

2. CONCEPT AND IMPORTANCE OF EMPLOYEE CROSS TRAINING:

Employee retention is the most important problem, which every organization are now facing in the international aggressive atmosphere. While soaring employee turnover reflects on squat self-confidence and be short of motivation, interestingly, seen from a different approach the nonappearance of turnover quickly results in de-motivation because the chance of lateral and forward-motivation is out of action from employees. It is in disagreement to human character to stay static, performing the comparable duties day in day out, with no expect of modify in regular or opportunities for development. Managers from time to time implement "Job enrichment" in a foolish way, by giving un-rewarded extra responsibilities to their supervisors and employees. This outcome in a feeling of mistreatment and has the reverse effect. An successful training method for motivation, is cross training, when implemented flat, increasing and descending. Department heads, assistants and employees be capable of cross-train either inside the department or in different departments. With support, employees can have a day's training in the role of subdivision heads ("King for the day"). A department head can take a general manager's role in his nonexistence. This is a structure of cross-training. A more sophisticated form of cross-training is job rotation, which usually involves extended periods (from one month to six months). With job rotation, the employee's role change. He is not considered as trainee, but is wholly responsible for certain jobs. Both cross training and job rotation create teams of employees who are more knowledgeable, confident of their professional expertise and can easily replace each other when needed. These techniques lead to great motivation throughout the company.

3. EMPLOYEE CROSS TRAINING VS OTHER MOTIVATIONAL TECHNIQUE:

Motivation is the art of stimulating a front office staff member's interest in particular job, project, or subject to the extent that he or she is challenged to be continuously attentive, observant, concerned and committed. There are various motivational techniques like recognition, communication, performance based reward, functioning situation, guidance, perks and perquisites etc. if we compare these with cross training motivational technique, we find that incentive pay can be used to influence employee behaviour. However, it is certain that any benefits gained in the short-term will be more than lost in the long-term. It is people's nature to look at what you are doing for them today. What you did for them in the past is quickly forgotten. That may not be the way it should be, but that is the way it really is. Trying to retain employees after they have stopped learning is bad for the employee and bad for the company as well. Bad for the employee because they have stopped "growing"-stopped improving their unique value in the job market. Bad for the company, because it stifles the flow of new ideas, new insights and new views of the changing business environment. Your star employee, once a dynamo, once willing, able and eager to tackle any task, no longer shows that drive. The problem may be outside personal problems – whereupon you have the obligation to help him through that period. However, it is more likely that he is simply no longer learning at the rate he was. He is no longer stimulated and

challenged – he is bored. It is the time for him to move on, and instead of trying to hold him with pay and benefits, you should try to help him find a new job where he can continue to grow.

3.1 METHODOLOGY:

A survey was conducted in different retailing organizations located at tamilnadu state to find out the effectiveness of cross-training on employee retention.

3.1.1 SAMPLE:

In total 100 employees (executives and managerial employees) of 20 retailing organizations situated in tamilnadu state participated in the study.87 of them male and 13 were female. So far as their portfolios are concerned, 20 were HR Managers/Executives, 20 Finance Managers/Executives, 35 Production Managers/Executives and the rest 25 were Purchase Managers/Executives.

3.1.2 DATA COLLECTION AND ANALYSIS:

A survey instrument was designed to obtain the opinion of employees on cross-training. Prior to distributing the questionnaire to the employees, their consent was obtained. They were also assured the confidentiality of their responses. The filled in questionnaires were collected back after 15days from the date of distribution. The collection was through phone call reminders or personal visit to the place. In total 150 questionnaires were distributed from which 100 have responded. Since, the organizations were located locally it was possible to obtain a good number of response through personal call and visits to the places. Through frequency tables the data were analyzed.

3.1.3 RESULTS:

This section presents the findings of the study. The survey is conducted with 100 employees of 20 retailing organizations and their views are complied and analyzed.

4. NO. OF COMPANIES PROVIDING CROSS-TRAINING

Results shows that most of the retailing companies do not provide cross training to their employees, out of 20 only 6 companies provides the cross training to the employees (see table 1).

Table 1: Use of Cross Training

Provide cross-training	Not provides cross-training
6	14

4.1 INTEREST TO LEARN NEW SKILLS

When respondents were asked whether they are interested to learn new skills, most of them were found to be interested to learn the skills required for other jobs. Almost 89 employees are interested to learn skills and competencies required for performing other jobs (see table 2). This is an indirect indication that training can be a powerful motivator for most of the respondents.

Table 2: Interest of employees to learn skill/competencies required for other jobs

Interested	Not interested
87	13

4.2 MOTIVATIONAL FACTORS:

Respondent's opinion about the different motivational factors on a three point rating (Strong motivator, average and weak motivators) was obtained. Results revealed that (see table 3) for most of the employees cross training, good working environment is the strong motivational factor as compared to other factors like incentives and empowerment. Almost for 75% employees the cross training is strong or average motivator.

Table 3: Motivational factor for employees

Motivational Factors	Strong Motivator	Average Motivator	Weak Motivator
Incentive/Money	18	22	60
Job Security	21	26	53
Good working conditions	30	26	44
Employee empowerment	25	30	45
Cross training	46	29	25

4.3 EFFECTIVENESS OF MOTIVATIONAL TECHNIQUE:

Out of 100 respondents, 50 were from the organizations where cross training has been implemented along with other motivational techniques. When those 50 respondents were asked to reveal their opinion on a three point scale, it was found out that employees feel cross training to be more effective and useful for them than other motivational techniques. Almost 90% of employees feel that cross training is effective motivational technique (see table 4).

An open ended question asking "overall what is your opinion about the cross training method?" revealed that almost all of the employees feels that cross training is effective because it provides more career opportunities to them and they enjoy and learn during the cross training. Cross training create the learning environment for employees and provide chance to recognize their hidden talent. It offers learning and opportunities for professional development.

Table 4: Motivational factor for employees

Motivational Factors	Very effective	Average effective	Not effective
Incentive/Money	08	13	29
Job Security	10	15	25
Good working conditions	18	20	12
Employee empowerment	25	15	10
Cross training	36	09	05

Moreover, interaction with HR managers revealed that the cross training is giving better result than other motivational techniques. Because now organization can manage routines work if any key employee is on leave or left the organization. Retention percentage is also decreased.

5. CONCLUSION:

People enjoy best doing what they do best. A born salesman will not be happy doing account audits, despite the fact he may have spent many years getting an accounting education. Everyone is good at some things, and lousy at others. But most people do not get the chance to find out what it is they are good at. Give them that chance.

Organizations can give this chance to their employees through employee cross training. Employee cross training is an effective motivational technique compared to other motivational techniques, because it prevents stagnation, offers learning and opportunities for professional development, improves understanding of different departments and the organization as a whole, leads to better coordination and teamwork, and finally removes differences, enmity and unhealthy competition. Therefore along with other motivational technique the organization needs to provide cross training to retain their employees.

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The impact of teaching professional self-concept on clinical performance perception in nursing students

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Abstract: The nurses' self-concept can be defined as information and beliefs that nurse have about their roles, values, and behavior which help individuals function at a higher level and use their learning experiences optimally. This study aimed to determine the effect of professional self-concept teaching on clinical performance perception of senior nursing students. A preliminary study was conducted to confirm the validity and reliability of the nurse self-concept questionnaire (NSCQ) and 6-dimension scale of nurse performance (6-DSNP). The participants consisted of 72 senior nursing students, sixty of whom agreed to participate in the study and complete the questionnaires. Then, the students were randomly categorized into case (n=24) and control (n=36) groups. The case group participated in the professional self-concept workshops for two days. Immediately (T2) and three months after the intervention (T3), the questionnaires were filled by both groups. The 6-DSNP score of the participants attending the workshop was significantly higher than that of the subjects in the control group ($p<0.0001$). Therefore, professional self-concept teaching can significantly affect the clinical performance of nursing students. Therefore, incorporating professional self-concept teaching into the nursing program can be effective for their clinical performance, and help nursing students have positive attitudes towards their competencies.

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Keywords: Professional self-concept; clinical performance; nursing students; nursing education

1. Introduction

Self-concept as a dynamic structure is an important issue in the study, practice of education and psychology (Arthur and Randle, 2007). Self-concept defined as an organized entity of features, characteristics, feelings, images and abilities that the person attributes to himself or herself (Mlinar et al., 2009) and predict sequential behavior (Cowin et al., 2008). The association between self-concept and behavioral outcomes has its foundation in the expectancy values, which have direct and indirect relationships between self-concept and future plans or selections (Cowin et al., 2008; Mlinar et al., 2009), being used in a variety of contexts such as education and sport and among children, adolescents and adults. For example, athletes' self-concept contributed to achieving championship performance. Positive self-concept has been found to be related to following a healthy regimen by children suffering from asthma (Cowin et al., 2008).

Also, self-concept provides a basis for ones' professional self-concept (Kelly and Courts, 2007) Professional self-concept has been of interest to scholars from various disciplines for over 100 years; it impacts an individual's professional performance (Arthur and Randle, 2007). Its importance in the study of health care professionals has only recently begun to be recognized (Takase et al., 2002) and has been the focus of nursing research (Arthur and Thorne, 1998).

Nursing is a profession and developing a concept of oneself as a professional nurse is a critical issue in nursing education (Ware, 2008). Also, the self-concept of nurses is an important concept for managers and clinicians to consider in the progress of the profession (Arthur, 1992).The nurses' self-concept can be described as information and beliefs that nurses have about their duties, value, and behaviors (Takase et al., 2002) that help develop their professional values (Kelly and Courts, 2007).

Since people often make one profession more desirable, eligible or respectable than another, nurses have been concerned about their image for many years because they have been seen as obedient to medicine and the servants of the physician (Huffstutler et al., 1998). However, in such professions as nursing, which require working with a degree of equivalence and respect in health care settings, it is important that nurses have a professional self-concept which is compatible with that of other professionals (Arthur, 1992).

A positive self-concept can be acquired from positive self-evaluation, self respect, self-esteem and self acceptance (Arthur and Thorne, 1998) that help a person function at a higher level and utilize his/her

learning experiences in an optimal manner (Cowin and Hengstberger-Sims, 2006), control the effects of a stressful work environment, and influence on the patient care positively (Hensel and Stoelting-Gettelfinger, 2011). Also the nurses' self-concept has a stronger connection with their retention plans than job satisfaction (Cowin et al., 2008). For these reasons, there has been a considerable interest in defining and quantifying professional self-concept (Arthur an Thorne, 1998).

Clinical education is an essential part of nursing education and dynamic process, aiming at training competent professional nurses; it makes up half of the nurses educational period in training program (Salimi et al., 2005). Since empowering students can provide positive feeling in the professional activities, a serious mission of professional educational institutions is to prepare students (Kelly and Courts, 2007) and expected that they acquire professional abilities during their education because the quality of clinical performance provides credibility to nursing science (Hassani et al., 2008). But various studies have shown that although nursing graduates possess scientific and theoretical basic knowledge, inadequate efficiency and lack of skill is seen in the clinical environment (Banaderakhshan et al., 2005).

After graduation, these students experience problems in taking care of patients at the beginning of their work. They do not consider professional standards in clinical experience and frequently make errors (Ghalje et al., 2008). This adversely affects the quality of nursing services (Parsa Yekta et al., 2005).

Nursing students are responsible for nursing care and patients' education (Parsa Yekta et al., 2007) but to the best of our knowledge an interventional study has not been so far conducted on professional self-concept. Environmental and communicative issues in the clinical setting have been studied by different researchers while the students' attitude has not been paid attention to. Therefore, the researcher aimed to conduct an interventional study to find out the effects of professional self-concept teaching on the perception of the senior nursing student's clinical performance in Shiraz University of Medical Sciences.

2. Material and Methods

2.1. Design and Procedure

This study employed an intervention, pre-post test follow up and control group design study aiming to investigate the effects of teaching professional self-concept on the perception of the senior nursing students' clinical performance in Shiraz University of Medical Sciences. The participants filled out the questionnaires before (T1), immediately (T2), and three months after the intervention (T3) in both experimental and control groups. Institutional Review Board (IRB) approval for the study was obtained from the Ethics Committee of Shiraz University of Medical Sciences (ECSUMS).

2.2. Participants

The study began with participants who were senior baccalaureate nursing students at a major university in Shiraz, Iran. The participants were recruited during a lecture in the last semester of their nursing studies. Each participant was given an information sheet explaining the purpose and process of the study and their voluntary participation. Issues regarding the participant's rights to confidentiality, anonymity and freedom to discontinue at any time were explained and it was clarified that the findings of the study would be shared with the participant if desired. Written consent was obtained from each student. Sixty out of 67 students agreed to participate in the study and complete the demographic details (age, gender and GPA average), self-concept and clinical performance survey at T1. Then, the students were randomly assigned to experimental (n=24) and control (n=36) groups. To ensure equivalent groups, demographic information and the mean score for professional self-concept and perception of the students' clinical performance were compared and there was no statistically significant difference. The students in the experimental group participated in the workshop of professional self-concept that was about self, self awareness, self-concept, professional self-concept, nursing self-concept and professional ethics for two days. Immediately (T2) and three months after the intervention (T3), the questionnaires were completed in both groups.

2.3. Instruments

The nurses' self-concept questionnaire (NSCQ, Cowin, 2001) and Six -Dimension Scale of Nursing Performance (6-DSNP, Schwarian, 1978) were utilized to collect attitudinal data on the senior student nurse's self-concept and their clinical performance for each period of data collection.

The NSCQ is a 36-item scale that measures six subscales of nurse self-concept containing self-esteem, care, staff relations, communication, knowledge and leadership identified by Cowin (2001). The NSCQ aims to measure the development and stability of dimensions in self-concept that relate specifically to the work of a nurse. All items are positively worded and there are six items in each factor. An 8-point Likert type scale is utilized ranging from 1 (definitely false) to 8 (definitely true). The NSCQ has evidence of theoretical and construct validity; its reliability has been published.

The Six-Dimension Scale of Nursing Performance (6-D Scale), a self direct tool including

52 four-point rating-scale items evaluates the nursing performance. The items are grouped into six performance subscales of leadership, critical care, teaching/collaboration, planning/evaluation, interpersonal relations and communication, and professional development. The validity and reliability of this scale has been approved by the developer (Schwarian, 1978). In both questionnaires, higher scores show better results.

For this study, NSCQ and 6-DSNP questionnaires were translated into the Persian language by three professors of Nursing and Midwifery College in Shiraz University of Medical Sciences. Then, it was back-translated from Persian into English by two other instructors of Nursing and Midwifery College to ensure clarity and content validity. As the Persian version of both questionnaires had not been used in Iran, they were piloted in a small scale study for feasibility and cultural suitability. The translated tools were piloted on 30 students who answered the Persian version. The surveys took between 15 and 20 minutes to be completed. The data analysis of the pilot sample did not reveal any unexpected findings, nor suggested any modification.

The internal consistency of the NSCQ, as measured by Cronbach's Alpha showed a good internal consistency. Cronbach's alpha scores for all the scales were adequate, with an overall Cronbach's alpha of 0.96, and subscales ranging from .88-.97. The internal consistency of the 6-DSNP was again measured by Cronbach's Alpha. The reliability was confirmed with total Cronbach's alpha of 0.97 and subscales ranging from .83-.91(Table1).

2.4. Data analysis

All obtained questionnaires were allocated a code number (ranging from #1 to #60) that could be used to identify the responses for analyzing the pairing of T1, T2, and T3 results. Data relating to the two instruments were entered into SPSS version 11.5 (Statistic Package for the Social Sciences) and examined by descriptive statistics, independent t-test and repeated measurement multivariate test for measuring the nurses' self-concept and clinical performance in three different time periods. A significant P-value was set at 0.05.

3. Results

The age of the participants ranged from 20 to 24 years old with the mean of 21 years (SD 1.3). 57% (n = 34) were female and 43% male (n = 26), and the average GPA was reported 7% (n = 4) less than 13.99, 81% (n = 49) in the range of 14-16.99 and 12% (n = 7) more than 17.

Baseline characteristics of the experimental and control groups revealed that they were similar with respect to age, gender and average GPA. The majority of the participants were between the ages of 20 and 22 years (58.3% in the experimental group and 69.4% in the control group); most of them were female (62.5% in the experimental group and 52.8% in the control group), and had a grade point average between 14-16.99 (75% in the experimental group and 86.1% in the control group). There was no statistically significant difference in the demographic variables between the two groups (P>0.05).

As shown in Table 2, assessing the results before the intervention using independent t-test showed that the two groups were almost similar in nurse self-concept and clinical performance and there was no statistically significant difference between them before the intervention (P>0.05).

Table1.Cronbach's Alpha for NSCQ and 6-DSNP

scales	Cronbach's Alpha	N of Items
NSCQ (total scale)	0.97	36
NGSC	0.96	6
caring	0.88	6
staff relations	0.91	6
communication	0.92	6
leadership	0.94	6
knowledge	0.88	6
6-DSNP (total scale)	0.97	52
teaching/collaboration	0.86	11
planning/evaluation	0.88	7
critical care	0.90	7
interpersonal relations and communication	0.91	12
leadership	0.83	5
professional development	0.85	10

Table2. Comparison of NSCQ and 6-DSNP mean scores before the intervention in the two groups

Group Variable	Case		Control		p-value
	M	SD	M	SD	
Nurse self-concept	195.6	38	190.8	49.3	.685
Clinical performance	148.8	21.4	153.2	25.7	.493

Table 3 presents the mean and standard deviation of the total scores in groups before and after the intervention as measured by NSCQ and 6-DSNP.

At baseline, the highest self concept scores were related to communication and the lowest scores to self-esteem. Also, the results showed that the experimental group demonstrated higher scores across all subscales of the questionnaires immediately and three months after the intervention.

The mutual effect of time and group was significant for total nurse self-concept; based on the results while the experimental group's scores had increased significantly, the control group's scores rose slightly (Figure 1).

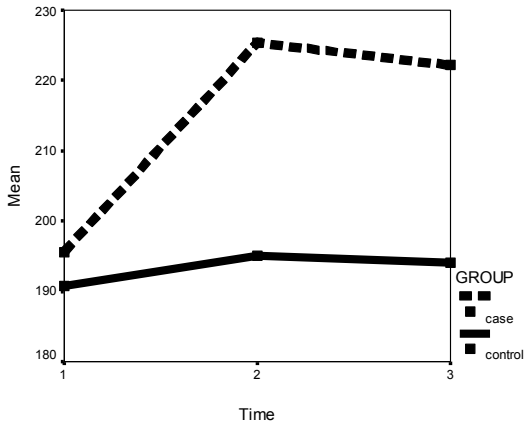

Figure 1. Graph of the Group by Time interaction effect for total nurse self-concept in both groups

Comparison of the mean scores of the nurses' self-concept from pre to post tests and follow up intervention in the groups as measured by NSCQ revealed four interaction effects from 6 self-concept subscales: self-esteem, care, knowledge, communication, while considering the mutual effect of time and group.

These results indicated that while the results of the self-esteem subscale for the experimental group had increased significantly, the results for the control group rose slightly.

The results regarding the mutual effect of time and group for care subscale showed a significant improvement in the experimental group and a reduction in the control group.

The results also revealed an interaction effect for the NSCQ subscale of knowledge, implicating that while the experimental group improved significantly from baseline to immediately after the intervention and then had a downward trend three months after the intervention but it did not reach the level before the intervention; the control group's results remained stable over time.

A significant group by time interaction effect was observed for communication. The findings revealed that while the experimental group' communication increased over time, that of the control group decreased. Also, the mutual effect of time and group was significant for total clinical performance. The results showed a significant improvement in the experimental group and a reduction in the control group. (Figure2)

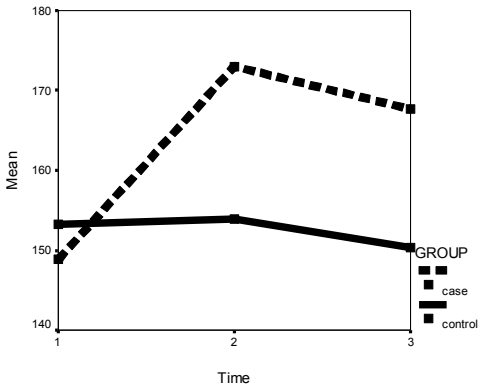

Figure 2. Graph of the Group by Time interaction effect for total clinical performance in both groups

At baseline, the highest clinical performance scores seen in interpersonal relations and communication and the lowest scores in teaching/collaboration.

Comparison of the mean scores of clinical performance before, immediately and three months after the intervention in groups as measured by 6-DSNP over time revealed an overall significant group by time interaction effect in all dimensions except critical care and leadership.

The results showed an interaction effect for teaching/collaboration, planning/evaluation, interpersonal relations and communication, professional development dimensions. It was indicated that while the experimental group's scores increased significantly immediately after the intervention (T2), decreased slightly after three months (T3), and has not still returned to the level of (T1), the control group remained stable over time.

Table3. Means scores of NSCQ and 6-DSNP subscales in groups at T1, T2 and T3 Scores

	time	T1		T2		T3		Time	Group	Time/Group
	mean / group	M	SD	M	SD	M	SD	P		
NSCQ total	case	195.6	38	225.4	27.1	222.2	29.6	< .0001*	.018*	.005*
	control	190.8	49.3	195	41.6	194.1	30.5			
Nuese self -esteem	case	26.5	10	33.6	8.6	34.5	8.5	< .0001*	.161	.004*
	control	27.2	10.5	28.9	9.6	29.1	8.3			
caring	case	33.4	6.8	37.1	4.6	37	6	.012*	.071	.012*
	control	33.4	7.3	34	6.7	32.7	4.1			

staff relations	case	33.9	8	40	12.6	37.3	5.2	.028*	.002*	.122
	control	30.9	9.5	31.7	7.8	32.5	5.9			
communication	case	37.3	5.7	39.6	4.6	39.2	5.7	.682	.022*	.024*
	control	36.9	7.9	35.2	7.2	34	6.8			
knowledge	case	33.5	7.5	38.9	5.2	36.3	6.3	.022*	.118	.022*
	control	33.4	10	33.4	9.3	33.6	6.4			
leadership	case	30.9	10.4	36.2	7	37.7	5.3	< .0001*	.05	.282
	control	29	12.5	31.7	9	32.1	7.7			
6-DSNP total	case	148.8	21.4	173	21.9	167.7	17.4	< .0001*	.026	< .0001*
	control	153.2	25.7	154	23.7	150.4	19.1			
teaching/ collaboration	case	30	5.9	35.1	3.5	34.2	3.9	.001*	.02*	.003*
	control	30.5	5.6	31.3	6.3	30	4.2			
planning/ evaluation	case	19.3	3.5	22.2	3.1	22	2.8	.015*	.276	.008*
	control	20.3	4.6	20.3	4.7	20	3.3			
critical care	case	19.4	4	22.3	3.7	22.3	3.3	.078	.29	.088
	control	20.3	5	20.2	4.1	20.5	6.3			
interpersonal relations and communication	case	36.3	5.4	43.7	12.7	40.1	7.3	.025*	.002*	.005*
	control	36.8	7.5	36	5.5	34.5	5.3			
leadership	case	14.5	2.3	16.2	2.8	18.1	7.3	< .0001*	.006*	.001*
	control	14.5	3.5	15.2	2.4	16.3	5.3			
professional development	case	29.3	4.6	33.5	3.2	32.7	4.2	.010*	.231	.009*
	control	30.7	5.5	30.9	4.9	30.4	4.8			

4. Discussion

Nursing is not a desirable profession and nurse educators are responsible to provide the graduates with high professional self-concept and also high quality and safe patient care. The results indicated an increase in the clinical performance before and three months after the intervention; it verifies the effect of the intervention on clinical performance for the experimental group while slight changes were found in the control group.

What is remarkable about the NSCQ results was the lowest mean scale score for self-esteem subscale .The result is consistent with that of Edwards' study (2010), showed that self-esteem levels were lowest at the end of nursing education. However, in two studies (Cowin and Hengstberger-Sims, 2006; Hensel and Stoelting-Gettelfinger, 2011) the highest mean score was obtained for self-esteem; Sasat et al. (2002) in their research also reported that perception of own self-esteem in undergraduate student nurses was compatible to the normal ranges.

The lowest mean score for the self-esteem, might be due to the fact that nursing students at the beginning of clinical training realize that hospitals are strongly physician-centered and based on the routines that have restricted the nurses directly and indirectly, so nursing students feel that their capacities would not be used and they should only perform the physicians' orders, and could not do an intervention independently. This culture and structure as a hidden curriculum actually causes low self-esteem of nursing students. Also, Valizadeh et al. (2007) in their research reported that the feeling of worthlessness and lack of attention of the community to the status of nursing was apparent from the experiences of nursing students, leading to low self-esteem.

The mutual effect of time and group was significant to change in the scores of self-esteem and this effect was more in the experimental group. In Moshki's study (2008) on 144 students in Gonabad University of Medical Sciences aiming at evaluating the effectiveness of the training program by using self-esteem, it was shown that educational programs cause empowerment, partnership and improve self-esteem and ultimately the mental health of the students. Also, the results of Unal's study (2012) revealed the effect of a course on self-awareness and communication techniques on nursing students' self-esteem, indicating a significant difference between the students' self-esteem scores in pre-test and post-test measurements. Moreover, in Moattari's study (2005), it was revealed that teaching of problem solving has a significant effect on the nursing students' self-esteem.

The highest score observed in the communication subscale could be used to explain that even in nursing courses the principles of communication, barriers and ways to facilitate more constructive communication, are taught, so the students consider their abilities more valuable and the mutual effect of time group was significant, showed that professional self-concept teaching could be effective in the experimental group.

In knowledge self-concept and care self-concept dimensions, the results indicated that not only

we can prepare nursing students with greater emphasis on increasing their knowledge and nursing care, but professional self-concept training can also be effective in improving the students' theoretical and experimental skills.

However, in leadership and staff relations of nurses' self-concept, the mutual effect of time group was not significant, indicated that the students should be trained more basically and coherently to play leadership role and make relationship with colleagues; there is probably a need for longer term trainings than our workshop program and perhaps the actual clinical environment can help more.

An important result obtained was that the mutual effect of time group was significant in total clinical performance but because of the reduction seen three months later, retraining is also required. The results of this study is similar to those of Zeraat and Ghafourian (2009) who used case and control groups of 30 students of Computer Engineering in Shiraz University, indicated that training the students on problem-solving skills caused empowerment and promotion of their educational self-concept .

The intervention could be effective in most dimensions of clinical performance except critical care and leadership. When evaluating the effectiveness of the professional self-concept on clinical performance, the problem being considered is that the time of workshop was limited and too much time was spent on lecturing; on the other hand, too little time was allotted to group discussion and practicing technique. That may not have been sufficient enough to help students improve in leadership and critical care. Ensuring that baccalaureate nursing students obtain a measure of leadership proficiency is still a challenge for nurse educators; further studies are needed to focus on this issue.

Additionally, in critical care subscale, practical procedures and working with mechanical equipment have been evaluated, showed that specific training in this dimension could be more effective.

The lowest score for teaching/collaboration of clinical performance reflects inadequate preparation of nursing students for patient education.

This is the first interventional study to examine the effect of professional self-concept on clinical performance perception of senior nursing students. It provides the evidence to support the notion that teaching professional self-concept can significantly affect the clinical performance of nursing students. Thus, it is concluded that incorporating professional self-concept teaching into the nursing program can be effective for their clinical performance, and help nursing students have positive attitudes towards their competencies.

More studies are required to determine the best way to improve students' professional self-concept and designing better nursing curricula to increase clinical performance.

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The Evaluation of a Teacher Training System ; A Study on the Efficacy of Teaching Training Policy in the last three decades in the field of English Teaching in Iran

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Abstract: After the establishment of modern style schools and colleges in Iran in the late nineteenth and early twentieth century, the need for trained and qualified teachers became the concerns of the authorities then. Some professors and teachers from Europe were the first pioneers who came and trained some teachers based on those days' standards. Since then, there have been a lot of changes in the curriculum and the syllabus designs of the academic teaching generally and English teaching specifically. Teaching English academically in Iran has had so many ups and downs during the last three decades. Unfortunately, the outcomes of these alternations do not show hopeful horizons to the usage of English language fruitfully.
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Keywords: Teacher training, EFL

Teacher training, a national requirement

Teacher education has a dynamic and key function in each society, because it is used to train those who are going to teach the next generation. Since teacher education's importance is obvious to everybody it is equally important to plan and implement it correctly. Menashri (1992) believes that the questions as to by whom and how student teachers are trained must be appropriately answered so as to produce an optimum outcome. It is clear that amongst these questions the question of 'who' (which refers to the trainer of the student teachers, either university lecturer or school teacher as trainer) has the greatest role in teacher education is the most important, because the other elements are dependent upon it. The teachers' contribution to developing the abilities of their students is well recognised world-wide. Bottery and Wright (1997:239) also observe the importance of teacher education for society.

The education and training of teachers are crucial to the quality of any society. Teachers are the gatekeepers of its traditions and culture and facilitators of its education.For teachers, above all professionals, must, almost by definition, be intellectually active, authoritative, lively, critical reflective, flexible and ever attentive to the constant and changing demands of the young and the society for which they are being prepared.

So, when teachers are appropriately trained they can change their society, whereas ill-trained teachers are not aware of what is going on in their society and can negatively affect the attitude of their learners, as well as preventing them becoming decent citizens. This is also debated and noted by Bottery and Wright (1997:244):

"Programmes based on the functional analysis of work roles are likely to produce teachers who are competent yet ill-equipped for further professional development, uncritical of educational change and largely ignorant of the wider cultural, social and political context in which the role of the teacher needs to be located. Such teachers will be neither experts nor reflective practitioners and lacking the background provided by education or training approaches based on the concept of professional expertise, will be professionals in name only."

It is then vital to be concerned with the teacher educators and teachers as trainers if we are looking for a sound teacher education. In other words, if these trainers were under any kind of unnecessary constraints how can we expect them to function appropriately? Trainers have been used to being well treated and respected, otherwise the public's expectations may not be achieved, and the future of the society could be jeopardized. The situation in the UK after the recent education reforms looks like to be of this sort - that is, at risk. The two countries of this study are very different places and their universities and teachers, like their societies, appear dissimilar to foreigners as compared to natives. In other words, the distinct way of life and cultures make for important education differences. For instance, teachers in eastern countries such as Iran are highly respected, whereas in the West they are treated and positioned differently. This thesis will, therefore, deal with teacher education in the UK and Iran, concentrating on a comparison of the teaching/learning process, with particular emphasis on strategies for oral production in English Language

Teaching for teacher education. On some cases of the Iranian experiences, he continues that on the Iranian experience.

Teacher training as an essential factor of education in each society requires expertise with appropriate course content, which meets the needs of the trainees. The usefulness of university-based teacher education is well recognised and supported by many of those who have been involved in it such as Stones, Barton, Gilroy and Whitty, Cashdan, DES, HMIs and even the recent Tory government. However, there have been some practitioners who disagreed with this form of teacher education such as 'the Hillgate Group and. the Institute of Economic Affairs' (Gilroy, 1992:11).

Language Teacher education in Iran

Language teacher education in Iran shows that the development of EFL teacher education in Iran goes back to nearly forty years ago, when more attention was given to higher education and in particular EFL instruction. According to Menashri (1992), the early attempts to use western education were made by sending students to European universities and the establishment of the first institution of higher education, Dar al-fonun in 1851. Gillett (1965), on a report to the Unesco, believes that Iranian teaching methods needs a lot of corrections and training. In 1965 Dickie an instructor from Unesco was sent to Iran. He was in Iran for two years. Dickie (1967) writes that he was associated (a) with the general organization of the scheme, particularly in matters of curriculum time-tables and organization of field studies in neighboring schools and village communities, (b) as a teaching member of the staff (up to 20 hours per week) he was responsible for the subjects "Principles of Teaching" (supervisors' course) and "Evaluation and Guidance" (degree course). In addition, two days per week were spent in village schools. He was assisted in these activities by a very able counterpart, Miss. Abolfotouh whom I would regard as competent to continue the work on the Instructional side as well as in the organization of practical work in village schools and communities. A manual for students has been prepared, entitled "Fundamentals in Primary Education".

At that time for the future plans he writes proposals were being considered for establishing Mamazan (acity in the north of Iran) as an International Centre associated with the training programmes in literacy education in Iran. Plans are also being prepared for establishing correspondence courses for rural teachers. It is significant that formal recognition of Mamazan is an independent institution; operative from the beginning of the next academic year has been promulgated. This will open the way for further development. He describes everything in details, including different primary and essentials of teaching skills and methods of teaching foreign languages up to that time.

A report consists of an analysis of the teacher education systems in the following ten countries done by UK NARIC / NRP work in partnership with the Refugee Council, West London Graduate Teaching Partnership and Newman College funded by the Training and Development Agency for Schools (TDA) describes the teaher training structure in Iran as Teacher training awards are offered by teacher training colleges (for those who wish to teach at pre-primary, primary or lower secondary level) and university faculties of education (for those who wish to teach at upper secondary or pre-university level). Due to the discrepancy in educational standards between urban and rural areas, special rural teacher training institutes have also been established. These are intended to encourage local students, particularly women, to train as teachers within their community. The institutes offer two year courses to students who have completed their lower secondary (guidance) education. Graduates are qualified to teach at primary level in rural schools.

Those students who wish to train as lower secondary (guidance) school teachers undertake the two-year Associate degree (Kardani) and must specialize in one of the 13 subject areas covered by the secondary school curriculum.

In order to train as an upper secondary school teacher, students must complete a four year Bachelor degree (Karshenasi) at the education faculty of a university or at the Teacher Training University (Tarbiat Moallem), which has branches in several cities. Students must specialize in one of the secondary education curriculum areas listed below and must also complete courses in teaching methods and educational psychology.

About the recent reforms the mentioned study states that traditionally Iranian teachers have practiced a teacher-centered method of education, where lessons are delivered in a lecture style and students receive the information passively. There is little interaction between students and teachers within this system and learning by rote is common. However, following the reform programme instigated by former president Mohammed Khatami, more modern teaching methods have been introduced in Iran with moderate success. Greater interaction has been encouraged in the classroom and student-centered teaching methods have been introduced. Quantitative assessment has given way to qualitative assessment and a more concise curriculum has enabled teachers to concentrate on delivering lessons

rather than preparing for exams. These changes are bringing Iranian classroom culture more into line with that of the UK and teachers who have received training and experience in the new methods are unlikely to face major problems when teaching in the UK.Teachers from disadvantaged rural areas may have more difficulty adjusting, as the reforms are more advanced in urban areas than in the surrounding countryside.

In 1981, the government took control over the education and new policies were adopted. According to Safi (1992) before the establishment of Dar al- moalemin and Dar al- moalemat in 1918, teachers in Maktabs and schools did not receive any education and were usually selected from among the best and the most studious students. Dehghan(1949) stated that without changing the system of education it was impossible to establish a comprehensive cultural program, to bring reform in institutes, and to educate qualified teachers. The development of higher education from the 1970s was closely associated with elementary and secondary education. According to Safi (1992), until 1966 various teacher-training centers were established and different syllabuses were written. From 1970s on the rapid growth of population as well as the segregation of schools by gender led to an acute shortage of teachers (Menasheri, 1992).In the meantime, new syllabuses were written and new educational policies were adopted.

Saadat (1995) says that there is no record available as to when exactly the training of English teachers first started in Iran. However, based on a historical review of teacher training in Iran ,Safi (1994) indicates that teachers attended special classes to learn educational principles and to promote their knowledge for the first time in Dar-ul-Fonun as early as 1910-11. From 1911, students were also dispatched to English-speaking countries to be trained as teachers. In 1918, Dar-ul-Mo'alemin— an institute for training male teachers— and Dar-ul-Mo'alemat— an institute for training female teachers— were established. After the establishment of Dar-ul-Mo'alemin-e-A:1i or the Higher Institute for Teacher Training in 1927, the training of male highschool teachers was assigned to this institute. In 1933, another institute was founded for training female high school teachers. In the same year, the institute advanced to an academic standing and was called Daneshsaray-e-A:1i, and after the establishment of the University of Tehran in 1934, the institute lost its independence and continued to work under the supervision of the University of Tehran.

Gharabaghi(1991) and Zangeneh (1995) tried to evaluate one of the programs of the Ministry of Education of Iran which was designed to alleviate the problem of shortage of teachers by lowering the employment standards. He presented a historical analysis of the educational system of Iran, with specific references to the quantity of the teachers of English and the preparation of such teachers in Iran. It offered a better understanding of the issues regarding teacher training and provided clues that might aid in training better teachers.

The last word

Comparing what we have all over the world at the moment , we can see close relationship between the syllabus designed for the academic purposes in Iranian teaching training centers and up to dated EFL discussions. Most of the new books which are published in different famous publications around the world are available in Iran (I do not say legally or illegally offset !). Iran is also one of the top article generators worldwide, and due to this Iranian scholars have always tried to be familiar with the latest innovations in ESL and EFL. Even among Iranian universities, we can see a hidden competition to show high levels of understanding of foreign language learning and teaching discussions.

However, what we have as the output of the educational system of high school says something else. Under the pressure of the non-communicative goals of English language usage policies, the teachers and students in Iran seem to be on the wrong track.

Studying three decades of foreign language learning and teaching in Iran and reviewing the charts and tables of the analysis of the final exams among high school students in different leves, Nargesy (2011) states that the general policies of writing academic books, designing curriculum, preparing and giving tests and other aspects of the process of EFL in Iran cannot show any traces of English language usage communicatively. Most of the students who can use English are those who have attended non-governmental English Institutes. It seems that, not having suitable textbooks based on the last changes we have had in developing English textbooks worldwide, we are limited to teach just some groups of vocabulary and some grammar. The same study reveals that while a lot of countries begin learning a foreign language at low ages in elementary schools, we startthis process in our secondary education syllabus.

What seems to be the most essential need nowadays in Iran is trying to look differently and to make a balance between what we teach in our teaching training centers and what and how we teach in our schools as an overall applicable English knowledge.

Table 1: Iranian Teaching Awards and their comparability

Primary	Rural Teacher Training Certificate - Gavaahinaameh-ye moallem roostayi	VGCSE A*-C/BTEC First Diploma/SQA Intermediate 2 standard
Primary/ Guidance level	Teacher Training Certificate - Kardani Tarbiat Moallem (Associate Degree in Education)	Certificate of Higher Education standard
Senior	Bachelor degree in Education - Karshenasi Tarbiat \Moallem	Bachelor degree standard

	Secondary Education	
Entry to Higher Education	Pre-University Certificate-Peeshdaneshgahi	Overall GCE Advanced / Scottish Advanced Higher standard (with the exception of English Language and to be considered with the High School Diploma)
Entry to Higher Education	National Entrance Exam - Kunkur	Overall GCE Advanced / Scottish Advanced Higher standard (with the exception of English Language)
Secondary	High School Diploma (3 years) (Theoretical, Technical, Vocational) - Nazari, Fani Herfei, Kar Danesh	A standard between GCSE and GCE AS level (with the exception of English Language), requires foundation year for entry to Higher Education
Secondary	High School Diploma (4 years) (Theoretical, Technical, Vocational) - Nazari, Fani Herfei, Kar Danesh	Overall GCE Advanced / Scottish Advanced Higher standard (with the exception of English Language)

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Studying the Variations in Ratio of Capital Resources toward the Equity Returnin Tehran Stock Exchange

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Abstract: The increase in shareholders' wealth from the leverage of debts is an important principle that forces the managers of the companies to pay enough attention to the time of the financing. Financial experts look for an optimized combination of the capital to maximize the company's value and consequently, to maximize the shareholders' wealth. In this regard, they have considered the effects of tax-savings from interests of debts and the low rate of debts costs in comparison to other capital resources. Some theories have been proposed in this regard that mainly focus on the positive effects of usingleverage of debts in increasing the shareholders' wealth. This research intends to investigate the effects if financing on the equity turnover of the active companies in Tehran Stock Exchange. In this regard, the companies who have used loans or capital increase as a financing way in a 5-year interval have been selected. The effects of two mentioned financing methods (loans and capital increase) on the ratio of their equity turnover have been tested on the basis of their financial reports. The results show that the ratio of total assets to the equity (leverage intent) is significant among the group of companies that have received debts and the group of companies that have increased their capital; but the ratio of equity turnover and the ratio of total assets, and the ratio of net profit to sales is not significant among the two groups of the companies. In other words, getting the loan by the active companies in Tehran Stock Exchange has not led to create a desirable financial leverage.

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Keywords: Debt, Equity, Financing, Shareholders' Wealth

1. Introduction

When they need new financial resources, the companies can borrow or they can transfer a part of their ownership. When deciding about new financial resources, the companies have to specify the costs of different sources of financing methods and determine the effects of each sources will put on their efficiency and their operational risks. Using proper methods of financing for profitable projects can play an important role in increasing the shareholders' wealth. The increase of shareholders' wealth is the final goal of profit associations. To gain more benefits and to increase the shareholders' wealth through changing the combination of capital structure, especially using borrowings for long-term periods is a solution for the companies to achieve their goals.

Some financial experts believe that the company's value depends on the management performance not on its capital structure. They believe that making proper decisions about investments(and not making wise decisions about financing) can lead to gain more benefit and to increase in the shareholders. In contrast, most financial experts are persuaded that paying enough attention to tax savings due to the costs of debt interests and the low rate of debt costs in comparison to other sources will lead to the increase of company's value and the increase in shareholders' wealth by using debts in their long-term financing. Accordingly, the companies have to make a balance between the values of tax saving of interest and the different costs of bankruptcies; i.e. the regulation of debt ratio has to be done in a way that maximizes the company value.

Indeed, these experts look for reaching the final goal of the company (i.e. maximization of shareholders' wealth) through decreasing the costs (i.e. minimization of financing costs). According to this theory, if the company can resort to tax savings, then it will be better for the company to use borrowing for its financing. Obviously, the company has to limit the rate of its debts due to the probable costs of financial crises or disorders. This research intends to investigate the effects if financing on the equity turnover of the active companies in Tehran Stock Exchange.

2. Literature review

One of the first researches on capital structure is David Durand's 1952 research. Then in 1958, two financial professors (Franco Modigliani and Merton Miller) published an article that was the beginning point of wide discussions due to its theory on capital structure (known as MM theory) so that in addition to

Modigliani and Miller's own articles on 1959, 1963, 1965, 1966, and 1969, several other researchers wrote articles to confirm or criticize MM theory, among which one can refer to David Durand (1959), Fred Weston (1963), Dawson, Breuer and Jacob (1965), Himms and Sprengel (1969), R. C. Merton (1969), and Jack Baker (1978).

Modigliani and Miller first (1958) believed that the manner of capital structure has no effect on the company's value but later (1963) they accepted that tax savings due to debt interests will lead to increase in company's value; accordingly they suggested the companies to use maximum debts in the combination of their financial sources.

In 1976, in a research on the capital structure in US, Scott and Martin showed that the type of the industry is a determining and effective factor on the national structure of the companies.

Rimmers (1975) studied a big-size sample of active companies in 9 different industries of 5 countries. The results showed that in France and Japan, financial structure is significant aamong different industries while in US, Netherlands and Norway such a difference between the industries is not significant. In yet another research on a sample of Railway companies, Warner (1977) concluded that the current value of debt bankruptcy costs is less than the increase of the value due to the debts. Brileyand Jarikom (1984) in their research on the desirable capital structure studied the effective factors on the financial structure of the companies. In this regards, the studied the effects of the main factors like trade risks on the financial structure of the companies. The results of this research that was conducted on 80 companies showed that the type of the industry has an important effect in the ratio of company's debts. Additionally, Anderson (1990) studied the relationship between the financial structure of the companies and their technology. He concluded that the capital-based companies have a higher ratio of debts than the work-based companies.

3. Hypotheses of the research

The profitability ratios measure the success of beneficiary units in gaining the net efficiency to the sales income or to the investments. Undoubtedly, the goal of the management is to gain maximal efficiency for the investments of shareholders in any beneficiary unit. Thus the rate of equity is the best criterion for assessing the success of beneficiary units in achieving the mentioned goal. The main question this research is going to answer is whether the financing methods have any effect on the ratio of equity of active companies of Tehran Stock Exchange.

Referring to above- mentioned discussions, the main hypothesis of the research can be defined as follow: Financing methods affect the ratio of the equity return.

The ratio of the equity return is obtained by division of net profit on the total equity. Few decades ago, DuPont Company offered a method for analyzing financial statements that is called DuPont system. According to DuPont system, the ratio of the equity return is the result of combining three other ratios. These three ratios include the ratio of sales income to total assets, the ratio of total assets to the equity, and the ratio of net profit to the sales income. Accordingly, three subsidiary hypotheses can be proposed as follow:

a. Financing methods affect the ratio of sales income to total assets;
b. Financing methods affect the ratio of total assets to the equity;
c. Financing methods affect the ratio of net profit to the sales income

4. Methodology

Conducting such a research requires gathering financial information of active companies in Tehran Stock Exchange. It is not possible to access such information merely through the financial reports of the companies. The needed information of the research has been collected from the financial reports of the related companies by confirmation of Tehran Stock Exchange Organization. Tehran Stock Exchange officially publishes the financial statements of the accepted companies in weekly, monthly, and annually terms. After data collection completed, we analyzed the data using suitable statistical methods, especially mean central mean.

4.1. Separate data analysis for the companies

In terms of the proposed hypotheses of the research, ratio of the equity return,the ratio of sales income to total assets, the ratio of total assets to the equity, and the ratio of net profit to the sales income are calculated separately. For example, the calculation results for Lamiran Company are shown in table 4.1.

Table 4.1. Sample of information processing

Lamiran Company	3	2	1	0	-1	-2	-3
Ratio of the equity return	0.8015	0.3805	0.3873	0.546	0.4893	0.2356	0.2186
Ratio of sales income to total assets	0.7278	0.6215	0.4959	0.3962	0.5974	0.529	0.5048
Ratio of total assets to the equity	3.6867	2.701	2.4382	2.5377	2.894	4.5886	4.8132
Ratio of net profit to the sales income	0.2987	0.2266	0.3203	0.049	0.2831	0.0971	0.0899

5. Testing hypotheses

5.1. First hypothesis

The first hypothesis was proposed as follow: Financing methods affect the ratio of the equity return.

Its counterpart hypothesis can be proposed as follow: Financing methods don't affect the ratio of the equity return.

In statistical terms, if d_E is the mean of variations of the related ratio among the companies that have financed through capital increase, and if d_D is the mean of variations of the related ratio among the companies that have financed through borrowing, we will have the followings for hypotheses zero (H_0) and hypothesis 1 (H_1) respectively:

H_0: $d_D \neq d_E$

H_1: $d_D = d_E$

5.2. First stage

In this stage, the variations in post-financing period in comparison to pre-financing period have been studied for each group of the companies (i.e. the comparison of 2 periods of each group with the group itself).

Table 2. Information relating to the mean return of the companies that have increased their capital

Name of the Company	ROI1	ROI2	D=ROI2-ROI1
Alborz Ceramic Co.	2.99	2.851	-0.139
ARJ	0.391	0.076	-0.315
Jam Daru	0.123	0.127	0.004
Motogen	0.1	0.568	0.467
Iranite	0.145	0.484	0.339
Absal	0.84	0.904	0.064
Alborz Carton	0.532	1.019	0.487
Pichak	0.267	0.619	0.352
Sepahan Cement	0.392	0.8	0.408
ARG	0563	1.381	0.818
Lamiran	0.11	0.135	0.245
Gas and Glasses	0.315	0.523	0.208
Naqshe Iran Industrial Group	0.656	0.761	1.11
Navarde Aluminum	0.448	0.674	0.226
Team Production	0.61	0.943	0.333
Pars Carpet	0.278	0.075	0.203
Shahin Plastic	0.299	0.11	0.189
Pars Daru	0.243	0.533	0.29
Pastiran	0.431	1.35	0.919
Pars Minoo	0.479	0.983	0.504
Shahdiran	1.075	1.148	0.073
BaftAzadi	0.534	0.896	0.362
Tehran Gach	0.427	0.129	0.298
Pars Khazar	0.413	0.342	0.071
Pars Oil	1.238	0.588	0.65
Mean	0.556	0.75	0.194

a) The companies that have had capital increase

Table 2 shows the mean of the ratio of equity return of each company in 3 years leading to financing (column ROI1) and the mean of 3 years after the financing (ROI2) and the variations between these 2 periods (column D). Additionally, the mean of each group of this information (AVG), variations (VARS) and standard deviation (STDS) are shown in the table.

ROI1: the man of equity return in 3-year period before financing

ROI2: the man of equity return in 3-year period after financing

d_D: return variation in period for each company

VARSs: 0.17165 = d variance

STDSs: 0.4143 = d standard deviation

b. The companies that have borrowed

ROI1: mean of 3 years before financing, mean of 3 years after financing

Variations of 2 periods for each company and variations' standard deviation

ROI1 = 0.43

ROI2 = 0.674

d_b = ROI Δ = 0.244

STDSd = 0.496

ROI1: mean return ratio of all companies' group before financing

ROI2: mean return ratio of all companies' group after financing

d_D: variations' mean of two periods of whole companies of the group

$$t = \frac{\acute{d}}{s\acute{d}} = \frac{0.244}{0.4962/\sqrt{14}} = 1/83$$

t is obtained as 1.83, higher than t equal to 1.7709, which means the difference is statistically is significant. Therefore the ratio of equity return for the companies that have borrowed after borrowing is higher than before.

5.4. Second stage

First, the equality for variances of two groups of companies are being tested and then the mean of the ratio variations are being compared in this stage.

0.194 $= d_E$

$VARS_{E=}$ 0.172

$d_{D=}$ 0.244

$VARS_{D=}$ 0.246

$$F = \frac{VARS_E}{VARS_D} = \frac{0.172}{0.246} = 0.65$$

It can be seen that f is obtained as 0.65 which is lower than the tables value for (13, 24) at the level of 0.1, which was equal to 1.9827. Therefore the

variances of both populations are equal in this level. So t-test is as follows:

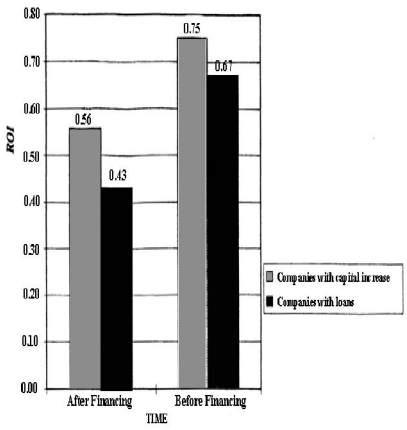
$$t = \frac{d_E - d_D}{SP\sqrt{1/n_E + 1/n_D}}$$

$$SP=\sqrt{\frac{(d_E)VARS_E+(n_D-1)VARS_D}{n_E+n_D-2}}$$

$$t = \frac{0.224 - 0.194}{\sqrt{\frac{246(+13)\ 0/172(246)}{25+14-2}}}$$

$t(n_1+n_2-2, a/2) = t(37, 0/05) = 1.6871$

t calculated as 1.6871 which is higher than the table's value , 0.05. It can be concluded that the difference in the level of 10% is not significant statistically. It means that the increase in ration of equity return in both groups of the companies is the same. Accordingly H_0 is rejected and its counterpart hypothesis (H_1) is confirmed



5.5. Financial leverage and its application

How are the variations in financial leverage against the variations of pre-interest and pre-tax benefit? To answer this question, it is necessary to calculate the financial break-even point. Financial break-even point is some of pre-interest and pre-tax benefit against which the equity benefit gets zero. Financial break-even point can be defined as follow:

$$EBIT = I + \frac{D_p}{1-t}$$

Where:
EBIT: pre-tax and pre-interest at financial break-even point
I: interest cost
t: tax rate
D_P: benefit of preferred shares

For example, if the interest cost in Alpha Companyis equal to 20 USD and the interest of preferred share is equal to 10 USD, and the tax rate is equal to 50 USD, then the financial break-even point will be as follow:

$$EBIT = 20 + \frac{10}{50\%} = 40$$

The variations of financial leverage degree can be calculated using Alpha Company assumptions at different levels of pre-tax and pre-interest benefit as follow:

1) EBIT= 10

$$DFL = \frac{10}{10 - 20 - \frac{10}{50\%}} = 0/33$$

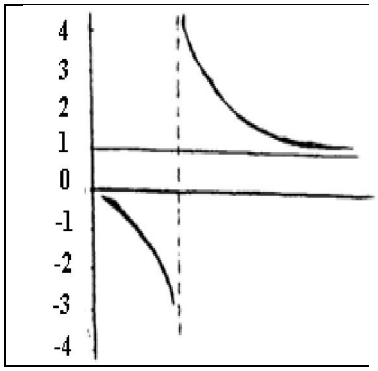


Fig. 1. Variations of financial leverage degree

a) Financial break-even point

Financial leverage degree calculates the percentage of the benefit variations due to 1% variation in pre-interest and pre-tax benefit. But what is the application of this leverage? Using financial average degree, we can: (1) calculate the financial risk rate, and (2) specify the variation of each share against the specified variation of pre-interest and pre-tax benefit.

5.6. Effectiveness of financing methods on the equity return

The ratio of equity return is obtained by dividing post-interest and post-tax benefit to equity:

$$\text{Equity return ratio: } \frac{EBIT - T - I}{S}$$

Where:
EBIT: pre-interest and pre-tax benefit
I: interest cost
T: Tax
t: income tax
S: equities

The effectiveness of financing methods on the benefit (return) of equities can be explained by an example:
Suppose Alpha Company needs 500,000 USD. The management of the company expects the return of company's assets to be 24%. In other words, pre-interest and pre-tax benefit of the company will be ….. USD
The company can gain the needed capital through 2 ways:

a. Gains the whole amount of the capital by publishing and selling its common stock. The price for each share in the market is 10 USD
b. Gains 250,000 USD bank loans with 15% interest rate and gains the remaining over equity.

For simplicity of the subject, it is given that none of the above- mentioned ways has side costs. The effects of these two methods on the ratio of Equity (ROE) can be as shown in table 3.

Table 3. The methods of financing methods on equity return

Explanation	Financing method	
	Just over equity	Loans and common stock
Pre-interest and pre-tax benefit (EBIT)	120,000	120,000
Subtracted: interest cost	-	37,500
Pre-tax benefit	120,000	82,500
Subtracted: tax (60% tax rate)	72,000	49,500
Post-tax benefit	48,000	33,000
Ratio of the benefit to equity	500,000 13.2%	250,000 9.6%

As shown in table 3, when the 50% of the needed capital is gained by borrowing, the rate of equity return is 3.6% more than when the whole capital is gained by selling common stock of the company. The reason of this difference is the tax savings of the interest cost. This issue shows the importance of financial leverage in increasing the capital profitability.

6. Results of hypotheses test

6.1. First hypothesis

Financing methods affect the ratio of the equity return.

According to the results of the test as shown in tables 1.4 and 2.4, calculated t is 0.05 lesser than the t of the table that was equal to 1.687 and this shows that the difference of the two groups is statistically insignificant. Accordingly, the variations of equity return are similar in both groups of the companies and thus financing method has not affected the equity return.

6.2Second hypothesis

H_0: *Financing methods affect the ratio of sales income to total assets.*

According to the results of the test as shown in tables 3.4 and 4.4, calculated t is 0.06 lesser than the t of the table that was equal to 1.6871 and this shows that the difference is statistically insignificant. Accordingly, the financing methods do not affect the ratio of sales income to total assets. Thus we can conclude that H_0 is rejected and its counterpart, H_1 is confirmed.

6.3. Third hypothesis

H_0: *Financing methods affect the ratio of total assets to the equity.*

According to the results of the test as shown in tables 4.5 and 4.6, calculated t is 1.99bigger than the t of the table that was equal to 1.9624 and this shows that the difference between the two groups is statistically significant. Accordingly, the financing methods do affect the ratio of total assets to the equity. Thus we can conclude that H_0 is confirmed and its counterpart, H_1 is rejected.

6.4. Fourth hypothesis

H_0: *Financing methods affect the ratio of net profit to the sales income.*

According to the results of the test as shown in related tables, calculated t is 0.186 lesser than the t of the table that was equal to 1.6871 and this shows that the difference is statistically insignificant. Accordingly, the financing methods do not affect the ratio of net profit to the sales income. Thus we can conclude that H_0 is rejected and its counterpart, H_1 is confirmed.

7. Conclusion and suggestions

The results show that the ratio of equity return of the companies of Tehran Stock Exchange is not affected by the financing methods. In other words, the ratio of equity returns of the companies whose whole capital is supplied by their owners is equal to the ratio of equity returns of the companies that have supplied some of their capital through borrowing.
Due to the lower cost of borrowed capital, theoretically it is expected that the companies who have used borrowing method to supply all their needed capital have a lesser equity return than the companies whose capital is supplied by their shareholders in part. Understanding the reasons of undesirable usage of financial leverage of Tehran Stock Exchange companies needs more studies.

Referring to the obtained results of the research, the following points are suggested to reach a better understanding of the performance of capital market in Iran:

1. It is necessary to specify the reason or reasons of ineffectiveness of financing methods on the equity return of Tehran Stock Exchange companies.
2. To supply their long term financial resources, the companies have to choice among the different available methods. Thus such companies have to research to specify the decision- making criteria of the managers of the companies and their attitudes.
3. The companies have to investigate the attitudes of the investors and share buyers and their view toward the balance sheet and their acquaintance with such an issue.
4. The companies have to investigate the way of assessment and the decision- making criteria of the financers (especially the banks) for granting the loans to the companies.
5. It is necessary to research about the way of recording interest costs by the companies that have supplied their needed capital through borrowing and to compare these ways with accounting standards.

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The Relations between the Life Skills and the Sport Success among the Athletic

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Abstract: This study is to assign the relations between the life skills and the sport success among the athletic students. Method: By randomly selection of 391 athletic students, they answered the questionnaires based on sociology and the life skills. In order to analyze data, the descriptive and assigned statistics were used by Pierson's correlative coefficient and Regression coefficient, and test. Results: Results show that there is an effective relation between life skills and their aspects, it means that there is a positive, meaningful relation between consciousness, sympathy, the effective relation, finding any way to solve the problem, the relations between people, making decision, the creative thinking, the critical thoughts, resistance to anxiety, and the success in sport. The results show that %21 of success in sport is assigned by life skills. Among 10 skills, there are skill relations to solve problems, and the resistance to anxiety predicts the success in sports. Conclusion: Regarding the relations between life skills and the success in sport, it is necessary to plan in order to progress the life skills to athletic students.
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Key Words: life skills, the success in sport, athletic, students.

Introduction

Nowadays, sport is not the only way to succeed; instead there are some factors other than physical ability, professional skills. The special anxiety such as bad weather, injury, cheat, fire, spectators (Anshel et al. 2000) are all affective in the success of sport, hence it is necessary to learn some skills to decrease stress to succeed, and these skills are called life skills.

The organs of world hygiene defined the skills of life in 1994 including: the skills of life means ability to behave sympathetically to face the problems of life (The organ of world hygiene, 2004). The different studies show that self-consciousness, self-confidence are the main factors of a person's abilities, and failures. The skills of life are the middle to progress the foresaid factors of human's life (The organ of world hygiene, (Qut. Fati. et al. 2006). The researchers of sport psychology mention some psychological skills such as imagination, concentration, the positive thought…. on sports (Talavon, et al. 2001). In the different studies, the skills of life are mentioned in the different fields, for example Ramsht and Farshad concluded that instruction of life skills increase the physical and psychological healthy to decrease the social problems (Qut. By poor sharifi et al. 2005) Bill (1996). The other studies show that the instruction of life skills increases self-confidence, dependability (Qut. Papiry, 1996). The other studies which were done by pool and Ivanz (1998, Qut Aghajani 2001), they concern the importance of life skills in the field such as the educational, instructional, dependent progress, the social relations, knowledge of jobs, the providence of wage, the social and individual responsibilities, planning, decision, the knowledge of needs, anxieties, the preoccupations of mind.

In Klingman's (1998) study, there are some cases relating to life skills in the close relations, the educational, job problems, self-destruction behaviors, the social, hygiene life of teenagers in which they succeed by instructing life skills (Tarmian 1999). The instruction of life skills cause the psychological-social progress, this condition makes a person capable to face the life struggles, in order to sympathize people, society, environment leading to the psychological healthy. Therefore, the sports of life skills accelerate the person's abilities to change their tendencies and behaviors. (Nasseri, 2005). In the other study, Nezoo (1990) introduced the skills to solve the problems which were important in the psychological, physical hygiene especially while a person faces the miserable events, the failures of life. The studies showed that they were based on special skills, and they did not concern the success in sport, besides the athletic students did not concern in this study, in which such hypotheses were mentioned:

1) There is some relation between the life skills and the success in sport
2) The success in sport are predictable by life skills

Method

The society and the statistical examples and the method of selection: the statistical crowd of study includes whole male and female, guidance school, and high school students who are chosen in the sport of different regions in the campaigns of Kermanshah

in 2010-2011. They are 3000 students, and there are 395 persons who are randomly chosen, they answered the questionnaires of life skills. After gathering the questionnaires, there were four incomplete questionnaires; finally, 391 questionnaires were analyzed.

In order to analyze data, the method of Pierson's: Correlation coefficient and Regression coefficient were used.

Tools

A) The Questionnaire of analyzing the life skills: this questionnaire includes 53 questions which were made in the region of five degree Likert including ten skills; self-consciousness, sympathy, the effective relations, the skills of relations among individuals, the skills to solve the problems, to decide, the creative thoughts, the critical thoughts, the skills to reinforce anxiety, and stress. Masoomi (2006) the permanence of questionnaire is %86. This study was done based on the method of Alfa Cronbakh, %91 coefficient for whole exams. In the cases of little measures, it means self-consciousness %53, sympathy %68, the effective relations %67, the individual's relation %68, the creative thought %62, the critical thought %63, the resistance anxiety %64, the resistance to stress %70.

B) The registration from of Demography characters and prizes; this from is researcher-based including student's gender, age, and degree.

Findings

Table 1: The correlative coefficient of life skills and the success of sport

Factor	Correlative Coefficient	Level	Number
Life skills	0/483	0/0001	391
Self-consciousness	0/231	0/0001	391
Sympathy	0/293	0/0001	391
Effective relation	0/176	0/0001	391
To solve the problems	0/339	0/0001	391
Individual's relations	0/268	0/0001	391
Decision	0/278	0/0001	391
Creative thought	0/305	0/0001	391
Critical thought	0/294	0/0001	391
Resistance to anxiety	0/306	0/0001	391
Resistance to stress	0/346	0/0001	391

The results of table 1 shows that life skills (r-%483) and its aspects: self-consciousness (r=%231), sympathy (r=%293), the effective relations (r=%176), to solve the problems (r=%339), the individual's relations (r=%268), decision (r=%278), the creative thought (r=%305), the critical thought (r=%294), resistance to anxiety (r=%306) resistance to stress (r=%346), as whole were in the level of $P\langle 0/0001$, and they were positively meaningful, it means those who gain more degree in the life skills, they will succeed in sport as well.

Table 2: The results of Regression analysis to predict the success in the sport regarding life skills

Predicted factor	F	P	R	R^2	β	T	p
Self-consciousness	8/617	0/0001	0/462	0/213	-0/029	0/503	0/616
Sympathy					0/073	1/229	0/220
Effective relation					0/041	0/671	0/503
To solve the problems					0/155	2/624	0/009
Individual's relations					0/061	0/989	0/323
Decision					0/075	1/236	0/218
Creative thought					0/082	1/350	0/178
Critical thought					0/018	0/268	0/789
Resistance to anxiety					0/039	0/596	0/552
Resistance to stress					0/169	2/702	0/007

Table 2 shows that the predicted regression of success in the sport would be meaningful based on ten skills (self-consciousness, sympathy, the effective relations, to solve the problems, individual's relations, decision, the creative thought, the critical thought, the resistance to stress, resistance to anxiety), it is F=8/617,P<0.0001. Among such skills, the skills to solve the problems is PP=0.0009, $\beta = 0/155$, resistance to stress would be $P = 0/007, \beta = 0/169$, it predicts the success of sport by students life skills. Besides, R^2=21/3 includes 21 percent of sport success among the students who were assigned by life skills.

Conclusion

The finding of this study shows that there is a meaningful, correlative relation between life skills and success in sports.

In means if athletes know about life skills they will succeed in the sport a lot. These finding accompany with those of Tatel et al. (2006) Naborz et al. (2000), Klingman. Specially, in the relation between degrees of life skills and the success of sports, there were positive, correlative, meaningful relations, it means those who show the skills such as self-consciousness, sympathy, the effective relations, to solve the problems, the individual's relation,

decision, the creative thought, the critical thought, the resistance to stress and anxiety, they will succeed in the sports more. These finding accompany with those of Moghadam et al. (2006), Shovartz et al. (2008), Ahmad; zadeh (1995) said Zaden Noosh Abadi (2001) Macli Land et al. (2000), Safarzadeh (2005), Hanton et al. (2004), Erlik (2003).

The result show that the findings of regression with respect to the success of sport would be based on 10 skills of life, and they are meaningful, and %21/3 of success in the sports would be assigned by these skills, among them, the skill to solve the problems and to resist stress are able to predict success in the sports. It means if athletes are able to solve the problems in the different, the will have some skills to control and resist stress, hence, they will succeed in the athletic games.

Suggestions

Regarding the life skills (10 skills), there is a positive, meaningful relation between skills and the athletic success. It suggests, athletes learn the physical, technical, instructional skills of life as well. Regarding the results of study, coaches, and managers, athletic teams should know the life skills to avoid the athlete's problems.

Source

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Investigate and Explain the Relationship Between Human Resource Competency Dimensions with Organizational Performance

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Abstract: Human resource has been exposed to many challenges and developments in recent decades. These challenges and changes. Has affected all aspects of human resource functions, including custodians, units and human resources systems. Custodians of human resources in the era of newly emerging are responsible new roles. Such roles that the custodians of human resources to effectively perform the tasks and activities have to do, are include strategic partner, functional export, Employee Advocate, human capital developer, This roles is to indicate what activities and actions must be performed. For playing efficient of roles, which requires new competencies of the human resources custodians in that field should be capable, the current research with studding aspects of competence in human resources, tried to investigate the efficient of this aspects on the organizational performance in Organizations case study.

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Keywords: Human resources competence, Human resources custodians, Aspects.

Introduction

Today's, tourism becomes as an important motive forces of economical development around the world. At the present, tourism further than any other economical activities in the word cause investment move and many exchanges in a local, regional, national and international measures, and tourism costs were developing more and speedy than national unmixed product and services and goods world export (Mahalatti, 1998, p 208).

If tourism Industry managed as well, it can be an integral part for other economical activities of a society, and it's influence can increase in way of selling local production. Management genre and governmental great diplomacy have a considerable importance on tourism development.

According to asters, tourism is a multi course science that if it is completed and developed without careful political analyzing, surely it cannot be completed (Birchil, 2005, International Tourism).

Iran is a prepared country in order to tourism industry considered by the country tourisms and in the field of investment.

International investors and invest owners have a considerable attention on Iran. But, why the Iran's tourism industry are intangible and in active? One of the main reasons of great management weakness can be bestowed on regulations and governmental insight of managers in all surfaces of this industry that is create management system healthy and with special strategy cause growth and progress in that. Organizations in the new millennium In today's competitive conditions, Cannot get the competitive advantage with the rules of yesterday in today's business. But recreating the methods, systems, structure, technology, human resources and competencies can provide favorable conditions for sustainable competitive, changing the attitude of Today's organizations managers can be evaluated as a first step to achieving new competencies in human resource. experts in the field human resource strategy believe that the activities of human resources may lead to increase performance and can be considered as a source of sustainable competitive advantage (Wright, Danfvrd and Snell, 2001). Competence of human resources as a new approach in human resource management sought to provide opportunities to identify the talents, abilities and competencies of managers. Competence of human resources includes five dimensions: business knowledge, strategic management, information technology, employee relationships, quality of working life -family. This study sought to examine the relationship between the competence of human resources and features of organizational performance.

2 Definitions of human resource competencies and performance

Abbas-Pour (2010) says: "Today's transcendent organizations in order to achieve to purposes competitive advantage in a turbulent environment requires more attention to their human resource. In recent decades which seen the growth and maturation of thinking management in the field of Postmodernism, the superior believe is that organizational success depends on its human resources management and it's also based on

strategic thinking".

Based on numerous advantages derived from the relationship between human resource management and organizational performance, many researchers and human resource managers Were encouraged to understand the VARIOUS types of competencies of human resource and indicating of it in order to raise the performance of their organizations (pin,2005).

Competencies are applicable in different fields of human resource management from individual functions is included employment and performance management functions such as strategic planning, design organizational structure, organizational culture. Such reasons that human resources executives is not used Active form for strategic planning, can be the inability of managers to incidence competencies needed in the LIFE (Barney and Wright, 1998).

Human resource professionals to perform the task in the role of strategic partner, need to regularly define and measure the required competencies. competencies to the knowledge, refers to skills, abilities or personality characteristics that directly affects his job performance. Competence can be described as combination of skills, attitudes and behavior that a person or organization have them (Slmr and Chyvv, 2004).

in the other words, the ability in order to present, perform tasks with relative ease and with a high level of predictability is based on the quality at the right time. Performance management strategies tries to such issues as how to achieve management objectives.

Performance management can be define as a strategic and integrated method for providing sustainable success in organizations by way of improve the performance of staff.

Performance management is strategic because it pay attention to broad issues facing the organization, whether the organization in its environment act such that effective and if overall direction of organization is toward achieving organizational goals or not? Attention the above points Dslr (2005) that refers to performance management strategies, he considers some goal For this purpose:

•Help to human resources to improve the performance

•Developing and fostering of staff for career path

•Using from the ideas of staff to improve the organization

•Encourage and participation employee;

•Collecting the information necessary to compensate staff

•Discovery Improvable points and planning for their improvement

3 Organizational competence dimensions

Experts believe that managers to gain required competence, Characteristics and indicators is important. Therefore the basis in this research was based on five dimensions mentioned above.It is believed that the integration of human resource competencies together shows a perfect image from organizational managers levels.

In recent decades, various organizations, have begun to join to the knowledge process and new concepts such as knowledge work, knowledge management and knowledge organization, reports from the intensification of the process. Peter Drucker by applying these concepts reports from creating new types of organizations in which instead of arm strength, mental strength is the rule (Drucker, 1999, p 79). Based on this theory in the future only communities can expect to develop that have more knowledge. Alvani (1380) tells the enjoyment of natural resources cannot be important as knowledge. Knowledge organization achieves to capabilities that is capable make a enormous power from little force (P. 283).

4 Employee relations

Refers to create competitive advantage through training, development and improvement of staff and with the help of diverse workforce, in order to improve competitive context of the organization (Ulrich, 1997).

5 Information of technology

Today, information technology is considered as an effective and most important part in organization theories. Research and study of Technology and its impact on organization and has a long history in management development. DeWitt and Jones (2001) say information technology is a basic instrument and in management and reduce of Uncertainties of management and producing processes.

6 Quality of work-family life

Formulate and develop policies and programs with the aim of achieving the balance between work and family life and also provide recommendations in order to identify and develop career of staffs (Payne, 2005). The quality of work life has been proposed for the first time in the late 60 and these words encompasses a range of theoretical concepts with the aim of organizational problems adjustment. The quality of work life has dynamic and multifaceted structure that covers concepts such as job security, reward systems, training and career advancement opportunities and participation in decision making.

7 Strategic of management

Presence of human resource managers in long-term strategic decisions as well as it is participation in the formulation of business strategies (Payne, 2005).

The strategic role of human resources is focused on align the strategies and process of HR with business strategy.

In order to play this role, HR tries by helping the realization of business strategies, become the strategic partner becoming of business strategies to human resource practices help to business through three ways. The first is that business can be flexible against changing, because the interval between the perceptions of strategy to implement of it is short. Second, businesses can better provide customer requests. Because customer service strategies are converted to specific policies and procedures. Third, business can do the financial performance through more effective enforcement strategies.

8 Performance of organization

Performance management is the area of human resources that could has the greatest contribution in improving organizational performance. The purpose of performance management strategies, increase organizational effectiveness, increase employee productivity and groups and gaining higher level of skill, competence and increase commitment and motivation of staff. Performance management can be defined as a strategic method for providing a sustainable success for organizations by means of improve the performance of staff. Performance management is strategic, because it pay attention to broad issues facing the organization, whether the organization in its environment act such that effective or if overall direction movement of organization is forward to organization goal or not?

9 Theoretical of framework

According to Skaran (2007) theoretical framework of research is theoretical relationships-based conception, between factors and Effective variable on the subject of research. The variables investigated in this research is derived from theoretical principles of research includes human resource competencies and organizational performance. Competence of human resources includes five dimensions: knowledge of business, information technology, quality of working life - family, strategic management, employee relations. In this of research to examine the relationship between the two variables, human resources competencies and mentioned aspects related to organizational performance is considered. Research model has been mentioned in Figure 1

Dependent variables Independents variables (Human resource competences aspects)

Based on research model the following assumptions are developed:

The main hypothesis: There is a relationship between competence of human resources and organizational performance

First hypothesis: There is a relationship between business knowledge and organizational performance.

Second hypothesis: There is a relationship between information technology and organizational performance.

Third hypothesis: There is relationship between the quality of working life - family and organizational performance.

Fourth hypothesis: There is a relationship between strategic management and organizational performance.

Fifth hypothesis: There is a relationship between organizational performance and employee.

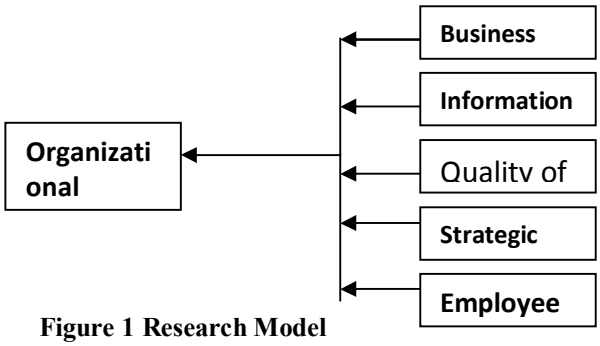

Figure 1 Research Model

10 Method of research

Present study in terms of goal it follows, is an applied research in the field of human resources. Because it is findings solves specific problems within the organization and improves existing conditions. The current research in terms of data-collection method is descriptive and co relational research. Statistical population of research comprise of managers at different levels of studied organization in Tehran. The required data gathered by means of surveys from 145 managers, from studied population. This research has done at Tehran in 2011. Data-collection method, are library and field and has used Questionnaire instrument for data collection. Questionnaire that is support human resources competence and organizational performance is researcher made questionnaire.

Of the 145 questionnaires were sent to the studied population, six questionnaires didn't return back and five questionnaires were excluded due to defects and gathering and analysis of data was conducted with 134 questionnaires. Based on Morgan table if the size of population is about 150, the sample size should be considered 108. With respect to the desired population was comprised of 145 persons, And 134 questionnaires were received in this study. Then we can generalize the results to whole population with 95% confidence. The scale of data is considered distance-based, therefore, to

determine correlations between variables, the Pearson correlation was used. Also tools such as ANOVA, linear correlation test, stepwise multiple regression and ultimately to prioritize independent variables, the Friedman test was used. To calculate the internal coordination, measuring instrument that measure the various features. Initially 30 each prototype is considered as pre-test the coefficient of reliability by using Cronbach's Alpha obtained 91%. On the resulting alpha value the reliability of the questionnaire endorsed. Logical validity of the questionnaire from the two aspects, content and APPEARANCE validity in terms of Clarity and ambiguity and also adequacy of quantity and quality of items by experts, scholars and university professors were approved. Also for the construct validity, the Factor analysis instrument was used. This method as a data reduction technique is very advanced and technical. This method can use for determining the factor load for each of questions. In general, by applying this method, Relevance of questions for measuring of a factor or component can be determined. In this case it is called confirmatory factor analysis. Based on factor analysis, load factor of each dimension of human resource competencies is non-zero.

11Findings

Research is focused on explanation of the relationship between human resources competence aspects and organizational performance. In order to more understanding these relationships, analysis was performed with the development of hypothesis in this field. The resulting of main hypothesis and peripheral hypothesis shows in table 4 given correlation coefficients.

Between human resource competences and its aspect with organization performance, corroborated the relationship between predictor variable and dependent variable. The most amount correlation with organizational performance is related to business knowledge and lowest is employee relations.

Test result	Corralation coeficient	Std.error	p-value	Dependent variable	Independent variable
Acceptance H1	./606	.01	./000	Performance management	Main hypothesis:hr competencies aspects
Acceptance H1	./685	.01	./000	Performance management	First hypothesis:Business knowledge
Acceptance H1	./274	.01	./001	Performance management	Second hypothesis:information technology
Acceptance H1	./543	.01	./000	Performance management	Third hypothesis : quality of life
Acceptance H1	./600	.01	./000	Performance management	Fourth hypothesis:strategic managment
Acceptance H1	./27	.01	./002	Performance management	Fifth hypothesis:employee relations

*p<0/05.**p<0/01,N=134

Also for checking the prediction rate of dependent variable based on the predictor variable variance was used from two-variable linear correlation and stepwise multiple regression.

Which results in Tables 5 and 6 is visible. For this purpose the following hypotheses were tested.

12Result of linear correlation analysis

H0: There is no linear relationship between hr competences and organizational performance

H1: There is a linear relationship between hr competences and organizational performance

Table 5 Linear correlation test

Test result	sig	B	Dependence variable	independence variable
acceptance H1	./000	/495	organizational performance	hr competences aspects

According to table 5 obtained B value consolidated the linear relationship between tow-variables and is justifier the changes in organizational performance based on human resource competencies.

13 The Stepwise multiple regression analysis results

There is most commonly used method for building stepwise model selection method. in this method each time after inserting a variable into model, all variables already have inserted to model and is not meaningful predictor for model exclude from the model. It is means, the variables that theirs significance is reduced by adding other variables exclude from the model. In this method, the following hypotheses were tested:

H0: There is no linear relationship between hr competences aspects and organizational performance.

H1: There is a linear relationship between hr competences aspects and organizational performance.

Table 6 final stages of the stepwise multiple regressions

Result test	Sig	B	Dependent variable	Independent variable	
Aceptence H1	**/000 . /000 . /000 . /000 . /048 .**	**/429 2 ./321 ./204 ./207 -/070**	**Organizational performance**	**Intercept** Business knowledge Information Technology Quality of Life Strategic Management Employee Relations	**The fourth stage of regression D**

*p<0/05,**p>0/01,N=134 p>0/01,F=47/43,R2=/59

According to Table 6, the independent variable, one of the organizational achievements Aspects, for this reason it's significant by inserting of other variables were missed, excluded from the model. It is mean; it has no significant linear relationship with the dependent variable. Positive and significant linear correlation between predictor variables, business knowledge, employee relations, information technology, quality of work life and strategic management has been fixed. Because the B calculated for the employee relations variable is 0.07. This variable has a negative linear relationship with organizational performance. The obtained linear relationship as follows:

+/207	**(strategic managment)**
-/070	**(employee ralations)**
+/321	**(business knowledge)**
+/204	**(information technology)**
2/429	**Organizational performance**

Coefficient of determination value in the fourth stage of this test is 0.59 (R2= 0.59) that is justifier of organization performance based on predictor variables. The value of F (F=47.43) has confirmed the goodness of model in the p>0/01 level.

14 Friedman analysis of variance results

In order to checking of the Equality of priorities we used Friedman test. For doing of this test the follow hypothesis investigated.

H0: The average Rank of each dimension of human resource competencies have significant differences with together.

H1: minimum of average Rank of a pair of the HR competencies have significant differences with together.

Figure 7 Friedman test results and ranking of predictor variables

rank	Mean value	independent variablse
2	33/3	Business knowledge
1	32/4	Information technology
4	56/2	Quality of life
3	3	Strategic management
5	79/1	Employee relations

*p<0/05 Sig=/000, N=134, dF=4, x2=194/002

Conclusion

Based on exploratory factor analysis and confirmatory factor analysis, six factors have most effect on the HR competencies. Also, based on standard estimation model " HR competencies".

The priority of main factors of this model respectively is:

Business knowledge, strategic management, quality of working life – family,employee relations. the results of this research in many aspects Is corresponded with other studies that is done in this field. For example, based on finding of Sung Leung and Khyralzman(2008). Dimensions of strategic management, business knowledge, and information technology are important factors affecting the "company performance". Also the findings of Bvsly and Pao (2004), has indicated, active managers in the field of human recourse knew the Business Knowledge competence as a main factor in creating of value added by HR functions

Also all of researcher already have investigated HR competencies have emphasized, recognizing and identifying of HR competencies leads to better understanding of role and positions of human resource managers as strategic partners

And by using of can estimate the HR manager performance and by Equipping of HR managers to strategic objectives achieve to organization objects.

For example, Leung (2008) in his study concluded that improving human resources competences (including strategic management, business knowledge, talent management, employee relations, quality of working life - family and information technology) has a significant positive relationship with the success of human resources managers

The thing, in relation to correlation study analyzing is resulted,

fixed the relationship between predictor variable (HR competencies)and dependent variable (performance management). The other findings of this study indicate, there is significant relationship between business knowledge, information technology, quality of life, strategic management, employee relations and organizational performance. That correlation coefficient and it's significant level individually (main and peripheral hypothesis) is shown in table 4 proving linear relationship between predictor variable and dependent variable is resulted in main hypothesis and between HR competencies aspects and organizational performance, Through the two-variable regression and stepwise multiple regression. The obtained results is shown in figure 5, 6. In stepwise multiple regressions, considering this the predictor variable has inserted to model based on correlation coefficient.

Was determined that by inserting of variables with higher correlation. the variable employee relations, missed its linear correlation with performance management.

Also the Variable quality of working life has negative partial correlation with organizational performance.

It's mean the it 'relationship is negative. The

variance of organizational performance can be predicted based on HR competencies (B). Based on obtained Coefficient of determination can be said organization performance value dependent to the variables: strategic management, information technology, knowledge business, quality of life (up to 95%).

Considering that five aspect of HR competencies present a perfect imagination of manager's competencies with together. The new findings of research proved, in discussed community, managers have more interested to gain HR competencies. Thus this has been effective in improving organizational performance.

According to confirmation of relationship between "competence of human resources" and "organizational performance", should be seek ways to implement the "competence of human resources". Thus, by more increasing of the level of "competence of human resources", can improve "organizational performance" in the studied organizational sets. Obtained Proposals based on results from performed tests including the results is suggested.

HR managers can be encouraged to design appropriate strategies for human resources.

Accordance with design requirements, implement and evaluate some plans.

- Based on obtained results, studied organization should use from managers in the field of human resource and they have education and Professional knowledge and academic in the field of human resources.
- Also human resource managers have required knowledge in the field of business and financial problems
- Based on obtained results (HR competencies), it is important, planning as Training programs for employee by managers.
- In addition to human resource managers in order to use of desired Capacities of the employees with difference and inconsistent cultures, have to plan to accept this peoples.
- Creating Physical and psychological heath programs for organization human resources.

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Ginsenoside Content in The Leaves and Roots of *Panax ginseng* at Different Ages

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Abstract: *Panax ginseng* is one of the most important medicinal plants in Asia, particularly Korea. Triterpene saponins (ginsenosides) are the main bioactive compounds in *P. ginseng*. The present study investigates the growth characteristics and variation of ginsenoside content in the leaves and roots of Korean ginseng (*Panax ginseng*) at different growth stages (from 1 to 6 years). Variation in ginsenoside content of both the leaves and roots was higher at the beginning of growth (1-3 years) and then increased with decreasing rates. Root fresh weight increased by 3.3, 5.0, 2.2, 3.0, and 1.7 times for successive year intervals. In comparison, leaf fresh weight increased by 4.6, 2.6, 3.7, 2.4, and 1.2 times for successive year intervals. Analysis of Korean ginseng leaves and roots indicated the presence of 10 ginsenosides (Rb_1, Rb_2, Rb_3, Rc, Rd, Re, Rf, Rg_1, Rg_2, and Rh_1) with the leaves containing higher levels of ginsenoside than the roots. All ginsenosides were maximally accumulated in the leaves during the early growth stages(1^{st} and 2^{nd} years), whereas maximum accumulation was recorded in the roots during the later growth stages (~5 years) Levels of ginsenoside Re, Rd, Rg_1 and Rc were higher in the leaves than other ginsenosides at all growth stages. Rb_1, Rc, and Rb_2 ginsenosides levels exhibited wide variation in the leaves across each year interval compared to the other 7 ginsenosides. Rb_1 accumulated more in the roots than in the leaves of Korean ginseng. Of the 10 ginsenosides examined, Rf ginsenoside content in the roots exhibited wide annual variation, with a difference of 3.3 times between the highest and lowest content. Overall, ginsenosides levels were much higher in the leaves compared to the roots, with plant age also contributing to variation in the levels of ginsenoside compounds.
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http://www.lifesciencesite.com. 105

Keywords: *Panax ginseng*; ginsenosides; leaf; root; growth pattern

1. Introduction

Asian ginseng, which is commonly known as Korean ginseng (*Panax ginseng* C. A. Meyer, Aralaceae family), has a long history worldwide as a medicinal herb (Kee, 1999). Korean ginseng is a perennial herb that produces flowers and fruits in its third year of growth. Ginseng root is normally harvested between the fourth and sixth year of growth. For at least 2000 years, Korean ginseng has been valued as a medicinal herb in traditional Asian medicine. By the 1900s, demand for ginseng was greater than the available supply of wild plants, hence, Korea began commercial cultivation (Kee, 1999; Ang Lee et al., 2001). Since the beginning of the 20^{th} century, the constituents of ginseng root have been investigated, and several classes of compounds have been isolated. Examples include triterpene saponins, essential oil-containing polyacetylenes and sesquiterpenes, polysaccharides, peptidoglycans, nitrogen-containing compounds, and various ubiquitous compounds, such as fatty acids, carbohydrates, and phenolic compounds (Tang et al., 1992).

Ginsenoside is a major compound of ginseng which has numerous physiological and pharmacological effects (Sticher, 1998). More than 150 naturally occurring ginsenosides have been isolated from different parts of ginseng plants (Christensen and Steve, 2008) with approximately 40 ginsenoside compounds identified in *P. ginseng* alone. While ginsenosides are distributed throughout parts of the ginseng plant, different parts of the plant exhibit distinct ginsenoside profiles, such that these parts may have different pharmacological activities (Attele et al., 1999). The key physiological effect of ginsenosides is that it can influence central nervous system activity and functions as anti-cancer drugs (Shinkai et al., 1996, Iishi et al., 1997, Kubo et al., 1992, Attele et al., 2002,

Dey et al., 2002, Yun, 1996). In addition, ginsenosides can have other activities including its anticarcinogenic, immunomodulatory, anti-inflammatory, antiallergic, antiatherosclerotic, antihypertensive, and antidiabetic effects as well as antistress activity and effects on the central nervous system (Lu et al., 2009).

Ginsenosides are specific types of triterpene saponins, and are thus members of a large group of plant glycoside compounds. In the 1960s, Shibata and others isolated 13 different saponins from Korean ginseng, and classified them according to RF values using thin-layer chromatography (Shibita et al., 1966). Subsequently, more than 40 putative ginsenosides have been isolated from ginseng roots. These ginsenosides are classified into two main groups: (1) the glycosides of 20(S)-protopanaxadiol (20[S]-dammar-24-ene-3b, 12b, 20- triol) (Rb_1, Rb_2, Rc, Rd, Rg_3 and Rh_2, and (2) and the glycosides of 20(S)-protopanaxatriol (6a-hydroxy-20[S]-protopanaxadiol) (Re, Rf, Rg_1, Rg_2, Rh_1 and R_1) (Attele et al., 1999; Awang, 2000; Popovich and Kitts 2004). Ginsenosides are distributed in many parts of the ginseng plant, including the root, leaf, and berry. Different parts of the plant contain distinct ginsenoside profiles (Attele et al, 1999) which may exhibit different pharmacological activity. Several studies have isolation and quantified ginsenosides in different parts of ginseng; however, there have been no studies that have investigated differences in leaf ginseng content at different growth stages. In this study, we quantified the amount of ginsenoside in Korean ginseng leaves and roots of different ages (from 1 to 6 years).

2. Material and Methods

2.1. Plant Material

Leaves and roots of different ages of Korean ginseng were collected at September of 2011 in field of Chungnam National University, Daejeon, Korea. Collected samples were freeze dried for 72h in freeze dryer and dried samples were ground into a fine powder (40-mesh) by mill.

2.2. Extraction of ginsenoside

Samples (approximately 5g) were extracted with 400 ml of 70% EtOH at 37℃ for three days in shaking incubator and repeat three times in same method. The extract was filtrated through filter paper (Whatman No. 42) and evaporated (Heidoph VV2011, 40℃). The evaporated extract was resuspended with 5ml of distilled water and freeze-dried the samples. It stored in room temperature and 1g sample resuspended in 20ml distilled water for HPLC analysis.

2.3. HPLC analysis

The 10 ginsenosides were analyzed using HPLC system of a model NS-4000 (Futecs Co., Daejeon, Korea) equipped with Softa Evaporative Light Scattering Detector (ELSD) 300s (SofTA, Thornton, Co, USA). The separation of ginsenoside was performed on a PRONTOSIL NC (250× 4.6mm) fractionation column, with a flow rate of 0.8 ml min^{-1}. The sample was injected (20 μℓ) and applied gradient elution was as follows our previous work (Kim et al., 2009). Identification and quantification of ginsensides were carried out by comparing the retention times and the peak areas respectively with those of ginsenoside standard or by direct addition of ginsenoside standard into the sample (spike test). Sample aliquots were filtered through a 0.45 μm poly(tetrafluoroethylene) filter prior to injection. All samples were run in triplicate. The standard chemical (ginsenoside Rb_1, Rb_2, Rb_3, Rc, Rd, Re, Rf, Rg_1, Rg_2, Rh_1) was purchased from canfo chemical, china.

2.4. Statistical analysis

The statistical significance was evaluated by ANOVA using the SAS 9.2 Software (SAS, 2010); SAS Institute Inc., Cary, NC, USA)., followed by individual comparison using Duncan's multiple-range test at $p < 0.05$.

3. Results

3.1. Growth characteristics of the leaves and roots of Korean ginseng at different ages

The growth patterns of the leaves and roots with respect to length, width, and fresh weight at different ages are presented in Table 1, while their morphological development is shown in Fig. 1. There was significant variation in all evaluated parameters for each year. Both leaf and root growth increased with increasing age. There was higher variation in leaf and root growth beginning during early development (1-3 years). Root fresh weight increased by 3.3, 5.0, 2.2, 3.0, and 1.7 times for successive year intervals. Root fresh weight was 5 times higher in the third year of growth compared to the second year of growth. A similar pattern was observed for growth in the length and diameter of roots. In comparison, leaf fresh weight increased by 4.6, 2.6, 3.7, 2.4, and 1.2 times for successive year intervals. The second year yielded 4.6 times higher leaf weight than the first year of growth. A similar pattern was observed for growth in the length and diameter of leaves.

3.2. Ginsenoside contents in the leaves of Korean ginseng at different ages

Analysis of Korean ginseng leaves and roots showed that the leaves contained higher levels of ginsenoside than the roots (Table 2). Ten ginsenosides (Rb_1, Rb_2, Rb_3, Rc, Rd, Re, Rf, Rg_1, Rg_2, and Rh_1) were identified from the analysis of Korean ginseng

leaves (Table 2). Ginsenoside content varied significantly with ginseng age. Early ginseng stages showed maximum accumulation of all ginsenosides. The highest accumulation of ginsenosides was in the first year of growth, and this then generally decreased with increasing plant age. Of the 10 ginsenosides, only Rg_1 had the highest accumulation in year 6. The levels of ginsenosides Re, Rd, Rg_1, and Rc were much higher for all ages compared to the other 7 ginsenosides. Re, Rd, Rg_1, and Rc levels were 56, 41, 32, and 28 times higher than the lowest levels of ginsenoside (Rf) in the first year. Rb_1, Rc, and Rb_2 ginsenoside levels varied widely across each year interval compared to the other 7 ginsenosides. This difference, in Rb_1, Rc, and Rb_2 content was 7.2, 2.8, and 2.7 times, respectively. Total leaf ginsenoside content in Korean ginseng varied significantly at different plant ages (Table 2). The range in total leaf ginsenoside was from 130.09 to 83.47 mg/g D.W. The highest amount of ginsenoside accumulated during the first year, then decreased until the third year, and subsequently slightly increased from the fourth to sixth year.

Table 1: Growth of leaves and root of Korean ginseng at different ages

Age	Leaf			Root		
	Length (cm)	Width (cm)	F.W. (g)	Length (cm)	Diameter (mm)	F.W. (g)
1	3.90 f	2.08 f	0.14 e	13.24 f	4.75 f	0.74 e
2	6.72 e	3.40 e	0.64 e	16.20 e	8.32 e	2.44 e
3	8.52 d	3.94 d	1.66 d	22.54 d	12.14 d	12.24 d
4	12.70 c	5.50 c	6.08 c	27.34 c	17.98 c	26.59 c
5	17.10 b	7.70 b	14.79 b	29.30 b	25.80 b	79.33 b
6	19.40 a	8.52 a	17.85 a	37.50 a	33.59 a	134.43a

3.2. Ginsenoside contents in the leaves of Korean ginseng at different ages

Analysis of Korean ginseng leaves and roots showed that the leaves contained higher levels of ginsenoside than the roots (Table 2). Ten ginsenosides (Rb_1, Rb_2, Rb_3, Rc, Rd, Re, Rf, Rg_1, Rg_2, and Rh_1) were identified from the analysis of Korean ginseng leaves (Table 2). Ginsenoside content varied significantly with ginseng age. Early ginseng stages showed maximum accumulation of all ginsenosides. The highest accumulation of ginsenosides was in the first year of growth, and this then generally decreased with increasing plant age. Of the 10 ginsenosides, only Rg_1 had the highest accumulation in year 6. The levels of ginsenosides Re, Rd, Rg_1, and Rc were much higher for all ages compared to the other 7 ginsenosides. Re, Rd, Rg_1, and Rc levels were 56, 41, 32, and 28 times higher than the lowest levels of ginsenoside (Rf) in the first year. Rb_1, Rc, and Rb_2 ginsenoside levels varied widely across each year interval compared to the other 7 ginsenosides. This difference, in Rb_1, Rc, and Rb_2 content was 7.2, 2.8, and 2.7 times, respectively. Total leaf ginsenoside content in Korean ginseng varied significantly at different plant ages (Table 2). The range in total leaf ginsenoside was from 130.09 to 83.47 mg/g D.W. The highest amount of ginsenoside accumulated during the first year, then decreased until the third year, and subsequently slightly increased from the fourth to sixth year.

3.3. Ginsenoside contents in the roots of Korean ginseng at different ages

Ginsenoside content in Korean ginseng roots varied significantly (Table 3). It is noticeable that the roots of Korean ginseng contained lower levels of ginsenosides compounds compared to ginsenosides content in the leaves except for Rb_1 (Table 3). In the later growth stages (~5 years) the roots maximally accumulated all ginsenosides compared to the leaves, except for a few specimens. There was a greater accumulation of the ginsenoside Rb_1 in the root compared to the leaf. The highest amount of Rb_1 (15.92 mg/g D.W.) accumulated in the fifth year of growth, and was 1.35 times higher compared to the highest leaf content of Rb_1. In comparison, the lowest amount of Rb_1(8.60 mg/g D.W.) accumulated in the root during the first year of growth, and was 5.2 times higher compared to that accumulated in the leaf. Rf ginsenoside levels exhibited wide annual variation compared to the other 9 ginsenosides. There was a 3.3 times difference between the highest and lowest Rf content. There was significant annual variation in the total ginsenoside content in the root of Korean ginseng at different ages (Table 3). Ginsenoside content was much lower in Korean ginseng root compared to total leaf ginsenoside content. Total ginsenoside content in the leaf ranged from 130.09 to 83.47 mg/g D.W., whereas it ranged from 46.0 to 25.77 mg/g D.W. in the root. Ginsenoside accumulation was greater in the root during the later growth stages, which was the opposite of that recorded for the leaf.

4. Discussions

To the best of our knowledge, information about the ginsenosides content in the leaves and roots of ginseng at different plant ages has not been published. Ginsenosides are generally distributed throughout all the parts of the ginseng plant. We found that the highest total ginsenoside content accumulated during the first year of growth, then decreased until the third year, and subsequently slightly increased from the fourth to sixth year in ginseng leaves; however, the highest total ginsenoside content accumulated in the roots during the later stages of ginseng growth, which was the opposite of that recorded for leaf. Liu (1988) reported that total ginsenosides content increases with age in Asian ginseng roots, from 1.15% at 1-year-old to

4.85% at 6-year-old, which is supported by our results for total ginsenoside content in the roots. Court et al. (1996) investigated the influence of root age on the ginsenoside content of American ginseng, and found that ginseng harvested after just 3 years of cultivation contained lower amounts of ginsenosides than ginseng harvested after 4 years

Table 2: Ginsenoside contents in leaves of Korean ginseng at different ages

Age	Ginsenoside content (mg/g D.W.)										
(Year)	Rb_1	Rb_2	Rb_3	Rc	Rd	Re	Rf	Rg_1	Rg_2	Rh_1	Total ginsenosides
1	11.81 a	9.61 a	1.51 a	18.41 a	27.35 b	36.73 a	0.66 c	21.26 ab	2.03 bc	0.74 c	130.09 a
2	3.95 bc	8.51 a	1.32 b	15.26 b	33.80 a	34.05 b	0.68 bc	21.33 ab	1.97 c	0.79 c	121.65 a
3	1.69 d	4.16 cd	0.82 d	6.69 d	22.06 cd	28.21 c	0.78 a	13.23 c	4.54 a	1.30 b	83.47 d
4	1.64 d	3.60 d	0.85 d	6.94 d	24.79 bc	29.84 c	0.72 b	20.11 b	4.31 a	1.66 a	94.45 cd
5	2.92 c	5.16 bc	1.04 c	9.86 c	19.39 d	33.59 b	0.71 b	20.14 b	2.27 bc	0.81 c	95.88 c
6	4.31 b	5.75 b	1.12 c	11.50 c	22.60 c	35.08 ab	0.72 b	22.92 a	2.49 b	0.86 c	107.36 b

Table 3: Ginsenoside contents in roots of Korean ginseng at different ages

Age	Ginsenoside content (mg/g D.W.)										
	Rb_1	Rb_2	Rb_3	Rc	Rd	Re	Rf	Rg_1	Rg_2	Rh_1	Total ginsenosides
1	8.60 d	1.35 f	0.28 f	3.49 d	1.78 c	6.66 c	0.84 f	1.85 f	0.43 c	0.49 e	25.77 e
2	11.39 c	1.81 d	0.35 e	5.23 c	3.25 a	7.55 a	1.26 d	3.33 e	0.78 a	1.03 b	35.98 d
3	12.24 b	2.75 c	0.47 c	7.10 b	2.75 b	6.91 b	1.46 c	4.67 d	0.63 b	0.88 c	39.86 c
4	12.72 b	3.08 b	0.51 b	8.09 a	2.84 b	6.46 d	1.58 b	5.39 c	0.59 b	0.70 d	41.96 b
5	15.92 a	3.77 a	0.57 a	8.35 a	1.81 c	6.23 e	2.19 a	6.47 a	0.41 c	0.28 f	46.00 a
6	15.71 a	1.53 e	0.42 d	5.45 c	0.99 d	6.39 d	1.09 e	5.87 b	0.32 d	1.25 a	39.02 c

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Capparis spinosa L. Propagation and Medicinal uses

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Abstract: The caper bush (*Capparis spinosa* L., Cappari daceae) has been introduced as a specialized culture in some European countries during the last four decades. The economic importance of caper plant (young flower buds, known as capers, are greatly favored for seasoning and different parts of the plant are used in the manufacture of medicines and cosmetics) led to a significant increase in both the area under cultivation and production levels during the late 1980s. The main production areas are in harsh environments found in Morocco, the southeastern Iberian Peninsula, Turkey, and the Italian islands of Pantelleria and Salina. This species has developed special mechanisms in order to survive in the Mediterranean conditions, and introduction in semiarid lands may help to prevent the disruption of the equilibrium of those fragile ecosystems.
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Keywords: Capparis spinosa, flower buds, medicines, cosmetics

Introduction:

Capparis spinosa is a perennial winter-deciduous species that bears rounded fleshy leaves and big white to pinkish-white flowers. A *caper* is also the pickled bud of this plant. Caper bush is present in almost all the circum-Mediterranean countries and is included in the floristic composition of most of them but whether it is indigenous to this region is uncertain(Yang, Liu et al. 2008). Although the flora of the Mediterranean region has considerable endemism, the caper bush could have originated in the tropics, and later been naturalized to the Mediterranean basin The plant is best known for the edible bud and fruit (*caper berry*) which are usually consumed pickled. Other species of *Capparis* are also picked along with *C. spinosa* for their buds or fruits(Jiang, Li et al. 2007; Tlili, Khaldi et al. 2010).

Plant

The caper bush (*Capparis spinosa* L., Capparidaceae) has been introduced as a specialized culture in some European countries during the last four decades. The economic importance of caper plant (young flower buds, known as capers, are greatly favored for seasoning and different parts of the plant are used in the manufacture of medicines and cosmetics) led to a significant increase in both the area under cultivation and production levels during the late 1980s. The main production areas are in harsh environments found in Morocco, the southeastern Iberian Peninsula, Turkey, and the Italian islands of Pantelleria and Salina. This species has developed special mechanisms in order to survive in the Mediterranean conditions, and introduction in semiarid lands may help to prevent the disruption of the equilibrium of those fragile ecosystems. (Germano, De Pasquale et al. 2002)

Capparis spinosa is highly variable in nature in its native habitats and is found growing near the closely related species *C. sicula*, *C. orientalis*, and *C. aegyptia*. Scientists can use the known distributions of each species to identify the origin of commercially prepared capers(Khanfar, Sabri et al. 2003). The shrubby plant is many-branched, with alternate leaves, thick and shiny, round to ovate in shape. The flowers are complete, sweetly fragrant, showy, with four sepals, and four white to pinkish-white petals, many long violet-colored stamens, and a single stigma usually rising well above the stamens (Rhizopoulou and Psaras 2003).

Environmental requirements

The caper bush requires a semiarid climate. Mean annual temperatures in areas under cultivation are over 14°C and rainfall varies from 200 mm/year in Spain to 460 in Pantelleria and 680 in Salina. In Pantelleria, it rains only 35 mm from May through August, and 84 mm in Salina. A rainy spring and a hot dry summer are considered advantageous. This drought-tolerant perennial plant has favorable influence on the environment and it is utilized for landscaping and reducing erosion along highways, steep rocky slopes, sand dunes or fragile semiarid ecosystems.

Harvest duration of at least 3 months is necessary for profitability. Intense daylight and a long growing period are necessary to secure high yields. The caper bush can withstand temperatures over 40°C in summer but it is sensitive to frost during its vegetative period. The potential exposure of caper hydraulic architecture to cavitations has recently been proposed as an explanation for its susceptibility to

freezing conditions. On the other side, caper bush seems to be able to survive low temperatures in the form of stump, as it happens in the foothills of the Alps. Caper plants have been found even 1,000 m above sea-level though they are usually grown at lower altitudes. Some Italian and Argentine plantings can withstand strong winds without problems, due to caper bush decumbent architecture and the coriaceous consistency of the leaves in some populations(Ma, Lu et al. 2010; Wang, Shi et al. 2012).

The caper bush is a rupiculous species. It is widespread on rocky areas and is grown on different soil associations, including alfisols, regosols and lithosols. In different Himalayan locations, *C. spinosa* tolerates both silty clay and sandy, rocky or gravelly surface soils, with less than 1% organic matter. It grows on bare rocks, crevices, cracks and sand dunes in Pakistan, in dry calcareous escarpments of the Adriatic region, in dry coastal ecosystems of Egypt, Libya and Tunisia, in transitional zones between the littoral salt marsh and the coastal deserts of the Asian Red Sea coast, in the rocky arid bottoms of the Jordan valley, in calcareous sandstone cliffs at Ramat Aviv, Israel, and in central west and northwest coastal dunes of Australia. It grows spontaneously in wall joints of antique Roman fortresses, on the Wailing Wall, and on the ramparts of the castle of Santa Bárbara (Alicante, Spain). Moreover, this bush happens to grow in the foothills of the Southern Alps (Verona, Italy) and is a common species on city walls in Tuscany (Italy) and on bastions of Medina and Valletta (Malta).Clinging caper plants are dominant on the medieval limestone-made ramparts of Alcudia and the bastions of Palma (Majorca, Spain). This aggressive pioneering has brought about serious problems for the protection of monuments (Ma, Lu et al. 2010).

The caper bush has developed a series of mechanisms that reduce the impact of high radiation levels, high daily temperature and insufficient soil water during its growing period. (Lam, Han et al. 2009; Zhang and Tan 2009)

Caper bush has a curious reaction to sudden increases in humidity - it forms wart-like pock marks across the leaf surface. This appears to be harmless, as the plant quickly adjusts to the new conditions and produces unaffected leaves.

It also shows characteristics of a plant adapted to poor soils. (Tesoriere, Butera et al. 2007)This shrub has a high root/shoot ratio and the presence of mycorrhizae serves to maximize the uptake of minerals in poor soils. Different nitrogen-fixing bacterial strains have been isolated from the caper bush rhizosphere playing a role in maintaining high reserves of that growth-limiting element. (Lam, Han et al. 2009).

Propagation

Capers can be grown easily from fresh seeds gathered from ripe fruit and planted into well drained seed-raising mix. Seedlings will appear in 2–4 weeks. Old, stored seeds enter a state of dormancy and require cold stratification to germinate. The seed of the genus *Capparis* is bitegmic. The testa is 0.2–0.3 mm thick, with all its cell walls somewhat lignified, some of them with distinct thickening; its tegmen consists of an outer fibrous, lignified layer four to ten-cell thick, with a lignified endotegmen composed of contiguous cuboid cells, with strongly thickened radial walls. Only the mesophyll between exo- and endotegmen is unlignified. Caper seed germination shows a dependence on the integrity of the covering structures. The viable embryos germinate within 3 to 4 days after partial removal of the lignified seed coats. (Caglar, Caglar et al. 2005)The seed coats and the mucilage surrounding the seeds may be ecological adaptations to avoid water loss and conserve seed viability during the dry season.

Use of stem cuttings avoids high variability in terms of production and quality. Nevertheless, plants grown from cuttings are more susceptible to drought during the first years after planting. Caper bush is a difficult-to-root woody species and successful propagation requires careful consideration of biotypes and seasonal and environmental parameters. Rooting percentages up to 55 are possible when using one-year-old wood, depending on cutting harvest time and substrate utilized.(Caglar, Caglar et al. 2005) Propagation from stem cuttings is the standard method for growing ‘Mallorquina’ and ‘Italiana’ in Spain, and ‘Nocella’ in Salina. Hardwood cuttings vary in length from 15 to 50 cm and diameter of the cuttings may range from 1 to 2.5 cm. Another possibility is to collect stems during February through the beginning of March, treat them with captan or captafol and stratify them outdoors or in a chamber at 3–4 °C, covered with sand or plastic. Moisture content and drainage should be carefully monitored and maintained until planting. Using semi-hardwood cuttings, collected and planted during August and September, low survival rates (under 30%) have been achieved. Softwood cuttings are prepared in April from 25- to 30-day shoots. Each cutting should contain at least two nodes and be six to ten centimeter long. Basal or sub terminal cuttings are more successful than terminal ones. Then, cuttings are planted in a greenhouse under a mist system with bottom heat; 150 to 200 cuttings/m2 may be planted. (Caglar, Caglar et al. 2005; Ozcan 2008)

Medicinal uses

In Greek popular medicine, a herbal tea made of caper root and young shoots is considered to be beneficial against rheumatism. Dioscoride (*MM* 2.204t) also provides instructions on the use of sprouts, roots, leaves and seeds in the treatment of strangury and

inflammation(Ageel, Parmar et al. 1986; Tlili, Khaldi et al. 2010).

Different flavonoids were identified in caper bush and capers: rutin (quercetin 3-rutinoside), quercetin 7-rutinoside, quercetin 3-glucoside-7-rhamnoside, kaempferol-3-rutinoside, kaempferol-3-glucoside, and kaempferol-3-rhamnorutinoside. Rutin is a powerful antioxidant bioflavonoid in the body, and is used as a dietary supplement for capillary fragility. Rutin has no known toxicity(Lam, Han et al. 2009; Tlili, Nasri et al. 2009; Yang, Wang et al. 2010). Capers contain more quercetin per weight than any other plant(Darwish and Aburjai 2010; Yang, Wang et al. 2010).

Caper root bark and leaves may have some anticarcinogenic activity. In fact, the hydrolysis products of indol-3-ylmethyl glucosinolates have anticarcinogenic effects(Arena, Bisignano et al. 2008; Lam and Ng 2009). Although the consumption of capers is low in comparison with the intake of other major dietary sources of glucosinolates (white cabbage, broccoli and cauliflower) it may contribute to the daily dose of natural anticarcinogens that reduces cancer risk. Glucosinolates are also known to possess goitrogenic (anti-thyroid) activity. Also, rutin and quercetin may contribute to cancer prevention (Cao, Li et al. 2010). Selenium, present in capers at high concentrations in comparison with other vegetable products, has also been associated with the prevention of some forms of cancer. [18]Capers are good for people who suffer from mar disease(Tesoriere, Butera et al. 2007; Ramezani, Aghel et al. 2008; Daoudi, Aarab et al. 2012).

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Do actions speak louder than words? An empirical investigation in terms of organizational performance in manufacturing organizations.

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Abstract:During the last years, organizational performance of manufacturing organizations is considered to be a key for a country's economy. As a result of high positive performance of manufacturing organization; the overall effects on the society have attributed the attention and the interest of organisational researchers. Armstrong and Baron (2003) highlighted the need of performance management as being strategic, integral (vertical, functional, human resource integration and integration of individual needs), focus on performance improvement as well as with the development. Gates and Otley (1999) further broaden the scope of performance measurement to include strategy development and the taking of action. In this study, researcher investigates the extent to which an organizational performance is affected by the actions of manufacturing leaders than by just implementing strong rules and regulations in the manufacturing organization. It was also examine whether differences in manufacturing organizational performance and actions of their leaders relate directly to manufacturing organizational performance or vice versa. There are number of tools and techniques available to measure organizational performance e.g. balance score card theory (BSC) by Kaplan and Norton (1992) based on stakeholder theory. The balanced scorecard approach was used as an operational tool, and it is employed to measure and improve operational performance of manufacturing organizations. According to Professor, Bob Kaplan, balance scorecard approach has further extended the measurement of organizational performance. Lipe and Salterio's (2000) observed that the application of balance scorecard approach facilitates managers' judgment, they further elaborate that balance scorecard approach improves managers' judgement regarding what is actually essential without any overloading of information. Further according to Tomasello M et al (2005), humans are more skilled than other animals at discerning what others are perceiving, intending, desiring, knowing, and believing—allowing group decision based on mutual discussion. It is therefore expected that the performance of the manufacturing organizations in this study to be attributed to the ability to actually do the job of their subordinates by the manufacturing leaders and thus set an example for the workers and thus enhance the performance of the manufacturing organization. Based on the results of data analysis of 132 manufacturing organization leaders/workers, it was found that organizational performance measured using balance score card approach is negatively related to both strong rules and regulations than by the actions of manufacturing organization leaders. Researcher argues this is due to strong rules and regulations in manufacturing organizations and so subordinates own innovativity reduces and causes organisational performance at stack. On the other hand manufacturing leaders' positive attitude has a significant positive relation between manufacturing organisational performance. Finally, it was also observed that manufacturing leaders educational background, related field experience positively influences the manufacturing organizational performance. Overall, results suggest that the more skilled and experience a manufacturing leader has, the more positive is the organizational performance. In a nut shell it can be concluded that manufacturing organizational performance is directly related to the actions of manufacturing leaders as well as the skills, experience and ability to do the job of his/her subordinate. A model for improving performance of manufacturing organizations has been developed as a result of data analysis of this study and is presented in this paper to enhance the performance of manufacturing organizations.

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Keywords: Manufacturing Organizational Performance; Actions of leaders; Skilsl and experience of leaders, Balance Score Card

1. Introduction:

There is a large and growing body of evidence that demonstrates a positive link between the actions of manufacturing leaders and organizational performance. The emphasis is on actions of manufacturing leaders in manufacturing organizations that reflects the view that manufacturing organizational performance depends less on tangible resources, but rather on intangible ones, particularly actions of manufacturing leaders. Recruiting and retaining the best manufacturing leaders, however, is only part of the equation. The organization also has to leverage the skills and capabilities of its manufacturing leaders by encouraging manufacturing leaders' positive actions and providing a supportive environment in which manufacturing leaders can freely apply their skills, knowledge and experience to enhance subordinates' productivity. In this study, researcher will assess the manufacturing leader's actions that can lead to improved organizational

performance and identify the key elements of the actions of manufacturing leaders which are essential to make subordinates more productive. The researcher will also examine the effect of these actions of manufacturing leaders on productivity and subsequently the impact on organizational performance, for which evidence is now growing. The purpose of this study was to test the effects of organizational performance relationship with the actions of manufacturing leaders Based on a cross-sectional study of manufacturing organizations performance and actions of manufacturing leaders , the paper tests whether the positive actions of manufacturing leaders are a key to enhance manufacturing organizational performance or vice versa. The questionnaire for this purpose was designed to find whether the positive actions of manufacturing leaders are one of the factors to enhance manufacturing organizational performance. The findings of the study will have implications for manufacturing leaders as well as for the top management of manufacturing organizations wishing to formulate a strategy to enhance manufacturing organizational performance based on manufacturing leaders' characteristics.

2. Literature review

Pertaining to performance management, few comprehensive definitions have been considered. Glossary of Performance Terms (IDeA) highlight that it involves understanding and taking actions on performance issues at each management level of the organisation, it starts from individuals, to organisational teams and its directorates and ultimately leads through to the whole organisation itself. It also involves performance measurement, systems and processes. Performance management is basically deals with managing people and 'the way people within an organisation operate and work together'. Organisational issues for example management/leadership styles, decisional issues, motivating people and persuading innovative ways, and risk taking are just a few variables to enhance organisational performance.

The definition of performance management elaborates the depth of the subject highlighting some of the activities involved in managing performance, that require a range of multi skills and functional approaches. Performance management has developed from diverse origins. During the last decades, number of measurement and management tools and approaches has been designed by number of researchers. For example, financial management and particularly management accounting have been designed for assessing and monitoring the financial performance of organisations; Operations Management particularly focus on the "shop floor" performance and it is mostly targeting on improving output and efficiency of manufacturing or service organisations; Strategy Management concerned with the development of plans to achieve future goals and objectives. Personnel management have been developed for managing the performance of staff. It is not very old concept that performance management from these different fields has started to unite and identify the need for integration into a multidisciplinary loom to manage performance. Neely et al, (1995) defined performance measurement that it is a system of accounting the efficiency and effectiveness of actions. Neely, (1998) further described, the actions needed to quantify the performance of organisations by pinpointing the performance measurement system as comprising three inter-related factors:

- Individual measures that quantify the efficiency and effectiveness of actions.
- A set of measures that combine to assess the performance of an organisation as a whole.
- A supporting infrastructure that enables data to be acquired, collated, sorted, analysed, interpreted and disseminated.

This definition given by Neely, (1998) is assumed to be one of the exact and mostly cited definitions for performance measurement, others famous definitions of performance management given by e.g., Ittner, Larcker and Randall (2003), Gates, (1999) and Otley, (1999) have further widen the area of performance measurement and it also contain strategy development as well as taking of actions.

A review of the literature by Archer and Otley et al, (1990-2003) identifies a number of reasons for managing performance as:

- Strategy Formulation, it deals with the objectives of the organisation and in what ways organisation is planning to target these objectives.
- Managing the strategy implementation plan in the organisation; it can be achieved by analysing the strategy implementation progress with the strategy of the organisation as planned in the beginning.
- Challenging the assumptions made during implementation process, and it can be achieved by targeting the implementation of a planed strategy as well as to assure that its parameters are legitimate.
- Checking the position where you are, by analysing performance achieved with the performance planned.
- Conforming to the non-negotiable issues, this can be achieved by checking whether the organisation is fulfilling the minimum

standards require to survive in the market (for example, legal, social and environmental requirements, etc).

- Properly communicate the strategy to all the organisational teams, it can be achieved by communicating the information regarding strategic goals/objectives the organisational teams are required to achieve.
- Properly communication the strategy of the organisation with all the stakeholders of the organisation.
- Give timely feedback to the organisational teams regarding how they are performing/achieving the organisational goals/objectives against the planned goals/objectives.
- Reward the good performers in the organisation who are achieving the strategy as planned, to motivate others as well as to the good performers.
- Evaluate the organisational performance against the benchmark of different organisations, units, departments, organisational teams as well as against the individuals.
- Provide information regarding management decision-making.
- Give encouragement for innovation/improvement in the existing process and self learning.

As argued by Neely, Kaplan and Norton; performance management system is assumed to be interactive (Neely, 1998; Kaplan and Norton, 2001) because its main roles are to aid the execution of the business strategy and to question strategic assumptions. To measure organisational performance, managers who use the balance scorecard, as an interactive system are overloaded; are not able to interactively use the system (Weber and Schaeffer, 2000). According to the research of (Lipe and Salterio's, 2000, 2002), the application of the balance scorecard approach gives managers' a clue in judgement, regarding what is essential; and it is basically not create the information overload. According to the survey of Nilsson and Kald's(2002) about Nordic organisations, the strategic performance management systems (SPM) are applied both diagnostically and interactively.

According to Watkin and Hubbard, (2003) 'research has … constantly indicating that an organisational culture can have a direct affect of up to 30 percent of the difference in top organisational performance measures'. Wiley and Brooks, (2000) also cited sufficient research … that analyse the linkage among employees work and its relative organisational performance success relative to that work'. They concluded that research as ' the more favourable/friendly organizational /leadership culture is in a work place, the more energetic and more productive the organisation workforce will be'.

Organizational Performance Management (OPM) in the manufacturing organizations scenario is 'the manufacturing organizational leader's activities necessary to improve the product quality as well as organizational profit margin'. Organisational Performance Management (OPM) in the public sector is 'the managerial activities necessary to promote well-performing policy management and public service delivery' (the Organisation for Economic Cooperation and Development; OECD, 1997:8). Organisational performance management in terms of government atmosphere refers to the functions /activities of the government as well its agencies/departments for its plan, implementation, review and evaluation of the programmes and projects for its effectiveness in terms of its policies'.

This paper investigates the extent to which a manufacturing organisation performance is reflected by the actions of its manufacturing leaders. During the last years, organizational performance of manufacturing organizations is considered to be a key for a country's economy. As a result of high positive performance of manufacturing organization, the overall effects on the society have grasped the attention and the interest of organisational researchers. Armstrong and Baron, (2003) highlighted the importance of performance management being strategic, integrated (vertical, functional, HR integration and integration of individual needs), concerned with performance improvement and concerned with development. Gates, and Otley, (1999) further broaden the scope of performance measurement to include strategy development and the taking of action. In this study, researcher investigates the extent to which an organizational performance is affected by the actions of manufacturing leaders than by just implementing strong rules and regulations in the manufacturing organization. It was also examined whether differences in manufacturing organizational performance and actions of their leaders relate directly to manufacturing organizational performance or vice versa. There are number of tools and techniques available to measure organizational performance e.g. balance score card theory (BSC) by (Kaplan and Norton, 1992) based on stakeholder theory.

To see what contributes to competitive advantage, Wright, (2010) and others acknowledge that internal resources be viewed as crucial to sustained effectiveness. Wright et al, (2001) and Penrose, (1959) presented the resource-based view (RBV) of the firm, and after wards it was also articulated by Rumelt,

(1984), Barney, (1991) and Dierickx & Cool, (1989). The RBV basically focus on the necessity for an organisation to take part as valuable group of resources and integrating them in innovative and productive style to assure organisational performance. It is to be noted that competitive advantage is not only dependent, as normally considered, for example, natural resources, technology employed, as well as economies of scale, since these are very simple and straightforward to reproduce. However, competitive advantage in terms of RBV is solely dependent on the valuable, rare, and hard-to-reproduce resources that exist in within an organisation. Human capital in a real sense is an 'invisible asset' Itami, (1987).

3. Methodology

This research was quantitative in enquiry and it was focussed at exploring if manufacturing leaders actions i.e., whether the command of manufacturing leaders over the job of the subordinates, educational background of manufacturing leaders, strong knowledge of the job performed by the subordinates and manufacturing leaders experience, have a positive effect on manufacturing organisations performance or vice versa.

From the literature review of organisational performance, it is evident that leaders strong knowledge, extensive experience and the leaders ability to perform subordinates job have a positive affect on the overall organisational performance Keeping in view of the facts from the literature of organisational performance, , a questionnaire was designed based on the consideration of manufacturing leaders ability to have a grasp on the job of subordinates, strong knowledge of the job and experience of the manufacturing leaders. The questionnaires were sent both by email and by post to the manufacturing leaders, i.e., managers, assistant managers and shop floor supervisors; and constant follow up of the questionnaire was done afterwards. In sum a total of 132 developed questionnaires were emailed or posted to manufacturing leaders of twelve manufacturing organisations. In response to 132 questionnaires, 104 questionnaires were returned completely filled, resulting a 78% response rate. The returned questionnaires were analyzed quantitatively using SPSS 17. Summary of some of the data received from respondents is summarized in table-1 to 3.

In term of years of service, respondents' work experience in their respective organisations is tabulated and shown in table 2 as follows:-

The respondents were requested to give their view in the form of either "Yes" or "No" to the questions, some of the questions asked from the respondents are summarized in table-3.

Table 1. Summary of Type of Manufacturing Organisations from which Data was Collected

Industry / Project	No. of Participants	Percentage
Large Manufacturing Organisations employing 300 or more employees	76	57.57
Medium Size Manufacturing Organisations employing 100 to 300 employees	34	25.75
Small to Medium Size Manufacturing Organisations employing 50 to 100 employees	22	16.66

Table 2 Demographic Data

No. of Years of Service	No. of Participants	Percentage
0- 3	56	42.42
3-5	26	19.69
5-8	19	14.39
8-12	31	23.48
Total	132	100

Table 3 Summary of the Questionnaire

S. No.	Questions
1	Do you think the manufacturing leaders' strong knowledge about the job done by his/her subordinates has a positive effect on organisational performance?
2	Does manufacturing leaders' related experience to the job performed by his/her subordinates' have a positive effect on organisational performance?
3	Do you think manufacturing leaders' strong educational background have a positive effect on organisational performance?
4	Does manufacturing leaders' strong ability to do the job of his/her subordinates' have a positive effect on organisational performance?
5	Do you think manufacturing leaders' who are considered to be role models have a positive effect on organisational performance?
6	Does manufacturing leaders' positive attitude towards his/her subordinates have a positive effect on organisational performance or to enhance manufacturing organisational performance?
7	Do you think that by implementing strong rules/regulations in manufacturing organisations have a positive effect on manufacturing organisations performance?

4. Analysis and Results

Data collected from the respondents was analysed using SPSS 16.0. Summary of the results obtained from the respondents is shown in table-4 and graphically shown in figure-1. It is evident from the results of the data analysis that respondents were asked whether the manufacturing leaders' strong knowledge about the job done by his/her subordinates has a positive effect on organisational performance. About 81 percent of the respondents were in favour of the opinion. When the same respondent were asked

whether manufacturing leaders' related experience to the job performed by his/her subordinates' have a positive affect on organisational performance manufacturing, 65 percent of the respondents replied positively and 94 percent of manufacturing leaders also replied positively. Regarding manufacturing leaders' strong educational background have a positive affect on organisational performance, 85 percent of manufacturing leaders' were in favour of the opinion of strong ability of the manufacturing leaders' to do the job of his/her subordinates' have a positive affect on organisational performance, 92 percent of the manufacturing leaders' responded in favour of the question about positive attitude of manufacturing leaders towards his/her subordinates have a positive effect on organisational performance, whereas only 17 percent of the respondents were in favour of the opinion regarding implementing strong rules/regulations in manufacturing organisations have a positive effect on manufacturing organisations performance. It is to be mentioned here that the respondents replied in a similar fashion regardless of organisational size, or with respect to the experienced they possessed. (Neely et al, 1995) defined performance measurement as the process of quantifying the efficiency and effectiveness of actions. The results of data analysis of this study also indicates that manufacturing organisational performance (efficiency and effectiveness) is directly proportional with the manufacturing leaders' attitude, experience, educational background and ability to do the job of his/her subordinates'. This can be stated that actions of manufacturing leaders, i.e., managerial skills, job related experience, educational background and ability to perform subordinates' job) can have a positive impact on manufacturing organisation performance just as the idiom 'actions speak louder than word'. From the results of data analysis of this study, a model has been developed to enhanced manufacturing organisational performance as shown in figure-2

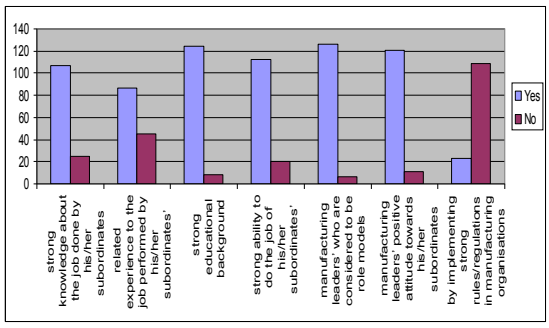

Fig 1. Graphical Representation of Summary of Responses of the Questionnaire

Table 4 Summary of Responses of the questionnaire

S. No.	Questions	No. of Respondents responded as "Yes"	No. of Respondents responded as "No"
1	Do you think the manufacturing leaders' strong knowledge about the job done by his/her subordinates has a positive effect on organisational performance?	107	25
2	Does manufacturing leaders' related experience to the job performed by his/her subordinates' have a positive effect on organisational performance?	87	45
3	Do you think manufacturing leaders' strong educational background have a positive effect on organisational performance?	124	8
4	Does manufacturing leaders' strong ability to do the job of his/her subordinates' have a positive effect on organisational performance?	112	20
5	Do you think manufacturing leaders' who are considered to be role models have a positive effect on organisational performance?	126	6
6	Does manufacturing leaders' positive attitude towards his/her subordinates have a positive effect on organisational performance or to enhance manufacturing organisational performance?	121	11
7	Do you think that by implementing strong rules/regulations in manufacturing organisations have a positive effect on manufacturing organisations performance?	23	109

In the lights of data analysis and results obtained, a research model is being developed to enhance the performance of manufacturing organisations as shown in figure 1.

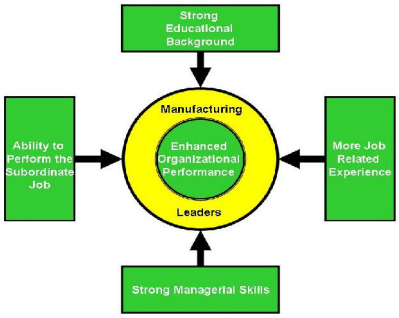

Fig 1. Developed Model to Enhanced Manufacturing Organisational Performance

5. Conclusion

(Terziovski et al, 1999) concluded that manufacturing organisation performance is more likely to achieve better performance in employee relations, customer satisfaction, operational performance and business performance, with total quality management than without total quality management (Milé Terziovski, Danny Samson, 1999). However this study also found that affect of manufacturing organizational performance is dependent on the strong managerial skills of manufacturing leaders in addition to high educational back ground, more job related experience and ability to perform subordinates' job. The results of this study indicates that manufacturing organisations performance will be high if manufacturing leaders have good educational background, possess good managerial skills, have job related experience and command over the subordinates' job performed. This is in line with the idiom 'actions speak louder than word'. The result of this study has been used to develop a model to enhance the performance of manufacturing organisations and is depicted in figure 1. This model can be used in the selection of suitable manufacturing leaders to enhance the performance of manufacturing organisations. The developed model was the outcome of data obtained from manufacturing organisations; however it can also be used to enhance organisational performance of any type of organisation if tested successfully.

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Reflects of Epicurism of Khayyam Quatrains in the West

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Abstract: Omar Khayyam (1047-1123) was born in the Seljuk period, one of the greatest eras of Iranian history in terms of the profusion of towering figures in different branches of learning. He was the man who, in collaboration with other astronomers, succeeded to devise the *Jalalian* calendar in the region of *Malikshah* (1073-1092), an enormous achievement indeed. Khayyam, in his Quatrains, challenged religious doctrines, alluded to the hypocrisy of the clergy, cast doubt on almost every facet of religious belief and appeared to have advocated a type of humanism.The draft sybaritic image of Khayyam after translation of Fitzgerald in the West that has led established pubs and wine called Omar Khayyam, often based on hedonistic approach of Rubaiyat For finding the effect of quatrain of Khayyam in the Europe, it needed to define some philosophical terms as Epicurism, Hedonism and materialism, then study the philosophical approaches of these quatrains in the west and analyzed them according of political and social situation of that era. This research, by referring to some methods of criticism, based on written historical events and the phenomenological model, tried to present the new theoretical point of view of relatively realistic message of Khayyam in the world.
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Keywords: Omar Khayyam; Seljuk period; Iranian; history; Jalalian; Malikshah

Introduction:

Philosophical approaches of Rubaiyat of Omar Khayyam in Europe and the West, often expressed during the translations of Rubaiyat from the original language. In most cases, these translations have reflected in the base of Fitzgerald's free translations of quatrains and Epicurus attitude in unreal meaning. It should be noted that each of the translations that was made under affecting of Khayyam's thought school, with regard to social and cultural infrastructure and its own period, just includes an explanatory of small corner of this school. Although a large part of these viewpoints, regardless of their trait and differentiation, in some general definitions, was expressed in the form of approaches of studying Khayyam.

The draft sybaritic image of Khayyam after translation of Fitzgerald in the West that has led established pubs and wine called Omar Khayyam, often based on hedonistic approach of Rubaiyat. Thus, the aim of this article is determine to how extent altered and distorted image of Khayyam that has been engraved today in the minds of European and Western was because of Fitzgerald epicures realize of the Rubaiyat? Also what lead to change epicures realize to hedonistic? For finding the effect of quatrain of Khayyam in the Europe, it needed to define some philosophical terms as Epicurism, Hedonism and materialism, then study the philosophical approaches of these quatrains in the west and analyzed them according of political and social situation of that era. In addition, this research, by referring to some methods of criticism, based on written historical events and the phenomenological model, should be presented the new theoretical point of view of relatively realistic message of Khayyam in the world.

For the first time about hundred and fifty years before Fitzgerald's translation, quatrain of khayyam was published in Latin, then in German by *Thomas Hayde* in a book titled *"ancient Iranian religious history"* and Around 1818 AD, *Hammerpurgustall*, Austrian Orientalist, in his book titled "*History of oratory Art* "published twenty four of quatrains attached to selected work of two hundred of Persian poets in German. However no one, caused huge reflect on literature and social atmosphere of that period (Alavi,B, 1986).

Despite of the translations was made in this period, introducing Khayyam in the global arena, returns to the nineteenth century and the free translation of the Rubaiyat by *Fitzgerald*. The Century which due to the global consequences of world wars in one hand and extend of thinking of materialism, secularism and church humanism, in the other hand has considered an admitted to the emergence and development base for Khayyam thoughts in the Europe and West. Fitzgerald's translation during the nineteenth and twentieth century, for those readers who had a materialist view on poems, was considered a new reflection in Epicurus philosophy in unreal means and propagandizes a new version of Hedonism.

Reflect of Rubaiyat in the literary movements in the west:

Researches in the area of study Khayyam indicate that several distinct and understanding, sometimes opposite with together, of Khayyam's complex character are presented in Europe and particularly in the West. However, each one of these interpretations includes an aspect of labyrinth character of Khayyam. This question is discussing now, that the European readers, were Believed on Khayyam whom *Fitzgerald* has offered in Victorian disposition and hedonist or Khayyam whom subsequently *Nicholas* depicted in Sufism on his translation(Sahbazi,H·1992)?

Many analysts have distributed theorists around global reflect of the Rubaiyat.In this way, some of them believe that results of European wars had caused this global distribution of Rubaiyat of Khayyam, some others, think that Rubaiyat was a resort and relieve for emotional suffering of those human who saw their traditional beliefs into question because of increasing natural science advances, more than before. Obviously, in such circumstances of the transition period of romanticism and modernism, literary mission of the Victorian era poets was palpable. Survey poets of poetry in this period of British Literature is a witness that the novels in this period are devoted to topics such as social concerns like unemployment, poverty, disease and death, also the poetry of this period was filled with regret themes such as, Depression, loneliness, and conflict between doubt and faith. Another obvious feature in the poetry of this period is despite aggressive, critical and even apostasy tone, which is in the sample can be found in the poems of *Alfred Tennyson* (1809-1892) (Tennyson, Alfred, Lord. 1991).

Contrary to the manner which is seen in poetry poets like *Alfred Tennyson*, at that period, free translate of Fitzgerald was written affected by Rubaiyat of Khayyam as all facade mirror images of beautiful and ugly aspects of life. The mirror for reminiscent of some philosophical questions and unsolved mystery with critical and protest tone. Criticism because of completeness demand and protest, because of failure. While the achievement of these unanswered questions, is the sadness resulting from the questioning of religious belief and shake the foundations of faith, which sits on the mirror like rust. But Fitzgerald as Khayyam, rises to conflict with the contemplation sufferings, by invitation to joy, happiness and taking refuge in drink and forget sorrow. Perhaps, because of being so comprehensive and beyond of time and place the content of Khayyam's Rubaiyat that Fitzgerald imaged by relying on internal states, has caused and provided this global fortune. Now the question has mooted here that critical look and protest tone of Fitzgerald at what extent look similar to the critical look and protest tone of Khayyam.

By studying and comparing the monotheist beliefs of Khayyam in his Epistles and philosophical works, and his inviting to contentment and magnanimity in Rubaiyat, it won't far from the minds that construe his criticism from the aesthetic look which from Worship and devotion caused by sincere relationship with God, known him rightful for such criticism. Perhaps, if Fitzgerald dominated to Persian language and translated Rubaiyat by studying other science-Philosophical Epistles of Khayyam and attention to other moral aspects in the Rubaiyat regardless of inner and personal feelings, today, would provide more realistic understanding of Khayyam epicure citing to hermeneutics science.

Clearly, the draft sybaritic image of Khayyam after translation of Fitzgerald in the West that has led established pubs and wine called Omar Khayyam, often based on hedonistic approach of Rubaiyat. Thus, how extent altered and distorted image of Khayyam that has been engraved today in the minds of European and Western was because of Fitzgerald epicures realize of the Rubaiyat?

Along with a comprehensive spread of Fitzgerald translation throughout England and Europe, also impress of the literary societies in that period from the thinking-philosophical process, emergence of movement and literary circles is seen that inundated the boundaries and gradually has found particular status in the west include America.

Studies in this topic indicate that most of dominant approaches in the field of study of khayyam, were related to mentioned activities of literary circles and affected by situation of literature in that period that briefly mentione:

- One of these movements was association of pre-Raphaelite, which was founded by three students from Oxford University in the England in1848. Although, at the beginning this association was formed with the aim of evolution in the Arts and particularly in painting, However due to the tendencies of members such as "Dante "*Gbryyl Rastey", 'Svyynbrn"* and *"Michael Rastey*", to literature such as poem, led to literature(Bern J,2004).
- In 1869 with the publication of a criticism article on Fitzgerald Rubaiyat by "Charles Eliot Norton (and deliver 74 cases of the Rubaiyat on it), it seems that a new understanding and another fictitious image of the Rubaiyat of Omar Khayyam was created, image based materialistic philosophy that merely represent an unworthy face of life. Then in 1899, a different naturalistic

picture of Rubaiyat of Khayyam was presented by "Mark Twain"(Verner Sh, 2004). He attempted to versify some quatrains, affected by Fitzgerald's Rubaiyat and his personality, that in the critical sarcastic them applied to challenge the nature and humanism also defeat man against nature.He seems, by basing the issues such as senescence, human decay and death in his poems, has been in a philosophical transition. Transition from naturalism to existentialism. For instance:

Sleep! For the sun scores another day
Against the tale allotted you to stay
Reminding you, is risen and now
Serves notice, ignore it while you may

- The poem "Love Song of Alfred Profrack" First published in 1915, is a dramatic narrative that despite accentuating the negative themes in the poem and using allegorical language, offers the classic form and symbolic perspective. Thus, it seems that in addition to the effect of Khayyam messages on the soul and mind of Elliott, his pen and writing has not been deprived of Khayyam. Even contradictory images in his poetry are a sign of paradox in the Rubaiyat. Within the poem, he relies on the main cultural depravity of materialistic society of West, paying attention to human distress that despite his knowledge of humility, vanity and banality of this material world, has condemned to live in it(Capleston F,1984). he also in his other poem "Devastated Land-1927" was imaging the declaim of the civilization that because of fading the beliefs, all human actions become meaningless as far as that death has no promises to restriction. In all of his works, he communicated the spirit of the Rubaiyat in the humanistic form and sense of seeking perfection, by particular symbolic and critical language. Even the Sanskrit prayer that he mentioned in the end of his collection, relates to desperately trying to fiend rescue way and earn peace also reminder this quatrain of Khayyam.

I wish the rest were replaced or this far way were reached

I wish after hundred thousand years, from the heart of ground we had a hope to grow as a grass

Hence, it could be considered from these two works of Eliot as humanistic approach of Rubaiyat.

Due to this subject that Eliot had known Khayyam since his teen, the period that his character and vision largely influenced by family traditions and beliefs also, indication teaching of the church was developed, certainly philosophical content of Rubaiyat had make toward new willingness in his philosophical and thought foundation (Kant I, 2010).

Conclusion:

Studies indicate that over the past centuries especially after the second World War in the Europe and Western societies, focusing on a specific aspect of the Rubaiyat and index it by the readers and researchers, also trying to establish and match the opinion of Rubaiyat and humanism, has led to formation and strengthening of a hedonistic and nihilistic approach of Rubaiyat. Thus, today the name of Khayyam has known as a symbol of revelry and pleasure seeking and his Rubaiyat have known as denier thought, futile and bonvivant.

For Instance from Khayyam Quatrains:

And this delightful Herb whose tender Green
Fledges the river's lip on which we lean
Ah, lean upon it Lightly! For who knows
From what once lovely lip it springs unseen.

It should be noted that this distributed widespread reflect of Rubaiyat, even compared to romantic and careful stylize Rubaiyat that Fitzgerald depicted, seems extreme and distorted form, which itself should rise infamous and lateral approaches. For example, Sufism interpretation of Nikolas from Rubaiyat in second half of nineteen century could consider from focusing on fatalist aspect of Rubaiyat, also delusory nihilism aspect of Rubaiyat is a psychological outcome of focusing on cynical and skepticism face of it.

There was a door to which I found no key
There was a veil past which I might not see:
Some little talk awhile of me and thee

There seem'd-and then no more of thee and me.

However it should be noted that what today has known as index of khayyam thoughts, is obviously reaction to abnormal social and political conditions and particular religious in that period.

And, as the cock crew, those who stood before
The tavern shouted- open then the door
You know how little while we have to stay
And, once departed, may return no more

The review of Sufism history in Iran should consider, increasing of Sufism and austerity among the poor masses that has emergence in some protest method in the peak period of oppression and exploitations. Thus, could say that this kind of epicurism not only in the Khayyam period, also in such as Hafez era has emergence and considered as

progressive and opposition movement. While it seems to deliver, prescription for contemporary society will result retrogressive process.

Alike for those who for to-day prepare
And those that after a tomorrow stare
A muezzin from the tower of Darkness cries
Fools! You reward is neither here nor there!

Meanwhile it should not forget that such inference just based on the poems that some part of it was manifestation of suppressed thoughts of Khayyam or his contemporary's unachieved wishes. Because not in scientic works and epistles of Khayyam could find evidence for this kind of epicurism, neither religious order of his era would provide this opinion.

In summary, By Comparison of each of these philosophical roots with the criteria and principles of contemporary philosophical schools, should be introduced Rubaiyat of Khayyam (both genuine and non-genuine quatrains) as the Statute of the school of Khayyam, Comprehensive human thoughts and feelings despite the distinctions and conflicts among them, generally were found at the same time and space.

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General Overview on Educational Institutions in Islamic Civilization

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Abstract: The scientific condition of the Arabian Peninsula before Islam and even at the beginning of Islam was so disappointing that the number of literate people did not exceed 16 0r 17 at the time of Muhammad. Then the first sparks of learning and literacy started with the Quran messages. In this way Quran verses and the Prophet's tradition became the best guides and sources of inspiration for learning and literacy. This book from the one hand encouraged people to think and respect knowledge and make distinction between those who are literate and those who are illiterate (1), and on the other hand, broaden their view point toward learning and made them seek knowledge; since the first Ayah (verse) of Quran started with the words "read in the name of God who created you." (2) It shows that the first steps of learning starts with reading; and knowledge changes the darkness of ignorance to the light of recognition and reading opens the gate of wisdom. Prophet Muhammad with the emphases on learning and literacy encouraged Muslims toward learning and increasing their knowledge and understanding. Because preserving the Suras (chapters) of Quran was very important to him, he had an especial concern over oral and written learning of these Suras among his followers in the mosque. Apart from its religious entity, mosque became an important place for learning and education and Muhammad is considered as the first teacher of Islamic society. (3) In addition to the encouragement found in holy Suras for literacy, establishment of the schools and universities which were done by Imams, created a kind of jubilee among Muslims in the history of Islam and made the act of establishing schools as important and valuable as making a mosque. For this reason after a short time several schools, Maktabs, and mosques opened in Islamic nations. And these schools had a considerable role in the progress and growth of Islamic civilization and helped Muslims come to the pick of their civilization in the first few centuries.
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Discussion

In order to study and analyze the ups and downs of educational institutions in Islamic civilization we need to divide it into different historical periods. Since dealing with the whole history of this notion is not possible in this research, the researcher tried to pay attention to a few educational institutions in this study. What is noticeable is that how such a rich culture and civilization could rise and improve in such a shocking speed and cause astonishment in a land where, according to historical references, there was no sign of culture and civilization, except for the Mecca that there were a few paintings of Jesus Christ and Holy Mary there was not sign of science and knowledge. (4) The reason behind this surprising fact in addition to its being from Muhammad and Quran was the universality of Islam. Islam was not limited to a specific land or nation; on the contrary it was universal as God promised to Muhammad "we assigned you as our messenger to all men." (5) That is why people from different land and tribes joined Islam and could cause such a great advance in Islamic culture and civilization. The present research aims to answer the following questions: why mosque turned out to be the first educational and religious center? Where was the first learning institution at the time of Muhammad? What was the basis of education in Islam? What were the circles and how important they were? What were the angles and how could they appear in Islam?

Research methodology

The present research was done using library resources with analytical and investigative approach.

Introduction

It seems very important and crucial to conduct a research on scientific and educational institutions in order to get the sufficient information regarding the condition of science and education in Islamic civilization and at the same time to evaluate what they have done throw 14 centuries in a vast geographical scope from China to Spain. Since retelling the history of these institutions during such a long period of time and in numerous countries need volumes of books the present research as the title reveals tries to give a to the point and general definition of these centers. And also gives the names of some of the most important mosques and schools in Egypt, Iraq, and Iran.

Mosques

An urgent need to have a meeting-place for social, political, and religious purposes made Muslims think of establishing places called mosques. So, from the beginning religious and praying purposes were not the only reasons for construction of mosques, but mosques acquired special attention and importance in Islamic civilization. Some of these important roles are as follows religious, social, judicial, governmental, educational, supervisor and control, and political center.

In other words, in addition to worshiping and education nearly all the affairs in Islamic government were done in mosques. Moreover Prophet Muhammad (p.b.u.h) had not assigned any other place for those affairs.

The first thing that Prophet Muhammad (p.b.u.h) did when he entered to Qobba (a place near Medina) was establishing a mosque for religious and political purposes. (6) Soon after the mosque in Medina became the first social and political center and a place for cultural meetings and Jihad. Later on, during the successors of Prophet Muhammad (p.b.u.h) when they conquered a land they established a mosque in the manner of Prophet Muhammad (p.b.u.h).

Apart from the heavenly value of making mosques because of the simplicity of its structure mosque-makers never faced problems and for this reason a number of mosques were made in one city. Shahiri, the famous Iranian historian, estimated the number of mosques in Bagdad in the third century (lunar calendar) as about three thousand. (7) Even if we consider the figure exaggerated, it shows the importance of making mosques. When the number of the mosques in a city increased the main mosque which is called Jama became the most important one and played a more important role in social and political affairs and was distinguished from the other mosques.

Al-Nabawi and al-Haram mosque in Saudi Arabia, Jama mosques in Koffe and Basra in Iraq al-Aqsa and Qobba al-Sokhre in Quds, Palestine are among the oldest mosques in the Islamic world. Historical records show that schooling circles were active in all of these mosques and in addition to learning Quran pupils learned Hadith, Jurisprudence and literature. (10) Instructors and learners gathered in mosques and sit in a circle for discussion and debate and each learner could join the circle which interested him. Sometimes in special days in a month skillful instructor and learners gathered in Jama mosque of each city at scientific meetings and discussed the subject matters. The instructors of these institutes were controlled by Islamic governments and sometimes received pension and accommodation. For example in Omavi Jama mosque of Damascus there was a learning circle that its instructors received daily pension. (11)

After a while, when the number of learners in mosques increased considerably, their needs increased as well and beside the mosques other accommodation and trading centers constructed together with schools, Maktabs, and libraries that provided students with their research materials.

Instructors from different religions like Maleki and Shafeie each sat by an especific pillar in the mosque, and had their classes. And in this way circle became an educational method. In this method the instructor sat on a chair or pillow and the learners sat in a circle or semicircle facing him. (12) The semicircle method is still being used in Islamic schools for clergies (Hozeh) in Qum, Mashhad, Najaf and other active mosques in the Islamic world. One of the important characteristics of this method was that the classes were held in a certain place continuously. For example the circle of Hadith in Rosaphe Jama in Iraq was held on Fridays or Master Hanbali's Hadith circle was held in Mansour's Jama after Friday prayer. (13)

Angle

Angle or pillar is a part of the mosque that formed by the development of mosques and got especial attention in the history of education. All the instructors that held their classes in the mosque sat by a pillar leaning to it while facing to Mecca and the learners sat around them. Little by little if the instructor continued his classes under the same pillar for a long time that place was named after that instructor. For example Ibrahim ibn Muhammd Naghotieh 297 (lunar calendar) held his classes under a certain pillar for about fifty years or the angle of Imam Shafeie in Omar inb Aas was an important place for researchers for a long time. (14) It should be mentioned that the custom of sitting in angles started from Jama mosques of North of Africa and little by little entered the Islamic world and it is still in use.

Maktab and Kottab

They are the names of elementary Islamic schools where pupils could learn reading and writing and reciting Quran, for this reason Maktab Khaneh turned out to be a suitable place for teaching Quran and fundamental notions of religious studies. (15)

With the development of Islamic nations and the necessity of literacy and education for children learning religious lessons became a public need and mosques become populated. Population of the mosques was not the only reason for separation of

Maktab and Kottab from mosques, the other reason was the age of the pupils. Since little children were under the religious duty-age there was the fear of contamination and disgrace for mosque as a holy place and also it might have caused problems for worshippers. This made the officials of Islamic society to make Maktab and Kottab a place for children to start learning. In some of the narratives it is said that Salman Farsi was the mastermind behind the idea of opening Maktab. (16) This is important for two reasons. First, Maktabs started their activity at the time of Prophet Muhamad; second, the opening of Maktab was the idea of a Persian. (17)

Schools

The development of schools in Islamic civilization School is a place with especial logic and purpose which had an important role in the history of education in Islam. Although school with its modern definition and function started in the fourth century (lunar calendar), its educational history dates back to previous centuries. (18) By keeping parts of the educational system of mosques in schools, scientific and educational activities continued outside mosques. And school as a great training center of Islamic world continued training researchers.

The first schools, after a while, changed a lot and gave ideas for new schools. Schools which used new methodologies and new systems opened in the fifth century (lunar calendar). In Islamic civilization schools started their activities with two unique ways, with the supervision of government as state schools or organized by private sectors. Private schools were mostly houses that instructors and pupils met to study, as the name indicates, due to being private these is no record of the first private school. But for sure the instructor in case of being rich opened several schools or other people paid the expenses. It is reported that the first and the best of these schools were found in Neishabour, Iran. (19) According to the historians, regarding the quality of schools and mastery of instructors Neishabour came second after Bagdad. In the second half of the fifth century (lunar calendar) public schools started their activities under the supervision of Islamic rulers. These schools for their scientific system played an important role in Islamic civilization for their scientific advances and introducing new educational system. These schools under the supervision of Islamic state were important centers for propagating and introducing Islamic, political, and even cultural thoughts of the Islamic ruling system. Similar schools of the kind opened during the ministry of the mighty Shafi'i minister of Seljuk dynasty Khajeh Nezam al Molk Tousi 457 (lunar calendar) and they were called Nezamiyeh. (20)

With the help of Abbasi kings Nezamiyehs became famous worldwide. To prove this claim we can refer to Aboshameh, the Islamic historian, saying that "schools that Nezam al Molk built in 475 (lunar calendar) became famous all over the world, you could not find any city of village or even remote islands with little population ruled by Ibn Omar without one of those schools in them." (21)

Once this Iranian minister made great effort in building these schools, important cities of the Islamic world like Balkh, Amol, Neishabour, Harat, Esfahan, Basre, Marv, Mosel, Maghreb, and Andalus had similar schools in them. Egyptian Fatimid, following the Nezamiyeh system, carefully planned and built Maktab, school, learning center, and invited imminent instructors and scientists from other nations and made great advances and accomplishments.

When Al Azhar with abundant facilities succeeded in gathering scholars and propagating Ismailism religion, Abbasid kings in order to propagate Sunni thoughts were obligated to support public Nezamiyehs. Since that time Nezamiyeh's system and method of establishing schools received thorough attention from governments and as a result in any part of Islamic countries public schools were made with the same style. For example Nouriyeh School in Sham, and Ayyubid School in Egypt. Although it is not possible to talk about all the schools in Islamic Empire in the paper, the researcher introduces some of the most important ones.

Great schools of the Islamic world

1. Bagdad schools

There is no authentic information about the time that private schools started their activities in Bagdad; but the first state school opened in the second half of the fifth century (lunar calendar). In 475 (Lunar calendar) Khaje Nezam al Molk Tousi made the first school under the supervision of Islamic state called Nezamiyeh in Bagdad. Although it was a public school, common people could use it two years later. At the beginning only the followers of Shafi'i religion or those who were connected to the Abbasi royal family could enter these schools. During the early years there were no specialized courses of fields of study tought in those schools but later on they invited imminent instructors like Ghazali and started teaching different subjects. For example Khatib Tabrizi was the lecturer of literature and after him his student Abo Mansour Javalighi got the responsibility. Abol Barakat Anbary was the lecturer of the new field of NAHV.

The other important school in Bagdad was called Mostansariieh which was built two centuries after Nezamiieh schools by Abassi king Almostansariieh in 630 (Lunar calendar). The priority of this school over Nezamiieh was that in latter only the thoughts and ideas of the one religion (Shafi'i) were taught but in the first one four different branches of Sunni were taught in four different halls. The amount of public donation, architectural beauty of the internal and external part of the school was remarkable and outstanding.

2. Schools in Iran

Before opening of school it was tried a lot to solve the problem of educational system in Iran. As a result educational activities outside the mosques spread all over the country for all class of citizens. Although training centers and different educational institutes were active in Iran, they could not be called schools for sure. For example Hassan Ebn Fazl who was a famous religious instructor bought a house in Neishabour and taught pupils for several years till his death in 282 (lunar calendar). (22) This is a proof for educational activities outside mosques in Iran, though the word school was not commonly used for calling such places in Iran.

Anyway, there is a record which shows that the first school in Iran and of course in the Islamic world was built in Esfahan by Imam Abobakr ibn Fork in 405 (lunar calendar). He also made another school in Neishabour and started teaching sciences there. Beihaghi school in Neishabour which was built by Abobakr ibn Hossein Beihaghi is considered as one of the oldest educational buildings in Iran. For many years Hadith and Jurisprudence were taught in this school. There was another famous school in Neishabour which was named after Abo Mansour Abd al Rahim ibn Mohammad Bishki 453 (lunar calendar) which was one of the richest school in Iran for its public donation. Saadiyeh school named after Amir Nasr ibn Saboktakin, Sultan Mohamoud Ghaznavid's brother. Abosaad Ismail ibn Ali Monshi Estarabadi school was among other famous schools in Iran. Although there were scientific and training centers in Egypt thousands of years ago, training based on scientific system began during Fatimid dynasty 358-567 (lunar calendar). Fatimid dynasty in order to propagate Ismailism religion did not close the other Sunni circles and during their two hundred years of ruling the classes of other religions were open and active. There were two schools belonged to minister Walakhshi 532 (lunar calendar) and minister ibn Salar 544 (lunar calendar) which were very important in the history of Egyptian education. The presence of these two Sunni schools in Egypt of Fatimid dynasty is the proof for Fatimid's tolerance with Sunni and other religious groups even the oppositions. The presence of these schools made the condition ready for the opening of Ayyobid schools in Egypt. Sala al Din Ayyobi 589 (lunar Calendar) who defeated Fatimid dynasty and conquered Egypt 567 (lunar calendar) established a Sunni regime in Egypt. After coming to the thrown, following Khajeh Nezam al Molk in Bagdad and Iran and Nour al Din Zangi in Shaam established thirteen important and active schools in Egypt. Among them Salehiyeh school received especial attention and glory.

Conclusion

It can be concluded that the primary purpose of Muslims was based on literacy and preserving the Ayah of the Holy Quran either in written or oral form. This end chanced the role of mosques as a place for worshiping to an educational center. Since Islam emphasized on the importance of knowledge and science, soon after schools opened in all parts of the Islamic Empire. The number of Maktabs, schools and circles increased gradually. The second step of training Muslims was the practical worshipping and obeying Islamic rules and regulations presented by the Quran. Soon after, with the establishment of the first Islamic regime in Medina, Prophet Muhammad designed a new method of training and educational system which was systematized like other social sectors. Muslims newly established regime in Medina needed economic activity, trade with other tribes, preparing an agreement with them, signing a peace treaty, announcing war and other social and political affairs. This made Prophet Muhammad to think of literacy more than before. Meanwhile, the Quran emphasized that Muslims should keep a written document of their agreements instead of oral promises. (24) This emphasis was a clear message for the Islamic society to pay more attention to education and literacy. And this idea was considered by many rulers throughout history and followed day after day. There were many places assigned and associated with training and education in the Islamic world such as mosque, school, Maktab, learning circle and angle, libraries, hospital, castle, and house of scientists and many other communities that could be a subject for separate study. Here are some of the common features related to some of the schools and training places specialized to certain field of study: elaborate architecture, receiving considerable public donation, owning a lot of land and material property, using imminent instructors and finally giving scholarship and pension to pupils.

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Signal Separation using Non-negative Matrix Factorization Based on R1-norm

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Abstract: Nonnegative Matrix Factorization (NMF) based methods have found use in the context of blind source separation, semi-supervised, and unsupervised learning. These techniques require the use of a suitable cost function to determine the optimal factorization, and most work has focused on the use of least square formulation which is prone to large noise and outliers. In this paper we developed robust NMF algorithm using R_1-norm which exhibit stability and robustness w.r.t. large noises. This algorithm is as efficient as the algorithms for least square formulations, avoiding the significant computational complexities routinely associated with R_1-norm formulations. The experimental show that R_1-NMF can effectively separate the observed that contain outliers better than standard NMF.

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Keywords: Blind signal separation, non-negative matrix factorization, R_1-norm**,** R_1-NMF.,

1. Introduction

During the past decades, blind source separation (BSS) has become a hot topic in the neural network community (Hyvarinen,1999), signal processing community (Cichocki ,2006), etc. The aim of BSS is to recover the latent sources, without knowing the exact mixing channel. As BSS method needs only the observations, it is quite attractive for signal recovery and system identification. The technology of BSS has many underlying applications, such as signal encryption (Chen,2008), micro-array data analysis (Stadlthanner ,2007), and so on.

On the other hand, many real sources are nonnegative, such as the natural images (Guillamet,2003, Berry,2007, Spratling ,2006) and the microarray data (Stadlthanner,2007))and data analysis, e.g., text analysis (Dhillon ,2007), Brunet,2000) Also, in BSS-based signal cryptosystem, to obtain better decryption accuracy, the plaintext signals are often preprocessed to be nonnegative before encryption (Chen ,2008). Therefore, in these cases, BSS may be solved by the widely used nonnegative matrix factorization (NMF) scheme, which is a powerful tool for data representation. The aim of NMF is to decompose a given dataset (observations) into a mixing matrix and a feature dataset (sources), which are both nonnegative.

Generally speaking, NMF does not rely on the statistical features of the sources, such as independence, nonstationarity, etc. But to solve BSS by NMF practically, it often requires some constraints to conquer the non-uniqueness of the factorization (Amari,2006, Shahnaz,2006). In fact, the constraints are widely discussed in different applications of NMF, where the volume constraint shows great potential to generate a unique result.

The rest of this paper is organized as follow. Section 2, describes the basic BSS and NMF model. Section 3, presents the rotational invariant l_1 - norm , section 4, illustrated the R_1-NMF algorithm that used to separation , section 5, the performance measures that used, section 6 , the experimental results and discusses the points of our method compared to the standard NMF. Finally, section 7 concludes the paper.

2. BSS AND NMF

The simplest linear model of BSS is:

$$\mathbf{Y} = \mathbf{AX} + \mathbf{V} \qquad (1)$$

Where $\mathbf{Y} = [y_{it}] \in \mathbf{R}^{I \times T}$ is a matrix of observations, $\mathbf{A} = [a_{ij}] \in \mathbf{R}^{I \times J}$ is an unknown mixing matrix, $\mathbf{X} = [x_{jt}] \in \mathbf{R}^{J \times T}$ is a matrix of unknown hidden components or sources, and $\mathbf{V} \in \mathbf{R}^{I \times T}$ is a matrix of additive noise. The objective is to estimate $\mathbf{A}$ and $\mathbf{X}$ rely only on the observed $\mathbf{Y}$. Practical BSS algorithms often need some prior knowledge and assumptions about the sources, such as independence (Hyvarinen, 1999).

When $\mathbf{Y}$, $\mathbf{X}$, and $\mathbf{A}$ are nonnegative, then Eq.(1) is a typical perfect NMF model . Therefore, NMF algorithms can be used to solve BSS (Hyvarinen 1999). Although there is the scaling indeterminacy of columns of $\mathbf{A}$ in NMF/BSS, it does not affect the results essentially (Cichocki,2006). Thus, the columns of $\mathbf{A}$ can be assumed to have unit length. This problem can be solved by choice a suitable cost

function and perform alternating minimization similar to Expectation Maximization (EM) approach (Cichocki,2006).

There are many possibilities for defining the cost function D(**Y** ||**AX**), and many procedures for performing its alternating minimization, which lead to several kinds NMF algorithms as: multiplicative, projected gradient, and fixed point (Seung,1999, Cichocki,2006,and Dhillon,2005).

The most widely known adaptive multiplicative algorithm for NMF is based on the squared Euclidean distance (expressed as the squared Frobenius norm) that defines as:

$$D_F(\mathbf{Y} \| \mathbf{AX}) = \frac{1}{2} \| \mathbf{Y} - \mathbf{AX} \|_F^2 \qquad (2)$$

$$s.t.\ \ a_{ij} \geq 0, x_{it} \geq 0, \forall i, j, t$$

Using a gradient descent approach for cost function Eq. (2) and switching alternatively between the two sets of parameters; we obtain the simple multiplicative update formulas:

$$a_{ij} \leftarrow a_{ij} \frac{[\mathbf{YX}^{\mathrm{T}}]_{ij}}{[\mathbf{AXX}^{\mathrm{T}}]_{ij} + \varepsilon} \qquad (3)$$

$$x_{jt} \leftarrow x_{jt} \frac{[\mathbf{A}^{\mathrm{T}}\mathbf{Y}]_{jt}}{[\mathbf{A}^{\mathrm{T}}\mathbf{AX}]_{jt} + \varepsilon} \qquad (4)$$

The above algorithm Eq. (3)- Eq. (4), called often the Lee-Seung NMF algorithm (Lee,2001) in which this algorithm is sensitive to the presence of outliers and to avoiding this we will used Rotational l_1- norm (R_1-norm) as illustrated in the following section.

3. Rotational l_1 - norm

The R_1-norm of a matrix was first introduced in (Ding, 2006) as rotational invariant l_1- norm and also used for multi-task learning (Argyriou,2007, Obozinski, 2006) and tensor factorization (Huang, 2008). It is defined as:

$$\| \mathbf{X} \|_{R1} = \sum_{i=1}^{m} \left(\sum_{j=1}^{n} x_{ij}^2 \right)^{\frac{1}{2}} \qquad (5)$$

While the Frobenius and l_1-norms are defined as:

$$\| \mathbf{X} \|_F = \left(\sum_{i=1}^{m} \sum_{j=1}^{n} x_{ij}^2 \right)^{\frac{1}{2}}, \ \| \mathrm{X} \|_{l1} = \sum_{i=1}^{m} \sum_{j=1}^{n} x_{ij} | \qquad (6)$$

In the Euclidean space, the Frobenius norm has a fundamental property rotational invariance. In comparison, the R_1 norm has the following properties: (1) triangle inequality; (2) rotational invariance, as emphasized in (Ding ,2006). Clearly, the Frobenius norm is determined by the sum of the squared elements. In this case, the squared large elements dominate the sum. Consequently, the Frobenius norm is sensitive to outliers. In comparison, the R_1 norm is determined by the sum of elements without being squared. Thus, the R_1 norm is less sensitive to outliers than the Frobenius norm (Ding, 2006). Note that R_1 -norm is different from l_1 sparsification: in sparsification l_1 is a constraint to the objective function while in R_1 is on the main objective function itself (also we used it as constraint to the objective function).

The problem can be solved using a simple yet efficient algorithm called R_1 -NMF (R_1 -norm, Nonnegative Matrix Factorization).

4. An Efficient Algorithm R_1 -NMF

The problem in Eq. (1) can solved by consider the following objective function

$$\mathrm{D}_{\mathrm{R1}}(\mathbf{Y} \| \mathbf{AX}) = \| \mathbf{Y} - \mathbf{AX} \|_{R1} + \lambda \| \mathbf{X} \|_{R1} + \mu \| \mathbf{A} \|_{R1} \qquad (7)$$

In order to impose sparsity, we add $\| \mathbf{X} \|_{R1}$ and $\| \mathbf{A} \|_{R1}$ where $\mu, \lambda \in [0.01, 0.05]$ are non-negative regularization parameters (Phan, 2009).

By using a gradient descent approach for cost function Eq. (7) we obtain the simple multiplicative update formulas:

$$\frac{\partial \mathrm{D_{R1}}}{\partial \mathbf{X}} = 2\mathbf{CX} + \mathbf{A}^T \mathbf{\Lambda} = 0 \qquad (9)$$

Where $\mathbf{C}$ is a diagonal matrix with the i-th diagonal element as:

$$c_{ii} = \frac{1}{2 \| \mathrm{x}_i \|} \qquad (10)$$

By left multiplying the two sides of Eq. (9) by $\mathbf{AC}^{-1}$ then we obtain:

$$\mathbf{\Lambda} = -2(\mathbf{AC}^{-1}\mathbf{A}^{\mathrm{T}})^{-1}\mathbf{Y} \qquad (11)$$

By substitute Eq. (11) into Eq. (9) then:

$$\mathbf{X} = \mathbf{C}^{-1}\mathbf{A}^{\mathrm{T}}(\mathbf{AC}^{-1}\mathbf{A}^{\mathrm{T}})^{-1}\mathbf{Y} \qquad (12)$$

The above update rules can be derived by using general multiplicative heuristic formulas as:

$$\mathbf{X} \leftarrow \mathbf{X} \otimes \left(\frac{\mathbf{C}^{-1}\mathbf{A}^{\mathrm{T}}\mathbf{Y}}{\mathbf{AC}^{-1}\mathbf{A}^{\mathrm{T}} + \varepsilon} \right)^{[\omega]} \qquad (13)$$

Where $\otimes$ is hadamard (component-wise) product and ω is over-relaxation positive parameter [0.5,2] which used to accelerate the convergence (Cichocki,2006) .By the same rule we can define the update for $\mathbf{A}$ as follow:

$$\mathbf{A} \leftarrow \mathbf{A} \otimes \left(\frac{\mathbf{C}^{-1}\mathbf{Y}\,\mathbf{X}^{\mathrm{T}}}{\mathbf{X}^{\mathrm{T}}\mathbf{C}^{-1}\mathbf{X} + \varepsilon} \right)^{[\omega]} \qquad (14)$$

For NMF problem with sparsity constraints the above multiplicative algorithm Eq. (13)- Eq. (14) can be summarized in the following pseudo-code Algorithm R_1 -NMF.

Furthermore, it would be very interesting to apply R_1 -NMF algorithm for inverse problems in which matrix $\mathbf{A}$ is known and we need to estimate only matrix $\mathbf{X}$ for ill-conditioned and noisy data.

5. Performance Evaluation

In order to evaluate the performance and precision of R_1 -NMF algorithm we used two criteria (Phan, 2009):

1. Signal -to-Interference-Ratio (SIR).
   Is used to evaluate the ratio between the power of the true signal and the power of the estimated signal

$$SIR = 10\log_{10}\left(\frac{\|\mathbf{X}\|_2^2}{\|\mathbf{X}-\hat{\mathbf{X}}\|_2^2}\right) \qquad (15)$$

2. Peak Signal-to-Noise-ratio (PSNR).

In contrast to SIR, the PSNR estimates the ratio between a maximum possible value of the normalized signal and its root mean squared error, that is:

$$PSNR = 10\log_{10}\left(\frac{R^2 \times T}{\|\mathbf{X}-\hat{\mathbf{X}}\|_2^2}\right) \qquad (16)$$

Where R is a maximum value of the signal and T is the number of samples.

6. Simulations and Experimental Results:

We have conducted extensive simulations with experiments designed specifically to address, how robust is the R_1 -NMF algorithm to noisy mixtures under multiplicative Gaussian noise, additive Gaussian noise. The multiplicative R_1 -NMF algorithm and standard NMF algorithm have been extensive tested on many difficult benchmarks. Illustrative examples are provided to give insight into the multi-layer techniques (Phan, 2009).

a. Example 1

In this example the simulations were performed on the "X_5smooth" dataset (Phan,2009)which contain three sparse and smooth nonnegative signals .We considered the matrix $\mathbf{X}$ with three nonnegative sources (truncating their length to the first 1000 samples) shown in Fig.1. We mixed these sources with a random mixing matrix $\mathbf{A}$ of dimension 3×3, whose elements were drawn independently from a uniform random distribution in the unit interval as displayed in Fig. 1.

After using R_1 -NMF to separate the mixture signals, the result of estimated signals shown in Fig. 2 and the result of standard NMF in Fig. 3. The performance was evaluated with SIR is 36.1622dB and 23.5268dB for R_1 -NMF and standard NMF respectively.

b. *Example* 2

In this example we applied our R_1 -NMF algorithm on a datasets (Phan,2009) (such as "Speech4", "SP_Ex1_Signals"," Speech8" and "X_10rand_sparse"). In which we take three sources from each dataset and we mix these sources with random mixture matrix with noise (5dB), the performance of our algorithm shown in Fig. 4, Fig. 5and Fig. 6 and Table 1.

Where in Fig. 5 the estimated speech (from "Speech4" dataset) by R_1 -NMF and its original in which there are scaling and permutation in the estimated speech, but this Figure cannot tell us the performance of our algorithm so, we can illustrated this performance through using Hinton histogram in which it used to compute and visualize the correlation matrix $\mathbf{G}$ of two matrices $\mathbf{X}$ and $\hat{\mathbf{X}}$, for evaluating the performance of uncorrelated sources (Phan,2009) (if the sources are estimated perfect then $\mathbf{G}$ become diagonal matrix).From Fig. 6 we can see that our algorithm is better than standard NMF.

Table 1 illustrated the performance of our algorithm in which SIR and PSNR is better than standard NMF but it take long time than standard NMF.

Algorithm R_1 -NMF

Input : $\mathbf{Y} \in \mathbf{R}_+^{I\times T}$:input data, J :rank of approximation, ω :over-relaxation, and λ, μ sparsity degrees

Output: $\mathbf{A} \in \mathbf{R}_+^{I\times J}$ and $\mathbf{X} \in \mathbf{R}_+^{J\times T}$ such that cost function (7) is minimized.

1. **begin**
2. initialization for $\mathbf{A}$ and $\mathbf{X}$
3. **repeat** /* update X and A */
4. update $\mathbf{X}$ by (13)
5. update $\mathbf{A}$ by (14)
6. foreach a_j of $\mathbf{A}$ do $a_j \leftarrow a_j / \|a_j\|_p$ /* normalize to ℓp unit length */
7. **until** a stopping criterion is met /* convergence condition */
8. **End**

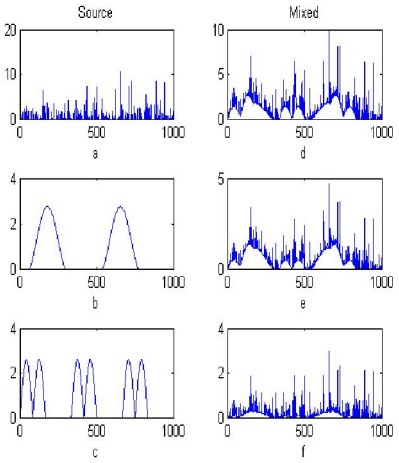

Fig 1: illustration of simulation experiments with three nonnegative sources and their typical mixtures using a randomly generated (uniformly distributed) mixing matrix (a, b, c) sources (nonnegative components) and (d, e, f) mixtures Signals.

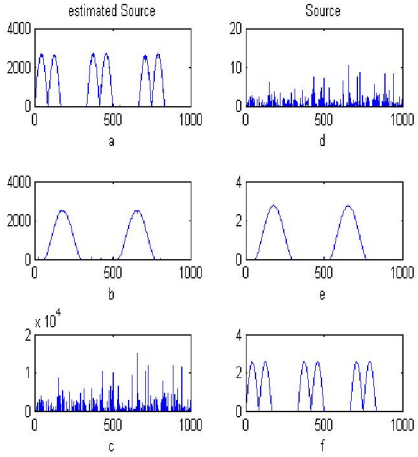

Fig 2: The estimated source by R_1 -NMF and Original source with SIR = 36.1622 dB (with scaling)

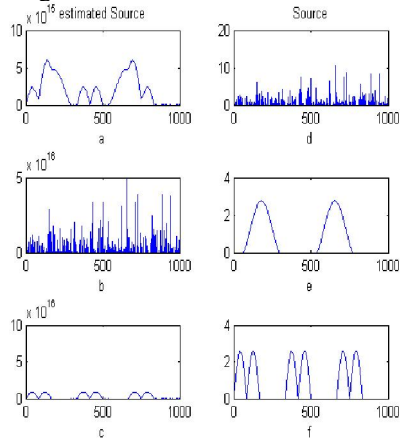

Fig **3:** The estimated source by standard NMF and Original source with SIR= 23.5268.

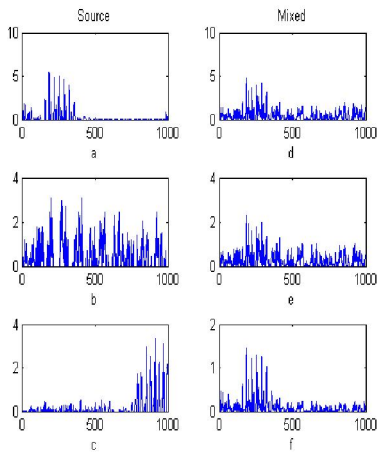

Fig 4: Original source in left and mixture source with noise (5dB) in right

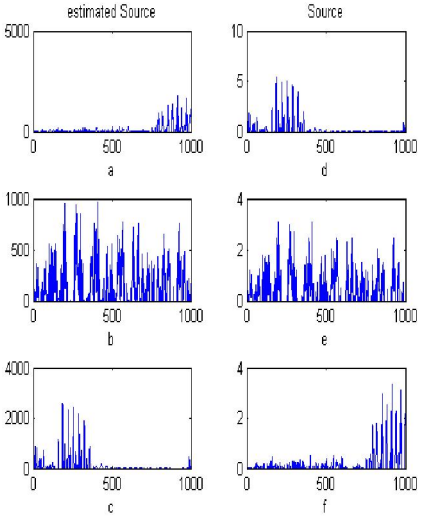

Fig5: Original source in right and estimated source by R_1 -NMF in left.

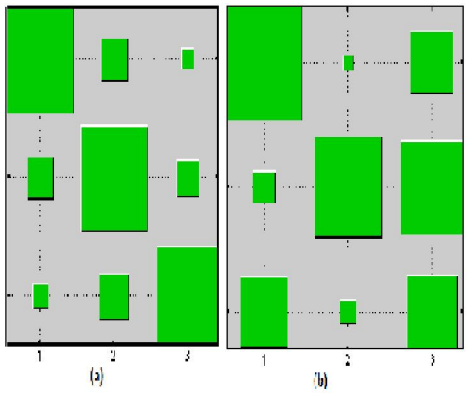

Fig 6: Hinton histogram for G (a) correlation for standard R_1 NMF, (b) correlation for NMF.

Table1: Performance of R_1 -NMF and NMF for four datasets with 4 layers (maximum 1000 iteration / layer).

Noise	R_1 -NMF			NMF		
	PSNR	SIR	Run time	PSNR	SIR	Run time
Speech4	31.53	35.82	27.56	25.15	21.65	15.52
SP_Ex1_Signals	30.33	34.77	11.91	24.83	32.69	8.410
Speech8	28.90	36.64	14.97	23.48	28.73	11.72
X_10rand_sparse	27.22	27.23	9.921	24.80	26.54	8.052

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7. Discussions

We have introduced the R_1 -NMF algorithm which is flexible and robust cost function and forms a basis for the development of a new class of multiplicative algorithms for NMF. This algorithm allows us to reconstruct (recover) the original signals and to estimate the mixing matrices, even when the observed data are imprecise and/or corrupted by noise. Extensive empirical studies have been performed on group of signals from NMFLAB, to demonstrate performance of our algorithm.

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Comparison of empirical correlations for the estimation of conjugate heat transfer in a thrust chamber

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Abstract: Due to high temperatures and pressures in the thrust chamber, regenerative cooling along with film cooling is one of the basic requirements for safe operation. This is ensured by controlling the rate of heat transfer from the walls of chamber through the coolant flow rate. For optimum performance of thrust chamber using efficient combustion, specific heat transfer rates through the nozzle section are required to guarantee the structure integrity of the chamber. Analytical procedures for the thermal design of thrust chambers are fairly limited and designers have to rely on empirical relationships and/or computational methods to calculate the heat transfer rates. Experimental correlations are usually used to predict heat transfer through the internal wall however the exact mechanism of heat transfer is not fully understood. Here a comparison of analytical and empirical approaches has been made for a simplified geometry consisting of two concentric shells. The simplified geometry allows direct application of analytical approach and provides a test ground for the empirical approaches. Results for heat flux and hot side wall temperatures are also compared with a coupled numerical simulation using commercial software Fluent. While estimations for cooling fluid outlet temperature and temperature of outer wall of coolant shell are also compared with the experimental data. The comparison indicates that the analytical method for the heat transfer calculation matches the numerical simulations and experimental data reasonably well.
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Keywords: Heat transfer; Thrust chamber; Bartz correlation; Dual shell.

1. Introduction

The modern liquid rocket engine thrust chambers are exposed to high pressure and high temperature environments. The flow in the thrust chamber is turbulent and supersonic. Reducing wall temperature at hot-gas side wall by 50-100^{o}C could result in doubling the chamber life cycle, which is very important to the industry of spaceflight due to the expensive cost of manufacturing. Therefore, ways to enhance the cooling rate of thrust chamber is very important to the rocket engine while keeping the performance of chamber to its optimal level. The heat flux varies along the thrust chamber wall according to geometry and design parameters of thrust chamber. In a typical design maximum heat flux is found near the zone where the area is reduced to its minimum; while the lowest values are usually observed near the nozzle exit of the thrust chambers.

Regenerative cooling is the most widely used method of cooling a thrust chamber and is accomplished by flowing high-velocity coolant over the sides of the chamber hot gas wall to convectively cool the hot gas liner. The coolant is normally the fuel used for the chamber, as it takes the heat by cooling the liner and getting discharged into chamber through injector and utilized as a propellant. The heat flow through the chamber wall is usually very high ranging up to 20 MW/m^2. The amount of heat that can flow into the coolant is controlled by many factors including the temperature difference between the chamber and the coolant, the heat transfer coefficient, the thermal conductivity of the chamber wall, the velocity in the coolant channels and geometrical design of the flow channels with the flow velocity of the hot gas in the chamber. However the flow rate of the coolant is usually limited to design constrains of the number of channels, channel velocity and chamber fuel requirements, as in most of the cases, the coolants are the propellant itself. In complex designs, the flow path is usually intricate and results in highly turbulent flows in the channel geometry. While the gas flow in the nozzle is also highly turbulent and supersonic. The optimal performance and structural integrity are highly difficult to obtain at times and one may need to rely on extensive experimentation to obtain required performance.

Due to the intricate geometric configurations and temperature dependant physical properties of fluids involved generally empirical formulations have been adopted for heat transfer calculations. For practical thrust chamber design Rocket Thermal Evaluation (RTE) code [1] and Two Dimensional Kinetics (TDK) nozzle performance code [2] are commonly used. In addition to empirical heat transfer models a number of computational and experimental testing are also employed to optimize the coolant

channel design so the chamber wall temperatures can be limited without influencing other critical parameters [3, 4]. Several investigations of the regenerative cooling and optimization have been performed using numerical codes (for instance see Carlos et al. [5], Niu et al. [6], Han [7], Li and Liu [8], and Toyama [9]). However mostly the inner chamber gas flow and associated heat transfer is modelled using empirical formulations with very few exceptions including coupled regenerative cooling for simplified configuration (for instance see Li and Liu [8]).

Further enhancements of the empirical one-dimensional model for flows in a rocket engine with regenerative cooling are also introduced. For example, Carlos et al [5], highlighted the importance of temperature varying fluid properties in the estimation of maximum inner wall temperature of the gas side. Naraghi et al [9] approximated the heat conduction in the engine wall by modeling the channel walls as fins. Sailesh et al [10] used commercial software to estimate the temperature and pressure distribution of the gas side for heat transfer calculations.

The enhanced relationship is further used for calculating aspect ratios of the cooling channel at various mass flow rates and pressure drops by Boysan et al [11]. However the exact nature of the heat transfer is still unclear especially in the presence of film cooling often introduced in large scale systems. Merkle et al [6] and Naraghi et al [12] studied the three-dimensional flow in the regenerative cooling passages along with film cooling resulting in lower maximum wall temperatures than usual. For conjugate heat transfer extensive experimentation and numerical simulations have been used to develop empirical correlations such as Namkoung et al [7]. Despite extensive experimental and numerical simulations, the heat transfer physics in complex geometric configuration is not well understood. The flow physics is often turbulent and requires extensive computational resource to resolve before estimations for heat transfer could be made. On the other hand one-dimensional empirical correlations cannot take some important effects (such as geometric and flow physics effect on heat transfer) into account, thus ad hoc design methods are used before experimental testing can be performed.

Understanding the heat transfer phenomena using first principles is important for safe design and optimal performance. The conventional designs often involve intricate paths for cooling channels to maximize the contact area between two sides but this limits the scope for understanding the physics. Here we propose a simplified geometry for coolant transport in a thrust chamber to study the heat transfer. The geometry involved two concentric shells (see Fig. 1) for gas side and coolant side respectively. This is the most simplified configuration with lowest area of restriction for the coolant (less than 4% for assembling using spot welds). One dimensional heat transfer model is used for radial heat transfer along the length of the chamber. Numerous empirical correlations for the estimation of heat transfer coefficient have been proposed due to complex flow physics, for instance Bartz Equation [13].

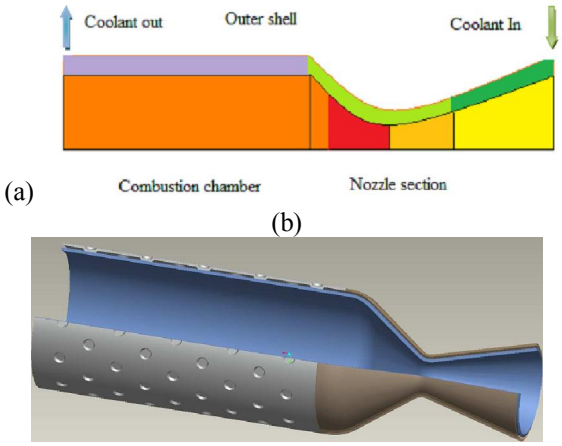

Figure 1: a. Layout of the Dual shell thrust chamber b. Cad model of dual shell chamber.

In the simplified geometry we test theoretical model for the estimation of convective heat transfer coefficient along with different empirical correlations. Results are compared with the numerical simulations using axi-symmetric geometry in commercial software. Temperature of the coolant at the exit from the chamber is also measured experimentally to validate the models. This allows a direct comparison between the experimental setup and analytical model in a realizable configuration.

2. Analytical and Empirical Models

Heat transfer in a regeneratively cooled chamber can be described as the heat flow between two moving fluids, through a multilayer partition as given below and shown in Figure 2.

$$\dot{q}_{tot} = \dot{q}_g = \dot{q}_s = \dot{q}_c \qquad (1)$$

2.1 Gas Side Heat Transfer

The heat transfer between the combusted gases and thrust chamber wall is through convection and radiation.

$$\dot{q}_g = \dot{q}_{g,conv} \qquad (2)$$

In thrust chamber, before the combusted gases can transfer heat to the wall, the heat energy must pass through a layer of stagnant gas along the wall, boundary layer. This basic correlation for this complicated convective heat transfer can be expressed by the following equation:

$$\dot{q}_{g,conv} = h_g (T_{aw} - T_{wg}) \quad (3)$$

The adiabatic wall temperature of combustion gas at a given location in the thrust chamber may be obtained from the following expression:

$$T_{aw} = T_c \left[\frac{1 + r\left(\frac{\gamma - 1}{2}\right) M^2}{1 + \left(\frac{\gamma - 1}{2}\right) M^2} \right] \quad (4)$$

where recovery factor 'r' can be estimated for turbulent flows as:

$$r = (P_r)^{0.33} \quad (5)$$

Conventional formulation for the calculation of gas side heat transfer coefficient is usually given in terms of several dimensionless parameters

$$\frac{h_g D}{k} = 0.026 \left(\frac{Dv\sigma}{\mu} \right)^{0.8} \left(\frac{\mu C_p}{k} \right)^{0.4} \quad (6)$$

where $Nu = \frac{h_g D}{k}$, $\mathrm{Re} = \frac{Dv\sigma}{\mu}$, $P_r = \frac{\mu C_p}{k}$

In simplified form h_g can be calculated as follows

$$h_g = 0.026 \frac{(\sigma v)^{0.8}}{D^{0.2}} P_r^{0.4} \left(\frac{k}{\mu^{0.8}} \right) \quad (7)$$

Determination of gas side heat transfer coefficient presents a very complex problem. Comparisons of analytical results with experimental heat transfer data have often shown disagreements. The differences are largely attributed to the initial assumptions for analytical calculations. Based on experience with turbulent boundary layer, some relatively simple correlations for the calculation of gas side heat transfer have been developed. Bartz Correlation [13] is a well known equation used for estimation of rocket nozzle convective heat transfer coefficients based on thermal properties of combusted gases and isentropic gas equations. Heat transfer coefficient can be estimated in terms of gas side wall temperature by using Bartz Correlation.

$$h_g = \frac{0.026}{d_t^{0.2}} \left(\frac{\mu_g^{0.2} C_{p,g}}{\mathrm{Pr}_g^{0.6}} \right) \left(\frac{P_c}{C^*} \right)^{0.8} \left(\frac{A_t}{A} \right)^{0.9} \sigma \quad (8)$$

$$\sigma = \left[0.5 \frac{T_{wg}}{T_c} \left(1 + \frac{\gamma - 1}{2} M^2 \right) + 0.5 \right]^{0.68} \left(1 + \frac{\gamma - 1}{2} M^2 \right)^{-0.12} \quad (9)$$

Apart from the Bartz correlation, based on the experimental studies of Ciniaref and Dobrovoliski [14] the relationship for convective heat transfer is also given as,

$$h_g = \frac{k_g}{d} 0.0162 P_r^{0.82} \mathrm{Re}_g^{0.82} \left(\frac{T_{aw}}{T_{wg}} \right)^{0.35} \quad (10)$$

For initial benchmarking results for Bartz correlation is presented, however a comparison is also provided later.

2.2 Coolant Side Heat Transfer

The heat transfer between the coolant and thrust chamber wall is by forced convection.

$$\dot{q}_{l,conv} = h_l (T_{wl} - T_l) \quad (11)$$

The correlations used for coolant side heat transfer are principally based on the conventional Dittus-Boelter equation for turbulent, thermally fully developed flow for fluids with constant property values. The following correlation is generally used for regenerative cooling analysis as given in equation (12) [15].

$$Nu = \frac{h_l D_h}{k_l} = 0.027 \mathrm{Re}_l^{0.8} \mathrm{Pr}_l^{0.33} \left(\frac{\mu_l}{\mu_{l,cw}} \right)^{-0.14} \quad (12)$$

3. Solution technique

The thermal flux received by the wall of the thrust chamber is the flux due to convection. Using equation (1),

$$\dot{q}_t = \dot{q}_c = h_g (T_{aw} - T_{wg}) \quad (13)$$

In steady state, this flux $\dot{q}_t$ passes through the first metallic wall of thickness t_{win} so that if k_{win} is the thermal conductivity of the wall material, we get:

$$\dot{q}_t = \frac{k_{win}}{t_{win}} (T_{wg} - T_{wl}) \quad (14)$$

In addition for coolant liquid, we know that:

$$\dot{q}_t = h_l (T_{wl} - T_l) \quad (15)$$

where h_l is determined using the Nusselt number (Eq. 12). The three relations given above determine the temperatures T_{wg} and T_{wl}, i.e., wall temperatures along the gas and liquid sides respectively. For calculations, the length of thrust chamber is divided into small segments. Each segment is assumed to have a constant heat flux. Heat balance is calculated for each segment with T_{in} at the inlet with T_{out} is the exit temperature of the segment. Heat taken by coolant in first segment is

$$(T_{out})_i = (T_{in})_i + \frac{qA}{C_{pcool}\dot{m}} \quad (16)$$

For all the elements,

$$T_{out} = T_{in} + \sum_i \frac{qA}{C_{pcool}\dot{m}} \quad (17)$$

where C_{pcool} is the mean specific heat of coolant and $\dot{m}$ is mass flow rate of coolant. The solution is obtained using an iterative procedure. The calculation starts with a guess value of T_{wg} and is updated using the average of the newly calculated values and its previous value, mathematically:

$$(T_{wg})_2 = \frac{T_{wg} + (T_{wg})_1}{2} \quad (18)$$

Initially, using the assumed value of T_{wg} at each station T_{wg}, h_g and $\dot{q}_t$ are calculated using equations (7) and (15) respectively. For different empirical correlations respective equations/models are used instead of equation (7). The calculated heat flux is used for the calculation of temperature distributions, i.e., T_{wg}, T_{lw}, T_{wl} and T_l. An update value of T_{wg} is obtained by taking the average of previous and newly calculated value of T_{wg}. This new value of T_{wg} is used for next loop and procedure is continued until required convergence is achieved. Any values of T_{wg} can be assumed, however, clever guess of T_{wg} can reduce the number of iterations. The solution is obtained using MATLAB. The hot gas in the thrust chamber is assumed to be composed of 9 constituent species. Table 1 shows the molar fractions of the species used for the calculations.

The properties of the constituent (such as heat capacity, viscosity etc) are averaged before using in the model and/or experimental correlation. The values of the temperature dependant properties are initially calculated using the guess values of the temperature. The values are continuously updated through the iterative scheme to obtain the steady state temperature at the wall of thrust chamber

Table 1: Molar Fraction of species

Species	Molar fraction
O_2	0.00137
N_2	0.282
H_2	0.1067
CO	0.163
CO_2	0.069
H_2O	0.344
NO	0.00259
OH	0.016
H	0.129

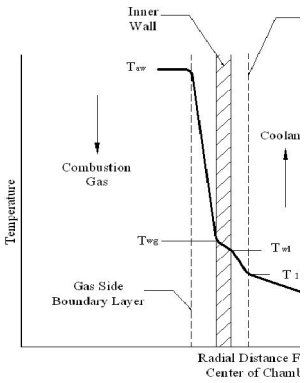

Figure 2. A schematics of the Temperature gradient in a Thrust chamber

3.1 Initial validation

For initial validation of the code, a comparison is made for the prediction of heat flux on the gas side of the chamber. The details for the thrust chamber used for the comparison can be found in [13]. The designed chamber pressure is 3.818 kPa with propellants LH2/LO2 and mass flow rate of propellant 18.599 kg s-1. The chamber uses LH2 for regenerative cooling. Figure 3 shows the comparison for the heat flux calculation using Bartz correlation and published data [13]. At the nozzle section (also shown in the Fig. 3), peak value of heat flux is found 25.8 MW/m2 compared to 28 MW/m2 found in [13].

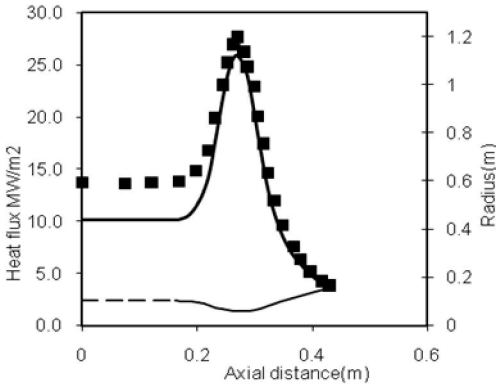

Figure 3. Comparison of heat flux using Equation (8) and results published in Ref [13]

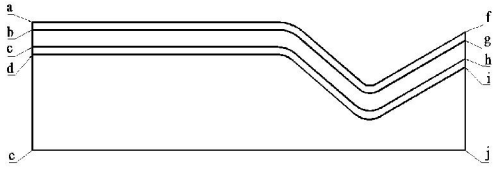

Figure 4. Schematics of the thrust chamber with labels indicating different boundaries. Details of the boundaries are mentioned in Table 2.

Table 2. Details of the boundaries indicated in Fig. 4

Section	Designation	Condition
abfg plane	Outer wall	Solid SS
bcgh plane	Coolant zone	Water
cdhi plane	Inner wall	Solid SS
deij plane	Hot gas zone	Ideal gas
de boundary	Pressure inlet	Pc=50 bar, Tc= 3000K
ij boundary	Pressure outlet	Pe= atm
bc boundary	Coolant pressure outlet	Pregout= 51 bar
gh boundary	Coolant velocity inlet	vin= 3.5m/s
ej boundary	Axisymmetric	axis
af boundary	Convective heat flux	hatm= 10 W/m2k

It can be observed from Fig. 3 that the peak heat flux is reasonably well predicted. The variation in the heat flux along the nozzle section also matches with the data. However higher values of the heat flux are observed in the combustion chamber compare to the predictions of the analytical code. It is worth mentioning here that the combustion chamber was designed with corrugation pattern on the coolant side different from the nozzle section (see ref [13] for details). The result presented here uses the corrugation pattern of the coolant side for the nozzle section only.

4. Thrust Chamber Geometry

The geometry of the thrust chamber used for this work is a simple dual shell. The outside diameter of the combustion chamber is 85mm with the length of the 195mm. The nozzle section starts immediately after the combustion chamber. The minimum diameter of the nozzle section is 18.2 mm located at a distance of 54.3mm from the start of the nozzle section. The total length of the nozzle section is 126.2mm with exit diameter of 54.4mm. The geometry is purposely selected and built for this research work to study the heat transfer in a simplified configuration. The exact profile of the geometry shall be displayed in all the results in following sections. The thrust chamber has a total thrust of 205 N. The inner and outer shells are manufactured using stainless steel joined together using spot welds. The experiments are conducted at an experimental facility equipped with appropriate data acquisition and instrumentations. The chamber is designed to operate with UDMH and N_2O_4 propellants. For the purpose of regenerative cooling, water is used with fixed flow rate of 1.0 kg/s. Details of the experiment, instruments and results are provided in forthcoming section.

5. Numerical Simulations

The numerical simulations are carried out using commercial software. The software solves conservation equations of mass, momentum and energy for compressible flow for the gas side, incompressible flow for the coolant side coupled with the conjugate heat transfer calculations. The simplified geometry can be approximated as two dimensional axi-symmetric. The conservation equations for the problem are given below. The continuity balance is given by:

$$\frac{\partial \rho}{\partial t}+\frac{\partial}{\partial x}(\rho v_x)+\frac{\partial}{\partial r}(\rho v_r)+\frac{\rho c_r}{r}=S_m \quad (19)$$

The axial and radial momentum equations are given below:

$$\left[\begin{array}{l}\frac{\partial}{\partial t}(\rho v_x)+\frac{1}{r}\frac{\partial}{\partial x}(r\rho v_x v_x)+\frac{1}{r}\frac{\partial}{\partial r}(r\rho v_r v_x)=-\frac{\partial p}{\partial x}+\\ \frac{1}{r}\frac{\partial}{\partial x}\left[r\mu\left(2\frac{\partial v_x}{\partial x}-\frac{2}{3}(\nabla\cdot\vec{v})\right)\right]+\\ \frac{1}{r}\frac{\partial}{\partial r}\left[r\mu\left(\frac{\partial v_x}{\partial r}+\frac{\partial v_r}{\partial x}\right)\right]+F_x\end{array}\right] \quad (20)$$

$$\left[\begin{array}{l}\frac{\partial}{\partial t}(\rho v_r)+\frac{1}{r}\frac{\partial}{\partial x}(r\rho v_x v_r)+\frac{1}{r}\frac{\partial}{\partial r}(r\rho v_r v_r)=-\frac{\partial p}{\partial r}+\\ \frac{1}{r}\frac{\partial}{\partial x}\left[r\mu\left(\frac{\partial v_r}{\partial x}+\frac{\partial v_x}{\partial r}\right)\right]+\\ \frac{1}{r}\frac{\partial}{\partial r}\left[r\mu\left(2\frac{\partial v_r}{\partial r}-\frac{2}{3}(\nabla\cdot\vec{v})\right)\right]\\ -2\mu\frac{v_r}{r^2}+\frac{2}{3}\mu\frac{v_r}{r}\left(\nabla\cdot\vec{v}\right)+\rho\frac{v_z^2}{r}+F_x\end{array}\right] \quad (21)$$

The energy equation is given as follow

$$\frac{\partial y}{\partial x}(\rho E)+\nabla\cdot(\vec{v}(\rho E+p))=$$
$$\nabla\cdot(k_{eff}\nabla T-\sum_i h_j\vec{J}_j+(\overline{\overline{\tau}}_{eff}\cdot\vec{v}))+S_h \quad (22)$$

The energy transport equation used by FLUENT in solid regions has the following form:

$$\frac{\partial}{\partial t}(\rho h)+\nabla\cdot(\vec{v}\rho h)=\nabla\cdot(k\nabla T)+S_h \quad (21)$$

For the turbulent flow with heat transfer, the Renormalization Group Theory (RNG) $k-\varepsilon$ model is used. The RNG $k-\varepsilon$ model has an additional term in its ε equation that significantly improves the accuracy for rapidly strained flows suitable in the current case.

Table 3: Grid independence study

	Hot gas	Inner wall	coolant	Outer wall	Exit Ma.	Outlet Temp (K)
1	25×100	5×100	5×100	5×100	2.92	328.7
2	50×300	10×300	10×300	10×300	3.1	328.9
3	50×600	15×600	15×600	15×600	3.1	329.0

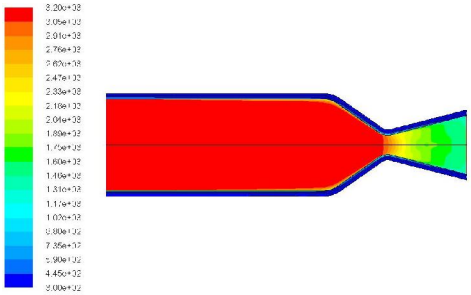

Figure 5. Contour plot showing variation of the steady state Temperature (K) in the thrust chamber along with coolant channel.

5.1 Boundary Conditions and Zones

The boundaries of the thrust chamber with different zones are mentioned in Figure 4. The chamber has two flow channels for gas and propellant flows respectively. While the solid wall separates the gas and liquid side and allows the heat transfer through conduction.

Commercial software Fluent is used for coupled simulation of gas and regenerative cooling fluid. For the thrust chamber analytical engine parameters are used as input from CEA software [17]. CEA calculates the resultant temperature and pressure which can directly be used as inlet boundary conditions. DTRM model is used for radiation heat flux calculated. Turbulence model is used with peak value of y^+(non-dimensional vertical height) less than 120. Initially three different grid sizes were used to carry out Grid independence study. The results for nozzle exit Mach number and outlet temperature of coolant are shown in table 3 for three grids.

It was noted that the variation in the outlet temperature and Mach no. is negligible for the case 2 and case 3. Therefore case 3 mesh is selected for further calculations and comparison.

The steady state variation in the temperature of the thrust chamber is shown in Figure 5. It can be noticed that the hot gases from the combustion chamber loses temperature as it flows through the nozzle section of the thrust chamber. The maximum heat transfer occurs in the region where the chamber diameter is reduced to its minimum. It is also seen that the hot gas loses temperature as the nozzle section expands after the throat. The coolant is introduced from the exit side. The heat transfer occurs along the nozzle section and resultant temperature on the coolant side increases as it comes out from the combustion side of the thrust chamber.

Figure 6 and 7 shows the variation of heat flux and the temperatures of the wall at the gas side, coolant side and the outermost side of the thrust chamber.

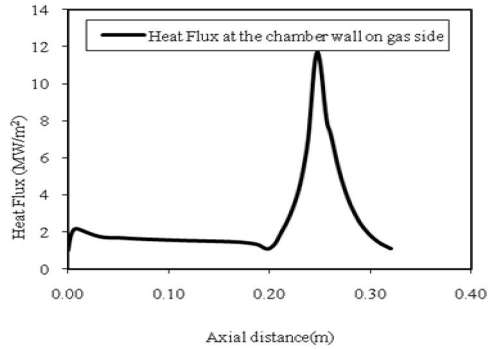

Figure 6. Variation of total heat flux along the length of the thrust chamber.

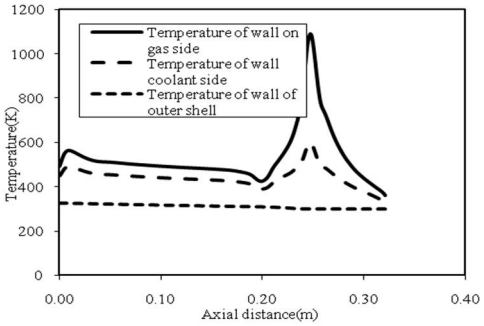

Figure 7. Variation of temperature along the length of the thrust chamber for a) the wall on the gas side, b) the wall on the coolant side c) outer most wall.

It can be observed from Figure 6 that the maximum heat transfer occurs near the throat region of the nozzle. In addition, highest temperature is also observed in the same region as seen in Figure 7. One may notice that the peak temperature is ~1200 K. For sustained working the peak temperature of the thrust chamber must be lowered to a safe limit. This can be controlled using the mass flow rate of the coolant. However in practice the mass flow rate of the coolant is controlled by the combustion process inside the chamber. Thus better estimation of the thrust chamber heat flux and wall temperatures is essential for the longer life of the chamber as well as for its better performance.

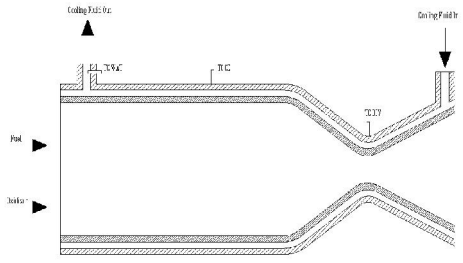

Figure 8. Schematic of experiment conducted along with the locations of the instruments installed.

6. Experimentation

For validation of the proposed technique, a specially designed thrust chamber was fired. For generating high temperature gases inside the chamber, UDMH and N2O4, are used as propellants. Water is used for the regenerative cooling. The thrust chamber is made up of high conductivity stainless steel inner and outer shell. Three thermocouples were installed on the chamber; first one on the outer body of thrust chamber almost at the center of the combustion zone, second one on outer side of the divergent part near the throat portion and the third one was directly measuring the temperature of the outlet water of the chamber in the outlet pipe of cooling fluid as shown in the figure 8. Schematic diagram of experimental setup is shown in figure 8. After the hot test of the thrust chamber, temperature data obtained by the three thermocouples and pressure plots are shown in figure 9 and 10 respectively.

The thrust chamber develops a steady pressure of ~ 50bar right after the ignition is made. The test lasts for a little more than 25 sec. The whole duration of the test the thrust chamber experiences constant pressure indicating the controlled environment present for the data acquisition. Using the three thermocouples data, one can observe that the temperature variations become steady in first 5 sec of the test. The temperature measured in the experiment indicates that the coolant acquires water during the first few seconds of the test and remains fairly constant afterwards. This indicates the initial transients of the chamber settle down in a short period of time. Thus the heat transfer rates can be calculated from steady state conditions.

Due to higher temperatures at the inner wall of the chamber and chances of perturbation of flow in the coolant channel, the data of inner wall temperature could not be monitored in this experimental setup.

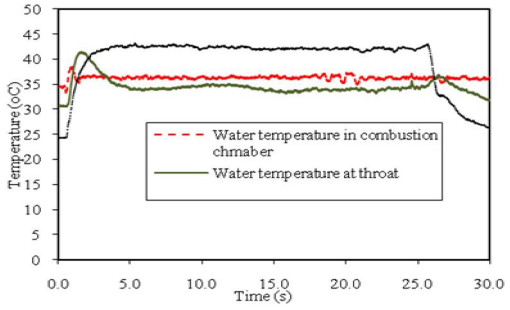

Figure 9. Thermocouple measured data for the temperature variations at the three locations labelled in Figure 8.

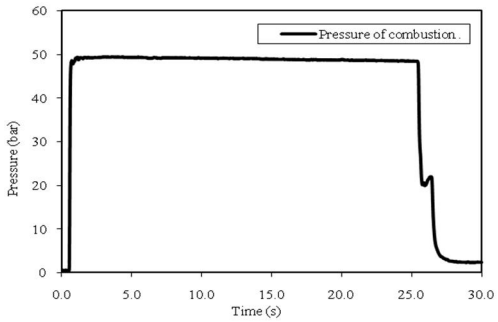

Figure 10. Real time Pressure record data of the thrust chamber.

However the temperature acquired by the coolant is used to calculate the total heat gained during the process. Also the analytical code as well as the numerical simulations produces temperature predictions for the coolant side. In next section we compare the results with experimental data.

7. Results and discussion

The results for the variation of heat flux and wall temperature on the gas side of the chamber are compared with the numerical simulations. Figure 11 and 12 shows the comparison between the predictions using analytical code with numerical simulations for heat flux and gas side wall temperature respectively. As anticipated the variation of heat flux along the chamber length shows a peak around the throat region. Correspondingly highest temperature is also observed in the same region.

The prime focus is the region where the gas accelerates to generate thrust for the chamber. The nozzle section is the most critical part of the chamber. High heat flux and resultant high temperatures may cause damage to the nozzle section. Thus any design calculations shall account the heat flux experienced by the chamber

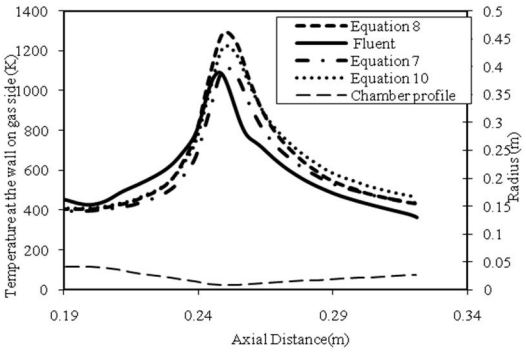

Figure 11. Comparison of temperature on the gas side of the thrust chamber.

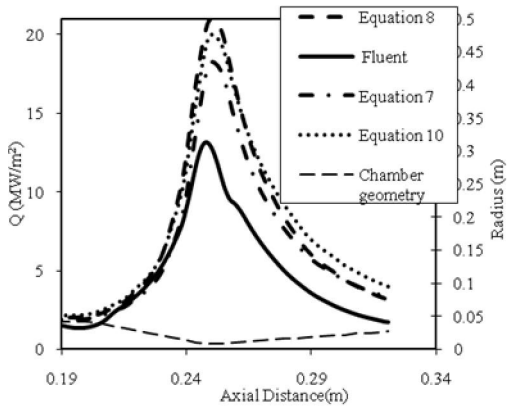

Figure 12. Comparison of heat flux on the wall of the thrust chamber.

. The temperatures in the nozzle section are high and slight deviation from the designed temperature may lead to structural damage. The comparison carried out here shows that different correlations predict highest temperature ranging from ~1300-1150 K. One can observe that the peak temperature predicted using equation 7 matches well with the numerical simulations. While the predictions of commonly used correlation of Bartz (equation 8) shows ~20% higher temperature in the throat region.

Apart from the peak temperature predictions, the variation in the temperature along the nozzle section and location of the peak temperature point varies in all the cases. The empirical correlation of Bartz (equation 8) predicts the peak temperature earlier compared to other formulations. Similarly Bartz predicts a slightly quick decrease in the temperature compared to numerical simulations, while the predictions using equation 7 matches well with the numerical simulations. One may also observe that using the simplified geometry the theoretical models are relatively best suited for the predictions of heat flux (see Figure 12). On the other hand the predictions using Bartz (equation 8) correlation are conservative predicting very high heat flux compared to numerical simulations. The predictions may well suit the designer's guideline for safe operation of the chamber; however the predictions may not be entirely correct or representative of the system.

Table 4. Comparison of wall temperature on the outer shell and coolant outlet temperature

	Eq. 7	Experimental	Fluent
Max wall temperature K)	1102	-	1080
Coolant exit temperature K	315.5	315	330
Outer wall temp of CC K	306	309	321
Outer wall temp of Divergent K	300	307	300

Comparison of wall temperature on the outer shell is presented in Table 4. Analytical predictions (using Equation 7) of the outer shell temperatures and coolant temperature show a reasonable match with the experimental findings. One may notice that the temperature of the coolant at the exit is 315 K in comparison with 315.5 K predicted by the code. This suggests that the analysis carried out here is valid and the predictions of the analytical method are reliable. The analytical predictions using equation 7 may be used for the design guidelines. However with the change in coolant flow configuration and net effective heat transfer area, the predictions of the analytical model using equation 7 may no longer remains reliable. A systematic study may reveal necessary modifications required for the correct form of the heat transfer. One the other hand, empirical predictions provide a conservative guideline for safe operations. But the entire physics may change with different geometrical features and flow physics.

8. Conclusion

Optimal design of thrust chambers requires correct estimation of heat flux experiences by the material of the chamber during operations. A number of empirical relationships have been proposed in the literature and can be used as a design guideline. However complete understanding of the heat transfer phenomena is a must for optimal and safe operations of the system. Here a comparison is made between the predictions of theoretical formulation and empirical relationships along with results using numerical simulations and experimentation. The geometrical configuration is kept simple to ensure validity of assumption and simplification of flow geometry. The dual shell configuration allows a direct comparison between the results of numerical simulations and analytical formulation. It is evident from the results that the heat transfer is dominated by the convective heat exchange between the hot gas and coolant. The form of the heat transfer coefficient is correctly estimated using analytical formulation. On the other hand other formulations show slight deviations. Although the deviations seem slight, but in the context of the geometrical configuration used for the study, the deviations are as high as 20%. One may notice that the empirical correlations predict higher temperatures, resulting in conservative design guideline for the chamber design. However this research work attempts to model the non-linear heat transfer problem using first principles. A parametric study using additional geometrical configurations may indicate the short comings in the analytical formulation. Rigorous study using numerical simulations and experimentation may yield correct relationship for heat transfer coefficient including possible geometric parameters.

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Investigating The effects of accounting and business cycles in the evolution of the Tehran Stock Exchange

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Abstract: In this research we study the effect of accounting data behavior according to the business cycles in Tehran stock exchange. More over this research examines the behavior of accounting data according to the business cycles, by considering the special features of companies. The studied accounting data in clouded sales growth, gross profit margin changes, changes in profit before tax and net profit and total assets changes. The results of this research show that in Tehran stock exchange there are significant relationships between some of the accounting variables (sales growth and gross profit margin) with business cycles and no relationship is seen among some of the variables (such as total assets changes). Moreover this research's findings indicate that the relation between the accounting data and business cycles is affected by the size of company and cyclical or non-cyclical nature of company (special features of companies). **[**Alireza Askarpour, Zahra Rahmati.
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Key words: accounting data behavior, business cycles, Tehran stock exchange, the special features of company and industry.

Introduction:

One of the developed countries features is that in these countries there are efficient financial market and institutions that also play an important role in the country's economy and lead to the economic growth and development. Dynamic financial markets are one of the essential and affecting elements on each country's economy. A dynamic market requires clear and reliable information to make appropriate decisions. Most of the used information in the financial markets are processed and reported by the accounting systems. The provided information via the accounting system that is a basis for predicting the exact future information is not enough, but also we must pay attention to the other factors like the economic condition of country (economic downturn or economic growth).

The economic conditions can have different effects on the companies and affect the accounting data behavior. For example, in the economic downturn, we expect that the level of sales growth and the grass profit margin of companies and also the investing level of companies decrease and vice versa. In the period of economic growth we expect the reverse of this event. Therefore we can say that economic conditions have a different effect on the accounting data. So knowing the changes of accounting data behavior according to the business cycles can help investors and other decision makers in official markets in predicting the future accounting data more exactly, and leads to a better source allocation. On the other hand the effect of business cycles on the accounting variables may be different according to the special features of companies.

In other words, the special features of companies such as cyclical or non-cyclical nature of a company or the size of company can affect the relation between the accounting data and the business cycles. For example in downturn condition the accounting data of non-cycling companies (such as food industry and public services) is not affected too much. While the accounting data of cyclical companies (such as (durable goods producers) is affected too much and in fact their sales, earnings and investing are decreased significantly. This research tries to show whether changing the economic conditions affect the performance of business companies, and whether this impact is different according to the special features of companies? This study provides an exact sight about the dynamic accounting data behavior in the major port of economy and provides a helpful guidance for analysts and the other users of financial data to predict the basic accounting variables.

This study provides an opportunity for decision makers so that they can improve their prediction about the company's performance according to the major economic conditions. There fore based on the mentioned cases, the aim of this research is to examine the relation between the accounting data and the business cycles according to the special institute's features. In this direction, at first the background of this research will be stated and after that the hypotheses will be provided, that the research method and after that the test results, hypotheses and research

finding will be stated. Finally the limitations and recommendations will be provided.

Research background:

Up to now no research has been done about studying the accounting data behavior according to the business cycles in Iran. But in the international level many researches have been done. In a research which the title "business cycle and accounting variable", the way of accounting variables' movement was studied according to the major economic conditions. He used the board data in his study. The studied period was from 1978 to 2003. The results of Colingo's study show that the accounting variables such as sales and the stable assets growth are totally related to the business cycles; and these variables are more sensitive to the economic downturn that the economic growth. Of course the range of these changes was not equal in all industries. For example the effect of business cycles on the accounting variable is totally significant for the cyclical industry such as automobile industry. While for non cyclical industry such as drug industry, this effect is only significant for sales and investment, and it doesn't have any significant effect on the earnings.

Johnson studied the relation between the business cycles and stock return and companies' earnings. The period of his study was from the years 1970 to 1987 with the consolidated regression method. His result showed that companies' profit was affected by business cycles. And the profits' stability is significantly greater than the great depression, due to the creation of investment opportunities. Moreover the research result show that stock exchange's return in growth period is greater than the great depression. Liyo and Vasalou studied this topic that companies regarding risk indicators such as the ratio of book value to market value of the company's size, how they are affected by economic conditions? Their period of study was between 1976 and 1997 by using the liner regression method. The result of their research indicate that stocks with the ratio of B/M face with a good condition and also a good performance in the economic growth period and viceversa in economic downturn condition they have a poor state. Choordiya and Shiva Koomar in a research which its title is "profits, Business cycles and stock Returns", investigated the role of business cycles in asset pricing experiments. They believed that companies' profit were related to the business conditions. The period of their study was between 1972 to 1999 and they studied their research hypotheses by multiple variables regression method. Their research result show that there is relation between business cycles and companies' profit. Moreover, they indicate that there is a relationship between stock return and business cycles and in fact the business cycles have a basic role in assets pricing. Pers Koruz and Timerman investigated stock return's fluctuations in changing levels of business cycles. The result of their study show that the stock returns' fluctuations are significant in changing level of business cycles. Antonio, Lam and Padiyan investigated that whether business cycles' variables and profit biased behavior can explain the speed of trading in three main Europe markets. The result of their study show that the profit of trading speed in Europe markets is affected by the international trading condition.

The behavior of the accounting data regarding the business cycles, the macroeconomic evidence suggests that consumption and investment behavior is highly correlated with the behavior of real GDP. Therefore it is expected that growth in sales and growth in total assets of the company is also actively associated with real growth. Zarnovit proved that the companies' profit and their changes are signifactly related to the real growth of GDP. Moreover Tilwer concluded that the change in earnings (profit margin, net profit before extraordinary items and net profit) is strongly related to the real concurrent and has a positive relations. Based on the mentioned cases, we can state the first hypothesis as follows: the first hypothesis: there is a positive and significant relationship between the accounting variables and the real GPP. The growth of real GDP will decrease in the downturn period, but in the period of development, the real GDP has a significant growth. So it is expected that in economic downturn condition, the growth of accounting variables such as the sales growth of companies and even for some of the industries it will be negative. Collinglo states that although the accounting variables reflect the real changes in the economic conditions, but it is expected that the impact of economic conditions on the variable accounting during the recession, is more than that of the growing economic period.

Therefore we can state the second hypothesis as follows:

The second hypothesis: the effect of the real GDP on the accounting variables in downturn period is more that of the growing economic period is more that of the growing economic period. The accounting data behavior may be affected by the special features of companies, regarding the business cycles one of the special features of companies, cyclical or non- cyclical nature of a company. In fact the changing range of business periods can be totally different regarding the kind of industry which the companies operate in it. The cyclical business companies are usually faced with a variable application for their products affected by the downturn and growing economic condition. For example the application for automotive companies will be decreased in downturn economic condition, because

people preserve their funds for more critical applications such as food and medicine and spend less for unnecessary purchases such as cars. Then due to decrease in application, investment in these industries during a recession is more limited. In contrast, non-cyclical companies have been affected by the economic boom and bust, and faced with a more stable condition. For example medicine and food industry are non-cyclical, because even if business conditions are deteriorating and revenue could decline, as people attempt to buy drugs and food. So because of stability of application for the non-cyclical companies, investment and earnings of these industries are affected less by the economic condition, and in fact don't decrease too much. Beckman, Dobius and Isakof, in an investigation about the relation between the special features of industry and stock return, found that the cyclical industrial output in j-7 66 ص countries is more than the non-cyclical industries. Regarding the mentioned cases, we can 8 tate the third hypothesis as follows:

Third hypothesis: the susceptibility of the accounting variables to the business cycles for the cyclical companies is more than the non-cyclical companies.

One of the special features of companies that can be effective in predicting the financial information in several economic condition, is the size of company. Gertler and Jil Christ in their study found that due to insufficient internal resources and less access to external sources, small companies have more limited investment in recession, so the performance of these companies is worse. In contrast, in term of economic growth and the relatively enough internal and external investment create a bed for investment for small companies and their performance will be improved. Because of the diversity of products, big companies have the ability to finance and new investment, so it is expected that in a recession period see less damage. The alone analysis clears the source of risks for accounting variables and also a related range to the size of company. Based on the mentioned topics, it is expected that small companies are more sensitive to changes of economic condition than big companies. Therefore we can state the fourth hypothesis as flows:

The fourth hypothesis: the susceptibility of accounting variables to the business cycles is greater, for small companies than big companies. The method of the present research is quasi-experimental and its methodology is after the events. The purpose of this research is application study that the result of this study can be useful for a wide spectrum, such as investors, stakeholders, the management of stock exchange, financial analysts, government and researchers.

Statistical Population:

The statistical population of this research is all of the accepted companies in Tehran stock exchange the accepted companies in Tehran stock exchange. The sample was selected according to the following criteria:

1- The company related to the industry is not a financial inter mediator.
2- The company was accepted in stock exchange before 1998, and after that it didn't leave the stock exchange.
3- The company's financial year end is on 29 March (Persian data Esfand 29)
4- The mentioned company's information is available and the trading halt should not be more than six months.

Based on the mentioned criteria, 253 companies were selected as a sample which were related to 29 different industries and 24 industries were cyclical and the other 5 industries were non-cyclical. The period in this research is from 1998 until 2007.

Research Models:

To test the research hypotheses, the following four models are used:

In these models it Acct is the company's accounting variables, ΔGPP is the real percent of GPP growth, time is the time figurative variable, EXP is the figurative variable for the economic condition, which is one for the economic growth period and is zero economic downturn period, cyclical is a figurative variable, that is one for cyclical industries and zero for non-cyclical industries, size is a figurative variable for the size of company and are variables' coefficients.

The accounting variable include the sales growth (ΔSales), change in percentage of gross profit margin (ΔPM), change in profit before tax (ΔEBT), change in net profit (ΔNI) and change in total net assets (ΔTA).

Measurement of research variables:

The dependent variables and the way of calculating them, the dependent variable of all models, are accounting variables, there are measured as follow. The annual sales growth of a company was measured with regard to the last year.

Change in the percentage of gross profit margin (ΔPM): this relation has been computed via the difference between the operating gross profit of a company divided by total salary of stakeholders in the previous period of the company.

The change in earnings before tax (ΔEBT): This relation has been computed via the change in earnings before tax of one period with the previous

period divided by total salary of stakeholders of the company.

The change in the net profit (ΔNI): this relation was obtained in the beginning of the period via the change in the net profit of a period divided by the total salary of the company's stakeholders. The total assets' growth of this relation has been computed via the change in the total assets of one period divided by the total assets in the beginning period of the company. The independent variables and the way of computing them, business cycles: what we mean by business cycles are the fluctuation in the economic activities and usually the national production. Every business period included the economic boom and bust stages. In this research the figurative variable has used to measure the economic boom and bust, that number one has been used for boom period and number zero has been used for bust period. Based on the mentioned cases, the economic boom and bust periods are as follows:

1- From 1959 until 1971, the partial buts period.
2- From 1972 until 1980, the partial buts period.
3- From 1980 until 1983, the partial buts period.
4- From 1983 until 1985, the partial buts period.
5- From 1985 until 1991, the partial buts period.
6- From 1991 until 1994, the partial buts period.
7- From 1994 until 2002, the partial buts period.
8- From 2002 until 2010, the partial buts period.

The change in real GDP: this variable has been computed via the change in real GDP divided by the real GDP of the previous period. The aforementioned information were extracted from the site and library of the Islamic Republic of Iran's central bank. The cyclical and non-cyclical industries (companies). The cyclical industries are those which usually faced with a changing demand for their product and by the economic boom, the demand will increase and by the economic bust, the demand will decrease. In contrast, the cyclical industries faced with a stable demand and generally the change in the economic condition does not affect their products' demand. In this research, to define the cyclical and non-cyclical industries- Fama and French classification has been used. Fama and French classified food industries, drug industries, financial services, public utilities (water, electricity, telephone and gas industries) as the non-cyclical industries and the other industries as the cyclical ones. To measure this variable, figurative variable has been used, that number one has been used for cyclical industries and number zero has been used for non-cyclical industries.

The size of company: one of the other specific features studied in this research was the size of company. The researchers used different indexes in their studies to measure the size of company, such as the total assets logarithm, the number of personal and the total sales logarithm. In Iran the most appropriate index for size in the total sale, because it is partially based on the current price and less affected by inflation. To determine the small and big companies, first the average sales of the sample companies and then the sales of each company has been compared with the average sale. If the sales of company was greater than the average sales of companies, the company was classified as the major company and otherwise it was classified as the small company. To measure this variable, the figurative variable has been used and number one for small companies and number zero for big companies were used.

The research's finding:

The results of descriptive statistics:

The results obtained from descriptive statistics for the dependent variable are provided in table (1). The descriptive statistics shows that the selected sample enjoys much diversity. For example the descriptive statistic about the change in sales indicate that the average and the median of change in sales is zero. 0% and 170% compared to the last year is 274 and also the maximum and minimum of change in sales weer o-, accordingly. The standard deviation of change was 69/ and /99 times more than 174. This statistics shows that sales also equals to 786 and to generalize these result to the society, it enjoys the necessary diversity.

Table (1): descriptive statistics

Statistics	UTA	UNI	UEB T	UPM	Usual e
Average	0.232	0.0382	0.052	0.154	0.274
Median	0.160	0.050	0.050	0.080	0.170
Maximum	10.60	12.110	12.110	32.900	69.740
Minimum	-0.770	-49.460	-45.580	-41.280	0.990
Standard deviation	0.452	1.799	1.765	1.792	1.786
The number of observation	1760	1750	1757	1760	1756

The results of the first hypothesis testing:

The first hypothesis of this research was mooted in such a way that there is a positive and significant relationship between the accounting variables and the real GDP. The result obtained from the first hypothesis testing are provided in table (2). As

one can see in table (2), the real GDP's unstable coefficient in error level 5 is not significant for any of the studied accounting variables. Therefore we can say that in Iran there is not a significant relationship between the accounting variables and the real GDP. It is worthy to mention that the changeable mark for the real GDP is position which is compatible with the predicted mark.

Table (2): the result of the first hypothesis testin

$$Acct_{it} = \alpha_1 + \beta_1 \Delta GDP_t + \lambda_1 Acct_{it-1} + \lambda_2 Time + \varepsilon_{it}$$

Wanson camera	Determining the balance coefficient	Time		Acct		ΔGDP		The dependent variable
		Value t	coefficient	Value t	coefficient	Value t	coefficient	
2.255	0.037	-2.24**	-0.022	-10.27***	-0.207	1.577	1.614	ΔSale
2.060	0.064	-1.13	-0.016	-9.5***	-0.094	0.655	2.880	ΔPM
1.999	0.002	-0.34	-0.004	-	-0.017	0.233	0.540	ΔEBT
2.092	0.000	-1.092	-0.029	0.08	0.000	1.640	9.388	ΔNI
2.135	0.024	-0.006	-1.475	0.064*	3.137	1.519	0.807	ΔTA

***, **, * are significant in error levels 1%, 5%, 10% accordingly.

Examining the accounting variables effect of previous year's accounting variables indicates the effect of the previous year's accounting variable on the current year's ones, especially in relation with the sales variable, the operating profit margin and the total assets. Moreover studying the impact of time on the accounting variables shows that time is an affective factor on sales. The maximum balanced assigning coefficient for the 5 studied models, equals to 7 percentage which is not too much considerable. Also the value of Watson camera for each of the 5 studied model is about 2 that indicates the non-existence of autocorrelation of auto correlation between data.

The results obtained from the first hypothesis testing are in contrast with Collingo and Zaranovit's research results.

One can guess several reasons to deny this hypothesis, such as unused capacity of the companies and the non-competitive market in Iran.

The result of the second hypothesis testing:

The second hypothesis of this research has examined the effect of the real GDP growth on the accounting variables in the economic bust period compared to the economic boom period and it has bee explained that the impact of the real GDP growth on the accounting variables in the economic bust period is more than that of in the economic boom period.

The results obtained from the second hypothesis testing are provided in table (3).

As one can see in table (3), the changeable coefficient EXP*ΔGDP in each of the 5 studied models is negative that indicates the negative effect of recession on the accounting variables, but from the viewpoint of statistics, in the error level 5, just the first and second models (the change in sales and gross earnings margin) are significant and the other models (the accounting variables) are not meaningful.

In other words, the accounting variables of the change in the total assets, profit before tax deduction and change in the net profit, compared with the economic boom period, are not more sensitive to the change in the economic condition in the economic bust period.

And only the variables of the sales and the gross earnings margin are affected by the business cycles.

Table (3): the results of the second hypothesis testing:

$$Acct_{it} = \alpha_{11} + \beta_{12} EXP + \beta_{11} \Delta GDP_t + \beta_{12} EXP * \Delta GDP_T + \lambda_1 Acct_{it-1} + \lambda_2 Time + \varepsilon_{it}$$

Wanson camera	Assigning coefficient	Time	Acct	EXP*ΔGDP	ΔGDP	EXP	The dependent variable
2.200	0.060	-0.054	-0.185	-4.789	2.262	0.406	ΔSale
2.060	0.066	-0.044	-0.69	-10.380 (-1.660*)	6.040 (1.268)	0.768	ΔPM
2.000	0.002	-0.034	-0.018 (-1.318)	-6.450	2.900 (1.070)	0.574 (1.251)	ΔEBT
2.010	0.003	-0.026	-0.001 (-0.551)	-6.755	9.317 (1.306)	0.384 (0.496)	ΔNI
2.135	0.031	-0.030	0.057 (2.811*)	-1.067	0.612 (1.093)	0.220 (1.306)	ΔTA

***, **, * are significant in error levels 1%, 5%, 10% accordingly.
The value of t is brought in the parenthesis.

It is compatible in relation with the variables of sales and the gross earnings margin [the results of this study are compatible with result of Collingo, Zarnovit and Tilver's research], but it is not compatible about the other variables. The non-impressiveness of profit before tax deduction and the accounting net profit via the business cycles that are accepted in Tehran stock exchange may be due to the profit management by using the non-operating items, such as selling the fixed assets, long-term and short-term investment, which leads to earnings stability before tax deduction and net profit and thus non-impressiveness of them of the business cycles.

The results of the third hypothesis testing

The third hypothesis of this research predicts that the susceptibility of the accounting variables toward the business cycles in the cyclical companies is greater than that of the non-cyclical companies. The results obtained from the third hypothesis testing are provided in table 4. As one can see in table (4) based on the value t, the unstable coefficient EX cyclical*ΔGDP (B14) is not significant in relation with the accounting variables, ΔNI, ΔEBT, ΔPM, ΔTA in the cyclical industries in the economic boom period and only the variable Δsales with error level 10% is meaningful. Also the coefficient cyclical*ΔGDP 13 is not significant in relation with the accounting variables ΔNI, ΔEBT, ΔPM, ΔT in the cyclical industries in the economic boom or bust period, and it is only meaningful in relation with the variable Δsales with error level 90%. Therefore the third hypothesis is denied and we can say that the cyclical or non-cyclical nature of the companies does not have any considerable impact on the accounting variables, according to the changes in the business cycles.

Generally, the result obtained from the third hypothesis testing of this research are compatible with the western finding such as Collingo, only in relation with the sales variable, and it is not compatible in relation with the other variable. Some of the main reasons that can be considered effective to deny this hypothesis in the economic environment of Iran, are price control and management and thus insignificant changelessness in the percentage of gross earnings margin and the operating profit in the cyclical and non-cyclical industries.

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Table (4): the result of the third hypothesis testing:

$$Acct_{it} = \alpha_{11} + \alpha_{12}EXP + \alpha_{13}\text{cyclical} + \alpha_{14}EXP * \text{cyclical} + B_{11}\Delta GDP_t + B_{12}EXP * \Delta GDP_t$$

Wanson camera	Assigning coefficient	EXP* cyclical* ΔGDP	cyclical* ΔGDP	EXP* ΔGDP	ΔGDP	EXP* SIZE	SIZE	EXP	Dependent variables
2.10	0.002	-12.410 (-1.752*)	-4.253 (-1.710*)	8.218 (1.326)	4.150 (1.889 *)	0.788 (1.897*)	0.147 (1.567)	-0533 (-1.469)	ΔSale
2.11	-0.001	-13.423 (-0.968)	6.179 (0.979)	5.630 (0.462)	-2.859 (-0.508)	0.773 (0.869)	-0.309 (-1.093)	-0.323 (-0.413)	ΔPM
2.05	0.000	-11.122 (-0.793)	3.626 (1.158)	5.910 (0.486)	-1.396 (-0.509)	0.779 (0.841)	-0.281 (-1.530)	-0.407 (-0.506)	ΔEBT
2.01	0.002	-27.437 (-1.280)	16.190 (0.981)	10.876 (0.576)	-3.026 (-0.207)	1.427 (0.366)	-0.671 (-1.280)	-0.707 (-0.770)	ΔNI
2.08	0.022	-4.696 (-0.836)	-0.571 (-0.462)	1.817 (0.369)	0.549 (0.502)	0.249 (0.689)	-0.003 (-0.052)	-0.055 (-0.174)	ΔTA

***, **, * are significant in error levels 1%, 5%, 10% accordingly.
The value of t is brought in the parenthesis.

The results of the fourth hypothesis testing:

The fourth hypothesis of this research predicts that the susceptibility of the accounting variables toward the business cycles for small companies is greater than that of big companies. The result obtained from this hypothesis testing are provided in table (5). The changeable coefficient EXP*SIZE*ΔGDP and the computed value t indicate that except for the accounting variable of the total assets changes (ΔTA) in small companies, the other accounting variables don't have any susceptibility toward the change in the economic conditions (business cycles). Among the studied variables, the total assets changes (ΔTA) in small companies are susceptible toward the business cycles. In other words, in economic boom period, the small companies' assets increase significantly that is indicative of the considerable increase of small companies investment. Studying the impact of change in the real GDP on the accounting variables based on the size of companies showed that by decreasing the GDP, the gross earnings margin and the profit before tax deduction of small companies will reduce significantly. In other words, recession has a considerable negative effect on the profitability of the small companies, while the mentioned impact is not too much considerable on the big companies.

Conclusion:

The result of this research indicate that there is not a meaningful relationship between the most of accounting variables (ΔEBT, ΔNI, ΔPM, ΔTA) and the business cycles. The result of this study show that among the studied variables, the sales changes are affected by the business cycles, and the change in the sales of companies is greater in the economic boom period, as compared with the economic bust period. The study of business cycles effect on the accounting variables based on the specific features of companies, such as cyclical or non-cyclical of them and their size showed that the range of impact is different according to the special features of companies. This study revealed that in the economic boom condition, the sales of cyclical companies takes a considerable change as compared to non-cyclical industries. In other words the sales of cyclical companies takes a noticeable increase, while the sales of non-cyclical companies doesn't take an expressive change.

Table (5): the result of the fourth hypothesis testing

$$Acct_{it} = \alpha_{11} + \alpha_{12}EXP + \alpha_{13}SIZE + \alpha_{14}EXP * SIZE + \beta_{11}\Delta GDP_t$$

Wanson camera	The assigning coefficient of balance	EXP* SIZE* ΔGDP	SIZE* ΔGDP	EXP* ΔGDP	ΔGDP	EXP* SIZE	SIZE	EXP	Dependent variables
2.12	0.024	-0.583 (-0.064)	-0.172 (-0.042)	0.199 (0.023)	0.641 (0.16)	0.173 (0.330)	-0.369 (2.13)	-0.169 (-0.349)	ΔSale
2.21	0.008	26.950 (1.517)	-42.308 (3.673**)	-31.610 (-1.908*)	42.107 (3.731 ***)	-1.120 (-1.028)	1.938 (3.27 0 ***)	1.415 (1.400)	ΔPM
2.11	0.012	8.829 (0.519)	-29.711 (-4.226***)	-11.842 (-0.756)	29.545 (4.293 ***)	-0.608 (-0.542)	1.771 (3.78 6 ***)	0.806 (0.781)	ΔEBT
2.11	0.011	20.871 (0.544)	-40.239 (-1.149)	-32.726 (-0.879)	48.543 (1.411)	-1.135 (-0.744)	2.204 (1.93 3 **)	1.617 (1.114)	ΔNI
2.08	0.013	15.983 (2.642***)	-0.229 (0.107)	-14.867 (-2.507***)	0.318 (0.154)	-1.081 (-2.643** *)	0.000 (0.001)	1.022 (2.745**)	ΔTA

***, **, * are significant in error levels 1%, 5%, 10% accordingly.
The value of t is brought in the parenthesis.

The result of this study revealed that there is a meaningful relationship between the business cycles and the total assets changes of change of small companies. In other words, in the economic boom condition, the amount of small companies investment (the total assets changes) will increase significantly, while the total assets changes of large companies don't take a manifest change. Moreover studying the effect of change in GDP on the accounting variables based on the size of company showed that when the GDP decreases, the gross earnings margin and the profit before the tax deduction of small companies will take a considerable reduction. Generally the result of this research set forth limited evidence about the relationship between the accounting variables and the business cycles. Moreover the results of present study suggested that the effect of business cycles on some of the accounting variables is different according to the specific features of companies. This investigation provide us a more accurate insight about the dynamic behavior of the accounting data in the major economy structure and can affect the knowledge and perception of financial analysts and users while analyzing the financial statements and predicting the future information of companies and also it can be effective for optimized economic decision makings of the users in regard to the transition of organization that is based on the specific features of companies.

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Teaching reading comprehension through concept map

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Abstract: This study aimed at investigating the effect of teaching English reading comprehension to Iranian students through concept mapping. In doing so, a pre-test and a post test were used. First 38 third grade high school female students in Karaj city were selected systematically and then they were divided into control and experimental groups randomly. The experimental group was thought using concept mapping, while control group was not exposed to such kind of teaching technique and the students in this group were thought in common way of reading comprehension teaching. The exam was made by a teacher which covered knowledge and meaningful learning in English reading comprehension. The high cognitive questions (analysis, combining, evaluating) were used to evaluate meaningful learning. A t-test was used to verify or reject the hypotheses. Data analysis shows that concept mapping technique has a significant effect on English reading comprehension ($t=3.388$, $df=36$, $p=0.002$
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Keywords: Concept map, meaningful learning, teaching strategy, reading comprehension skill

Introduction

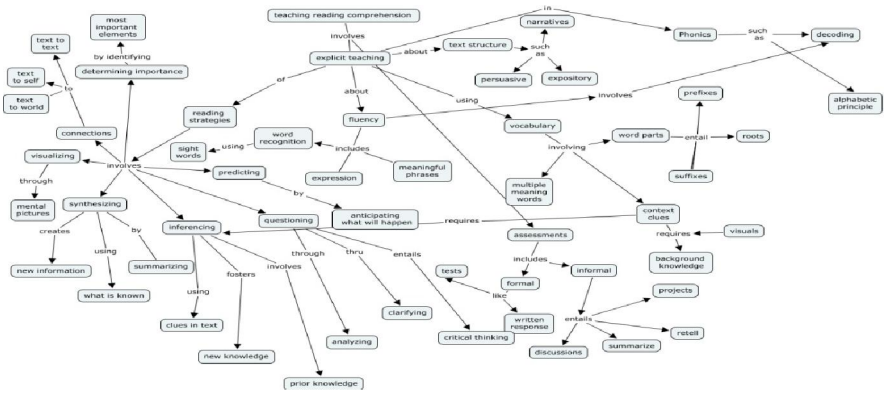
Constructivism emphasizes on the active teaching methods which focus on student-centered activities and considers learning as a dynamic and internal process in which the learners acquire new knowledge through linking already learned information with the new one. Constructivists believe that the best teaching method is to determine what learners already learned first and then start teaching from that point (Ausubel et al, 1978).

One of the new educational strategies that is consistent with constructivism learning theory (Duffy et al, 1991) and meaningful learning (Ausubel , 1968, Novak, 1991, 1992) is concept map. Concept map was proposed as the results of Novak's' studies in Cornell University as an educational tool against rote learning in 1980s (Novak and Cannas, 2006). Novak's work was based on the cognitive theory of Ausubel who stressed the importance of prior knowledge in being able to learn new concepts. The most important single factor influencing learning is what the learner already knows.

Concept map is based on Ausubel's meaningful learning theory and derived from advance organizer concept in Ausubel's theory. According to Ausubel, the meaningful learning occurs when the learner can organize the information and link the prior knowledge to the new one in cognitive structure. Cognitive structure contains a set of organized principles, concepts and information that a person has already learned and fields of inquiry are organized like pyramid with the most general ideas forming the apex, and, more particular ideas and specific details subsumed under them. The most inclusive ideas-those located at the top of the pyramid- are the prominent and most enduring elements in the hierarchy. They process a longer life span in memory than do particular facts or specific details, which fall at the base of the pyramid. Cognitive structure emphasizes the Horner's cognitive structure in the acquisition of new information. Present experience is always fitted into what the learner already knows. A cognitive structure that is clear and well organized facilitates the learning and retention of new information.

A concept map includes knots (concepts and terms) that link lines and also link concepts which specify the relationship between the concepts. Concept maps includes concepts usually enclosed in circles or boxes of some kind, and the relationships between concepts or propositions which indicated by a connecting line and linking word. Linking words on the line specify the relationship between two concepts. The label for most concepts is a word, although sometimes we use symbols. Propositions are statements about some object or event in the universe, either naturally occurring or constructing. Propositions consist of two or more concepts connected with other words to form a meaningful statement. We call these statements the semantic units. In addition, the combination of concepts and the direction of linking line determine the map structure .e.g. hibernacula or non-hierarchical fashions (Yin and et al, 2005).

The following diagram shows a concept map about reading comprehension teaching.



Concept maps can be used in various stages of the curriculum designing (Brulliard & Baron, 2000, Moen & Boersmn, 1997, Edmondson, 1995), before or in the learning process as an advance organizer (Bruillard& Baron, 2000, Novak &Novak, 1998, Willerman& Macharg, 1991) and after learning as an evaluation tool (Quinn et al, 2004, Rebich & Gautier, 2005, Williams, 2004).

Concept maps are used as a learning and educational tool in different scientific fields and they are suitable tools for presenting and organizing knowledge. Concept maps facilitate the meaningful and long-life learning knowledge through presenting a pattern and a framework (Novak & Cannas, 2006, Liaght, 2006). Although, concept maps have been used as a purposeful educational tool widely and successfully in different educational fields, mostly they have been used in the field of technical sciences, especially in first language and there are a few studies on second language. A lot of Iranian students have problem in English reading comprehension. Not only the high school students have this problem, but university students also do. In spite of the fact that students start Studying English from sixth grade and continue to the last year of high school, they use the meaningful learning techniques a little and the results of institutes exams, final exams, and national entrance exam show that the English level of students is low and the students are weak in English language. Although the studies show the positive effects of concept map on meaningful learning as an influential technique, effective steps have not been taken to apply this technique in official classes of teaching-learning. This study is an attempt to investigate the effect of concept map on English reading comprehension meaningful learning of students (as L2).

Concept map as a teaching strategy

Various methods have been proposed for teaching concepts, discovery method of Brunner and meaningful learning of Ausubel are the most recognized methods among them. Brunner emphasizes the studied issue structure and the necessity of active learning as the basis of real understanding and Ausubel (1968) emphasizes on the teacher's role in learning and believe that knowledge is acquired through accepting information and concepts and the relationship between concepts. According to Ausubel, the most effective factor in learning is the prior knowledge and meaningful learning occurs when the learner links the new information with prior knowledge consciously. Ausubel proposed advance organizer for activating the learner's mind to link the new information with cognitive structure. Novak supported the Ausubel perspective and specified the concept map as a strategy to access prior knowledge and as a tool to comprehend the text (Novak& Gowin, 1984).

Wang et al (2008) introduces concept map as an educational technique that links new information to prior knowledge structure and introduces conceptual understanding through meaningful showing of concepts. Concept maps in various ways, creating map by learner, creating map by teacher and students and presenting the map to the learners, can be used in teaching and learning.

One of the common applications of concept map is its use as a tool for presenting educational materials. In this method, materials and key concepts are presented in an organized manner through concept map. Teachers can use concept map in various stages of teaching, i.e. before teaching as an advance organizer, in teaching process for presenting new information and clarifying concepts, after teaching for summarizing and reviewing and also for testing the learners' achievements. Concept map helps teachers to specify the key concept of the content and their mutual relationship between them and present a summary and general image of topic to the learners. Concept map not only transfer main information through graphical representation, but also specifies the links, structures or characteristics which are not observable in the text and present them in a summarized form. So, map facilitates the meaning and retaining of information. Well organized maps facilitate meaningful learning

and consequently cause the long life use of knowledge in new situations and make it possible to keep knowledge for a long time (Novak, 1990, Novak and Wandrsee, 1991). The positive effects of concept map learning are: providing a framework of learning subject, specifying the important concepts and the relationship between them, facilitating learning, memorizing and remembering, specifying the important concepts which emphasized by teacher and prepare the learner's mind like advance organizer.

The studies have shown the positive effect of concept map on learning (Novak, 2003, Novak & Cannas, 2006, Horton et al, 1993), on foreign language learning (Marriott and Torres, 2008, Bahar and Danservean, 2001), on searching prior knowledge (Gurltt et al, 2007) , on on improving English reading comprehension (Dias, 2010, Conbn, 2008, Liu, 2010, Vakilifard & Armand, 2006) and on writing skill (Ojima, 2006, Lee &Cho, 2010).

Those whose first language is not English need techniques for better learning, longer information saving and the stored information in the new situations. Teachers also look for teaching techniques which activate students in the language learning process and increase their success. Among effective factors on language learning, the teaching strategies play an important role in learning. These strategies are a lot, but we just focus on prior knowledge and knowledge structure in improving English reading comprehension of second language of high school students and investigate the effect of concept map as a teaching strategy on English reading comprehension (as L2).

Research Background

In the recent years the concept maps have widely been the research basis in various scientific fields and studies have shown the positive impact of concept maps on meaningful learning (Horton et al, 1993, Novak & Cannas, 2006, Novak, 2010). A few studies have been done on concept maps in second language, especially on reading comprehension. Liu (2010) investigated the effect of creating concept maps with the help of computer on English reading comprehension of English bachelor students in Taiwan in which English was L2. The findings of the study showed that not only concept map strategy improves reading comprehension, but also it improves the application of other reading comprehension strategies. Dias (2010) used concept maps for improving English reading comprehension of bachelor students in which English was their L2. The results of the study showed that concept map is an effective strategy to improve reading comprehension. The students not only learned how to use tools to create Cm, but also increased their independence in application of knowledge organizing methods.

Conlon (2008)in a case study on Scottish students titled " creating content concept map, new technology and new teaching concluded that the students enjoy their lessons with creating concept maps and believe in the effectiveness of concept map use in reading comprehension. Armand & Vahidifard (2006) studied the effect of concept map on French (as L2) reading comprehension. The findings of this study showed that the experimental group did better in reading comprehension in comparison to control group. Another study by Lee and Cho was conducted to investigate the application of group concept map on writing skill of Korean university students. The results suggested that the concept map improves the students writing skill incredibly in general and improves organizing, language usage and vocabulary in particular.

Ojima(2006) in a case study investigated the effect of concept map as a pre-task on three Japanese students writing skill. The findings showed that concept map creating improves learners' English writing skill on the basis of complexity. English was L2 in this study. Most of the studies on concept map have been conducted by academic researchers and have been their academic projects. These projects were dealing with a lot of conflicts because concept maps were used in official classes by teachers.

Research Objectives and Hypotheses

This study aimed at investigating the effect of teaching through concept map on English improvement and reading comprehension meaningful learning of EFL students. The research hypotheses are as the following:

H1: Using concept map in teaching improves students' English learning.

H2: Using concept map strategy in teaching leads to meaningful learning of Students' English reading comprehension.

Project Plan

This is a quasi experimental plan of post test with control group. The educational concept mapping strategy (independent variable) and meaningful learning and improvement (dependent variable) were considered as two variables of the study. They were tested by a teacher achievement test. Experimental group was thought through concept mapping, but control group was not exposed to teaching through concept mapping and the common reading comprehension techniques were used in class. To control the external influential factors affecting the subjects, the students in experimental group were under the same conditions such as grade, field, previous school year average, gender, age, school of studying and teacher.

Sample of the Study

Thirty eight female third grade high school students in Karaj city studying in the school year of 2010-2011 were selected through purposive sampling and were divided into experimental and control group randomly. The purposive sampling was used because of the official limitations and preventing the problems that it may make for official educational plan.

Study Tools

1. Materials

English book 3 was used as teaching material in this study. This book is a reading base book and 65 percent of the book content is allocated to reading comprehension and vocabulary. The book contains six lessons and every lesson consists of a reading text of about 6-7 paragraphs, vocabulary, language function, grammar and pronunciation. This study focused on reading comprehension and teaching it through concept mapping.

2. Concept maps

A concept was made by the researcher with the help of Cm tools for every lesson. The maps were verified by a linguist and four expert of English teacher group. The maps were hierarchal type in which most general issues were on apex and detailed and special ones at the bottom of the pyramid. These maps used as teaching tools in experimental group.

Testing tools

An achievement test teacher-made test was used to measure the achievement and meaningful learning. The test questions were made on the basis of Bloom (1956) cognitive categorizing at the level knowledge, understanding, application, analysis, combining and evaluation. The questions were multiple choice, short answer, supplying, explanatory and concept map. Concept map and levels (analysis, combining, and evaluation) questions were used to measure the meaningful learning. To make the academic achievement test, the following steps were taken:

1. Preparation the educational objective of each lesson
2. Preparation of table of content of the book

In this stage content portion of each section (reading, vocabulary, language function, grammar, and pronunciation) was specified on the basis of allocated time and volume in the book and each section portion was also determined in the test.

3. Two dimensional table of specification of objective and content

The table included two dimensions of objective and content which in each table raw the lesson sections and the Bloom's cognitive classified levels were in columns and in each cell there was the section percentage of total score. To be sure of content validity of achievement test, the test items were made on the basis of table of objective-content and after making the test, the achievement test was verified and confirmed by five experts of English teaching group. The test reliability was calculated with Kuder-Richardson which was 0.193, that indicates a good reliability of test.

4. Evaluation Questions

For evaluation, the test questions were reviewed and the necessary changes have been made. Also, in the beginning, the test was administered to two classes (40 students), item difficulty was calculated and weaknesses were reformed.

Methodology

The implementation of this study was done in three stages as the following:

1. Preparation: in this stage the activities like teacher training, lesson plan, concept map creating, achievement test making, and sample selecting were accomplished.
2. Pre-test: a teacher made test was administered to the selected subjects to be sure of their homogeneity
3. Procedure:

Concept map group

English reading comprehension was thought through concept map technique in 12 sessions, each session 60 minutes. In the first session the students became familiar with concept map, concept map characteristics, how to make concept map and some concept map samples. In the following sessions the teaching process were shown in the following table:

Stage	time	activities
Text reading	15	Reading the text by teachers and some of the students in the class, all the students pay attention to the text, the teacher explains difficult words
Focus questions	5	Teacher asks questions from the students about main topic, specifies main idea in one or two words, the teacher writes the ideas on the board and selects the best one as topic
Highlighting text concepts	15	Teacher asks students to specify the main concepts of the text and writes them on the board
Map creating	10	Teacher creates the concept map through specifying the relationship between concepts and main idea
Reviewing	5	Summarizing and reviewing the lesson based on the map by teacher and map revising
Concept mapping	5	Asking students to create the map in their notebooks

In the next session the teacher asks students to create the map on the board for evaluation.

Control group

The control group was exposed to the same lesson, but teaching techniques were different, i.e. the teacher used common techniques (reading the text and explaining it).

Evaluation stage

After teaching the entire book, the students of two groups participated in the final exam for measuring their achievement, their meaningful learning and reading comprehension of the book texts, the allocated time was 90 minutes.

Findings

To analyze the data and verify or reject the hypotheses, the mean, standard deviation, and independent t-test were used. Regarding the first hypothesis of the present study "using concept map in teaching improves students' English learning", the result of t-test for comparing two groups were shown in Table 1. Due to the fact that significance level of table (0.002) is less that α=0.5 (p<0.05), the research hypothesis, i.e. the effect of concept map on English learning improvement is verified. Since the mean of experimental group which was affected by independent variable was 13.96 and it was 10.95 for control group which was not affected by this variable, the mean difference can be referred to the independent variable.

Table 1- the results of independent t-test for comparison of control and experimental groups

Group	N	Mean	SD	T	df	Significance
Experimental	18	13.96	3.28	3.388	38	0.002
Control	18	10.95	2.12			

The results of t-test shown in table 2 were used to verify or reject the second hypothesis and compare experimental and control group, i.e. "using concept map strategy in teaching improves students' English reading comprehension. According to the results, the significance level (0.0001) is less than α , $(p < 0.05)$, so the second hypothesis is verified, that is, the concept map has positive effect on English reading comprehension and meaningful learning. Since the mean of experimental group that affected by independent variable was 13.53 and mean of control group which was not affected by this variable was 8.17, this mean the difference can be referred to the effect of independent variable.

Table 2-the results of independent t-test for comparing the control and experimental groups in meaningful learning and reading comprehension

Group	N	Mean	SD	T	df	Significance
Experimental	18	13.53	4.39	4.426	38	0.001
Control	18	8.17	2			

Results and Discussion

The present study aimed at the investigating the effect of teaching through concept map on English reading comprehension and meaningful learning of the students. The findings showed that using concept map as a teaching strategy has a positive effect on meaningful learning improvement and English reading comprehension of students. The students in experimental group which were exposed to concept map strategy in class did better in the post test than the students in control group that deprived from such kind of instruction. These results are in accordance with findings of Horton et al (1993), Dias (2010), Conlon (2010), Vahdanifard and Armand (2006), Ojima (2006) and Lee and Cho (2010).

Teaching through concept map has positive effect on meaningful learning and reading comprehension for various reasons. First of all, the questions by teacher in class to specify main topic and general and detailed concepts, activate students in the process of learning. Also, the learners use reading strategies like listening, focusing, highlighting, classification and revising effectively. Using of strategies and activating the learner improve learning and reading comprehension. Secondly, creating a map by teacher provides a general idea of the text, key words, concepts sequence and the relationships between different parts of the text in the summarized form and this pictorial summary causes text reviewing, reciting and retaining of information. Thirdly, concept map works as a language and cognitive tool, as a language tool emphasizes on meaning relation of concepts and the way which relations between concepts improve meaning clarification and reading comprehension and possibility of language use. In addition, the connection between the already learned concepts and their usage in the map facilitates the meaningful learning because maps activate prior knowledge. As a cognitive tool, presents the concept map, main topic, important concepts and their relations with each other in a pictorial, summarized and organized form.

The effectiveness of concept map is in accordance with most of the learning theories. According to the meaningful learning theory of Auzubel, concept map plays the role of an advance organizer. The advance organizer presented by teacher activates the mind of the students through connecting the prior knowledge to new information. Teacher show a pictorial summary of the topic and the relationship between concepts in a hierarchical form from the most general to detailed through concept map. This organizing, hierarchical structure and connection of prior knowledge to the new information facilitate meaningful learning because it is the same as the knowledge structure in the mind. Presenting the

concept map in the class as a cognitive tool causes reviewing and organizing of materials and on the basis of information processing theory, the reviewing, expanding and organizing not only causes information transfer, but also improves the mind status. The studies (Lee and Nelson, 2005, Roth and Roychoudhury, 1993) and theoretical principles find concept map as an effective technique in which the visual reviewing of materials is provided easily and the map shows a comprehensive pictorial summary of concepts and their relations. On the basis of dual coding theory Pavia (1991), the information is decoded in the form of pictorial and verbal in the mind and when the information about a topic is decoded in these two ways, the mind processes are improved. Another advantage of concept map is that the pictorial summary of material prevents overload of information in the mind. To sum up, the present study showed the effect of concept maps on meaningful learning of English language, improving reading comprehension and activating the learner in the learning process. On the basis of the findings of this study, it's recommended that the students improve the English, especially reading comprehension through using concept maps and teachers also used concept map as a teaching strategy to help students to improve their reading comprehension.

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Application of series FACTS devices in power system

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Abstract: Flexible AC Transmission Systems (FACTS) are the well known and commonly used components in power system. These components are manly used to control of power system and also stability improvement. One of the benefits of FACTS devices is to damp out low frequency oscillations (LFO). One of the most important FACTS devices is Static Synchronous Series Compensator (SSSC) which is installed in series with line. In this paper SSSC is used to damp out LFO and a supplementary stabilizer based on SSSC is designed. Partial Swarm Optimization (PSO) is used to adjust the parameters of the proposed stabilizer.
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Keywords: Supplementary Stabilizer, Partial Swarm Optimization, Low Frequency Oscillations, Static Synchronous Series Compensator

1. Introduction

With the practical applications of converter-based flexible AC transmission system (FACTS) controllers [1] such as the static synchronous compensator (STATCOM) [2], static synchronous series compensator (SSSC) [3] and unified power-flow controller (UPFC) [4], modeling and analysis of these FACTS controllers in power-system operation and control is of great interest. Power-flow calculations are fundamental to the operation, planning and control of power systems. In recent years, significant work has been done in the modeling of the FACTS controllers in power flow and optimal-power-flow studies [5–12].

SSSC is a voltage-sourced converter-based series compensator and was proposed within the concept of using converter-based technology uniformly for shunt and series compensation, as well as for transmission angle control. It has been successfully applied in power systems. In this paper, SSSC is used to increase power system stability. A supplementary stabilizer is equipped based on SSSC. The parameters of the proposed stabilizer are tuned by using PSO.

2. Static Synchronous Series Compensator (SSSC)

SSSC is one of the most important FACTS devices. It is installed in series with transmission line. This device has a voltage source converter serially connected to a transmission line through a transformer. It is necessary an energy source to provide a continuous voltage through a condenser and to compensate the losses of the VSC. A SSSC is able to exchange active and reactive power with the transmission system. But if our only aim is to balance the reactive power, the energy source could be quite small. The injected voltage can be controlled in phase and magnitude if we have an energy source that is big enough for the purpose. With reactive power compensation only the voltage is controllable, because the voltage vector forms 90º degrees with the line intensity. In this case the serial injected voltage can delay or advanced the line current. This means that the SSSC can be uniformly controlled in any value, in the VSC working slot.

The Static Synchronous Series Compensator (SSSC) uses a VSC interfaced in series to a transmission line, as shown in the Figure 1. Again, the active power exchanged with the line has to be maintained at zero hence, in steady state operation, SSSC is a functional equivalent of an infinitely variable series connected capacitor. The SSSC offers fast control and it is inherently neutral to sub-synchronous resonance.

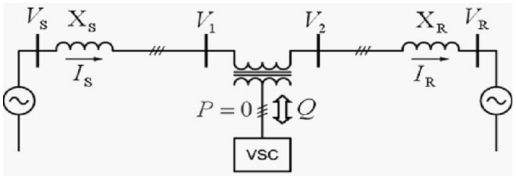

Figure 1: SSSC - A VSC interfaced in series to a transmission line

As mentioned, Static Synchronous Series Compensator (SSSC) is placed in the group of series connected FACTS devices. As shown in Figure 2, SSSC consists of a voltage source inverter connected in series through a coupling transformer to the transmission line. A source of energy is required for providing and maintaining the DC voltage across the DC capacitor and compensation of SSSC losses.

Figure 3 shows the model of SSSC which consists of a series connected voltage source in series with impedance. This impedance represents the impedance of coupling transformer. The SSSC when operated with an appropriate DC supply (an energy source and/or sink, or suitable energy storage) can inject a component of voltage in anti-phase with the voltage developed across the line resistance, to counteract the effect of the resistive voltage drop on the power transmission.

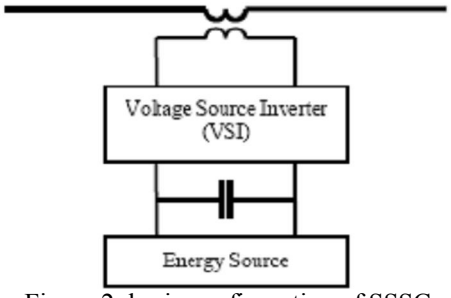

Figure 2: basic configuration of SSSC

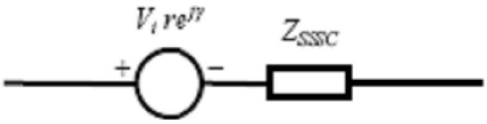

Figure 3: equivalent circuit of SSSC

3. Test system

A multi machine power system installed with SSSC is considered as case study. The proposed system is shown in figure 4. The SSSC is installed in line 4 and system data can be found in [13].

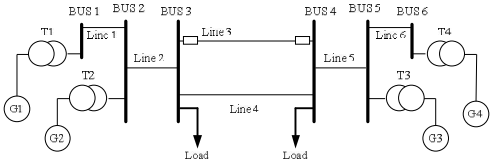

Figure 4: power system installed with SSSC in line 4

4. Power system stabilizer

An AVR (without supplementary control loops) can weaken the damping provided by the damper and field windings. This reduction in the damping torque is primarily due to the voltage regulation effects inducing additional currents in the rotor circuits that oppose the currents induced by the rotor speed deviation Δω. Adding supplementary control loops to the generator AVR or FACTS devices is one of the most common ways of enhancing both small-signal (steady-state) stability and large-signal (transient) stability. The Stabilizer can be used to add damping signal to the SSSC, where the output signal of the stabilizer is used as an additional input (v_{stab}) to the SSSC. The stabilizer input signal can be either the machine speed deviation, Δω, or its acceleration power. The stabilizer is modeled by the nonlinear system depicted in Figure 5.

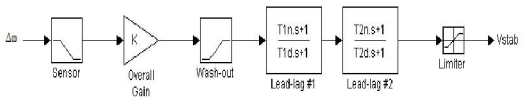

Figure 5: Conventional stabilizer

The model consists of a low-pass filter, a general gain, a washout high-pass filter, a phase-compensation system, and an output limiter. The general gain K determines the amount of damping produced by the stabilizer. The washout high-pass filter eliminates low frequencies that are present in the Δω signal and allows the stabilizer to respond only to speed changes. The phase-compensation system is represented by a cascade of two first-order lead-lag transfer functions used to compensate the phase lag between the excitation voltage and the electrical torque of the synchronous machine.

5. Partial Swarm Optimization

PSO was formulated by Edward and Kennedy in 1995 [14]. The thought process behind the algorithm was inspired by the social behavior of animals, such as bird flocking or fish schooling. PSO is similar to the continuous GA in that it begins with a random population matrix. Unlike the GA, PSO has no evolution operators such as crossover and mutation. The rows in the matrix are called particles (same as the GA chromosome). They contain the variable values and are not binary encoded. Each particle moves about the cost surface with a velocity. The particles update their velocities and positions based on the local and global best solutions as shown in (1-2):

$$V_{m,n}^{new} = w \times V_{m,n}^{old} + \Gamma_1 \times r_1 \times (P_{m,n}^{local\ best} - P_{m,n}^{old}) + \Gamma_2 \times r_2 \times (P_{m,n}^{global\ best} - P_{m,n}^{old}) \quad (1)$$

$$P_{m,n}^{new} = P_{m,n}^{old} + \Gamma V_{m,n}^{new} \quad (2)$$

Where:

$V_{m,n}$ = particle velocity
$P_{m,n}$ = particle variables
W= inertia weight
r_1, r_2 = independent uniform random numbers
$\Gamma_1 = \Gamma_2$ = learning factors
$P_{m,n}^{local\ best}$ = best local solution
$P_{m,n}^{global\ best}$ = best global solution

The PSO algorithm updates the velocity vector for each particle then adds that velocity to the particle position or values. Velocity updates are influenced by both the best global solution associated with the lowest cost ever found by a particle and the best local solution associated with the lowest cost in the present population. If the best local solution has a cost less than the cost of the current global solution,

then the best local solution replaces the best global solution. The particle velocity is reminiscent of local minimizes that use derivative information, because velocity is the derivative of position. The advantages of PSO are that it is easy to implement and there are few parameters to adjust. The PSO is able to tackle tough cost functions with many local minima.

6. Design methodology

The proposed supplementary stabilizer is designed based on the SSSC in the given test system. The stabilizer design by using PSO is presented in details by [15]. In this study the performance index is considered as (3). In fact, the performance index is the Integral of the Time multiplied Absolute value of the Error (*ITAE*).

$$\mathrm{ITAE} = \int_0^t t|\Delta\omega|dt \qquad (3)$$

It is clear to understand that the controller with lower performance index is better than the other controllers. To compute the optimum parameters, different faults are assumed and then the best responses are chosen. In order to acquire better performance, number of particle, particle size, number of iteration, Γ_1, Γ_2, and Γ are chosen as 5, 12, 40, 2, 2 and 1, respectively. Also, the inertia weight, w, is linearly decreasing from 0.9 to 0.4. It should be noted that PSO algorithm is run several times and then optimal set of parameters is selected. The optimum values of the stabilizer parameters are obtained using PSO and summarized in the Table 1.

Table 1: Obtained parameters of stabilizer

parameter	K	T_{1n}	T_{1d}	T_{2n}	T_{2d}
value	9.11	0.44	0.01	0.35	0.01

7. Simulation result

The proposed stabilizer is evaluated based on the test system. Large disturbance is considered to show ability of the proposed stabilizer. The simulation results are depicted in figures 6-8. It is seen that the system without stabilizer contains insufficient damping and the responses are pendulous. But the stabilizer can greatly enhance power system stability and damp out the oscillations and the advantages of the proposed stabilizer are visibly seen.

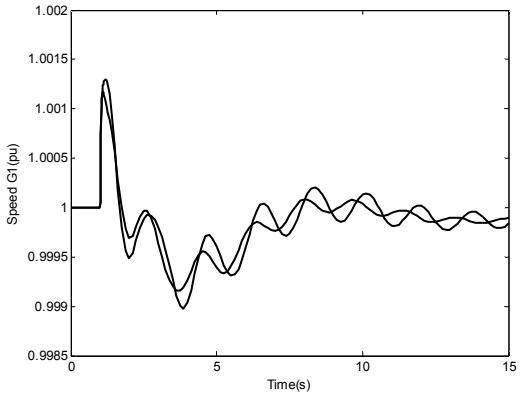

Figure 6: Speed G_1 following 10 cycle three phase short circuit in bus 8 (**Solid**: with stabilizer **dashed**: without stabilizer)

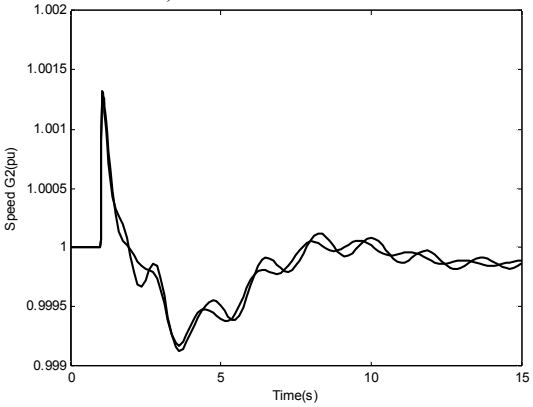

Figure 7: Speed G_2 following 10 cycle three phase short circuit in bus 8 (**Solid**: with stabilizer **dashed**: without stabilizer)

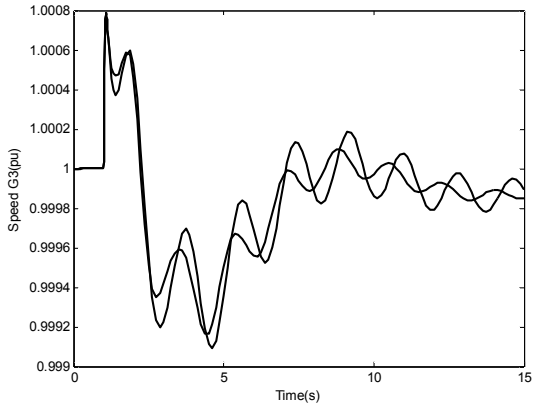

Figure 8: Speed G_3 following 10 cycle three phase short circuit in bus 8 (**Solid**: with stabilizer **dashed**: without stabilizer)

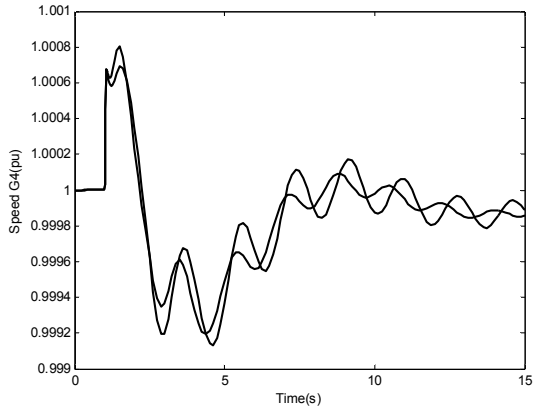

Figure 9: Speed G_4 following 10 cycle three phase short circuit in bus 8 (**Solid**: with stabilizer **dashed**: without stabilizer)

8. Conclusion

A supplementary stabilizer based on SSSC presented here. A two area power system assumed to show the ability of the proposed method. Non linear simulation results demonstrated that the designed stabilizer capable to guarantee the robust stability and robust performance under disturbances. Also, simulation results show that the PSO is a suitable tool to design stabilizer parameters.

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Economic Assessment and Effectiveness of Sulfur and Organic Matters on the Qualitative and Quantitative Yield of Canola (Brassica napus L.) in the calcareouse Soil

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Abstract: For economic assessment of Sulfur application, the present research has applied Thiobacillus Bacterium and organic matter, during 2009 - 2011 for three years, in the calcareouse soil of the Research Field of Agricultural station of Gachsaran-Iran as the split- split plot experiment in the randomized complete blocks design with 18 treatments on a Varity of Hiyolo 401 Canola in three replications. The treatments were: Sulfur (0, 400, 800 kg), Thiobacillus (0, 2, 4 kg) and organic matter (0, 20 tons) in hectare. The combine analysis of variance for three years mentioned factors on some properties as harvest index, biologic yield, seed yield, protein percentage, oil percentage and oil yield showed that the factors alone and together have a significant effect on the qualitative and quantitative economic yield of Canola plant. mean Comparisons of the main and interaction effects between factors showed that the most average of the seed and oil yield has been produced by treatments $O_2T_3S_2$ which increased, in comparison to the control treatment, the seed and oil yield respectively 154% and 180%. Also, the economic consideration of the project results revealed that exerting this treatment will increase 5320000r (266$) profit in per hectare.
[Jafar Gohargani, Meruzhan Galstyan, Abdolamir Moezzi. **Economic Assessment and Effectiveness of Sulfur and Organic Matters on the Qualitative and Quantitative Yield of Canola (Brassica napus L.) in the calcareouse Soil.** *Life Sci J* 2012;9(4):736-740] (ISSN:1097-8135). http://www.lifesciencesite.com. 115

Keywords: Canola, Sulfur, Organic matter, Thiobacillus bacterium and yield.

Introduction

After the cereals, the oil seeds are the second food source of the world. These crops contain both the oil source of Fate Acid and protein. Among the oil plants, Canola is the plant with the high level in term of quality, quality and nutrition indexes. Also, it has been recognized as one of most important oil plants of the world and it is, according to the last published static by FAO, the third source of herbaceous oil in the world after Soya and Palm (Malakouti, et al. 2003). Capitation of the oil consumption in the world has been, differently, reported based on the nutrition habits of people. However capitation of edible oil of Iran has been estimated about 16(kg) and the internal need of the country is more than one million tons in which about 90% is imported. In term of agriculture, the oil plants are in a particular position (Malakouti, et al. 2003).

Sulfur plays an important role in increasing the yield and oil quality of Canola. In other words, it plays a significant role in the yield of Canola oil (for its participation in the product process of oil) as well as a modifier in the soil (Besharati Kalaye, 1999). Importance of this element in our country soil, which is dominantly limy, will be represented more than other elements. By participation in the structure of Amine Acides, Proteins, Vitamins and Anzims within the plant, Sulfur is one of elements with high consumption for plant, after Nitrogen, Phosphorous and Potassium., Canola plant has been regarded as one of the most important oil plants. Because of containing more than 40% proteins in its meal, Canola is taken into account as one of the most significant oil seeds of the world. Increase in the oil percentage of Canola plant is because of Sulfur consumption and its function in many fate Acides (Asghar, et al. 2004). In comparison with the cereals and legume, Canola needs more Sulfur because of the more protein in its seed (Malakouti, et al. 2003). The result of the different fertilizer experiments showed that the density of Glucosinolate and oil in seed as well as general yield of Canola in the applied varieties were increased noticeably (Lakhincni, et al. 1992).

The Sulfurous fertilizers not only increase the yield and quality of oil products but also improve the consumption efficiency of the other fertilizers as Nitrogen and Phosphorus; consequently, reduce the production costs and increase the economic return for the producer. Based on the results of all farm data, per kilogram of the consumed Sulfur by fertilizers increased the yield of ground nut, Soya and Canola, respectively, 13/3, 8/9 4/5 kg (Lin, 1998).

In our country, only 8-10 percent of the necessary oil seed is produced. If we continue the current trend, we should import about 1/3-1/4 million tons to provide the annual edible oil (assuming the percent capitation: 17-18 kg). This estimation has been regarded by assuming 200000 tons as the minimum

local product; therefore, we need, minimally, 1/5 to 2 milliard dollars to import the raw oil, with regard to the price of 1000 dollar for per tons of edible oil within 10 to 20 years in the future. (Malakouti, et al. 2003).

Material and methods

The present research was conducted in the Research Field of the Agricultural station of Gachsaran, Iran.within 2009-2011.

At first we prepared composite soil samples from the field in the 0-30 cm depth and after drying the samples were analyzed for soil physical and chemical characters. Soil texture was determined using the hydrometric method, pH and electrical conductivity of the saturated paste, soil organic matters, total carbon and available P, K and neutralizing material were measured using standard methods. The experiment was performed was done with split-split plot experiment based on randomized complete blocks design with three replications.

Treatments in this research were different combinations of three factors namely: 1- organic matter with two levels of O_1=0, O_2=20 t ha^{-1}) as main factor, 2- Thiobacillus inoculants three levels of T1=0, T_2=2, T_3=4 kg ha^{-1} as sub factor and finally 3- three levels of Sulfur element with the three levels of S1=0, S_2=400, S_3= 800 kg ha^{-1} as sub-sub factor. Canola seeds were planted in 12 m^2 plots, in the 7 rows with 6 meters length and 30 cm space from each plot. To preventing of mixing and other problems two meter spacing was consider between replications. Before seed planting, the field was leveled carefully with tillage machinery in the all of plots. Nutrient elements based on the results of soil analysis were performed by triple super phosphate and urea, 50/50 kg ha^{-1} and mixed with the soil using disk harrow respectively (Klute, 1986). The Sulfur treatment (Sulfur element with the purity of 98%) and the organic matter as source of organic matter were used for each plot based on their treatments and mixed completely with soil. Canola seeds were inoculated with thiobacillus bacterium based on related treatment (0.5% applied Sulfur) before planting. During the different stages of plant growth, agronomic operations such as diseases, weeds and pests control were performed for all plots. During growing season, agronomic traits such as pods per plants, seed per pods, thousand seed weight and economic yield, oil, protein content and etc. were recorded (Naderi Arefi, et al.2006) . All data were analyzed with SAS and MSTAT-C software's.

The combine analysis of variance in triennial data of the experiment showed that the effect of year on the properties of biologic yield, economic yield, percentage of oil and oil yield were significant at1% probability level (Table 1).

The result showed that the effect of organic matter on the measured properties was significant and interaction between year × organic matter on the harvest index at 1% probability level and biologic yield at 5% probability level was significant but it did not significant of the other properties. The organic matters cause the improvement in the quantitative properties of plant by improving the physical properties of soil and possibility of growth and development of root as well as availability of the useful elements for plant (Azzizy, et al. 1994 and Malakouti, 2004).

The results showed that the effect of Thiobacillus Bacterium as well as interaction between year × Bacterium and Bacterium × organic matter on all properties were significant but the protein percentage.

The results showed that the interaction between year × organic matter × Bacterium on the properties of harvest index, biologic yield, economic yield and oil yield at 1% probability level were significant but it was not significant in the case of properties of protein and oil percentage. Some researchers concluded that Thiobacillus Bacterium eventually provides many static elements in the soil, through the mechanism of decrease in PH of soil, which increases the aerial organs of plant and, consequently, quantitative yield of plant (Jafarneijad 2006, Haghighi, et al. 2004 and Kalbasi, et al. 1988).
The results showed that the effect of Sulfur on all properties significant at 1% probability level and interaction between year × Sulfur on the biologic yield, economic yield and oil yield were significant.

The results showed that effect of interaction between Sulfur and organic matter on the properties biologic yield, economic yield, protein percentage and oil yield significant at 1% probability level. The results showed that interaction between the year × organic matter× Sulfur on the properties of harvest index, biologic yield, economic yield and oil yield at 1% probability level were significant. But it did not significant in protein and oil percentage. Moreover, the interaction between Sulfur ×Bacterium ×organic matter on all the measured properties were significant at 1% probability level.

Also, the results of combine analysis of variance showed that the interaction between year ×organic matter ×Bacterium ×Sulfur on the properties of harvest index, biologic yield and oil yield were significant at 1% probability level. The results of the research are agreement to the results of the other researches (Gohargani, et al. 2010 and Salimpour, et al. 2010).

The average of triennial yield showed that the interaction between Thiobacilus Bacterium and Sulfur powder was able to influence the measured properties

(Table 2). The results show that the interaction between Thiobacillus bacterium and Sulfur powder in the treatment with out organic matter and 4 kg bacterium in hectare and 800 kg in hectare Sulfur, in comparison to the control treatment, caused respectively increase in harvest index (2/79%), biologic yield (3149 kg/ha), economic yield (662 kg/ ha) and protein (%0.5), oil (2/24%) and oil yield (313 kg/ ha).

The results of table 2 show that the interaction between organic matter, Thiobacillus bacterium and Sulfur powder was able to affect the measured properties significantly and the treatments (O_2T_3 S_2), in comparison to the control treatment, had the most effect on the harvest index 4/91%, economic yield 1700 (kg/ ha), oil yield 817 (kg/ ha) and treatments (O_2T_3 S_3) had the most effect on the biologic yield 9058 (kg/ ha) and 0.68% on the protein percentage and 4/5% oil.

Some researchers (Morshedi, et al. 2007, Sayami, et al. 2006 and Gohargani, et al. 2010) reported that the simulations application of organic matter and Sulfur powder in the different Sulfur increased the yield and its components and oil quality in the different plants. Also, other researchers (Azzazy, et al. 1994, Malakoti, 2004 and Naderi Arefi, et al 2006) reported that the simultaneous treatments of bacterium and Sulfur powder fertilizer had a significant effect on the qualitative yield of Canola product because of the bacterium role in absorption of the various elements by plant.

Zhao, et al. (2001) and Matalebi Fard, et al. (2007), in their studies, reported that application of the pure Sulfur fertilizers increases the qualitative properties and yield of Canola plant. The above results corresponds to the experiments and results by Malaki, (2004), Kallbasi, et al (1988), Gohargani, et al (2010) and Jafarnejad, et al (2006).

Sulfur fertilizers and bacterium together not only increase the yield and quality of the oil products but also improve the consumption efficiency of the other fertilizers as Nitrogen and phosphorous; consequently, reduce the product costs and increase the economic return for the producers (Salimpour, et al. 2010).

Discussion

The absorption capability of the tiny nutritive element by the plant is reduced in the place of the experiment performing because of its limy and alkaline soil (pH=8). Application of Sulfur decreases the soil pH and, consequently, increases the absorption capability of nutritive tiny element by the plant. Thus, increase in the absorption capability of nutrition elements as well as its effect in increasing the oil percentage and protein in the seed cause an increase in the qualitative and quantitative yield of the Canola seed. Sulfur has an essential role on the oil percentage and yield in the oil seeds, in particular Canola, but it should be changed into the sulfate ion for absorption. Unfortunately, with regard to the intensive decrease in the percentage of organic matters in Iran's soils, the activity of this local bacterium also has been reduced; thus, application of animal manure increases the activity of this bacterium as well as Sulfur Oxidation.

In this research, the program of combination of Sulfur fertilizers and Thiobacillus bacterium with organic matter caused the effectiveness on the qualitative and quantitative yield of Canola; thus, the triennial average of the means show that treatments ($O_2T_3S_2$), in comparison to the control treatment, was accompanied by increase in the seed yield (154%) and oil yield (180%). By this increase, the yield in the calcareous soil with the same climate, like the place of experiment for Iran with 15000 ton in Canola seed will be 23100 tons in year.

In this project, the economic assessment method was performed based on the detailed budgeting method the results of which are in the following part:

$\partial GM = (R1+C2) - (R2+C1)$

R1= the income which is the result of performing the project.

C2= the income without any cost payment.

R2= the income which was lost by performing the project.

C1= the cost which is because of performing the project.

$\partial GM = (1960000+0)-(10780000+3500000) = 5320000$(r).

Application of Sulfur with Thiobacillus bacterium and animal manure in Canola cultivation is economic because ∂GM is positive. Also, the results of the project show that application of 400 (kg) Sulfur, 4 kg Thiobacillus and 20 tons Organic matter ((O_2T_3 S_2)) in hectare will increase the farmers benefit about 5320000 (r) (266$). As the result, the pure profit of the yield increase in the 15000 hectare cultivation will be 79/8 milliard (399000$) per year.

The result correspond to the those of Malakuti, et al (2003), Hamedi, et al. (2005), Salimpour, et al. (2010) and Gohargani, et al. (2010).

Table 1 The results of analysis of variance for the important agronomic traits

Source of variation	Df	Harvest Index	Biologic Yield	Economic Yield	%Protein	%Oil	Oil Yield
		(ms) mean square					
Year	2	1.543^{ns}	53864381**	1732742**	0.679^{ns}	3.36**	335199**
Year× repetition	6	1.527^{ns}	1076283^{ns}	15987^{ns}	0.616^{ns}	0.534^{ns}	3260.89
Organic matter	1	159.01**	578060446**	29183102**	8.32*	71.76**	6315458**
Year× organic matter	2	22.83**	4781219.9*	36108^{ns}	0.006^{ns}	0.072^{ns}	6513.90^{ns}
Error	6	0.875	741458.4	25100.84	1.057	0.512	3961.06
Bacterium	2	14.522**	59250195.5**	2231406**	0.155^{ns}	14.70**	535848.9**
Year× Bacterium	4	7.017**	2150940.9**	82286.4**	0.004^{ns}	0.915*	16147.88**
Organic matter × Bacterium	2	11.909**	14142008**	166344**	0.835^{ns}	3.47**	58681.46**
Year× organic matter × Bacterium	4	4.275**	2493738.4**	34068.7**	0.002^{ns}	0.567^{ns}	7509.62**
Error	24	1.040	442515.8	5815.05	0.316	0.269	1157.86
Sulfur	2	6.625**	135528889.5**	4421596**	5.17**	26.82**	1016286**
Sulfur × year	4	1.728^{ns}	2875899.8**	160340**	0.0002^{ns}	0.044^{ns}	33123**
Organic matter ×Sulfur	2	1.841^{ns}	14819911.2**	441235**	0.816**	0.283^{ns}	107425.5**
Year× organic matter ×Sulfur	4	5.354**	1353899.9*	88856.5**	0.008^{ns}	0.263^{ns}	18725.15**
Sulfur ×Bacterium	4	13.529**	7137284.25**	95136.4**	0.577**	1.611**	24766.78**
Year ×Bacterium ×Sulfur	8	4.276**	2121619.9**	13767.5^{ns}	0.005^{ns}	0.114^{ns}	2992.5^{ns}
Organic matter ×Bacterium× Sulfur	4	3.874**	2642215.3**	94379.9**	0.590**	3.044**	28391.35**
Year× organic matter × Bacterium× Sulfur	8	4.658**	1930386.6**	24230.7^{ns}	0.002^{ns}	0.169^{ns}	4568.92**
Error	72	0.900	512812.97	14386.2	0.138	0.260	2885.90
CV%		5.54	6.42	6.25	1.64	1.18	6.43
ns, * and ** non significant and significant at the 5 and 1 percent level of probability respectively.							

Table 2. The effects of different treatments on the average of triennial yield components of canola

	Thiobacillus Kg ha^{-1}	sulphur	Harvest Index (%)	Biologic Yield (kg.ha^{-1})	Economic Yield (kg.ha^{-1})	Protein (%)	Oil (%)	Oil Yield (kg.ha^{-1})
Non- Organic matter	0	0	14.82	7692	1101.5	22.41	41.19	453
		400	16.54	9250	1421	22.21	42.09	598
		800	17.92	9162	1476	22.66	43.33	640
	2	0	16.66	7842	1297.6	21.87	42.03	545
		400	16.93	9985	1546.6	22.3	43.05	666
		800	17.98	10062	1705.3	22.78	43	732
	4	0	17.22	8580	1386.6	22.48	42.31	586
		400	16.49	10037	1603	22.26	42.73	679
		800	17.61	10841	1763.6	22.91	43.43	766
20 t ha^{-1} organic matter	0	0	18.59	10510	1794	22.48	43.05	772
		400	17.29	12823	2178.6	22.48	43.09	939
		800	20.76	11923	2245.3	23.04	43.62	979
	2	0	20.08	9687	1930.3	22.61	43.04	831
		400	18.43	14266	2447	23.38	43.95	1075
		800	20.6	13936	2651	23.16	44.09	1169
	4	0	17.01	11683	1985.6	22.37	43.21	858
		400	19.73	15876	2802	22.93	45.31	1270
		800	18.9	16750	2703.6	23.09	45.67	1235

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Islamic Azad University Brand Dimensions and Their Effect on Selection of Azad University

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Abstract: Present research has identified and ranked effective dimensions of Islamic Azad University brand. The research objectives were: (1) to develop a model for Azad University brand; (2) to identify the personification dimensions of Islamic Azad University brand; (3) to determine the order of dimensions effect on selection of Azad University; (4) to examine the relation between Azad University brand and selection of Azad University as the target university. 450 questionnaires were distributed to departments of Azad University, Tehran Central Campus for the required data. 421 returned questionnaires were used for this study. Collected data were analyzed by using SPSS software. Pearson and Spearman correlation, multiple regression, and Friedman test were used for data analysis. The proposed model was confirmed with a correlation of 0.707, an error rate below 0.01 at 0.99 degrees of confidence. Sincerity obtained the highest score among Azad University brand personality dimensions. Multiple regression results indicate that brand dimensions can account for about 67% of dependent variable total variance. The residual variance is affected by influencing variables outside the model. The average priorities of brand dimensions obtained from Friedman test ranked dimension priorities from high to low as: brand equity, brand value, obvious brand structure, and non obvious brand structure.
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Keywords: Obvious Brand Structure, Non Obvious Brand Structure, Brand Value, Brand Equity.

Introduction

One of the current challenges of families, high school students, and university students in Iran is university selection for higher education. Institutions that help perspective college students to enter their preferred field of study at university have built up a successful business. There are many influential factors and parameters in selection of a target university. Some of these factors are brand name, geographical location, scientific level and ranking, tuition, experienced and competent faculty, as well as educational, research, and amenity levels.

From the interviews conducted with university students, specialists, and faculties, it seems that hardworking top students rarely select Azad University as their top choice. The first problem of this research is to find out why Azad University is not being selected as the target university by top students.

Azad University brand may have the potential to be selected more often by would be college students. The main questions in this research are:

- What are the influencing factors of Azad University band?
- What are the priorities of these factors?

This research attempts to identify and rank various dimensions of Azad University brand in order to propose a solution to the study problems.

Literature Review

A. ***Theoretical Background***:

Various definitions have been proposed for brand. An old definition of brand has defined it as a trade name for an organization. A newer definition defined it as a symbol of organization reputation. American Marketing Association defined brand in 1960 as a certain name, term, symbol, sign, or design, or a combination of them intended to differentiate products and services of a salesman or a group of salesmen from competitions (Esma'eel Pour, 1384/2005, p. 188).

A brand, trade mark, or trade name may include (Ibid, p. 190):

1) A *brand name* that can be verbalized. For example Tide, Chevrolet, and Peugeot;
2) A *brand mark* that cannot be vocalized but is recognizable and a product can be identified by it. For example Mercedes

Benz logo or Islamic Azad University logo; and

3) A *trade mark* that is the registered brand name or a part of which is protected by law.

A brand name has two parts. The first part is its obvious structure and lies within marketing company domain. The obvious structure includes name, logo, color, design, and language. Many people focus on obvious structure when they hear a brand name. A brand name has a second part which is known as non obvious structure. This part of a brand name indicates that how the obvious part should be viewed. The most important non obvious structure of a brand name is its identity. A brand name remains powerful so long as it is loyal to its identity.

Brand name identity can be depicted in a hexangular shape with each angle representing one brand name characteristic.

1) **Body**: the essence of a brand name or a combination of differentiable characteristics that can immediately be recalled by looking at the brand name.
2) **Personality**. When a brand name is personified, that quality is recalled when talking about that specific product and service. Examples are: idealistic Citroen or conservative Peugeot.
3) **Culture**. Represents the value system that acts as a source of inspiration and energy for a given brand name. For example, Opel is a product of California culture representing new scientific discoveries.
4) **Relation**. Brand name is a relation and often provides a non obvious opportunity for people interaction. For example, Lavash Kirit is at heart of mother-child relation.
5) **Reflection**. A brand name reflects the picture of its main customers. For example, the reflection of Coca Cola is young people.
6) **Self-image**. A brand name creates a link for buyers to identify themselves with. For example, a customer creates internal feelings of belonging to a sports club by buying Locust products, even if they do not have any sport affiliations (Kapferer, 1385/2006, pp. 63-68).

Crosno et al, (2009) believed that brand equity is made of many parts including brand association, awareness, perceived quality, loyalty, and other proprietary assets. Aaker (1991) proposed five elements for brand equity including brand awareness, loyalty, perceived quality, association, and proprietary assets. Farquhar (1989) stated that brand equity is the added value that a brand name gives to a product. Keller (1998) related brand equity to a differentiating effect which brand knowledge (i.e. awareness, implications, or associations) has on customer reaction. Aaker (1991) defined brand name equity as a collection of assets and liabilities related to brand name and brand mark that are added to or subtracted from the value of a company products or services (Ahmadi Nejad, 1388/2009, p. 66).

Brand vitality or brand power shows the market recognition of a brand as perceived by customers. Brand capability, brand stature, or brand value is determined by relative performance of a brand based on validity and knowledge criteria (Cutler, 1383/2004).

B) Experimental Background

Our search revealed that there has not been a study on Azad University brand within the framework defined for this research. A number of similar researches that were considered for this study are discussed below.

Chirany and Khadang (1388/2009) defined a model based on Aaker model to identify effective factors in the brand equity of hygienic products in Gilan Province from young customer points of view. They found out that company image had the highest effect and brand name had the lowest effect on product selection (Chirany and Khadang, 1388/2009. P. 89).

Kaffashpour, et al found out in a study that customer loyalty, satisfaction, commitment, trust, perceived quality, brand awareness, and brand value affected service company image (Kaffash Pour, et al, 1388/2009, p. 137).

Javaheri et al studied brand identity background and outcome for Hacoopian brand and found out that prestige, customer satisfaction and company communication had positive effect on brand name identity. Brand name identity had positive relation with repeat purchase, advertising, or word of mouth recommendations (Javaheri, et al, 1388/2009, p. 138). Ghafele Bashi study found significant direct relation between perceived brand class and perceived quality; perceived quality and customer expected value; and customer expected value and the desire to purchase. They found significant indirect relation between price and fair price; price and customer expected value; customer expected value and the desire for shopping (Ghafele Bashi, 1388/2009, p. 139).

Rahmani study found positive relation between attitudinal loyalty and behavioral loyalty. This means that favorable attitude is associated with repeat purchase (Rahmani, 1387/2008, p. 4).

Haghighi, et al studied the relation between brand name recognition and customer loyalty for Parsian

Bank. The result showed that brand name recognition had positive relation with customer loyalty. Customer satisfaction had positive relation with word of mouth support and customer loyalty, and had negative relation with customer desire to brand name change. Customer loyalty had positive relation with word of mouth recommendations. There was a positive relation between continued commitment and customer desire to trade name change (Haghighi, et al, 1388/2009, p. 43).

Research objectives

The primary objective of this research was the identification and ranking of Azad University brand dimensions. The following secondary objectives were pursued in this research:

1) To develop a model for Azad University brand,
2) To determine a personality dimension for Islamic Azad University brand,
3) To study the relation between Azad University brand and its selection as the target university: and
4) To prioritize brand dimensions on selection of Azad University.

Research Variables

Independent variable in this research is *Azad University brand*. The dependent variable is *the desire to select Azad University as the target university*. The independent variable is studied against:

1) The obvious brand structure or brand elements,
2) The non obvious brand structure or brand identity,
3) The brand equity, and
4) The brand value.

This research included library research into specialized literature, knowledge, and experts' information. The following model was developed for the study of Azad University brand.

Research Hypothesis

The primary hypothesis of this research was that Azad University brand dimensions affected the selection of Azad University. The secondary hypotheses of this research were:

1) Obvious brand structure of Azad University affects the selection of Azad University
2) Non obvious brand structure of Azad University affects the selection of Azad University.
3) Brand equity of Azad University affects the selection of Azad University.
4) Brand value of Azad University affects the selection of Azad University.
5) Brand equity of Azad University has the highest effect on the selection of Azad University.

Research Methodology

Research Method

This research is practical for its objectives; is a survey, descriptive, and correlation study for its timing of data collection; and is a field study for its data collection methods.

Data Collection Method

This research has used two data collection methods. The first method was library research involving available books, articles, and internet sites. They were used to build a theoretical framework, develop hypothesis, and formulate hypothesis. The second method was field study to collect the required data by means of a questionnaire to test research hypotheses.

Statistic Population

The statistic population included all female and male university students at various departments of Azad University, Tehran Central Campus during academic year 2010-2011. Tehran Central Campus has 11 departments and 30,000 students.

Sampling Method

Sampling method was stratified random sampling which was proportionately selected from the statistical population. The questionnaires were distributed among students from different departments. The departments at Tehran Central Campus were stratums in this research.

Sample Size

Base on a statistical population of 30000, the number of sample based on Krejcie and Morgan method was 379 and based on Chocran formula was 379.315, as shown below: Although the sample size was 379 according the above formula, but 450 questionnaires were distributed among students to increase accuracy of research findings. Finally, 421 questionnaires were received by researcher for final analysis.

Assessment tool

This research used a researcher made questionnaire for measurement and assessment of research variables. This questionnaire was made based on past scientific and research documents and backgrounds plus the experts' views. The questionnaire had 25 closed questions that were designed and developed using five Likert ordinal-qualitative scales (completely against, relatively against, almost, relatively for, completely for)

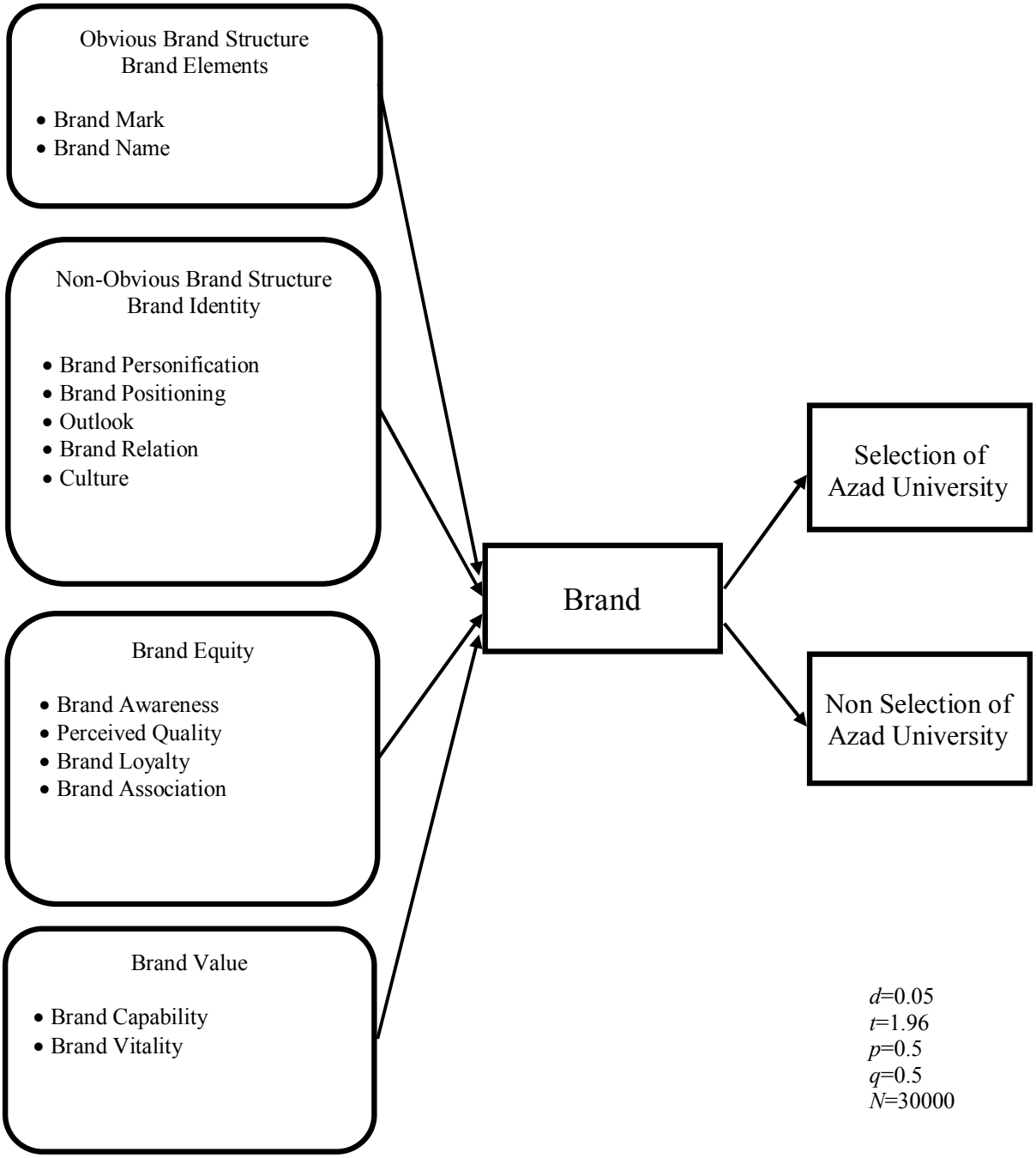

Figure 1: Researcher Made Model for Azad University Brand Dimensions

$$n = \frac{\frac{t^2 p.q}{d^2}}{1 + \frac{1}{N}\left[\left(\frac{t^2.p.q}{d^2}\right) - 1\right]} = \frac{\frac{(1.96)^2(0.5)(0.5)}{(0.05)^2}}{1 + \frac{1}{30000}\left[\left(\frac{(1.96)^2(0.5)(0.5)}{(0.05)^2}\right) - 1\right]} = \frac{384.16}{1.012772} = 379.315$$

Validity and Reliability

Assessment tool was examined based on expert recommendations. Experts judged the questionnaire with content validity (face validity). This research used Cronbach Alpha to examine validity of a questionnaire through Statistical Package for Social Science (SPSS). 38 questionnaires were distributed among statistical population. The reported Cronbach Alpha Coefficient was 0.909. The construct reliability of questionnaire was judged very high according to George and Mallery rule of thumb (2003) and a higher than 0.9 coefficient.

Data Analysis Method

The collected data from distributed questionnaires were analyzed in two descriptive and inferential statistical levels by using SPSS software. The present research used correlation test (Pierson and Spearman) to study the relationship between effective dimensions of Azad University brand. Multiple regression analysis was used to measure the degree of effects, and finally Friedman test was used to prioritize effective dimensions on Azad University brand.

Research Findings

Population Characteristics

The demographic information of statistical sample is presented in table 1.

Table 1: Population Characteristics of Statistical Samples

Description		Number	Percent
Gender	Male	216	51.3
	Female	205	48.7
Marriage status	Married	164	39
	Single	257	61
Employment	Employed	254	60.3
	Unemployed	167	39.7
Education	Technician and B.S	179	42.5
	M.S. and higher	242	57.5
Age	25 and lower	182	43.2
	26 - 30	156	37.1
	31 and higher	83	19.7

Descriptive Statistics

Table 2 shows the frequency distribution of respondents based on their evaluations of obvious brand structure, non obvious brand structure, brand equity, and brand value. 71.5 percent of respondents evaluated Azad University brand as medium to high. Similarly, 79.3 percent of respondents evaluated non obvious brand structure, 85 percent brand equity, and 85 percent brand value as medium to high.

Table 2: Frequency Distribution of Respondents Divided by Dependent Variables

Variable		Very Low	Low	Medium	High	Very High	Total Number
Obvious Brand Structure	Number	34	86	181	105	15	421
	Percent	8.1	20.4	43	24.9	3.6	100
Non Obvious Brand Structure	Number	9	78	234	91	9	421
	Percent	2.2	18.5	55.6	21.6	2.1	100
Brand Equity	Number	15	48	207	144	7	421
	Percent	3.6	11.4	49.2	34.2	1.7	100
Brand Value	Number	15	48	195	151	12	421
	Percent	3.6	11.4	46.3	35.9	2.9	100

Inferential Statistics

Research hypothesis are non-directional when we consider inferential statistics of the field and subject of study. Therefore, correlation coefficient and linear regression tables are used to test hypothesis. Pierson and Spearman correlation coefficients are used to measure the degree of correlation.

Table 3 shows how selection of Azad University is related to obvious structure, non obvious brand structure, brand equity, and brand value of Azad University. Brand equity had the highest relation with the selection of Azad University (r=0.806), which is statistically significant at 0.01 level. Non obvious brand structure (r=0.489), obvious brand structure (r=0.427), and brand value (r=0.480) ranked in order in terms of correlation with the dependent variable at 0.01 significance level.

Table 3: Correlation between Azad University Brand Dimensions and Azad University Selection

		Selection of Azad University
Obvious Brand Structure	Pierson correlation coefficient	0.427**
	Significance level	0.000
	number	421
Non Obvious Brand Structure	Pierson correlation coefficient	0.489**
	Significance level	0.000
	number	421
Brand Equity	Pierson correlation coefficient	0.806**
	Significance level	0.000
	number	421
Brand Value	Pierson correlation coefficient	0.480**
	Significance level	0.000
	number	421

Multiple linear regression analysis was used to measure the effect of each independent variable on dependent variable. Table 4 shows descriptive statistics resulting from multiple linear regression analysis. This analysis ranked brand elements based on their averages in order as obvious brand structure, brand value, brand equity, and non obvious brand.

This research used a regression model and the enter method to predict the dependent variable based on four independent variables.

Table 6 summarizes the values obtained from the model. Multiple R represents multiple-correlation between brand dimensions and the dependent variable. The reported R was 0.823 indicating a strong correlation between dependent and independent variables. R square or determination coefficient (R^2) shows the degree of dependent variable changes and variances that can be clarified by the independent variables.

Adjusted determination coefficient (R^2 adj) adjusts the determination coefficient for higher reflection of goodness of fit. This number is used to interpret the determination coefficient. Since determination coefficient has been adjusted by degrees of freedom, hence, the reported determination coefficient in this research is 0.674. It means that the four brand dimensions (obvious brand structure, non obvious brand structure, brand equity, and brand value) can clarify 67% of the total variance of the dependent variable. The rest of variance depends on variables outside the model. Standard error of estimation was 9.872. It represents the strength of predictive regression equation.

Table 4: Descriptive Statistics of Dependent and Independent Variables

Variable	Mean	Standard Deviation	Number
Obvious Brand Structure	53.06	17.716	421
Non Obvious Brand Structure	50.43	13.776	421
Brand Equity	52.35	14.340	421
Brand Value	52.83	15.367	421
Selection of Azad University	48.54	17.290	421

Table 5: Considered Variables / Eliminated Variables

Considered Variables	Eliminated Variables	Method
Obvious Brand Structure, Non Obvious Brand Structure, Brand Equity, and Brand Value	---------	Enter

Dependent variable: Selection of Azad University

Table 6: Summary of Goodness of Fit Statistics

Multiple Correlation Coefficient	Determination Coefficient	Adjusted Determination Coefficient	Standard Error of Estimation
0.823	0.677	0.674	9.872

Predictors: Obvious Brand Structure, Non Obvious Brand Structure, Brand Equity, and Brand Value

Dependent Variable: Selection of Azad University

Table 7 shows the result of analysis of variance with regression and residual as two source of variance for dependent variable. This table also shows sum of squares, degree of freedom, and mean square for each source of variance. Regression source represents information about changes of dependent variable resulting from research model. Residual source represents information about changes of dependent variable resulting from variables outside research model.

F (Fisher) statistics shows the suitability of the regression model, i.e. if the independent variables can explain the changes in the dependent variable. The value of F statistics is 218.090 and is significant at error level below 0.01. The regression model with one dependent variable and four independent

variables is a suitable model and independent variables can explain changes in dependent variable.

Table 7: Analysis of Variance

Model	Sum of Squares	Degree of Freedom	Mean Squares	F Statistics	Significance Level
Regression	85012.525	4	21253.131	218.090	0.000
Residual	40539.758	416	97.451		
Total	125552.283	420			

Predictors: Obvious Brand Structure, Non Obvious Brand Str Brand Value

Dependent Variable: Selection of Azad University

Table 8 shows the regression effect of each variable in the model and their correlation. This table contains two forms of regression effects, i.e. standardized coefficient (Beta) and non-standardized coefficient (B). The regression effect indicates the proportional effect of each independent variable of the model. Variable comparison shows that the effects of four independent variables on dependent variable are significant and the order of effects from high to low is brand equity (0.704), non obvious brand structure (0.128), obvious brand structure (0.078), and brand value (0.029). As an explanation, an increase of one standard deviation in brand equity will increase the dependent variable by 0.704 standard deviation.

Table 8 shows three different correlations:

1) Brand equity has very high zero-order correlation with dependent variable. Non obvious brand structure, brand value, and obvious brand structure have high zero-order correlation with the dependent variable. Therefore, the ranking of correlations are brand equity (0.806), non obvious brand structure (0.489), brand value (0.480), and obvious brand structure (0.427).
2) Obvious brand structure and non obvious brand structure have relatively high partial correlations. Partial correlation is very high for brand equity and is low for brand value.
3) Semi partial correlation is high for brand equity and is low for obvious brand structure, non obvious brand structure, and brand equity variables.

Table 8: Regression Effect Coefficients

Model	Non Standardized Coefficients		Standardized Coefficients	t-value	Significance Level	Correlations		
	B	Standard error	Beta			Zero Order	Partial	Semi Partial
Fixed value	-9.764	2.216	--	-4.406	0.000	--	-	-
Obvious brand structure	0.076	0.031	0.078	2.440	0.015	0.427	0.119	0.068
Non obvious brand structure	0.161	0.048	0.128	3.379	0.001	0.489	0.163	0.094
Brand equity	0.849	0.040	0.704	21.034	0.000	0.806	0.718	0.586
Brand value	0.033	0.043	0.029	0.761	0.022	0.480	0.037	0.021

Dependent variable: Selection of Azad University

Table 9 shows the relation between Azad University brand and its selection. The results indicate that there is a significant direct relations (r= 0.707) between the two variables.

Table 9: Correlation between Azad University Brand and Its Selection

		Selection of Azad University
Azad University Brand	Pierson correlation coefficient	0.707**
	Significance level	0.000
	Number	421

Azad University Brand personality dimensions are presented in table 10. This table shows that Azad University Brand personality dimensions can be ranked based on their scores in order from high to low as: sincerity, competence, excitement, sophistication, and ruggedness.

Table 10: Azad University Brand Personality Dimensions

No.	Personality Dimension	Number	Range	Minimum	Maximum	Total Score	Average Score
1	Sincerity	421	4	1	5	1002	2.38
2	Excitement	421	4	1	5	923	2.19
3	Competence	421	4	1	5	961	2.28
4	Sophistication	421	4	1	5	856	2.03
5	Ruggedness	421	4	1	5	852	2.02

Friedman test results for prioritization of brand dimensions are shown in table 11.

Table 11: Descriptive Statistics of Friedman Test

Brand Dimension	Number	Mean	Standard Deviation	Minimum	Maximum	Percentile		
						25^{th}	50^{th}	75^{th}
Obvious Brand Structure	421	53.06	17.0716	20	100	40	53.33	66.67
Non Obvious Brand Structure	421	50.43	13.776	20	87	41.20	51.47	58.67
Brand Equity	421	52.35	14.3400	20	100	45	55	60
Brand Value	421	52.83	15.367	20	90	40	55	60

Table 12 shows the average priorities of brand dimensions obtained from Friedman test. There are no significant differences between brand dimensions. The ranking of brand dimensions based on their score in order from high to low is: brand equity, brand value, obvious brand structure, and non obvious brand structure variables.

Table 12: Friedman Analysis of Variance for Brand Dimensions

Variable	Average Score
Brand Equity	3.19
Brand Value	3.06
Obvious Brand Structure	3.05
Non Obvious Brand Structure	2.70

Discussions and Conclusions

The number of respondents was 421 with almost equal proportion of females (216) to males (205). The sample included 164 married and 257 single individuals. 42.5 percent of respondents had technical and bachelor's degree and 57.5 percent had masters or higher degree. About 60 percent of respondents were employed and the rest were unemployed. 182 respondents were 25 years of age or younger, 156 were in 26 to 30 age group, and 83 were 31 years of age or higher.

The results of Pierson linear correlation test showed that obvious brand structure (r=0.427), non obvious brand structure (r=0489), brand equity (=0.806), and brand value (r=0.480) are correlated with the selection of Azad University at error rate below 0.01 with 0.99 percent degree of confidence. Their ranking based on correlation intensity ordered from high to low is brand equity, non obvious brand structure, and obvious brand structure. The correlations confirm the dimensions of researcher made model.

The results of analysis showed that brand equity had the highest effect on the dependent variable with regression coefficient of 0.704. In other word, the highest influencing factor in Azad University brand is brand equity. There is a significant correlation between Azad University brand and selection of Azad University with an intensity of 0.707 and significance level of 0.01. Therefore, the primary research hypothesis was confirmed.

The significance level and correlation intensity between demographic specifications and research variables as determined by Spearman correlation coefficient are as follows:

1) Azad University brand is directly correlated to respondents' age at significance level 0.030 and intensity level of 0.106. Thus, respondents with 25 years of age or lower had more positive attitude towards Azad University brand;
2) Azad University brand is directly correlated to respondents' employment status at significance level of 0.036 and intensity level of 0.102. Thus, employed respondents had more positive attitude towards Azad University brand;
3) Azad University brand variable is indirectly correlated to respondents' education level at significance level of 0.021 and intensity level of -0.113. Thus, less educated respondents who were studying for technical and bachelor's degrees had more positive attitude towards Azad University brand; and

Single females of 25 years of age or younger had more positive attitude towards selecting Azad University. Similarly, employed respondents at 25 years of age or younger who were studying for technical and bachelor's degrees had more positive attitude towards Azad University brand.

Analysis showed that students attending departments at Tehran Central Campus of Azad University ranked Azad University brand personality dimensions in the order of importance from high to low as sincerity, competence, excitement, sophistication, and ruggedness.

Multiple linear regression analysis measured the adjusted determination coefficient at 0.674. This means that brand dimensions can explain about 67% of total variance of dependent variable. Fisher statistics was 218.090. Therefore, it is possible to conclude that the regression model was a good fit and the independent variables can collectively explain the changes in dependent variable.

Zero-order, partial, and semi partial correlations resulted from multiple regression showed that the four independent variables of obvious brand structure, non obvious brand structure, brand value, and brand equity have significant effects on selection of Azad University as the dependent variable.

The ranking of independent variables effect on dependent variable based on their regression coefficients ordered from high to low was: brand equity (0.704), non obvious brand structure (0.128), obvious brand structure (0.078), and brand value (0.029). The average priorities of brand dimensions obtained from Friedman test showed no significant differences between brand dimensions. The order of brand dimensions from high to low was brand equity, brand value, obvious brand structure, and non obvious brand structure variables.

Suggestions

The following suggestions are proposed based on the research hypothesis and the results obtained from data analysis.

1) Friedman test indicates that Azad University should focus on brand equity more than other dimensions to improve its brand;
2) Respondents at age of 25 years or younger had more positive attitude toward Azad University brand. Therefore, Azad University should focus its marketing activities on creating positive attitude among older students;
3) Employed respondents had more positive attitude toward Azad University brand. Therefore, Azad University should focus on employed individuals as its target market.
4) Respondents who were working toward technical and bachelor's degree had more positive attitude toward Azad University brand. Therefore, the Azad University should focus on individuals who are interested in continuing education;
5) Brand personality dimensions of Azad University in order of importance from high to low are sincerity, competence, excitement, sophistication, and ruggedness. Therefore, Azad University should focus on personifying its brand by sincerity and competence. The average scores for these two dimensions were 2.38 and 2.28 (out of 5), respectively. These two dimensions made up approximately 50% of the total scores. Hence, any improvement in these two dimensions can elevate the position of Azad University brand personality; and
6) The identified Azad University brand dimensions (i.e. obvious brand structure, non obvious brand structure, brand equity, and brand value) account for 67% of the total variance of selection of Azad University as the independent variable. Therefore, emphasizing on these dimensions can increase Azad University profitability.

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In Vitro Activity of nano-silver against Ocular Pathogenic Fungi

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Abstract: The in vitro activity of nano-silver versus those of fluconazole and natamycin was assessed against 264 ocular fungal isolates. The activity of nano-silver against Fusarium spp., Aspergillus spp., and Alternariaalternata was 8 times, 32 times, and 2 times, respectively, greater than that of natamycin and 512times, 256 times, and 4 times, respectively, greater than that of fluconazole. Nano-silver's antifungalactivity was significantly superior to those of natamycin and fluconazole against ocular pathogenic fungi in vitro.
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Keywords: nano-silver; fungal keratitis; drug susceptibility testing; antifungal

1. Introduction

The problem of keratomycosis has become increasingly prevalent in corneal diseases that are responsible for vision loss in the developing world like china(1,2,3).Clinical studies indicate that keratomycosis constitutes about 46.7% to 61.9% of all cases of suppurative keratitis inpatients. Filamentous fungi, mainly Fusarium spp. or Aspergillus spp., are the most frequently isolated fungi in patients with keratomycosis and the most common ocular pathogenic fungi in China. To date, only fluconazole and natamycin are commercially available for ocular use in China. Fluconazole has high bioavailability against Candida spp., but Fusarium spp. And Aspergillus spp. are resistant to it (4,5,6). Natamycin is the only topical ophthalmic antifungal compound approved in the United States (7), but it penetrates the cornea and conjunctiva poorly and effective drug levels are not achieved in either the cornea or the aqueous humor (8) after topical application because it is poorly soluble in water. It is therefore useful only in the treatment of superficial keratomycosis. Due to the relative unavailability of effective antifungals, corneal lesions fail to resolve in many patients who receive antifungal treatment, some patients get vision loss and eventually perforation of the cornea, ultimately require penetrating keratoplasty, or even enucleation or evisceration (2,9). Therefore, it is very important and urgent to explore broad-spectrum antifungals to effectively suppress a wide variety of ocular fungal pathogens and to develop new antifungal eye drops to combat this vision-threatening infection.

Since ancient times, the silver ion has been known to be effective against a broad range of microorganisms. Rencently there is an increasing use of silver as an efficacious antibacterial and antifungal agent in wound care products and medical devices (10,11,12,13) including dental work, catheters, and the healing of burn wounds (14,15,16). Additionally, $AgNO_3$, as eye drops, have been utilized to prevent gonococcal ophthalmicneonatorum in newborns by pediatricians for centuries(17), and our experiment has demonstrated that Silver nitrate exhibited potent antifungal activity against ocular fungi in vitro. 18. Recent advances in nanotechnology have enabled us to produce pure silver, as nanoparticles, which are more efficient than silver ions(19).

2. Material and Methods

Two hundred sixty-four strains of fungi isolated from patients with keratomycosis from the Zhengzhou second hospital and the Henan Eye Institute in Zhengzhou, China, were investigated. These isolates were identified based on morphology by standard methods (20,21,22,23). They included 144 Fusarium isolates, 110 Aspergillus isolates, and 10 Alternaria alternata isolates. Candida parapsilosis ATCC 22019 was used as quality control for each test.

The antifungal agents tested in this study were nano-sliver (Nanux, korea; 2000ppm), natamycin (Yinxiang Biotechnology Co., Ltd., Zhejiang, China; minimum purity, 95%) and fluconazole (Pfizer. American, minimum purity, 100%) They were all dissolved in 100% dimethyl sulfoxide. The stock solutions were prepared at concentrations of 800μg/ml for nano-sliver, 1,600 μg/ml for natamycin and 25600 μg/ml for fluconazole. Drug dilutions were made in RPMI 1640 (with L-glutamine, without sodium bicarbonate; GIBCO-BRL, Grand Island, NY) medium buffered to pH 7.0 with 0.165 M morpholinepropanesulfonic acid (MOPS; Serva, Feinbochemica GmbH, Germany). Final concentrations ranged from 0.0313 to 16μg/ml for

nano-sliver, from 0.0625 to 32μg/ml for natamycin and from1 to 512μg/ml for fluconazole. Then they were stored at -65°C until tested.

A broth microdilution method was performed following the Clinical and Laboratory Standards Institute (CLSI) M38-A document (24), which describes a standard method for testing the susceptibility of conidium-forming filamentous fungi that cause invasive fungal infections, including Aspergillus species, Fusarium species, etc., to antifungal agents. Inocula were prepared in accordance with the CLSI M38-A document. The final inoculum was 0.4×10^4 to 5×10^4CFU/ml. Following incubation at 35°C for 48 h, the MIC was determined according to the CLSI M38-A document. For nano-sliver and natamycin the MIC was defined as the lowest drug concentration that prevented any discernible growth, and the MIC was defined as the lowest drug concentration that prevented 75% or more growth for fluconazole.

The MIC range and mode, the MIC50(MIC for 50% of the strains tested), and the MIC90(MIC for 90% of the strains tested) were provided for the isolates with the SPSS statistical package (version 13.0). For calculation, any high off-scale MIC was converted to the next higher concentration.

3. Results

The in vitro activities of nano-sliver, natamycin and fluconazole against the Fusarium spp. and Aspergillus spp. are summarized in Table 1 and Table 2. Both the MIC50 and MIC90 of nano-sliver were both 1μg /ml for Fusarium spp. and 0.5μg /ml and 1μg /ml, respectively for Aspergillus spp. The MIC50 and MIC90 of natamycin were 4μg /ml and 8μg /ml, respectively, for Fusarium spp. and were both 32μg /ml for Aspergillus spp. The MIC50 and MIC90 of fluconazole were both 512μg /ml for Fusarium spp. and were 128μg /ml and 256μg /ml, respectively, for Aspergillus spp.

When comparing the MIC90s of nano-sliver, natamycin and fluconazole, the activity of nano-sliver against Fusarium spp. is 8 times greater than that of natamycin and 512 times greater than that of fluconazole, the activity of nano-sliver against Aspergillus spp. is 32 times greater than that of natamycin and 256 times greater than that of fluconazole, and the activity of nano-sliver against Alternaria alternata is 2 times greater than that of natamycin and 4 times greater than that of fluconazole. And as shown in Tables 1 and 2, nano-sliver has activity against Fusarium and Aspergillus complexes. For each of these genera, this activity remains consistent and does not show significant interspecies variability. Therefore, nano-sliver's effect was significantly superior to those of natamycin and fluconazole against main ocular pathogenic fungi in vitro.

Table 1. *In vitro* susceptibilities of ocular *Fusarium* isolates to Nano-sliver, natamycin and fluconazole.

Organism (no. of isolates) and antifungal agent	MIC (μg /ml) range (mode)	MIC50 (μg /ml)	MIC90 (μg /ml)
Fusarium solani species complex (85)			
Nano-silver	0.25-2(1)	1	1
natamycin	4-32(4)	4	8
fluconazole	16-512(512)	512	512
Fusarium moniliforme species complex (23)			
Nano-silver	0.5-2(1)	1	2
natamycin	4-8(4)	4	8
fluconazole	32-512(512)	256	512
Fusarium avenaceum species complex (18)			
Nano-silver	0.5-2(1)	1	2
natamycin	4-32(8)	8	8
fluconazole	64-512(512)	512	512
Other Fusarium isolates (18) [1]			
Nano-silver	0.5-2(0.5)	0.5	1
natamycin	4-8(4)	4	8
fluconazole	256-512(512)	512	512
Fusarium spp. (144)			
Nano-silver	0.25-2(1)	1	1
natamycin	4-32(4)	4	8
fluconazole	16-512(454.79)	512	512

[1] Includes 9 strains of Fusarium oxysporum species complex, 5 strains of Fusarium poae species complex, and 4 strains of Fusarium lateritium species complex.

Table 2. *In vitro* susceptibilities of ocular *Aspergillus* and *Alternaria alternata* isolates to Nano-sliver, natamycin and fluconazole.

Organism (no. of isolates) and antifungal agent	MIC (μg /ml) range (mode)	MIC50 (μg /ml)	MIC90 (μg /ml)
Aspergillus flavus species complex (54)			
Nano-silver	0.5-1(0.5)	0.5	1
natamycin	8-2(32)	32	32
fluconazole	64-512(128)	128	256
Aspergillus fumigatus species complex (14)			
Nano-silver	0.25-1(0.5)	0.5	0.5
natamycin	4-32(4)	4	4
fluconazole	64-256(128)	128	256
Aspergillus oryzae species complex (15)			
Nano-silver	0.5-1(0.5)	0.5	0.5
natamycin	4-32(32)	32	32
fluconazole	64-128(128)	128	128
Aspergillus versicolor species complex (13)			
Nano-silver	0.125-0.5(0.25)	0.25	0.5
natamycin	4-32(32)	8	32
fluconazole	32-256(128)	64	128
Other Aspergillus isolates (14)[2]			
Nano-silver	0.0625-0.5(0.25)	0.25	0.5
natamycin	0.25-32(16)	8	32
fluconazole	32-128(64)	64	128
Aspergillus spp. (110)			
Nano-silver	0.0625-1(0.5)	0.5	1
natamycin	0.25-32(32)	32	32
fluconazole	32-512(128)	128	256
Alternaria alternata (10)			
Nano-silver	0.25-1(0.5)	0.5	1
natamycin	2-8(4)	4	4
fluconazole	8-128(64)	16	128

[2] Includes 8 strains of Aspergillus niger species complex, 2 strains of Aspergillus candidus, 2 strains of Aspergillus nidulans, 1 strain of Aspergillus ochraceus, and 1 strainof Aspergillus wentii.

4. Discussions

Nano-sliver has been developed as a potent antibacterial, antifungal, antiviral, and anti-inflammatory agent. (25,26,27). Compared with other metals, silver nanoparticles show higher toxicity to microorganisms while exhibiting lower toxicity to mammalian cells (28). To date, the most promising applications have been shown in the medical fields, such as infection for wound and burn (29,30). Nano-sliver is available as an antimicrobial gel formulation for conventional topical antimicrobial agents, treatment (31). Some studies show that nano-sliver have the antimicrobial activity against bacteria and virus (32,33,34). The findings from our study indicate that nano-sliver is active against ocular fungal.

In conclusion, in this study, nano-sliver exhibited potent in vitro activity against main ocular pathogenic fungi and was even more effective than natamycin and fluconazole. The results suggest that nano-sliver might to be a effective drug in the treatment of keratomycosis and that a prospective evaluation of efficacy and safety to further develop its clinical applications.

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Survey on Continuous Nursing Requirements for Stroke Patients

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Abstract: Objective Surveying continuous nursing requirements for brain stroke patients after leaving hospital. **Methods** Questionnaires survey by conveniently selecting 136 stroke patients from medical wards of the Neurology Departments in third grade A-class hospitals in Zhengzhou. **Results** Most patients have strong requirements for continuous rehabilitation nursing. Requirements of continuous nursing knowledge for stroke patients out of hospital mainly are the fundamental knowledge related to the brain stoke, next medical rehabilitation instructions and nursing supporting. **Conclusions** Brain stroke patients have strong continuous nursing requirements after leaving hospital. It can guarantee that brain stroke patients receive complete and continuous nursing out of hospital with medical personnel's working out nursing plan and developing health education based on requirements of the patients.

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Keywords: Stroke; Continuous Nursing; Requirements

1. Introduction

The brain stroke is a common clinical and frequently-occurring disease, and its incidence rate, case fatality rate and disability rate are in a leading place among diseases in China. In the US, the disease has become the third lethal disease and the first factor causing disability(Michael and Shaughnessy, 2006). In Chinese towns and countries, the stroke incidence rate is 200 per 100,000, case fatality rate per year is 80-120 per 100,000, and recurrence rate comes to 40%. Over 70% survivors have dysfunction in different degrees, of whom are severely disabled(Nan, 2008). Which affect their daily life, and bring heavy burdens to their family and society. The brain stroke is of high disability rate, long course of disease, and slow recovery. The continuous nursing after leaving hospital is the key to improve patients' life quality. This study is aimed at surveying the nursing for the stroke inpatients out of hospital, and provides reference bases to structure the continuous nursing mode from hospital, community to family for the stroke patients.

2. Methods

136 stroke patients were selected conveniently for questionnaire survey from the the wards of the Neurology Department in two third grade A-class hospitals in Zhengzhou from January to June 2011. Inclusion criteria for patients: ① Conforming to diagnostic criteria revised in the 4th National Cerebrovascular Disease Academic Conference(Nan, 2008), and diagnosed as brain stroke by the CT or MRI head inspection; ② The course of disease lasts within two weeks, with stable vital signs; ③ Having disfunction of limbs, without important viscera diseases such as severe heart and lung; ④ Glasgo coma scale (GCS) is larger than 8 points; ⑤ Voluntarily participating in the study. The exclusion criteria: ① Severe cognitive dysfunction; ② Having previous dementia; ③ Having previous psychiatric history; ④ Suffered from diseases of aphasia, or severe heart, liver and kidney. Totally 150 questionnaires were released totally, 136 of which were valid at the valid rate of 90.7%.

The data were collected by questionnaire survey, the researchers released questionnaires after the agreement of patients and their family members, and instructed patients or main caregivers in the uniform instructions to fill in the questionnaires. The questionnaires were taken back on the spot and checked by item, and the unfinished items were corrected.

The questionnaires were self-designed on the basis of consulting of related literatures, and the questionnaire contained two aspects: requirements of continuous nursing knowledge and techniques for stroke patients after leaving hospital. the requirements of continuous nursing knowledge included ten items such as cause and symptoms of brain stroke, inductive and risk factors, complication prevention, sequelae, palindromia first-aid knowledge, medicine-taking knowledge, etc. The requirements of techniques included the following ten items: blood pressure and pulse measuring, blood sugar monitoring, effective cough method, limbs rehabilitation exercise, language recovering, injection method, etc. Four options were

set for each item, i.e. not required, not to matter, required, very required. The pilot test showed it was better validity for the questionnaires.

The statistical analysis was done by SPSS (16.0 version) after data were collected. The general data for patients were described with frequency, percentage and mean; nursing requirements for patients were described with frequency, percentage, mean and standard deviation.

3. Results

There were 60 women and 76 men in the final sample. The mean age was 67.7±11.8 years (range 38~81years). 57.4% were retired, 11.4% were employed full-time, 13.2% were unemployed, 17.0% were employed part-time. 58.1% stroke patients on one occasion, 35.3% two to there times. A majority lived with family members (89.7%). Nearly half participants had another disease (Table 1).

Table 1 Demographic data of patients (n =136)

Characteristics	N	%
Gender		
Female	60	44.1%
Male	76	55.9%
Degree of education		
Junior high school or below	85	62.5%
Senior high school or secondary school	31	22.8%
Junior college and above	20	14.7%
Employment status		
Retired	78	57.4%
Employed	40	29.4%
Unemployed	18	13.2%
Form of payment		
Self-supporting	16	11.8%
Medical insurance	108	79.4%
Others	12	8.8%
Living situation		
Alone	14	10.3%
With another person	122	89.7%
Number of hospitalization		
One	79	58.1%
Two	34	25.0%
Three	14	10.3%
More than four times	9	6.6%
Diagnosis type		
Cerebral infarction	70	51.5%
Cerebral embolism	38	27.9%
Other type	28	20.6%
Complications		
High blood pressure	47	34.6%
Diabetes	22	16.2%
Heart disease	11	8.1%
Others	8	5.9%

As shown in Table 2, the survey shows that the patients are lack of knowledge and techniques of brain stroke rehabilitation, and most patients have strong requirements for continuous rehabilitation nursing. More than 70.0% patients either required or very required basic knowledge of stroke, 77.9% report that they need recovery knowledge. Requirements of continuous nursing knowledge for stroke patients out of hospital mainly are the fundamental knowledge related to the brain stoke, as well as medical rehabilitation instructions and nursing supporting, for example, Medicine-taking and diet knowledge. About the skill training requirements, above half indicate that they want to know how to perform limb exercise and language training. At the same time, most participants either required or very required basic nursing skill (Table 2).

Table 2 Requirements of continuous nursing for patients out of hospital (n =136)

Items	Vr (%)	R (%)	Nm (%)	Nr (%)
Rk				
Cs	16.2%	54.4%	13.2%	16.2%
Irf	14.0%	56.6%	12.5%	17.6
Cp	14.0%	56.6%	14.0%	16.2%
S	16.2%	58.8%	8.8%	16.2%
Pfk	14.0%	58.8%	10.3%	16.9%
Rk	23.5%	54.4%	10.3%	11.8%
Mk	14.7%	44.9%	19.1%	21.3%
Dk	19.9%	36.8%	16.2%	27.2%
Mi	16.2%	44.9%	19.1%	19.9%
Rs				
Ure	14.7%	55.1%	14.7%	15.4%
Lre	28.7%	51.5%	7.4%	12.5%
Lr	22.1%	52.9%	11.8%	13.2%
Bpm	22.1%	55.1%	11.0%	11.8%
Bsm	20.6%	51.5%	13.2%	14.7%
Im	19.1%	44.1%	16.9%	19.9%
Gtctn	13.2%	43.4%	22.8%	20.6%
Cofn	13.2%	47.1%	17.6%	22.1%
Rt	19.1%	52.9%	15.4%	12.5%
Mrs	22.1%	44.1%	19.1%	14.7%

(Rk, requirements of knowledge; Rs, requirements of skills; Cs, causes and symptoms; Irf, inductive and risk factors; Cp, complication prevention; S, sequelae; Pfk, palindromia first-aid knowledge; Rk, recovery knowledge; Mk, medicine-taking knowledge; Dk, diet knowledge; Mi, mental instructions; Ure, usage of rehabilitation equipment; Lre, limbs rehabilitation exercise; Lr, language recovery; Bpm, blood pressure and pulse measuring; Bsm, blood sugar monitoring; Im, injection method; Gtctn, gastric tube and catheterization tube nursing; Cofn, cut and orificium fistulae nursing; Rt, respiratory training; Mrs, mental regulation skills; Vr, very required; R, required; Nm, Not to matter; Nr, Not required).

4. Discussions

The stroke patients and their family members are generally lack of related knowledge and rehabilitation techniques. With aging of population and reform of medical system, the stroke patients have higher requirements for medical rehabilitation nursing and life services(Shi et al.,2010). The survey results show that the stroke patients have the stronger requirements for continuous nursing knowledge and techniques out of hospital. Continuous health education is an effective method. The nursing personnel may evaluate timely the patients' health situations and nursing requirements when they are admitted to hospital, and work out continuous nursing plan out of hospital. After leaving hospital, medical care personnel offer instructions on purpose based on patients' diet, drug taking, limb rehabilitation training, blood pressure and sugar control, etc. so as to improve patients' self-care and self-training capability(Cai et al.,2010). Moreover, the medical personnel should also instruct the caregivers at home so that they can assist patients for limb exercise and daily life training.

Currently, the Chinese medical security system is not yet perfect, and the treatment and nursing for brain stroke patients is proceeding mainly in hospitals, and the timely, effective and continuous recovering nursing is not available for most patients out of hospital, which results in recurrence or multi-recurrence of the disease(Yin and Liu,2010). Owing to such reasons as hospital stay and expenses, the stroke patients mostly complete rehabilitation at home or community. It is suggested that patients continue recovering nursing by hospital or community medical personnel after leaving hospital to prevent recurring or multi-recurring of the brain stroke and resolve timely the patients' problems or puzzles. By this way, the continuous hospital-community-family recovering nursing mode is structured to improve the stroke patients' daily life and quality(Zhang et al.,2010).

Systematical health education should be carried out, correctly evaluate patients' condition, awareness, knowledge related to disease, psychologic status, etc. during patients' hospitalization; implement continuous nursing technical instructions based on patients' mastering of the disease-related knowledge, such as daily functional training, blood pressure and pulse measuring, blood sugar monitoring, insulin injection, etc., repeatedly demonstrating and imitating; help stroke patients master rehabilitation nursing techniques, and promote and assist patients to apply the techniques and knowledge to daily life. The health administrative departments in communities should improve the community service facility, work out the detailed training plans, develop all kinds of professional training, and invite extramural hospital rehabilitation specialists to make recovering knowledge lectures. By this way, they can help community nurses learn and accumulate rehabilitation knowledge and improve their recovering level. This will lay the solid foundation for structuring of the continuous hospital-community-family nursing mode.

Our study identified the stroke patients have the stronger requirements for continuous nursing knowledge and techniques out of hospital. This indicates the continuous nursing out of hospital should be further strengthened. So, in combination with Chinese conditions we should actively develop the continuous hospital-community-family nursing based on the specific requirements of continuous nursing services by borrowing foreign family and community nursing service mode.

Despite the limitations of our study, we believe that the data presented here will help to inform future research of interventions to meet requirements for continuous nursing and help to stimulate further work in this area.

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Forgien Capital Inflows and its Impact on Domestic Saving In India

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Abstract: The various form of inflow of foreign capital (loans, FDI and portfolio) came in developing countries to bridge the gap between domestic saving and domestic investment and therefore, to accelerate economy growth. In India, many variables have been used in saving function. But in this study our aim is analyzing the long run effect of foreign capital inflow on domestic saving and not to estimate the saving function. In this paper much attention have been paid in past 10 years, relationship between foreign direct investment (FDI) , foreign portfolio investment (FPI) and domestic saving, the main purpose of the study has been determined whether in developing country like India foreign capital inflow and domestic saving are complementary or substitute.
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Keyworld: domestic saving, foreign capital, foreign direct investment

Introduction

Capital flows have direct and indirect affect in macroeconomic. Capital flows affect a wide range of economic variables such as exchange rates, interest rates, foreign exchange reserves, domestic monetary conditions as well as savings and investments. Some commonly observed effects of capital inflows that have been documented in recent studies include real exchange rate appreciation, stock market and real estate boom, reserve accumulation, monetary expansion as well as effects on production and consumption. Empirical studies that have begun to appear on the subject assess the impact of capital inflows upon output growth (Gruben and McLeod, 1996), differential macroeconomic effects of portfolio and foreign direct investment (Gunther, Moore and Short, 1996) and effects upon monetary conditions, savings and investment (Kamin and Wood, 1998).

Capital flows can affect domestic investment in several ways. First, FDI contributes directly to new plant and equipment ("Greenfield" FDI). Second, FDI may produce investment spillovers beyond the direct increase in capital stock through linkages among firms. For example, multinational corporations (MNCs) may purchase inputs form domestic suppliers thereby encouraging new investment by local firms. FDI for mergers and acquisitions (M&A) does not contribute to capital formation directly unless the new foreign owners modernize or expand their acquisitions by investing in new technology. FDI may also "crowd out" domestic investment, if MNCs raise productivity and force local competitors out of the market. This is usually the case when MNCs use imported inputs or enter sectors previously dominated by state-owned firms. Finally, FDI, foreign loans and portfolio investment may reduce interest rates or increase credit available to finance new domestic investment. On this last point, a study by Harrison, Love and McMillan (2004) finds that FDI in particular eases the financing constraints of firms in developing countries and that this effect is stronger for low-income than for high-income regions.

Foreign capital can have indirect impact on domestic investment through what Kose, Prasad, Rogoff and Wei (2006) call "collateral benefits". To attract foreign investors governments of developing countries have to implement sound macroeconomic policies, develop their institutions and improve governance.

Bosworth and Collins (1999) show that the impact of a one-dollar increase of FDI is an 81-cent contemporaneous rise in domestic investment and that of foreign loans is a 50-cent rise, while they do not find a statistically significant relationship between portfolio flows and capital formation. Find that aggregate foreign capital flows raise domestic investment, but the evidence on the different types of flows is more nuanced.

Hajivassiliou (1987), using data for 79 developing countries in the period 1970-82, and treating the demand for and the supply of loans separately, finds out that the demand for borrowing is positively determined by total debt service to export ratio, growth of GDP per capita, import to GDP ratio, interest and principal to export ratios and negatively by real GDP per capita.

The last decade has witnessed a tremendous increase in the mobility of international capital. Cross-country trends in capital flows reveal that private capital flows now dominate with official capital flows reduced to a trickle. Simultaneously, a

rise in portfolio capital has tilted the composition of international capital flows towards short-term investments, exposing individual countries to enhanced volatility and sudden withdrawal risks. These have been driven both by strong trends towards globalization, which has enabled pursuit of higher returns and portfolio diversification, and the market oriented reforms in many countries, which have liberalized access to financial markets.

The data in table1 indicate foreign direct investment as a percentage of gross fixed capital formation in three developing countries such as India, China and Brazil.

Table: 1 FDI inflows as a percentage of gross fixed capital formation (Percent)

Year	Brazil	China	India
2001	23.8	10.3	4.8
2002	20.0	10.0	4.7
2003	12.0	8.3	2.9
2004	17.0	7.7	2.8
2005	10.7	7.7	2.8
2006	10.5	6.4	6.8
2007	14.5	6.0	6.3
2008	14.7	5.3	9.6
2009	9.9	4.0	8.4

Source: UNCTAD, *World Investment Report*, 2009, Annex Table 5,

These countries have been selected because of faster growth rate of economic in the world during the last decade. According to data in Brazil and china FDI inflows to gross fixed capital formation was 23.8 and 10.3 percent in 2001, which has been declined to 9.9 and 4 percent in 2009 respectively. On the other hand in India FDI inflows to gross fixed capital formation was 4.8 percent in 2001 and that has been raised to 9.6 percent in the year 2009.

Comparison of the these countries in regard of amount inflow of foreign direct investment reveals that FDI inflows in China, Brazil and India were Million US$ 46878, 22457 and 5478 in the year 2001 respectively and that has been raised to Million US$ 95000, 25949 and 34613 in 2009 respectively. The following chart indicates the china was more attractive than India and Brazil for foreigner to invest.

Regarding table: 1 and chart: 1, it can be concluded the growth of domestic saving as a percentage of gross fixed capital formation is more that foreign capital inflow as a percentage of gross fixed capital formation in China and Brazil during the year from 2001 to 2009. On the other hand the growth of foreign capital inflows as a percentage of gross fixed capital formation is more that domestic saving as a percentage of gross fixed capital formation at the same period.

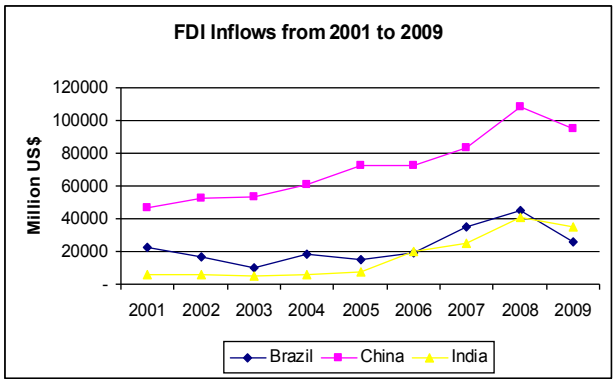

Chart 1. FDI Inflows

Developing the Model

For analyzing the impact of foreign capital inflow on saving rate, a number of studies in economic literature are based on cross-sectional data with a lot of explanatory variables. Similarly, in the case of India, many variables have been used in saving function, aim of these studies to examine the impact of different macroeconomic variables on saving rate of India. But in this paper, we have used simple model, because in this study our aim analysing the effect of foreign capital inflow on saving and not to estimate the saving function, so it is better to use simplest form [Sohan and Islam (1988)].

In India average gross Domestic Saving (DS) as percentage of GDP is 30.2 percent from 2001 to 2010 and average gross Domestic Investment (DI) as percentage of GDP is 30.9 percent during the same period, that's means $DI > DS$, *so* we can concluded domestic investment is equal domestic saving plus Net Foreign Capital Inflows (NFCI) as following equation:

$$DI = DS + NFCI \quad \ldots\ldots\ldots\ldots (1)$$

To examine the impact of foreign aid on domestic saving, we have been hypothesized a simple linear saving function as follows:

$$DS\,t = \alpha + B1\,PC\,t + B2\,FCI\,t \quad \ldots\ldots\ldots (2)$$

Where; *DS*= Domestic Saving rate, *PC*= Per Capita GNP, *FCI*= Foreign Capital Inflows

And *t* refers to the time period 2001-2010.

We have divided foreign capital inflows into two parts. First Foreign Direct Investment (FDI) and second Foreign Portfolio Investment (FPI) and to

study their effect on domestic saving, following equation formulated for this purpose:

$DS = \alpha + B1\ FPI + B2\ FDI$ .... (3)

Where; *DS*= Domestic Saving rate, *FPI* = Foreign Portfolio Investment, *FDI*= Foreign Direct Investment

Domestic saving rate is taken from various issues of Reserve Bank of India and per capita GNP is measured in constant market prices of India. The foreign capital inflows as measure by current account deficit are taken from RBI (Handbook of Statistics on Indian Economy, RBI, 2010).

Research Methodology

In what follows, we employ regression analysis to empirically examine the effects of capital inflows on domestic investment in developing countries. Before embarking on this analysis, however, it is useful to take a quick look at the summary statistics on net inflows of foreign resources to India. These data, presented in Table 2, which has been collected from Reserve Bank of India (RBI), the data reveals that Foreign Direct Investment (FDI) has been increased from Rs 18406 Crore in 2001 to Rs 176304 in 2010 and Foreign Portfolio Investment (FPI) has been rised from Rs 12609 to Rs 153511 at the same period. Compound Average Growth Rate (CAGR) of FDI during the year 2001 to 2010 was 35.5 percent, however the CAGR in the account of FPI was 23.5 percent at the same period. In the year 2009 FPI has showed negative growth rate, which can be concluded, that foreign portfolio investment has been effected by the global economic and financial crisis.

Table 2. Foreign Investment Inflow (Rupees Crore)

Year	Direct Investment	Portfolio Investment	Total
2001	18406	12609	31015
2002	29235	9639	38874
2003	24367	4738	29105
2004	19860	52279	72139
2005	27188	41854	69042
2006	39674	55307	94981
2007	103367	31713	135080
2008	140180	109741	249921
2009	161536	-63618	97918
2010	176304	153511	329815
CAGR	32.5	23.5	28

Source: *Total foreign investment as per balance of payments statistics (Handbook of Statistics on Indian Economy, RBI, 2010);

Regarding chart2 domestic saving in the year 2001 was Rs 297215 Corores, which has been increased to Rs 1425247 in 2010.

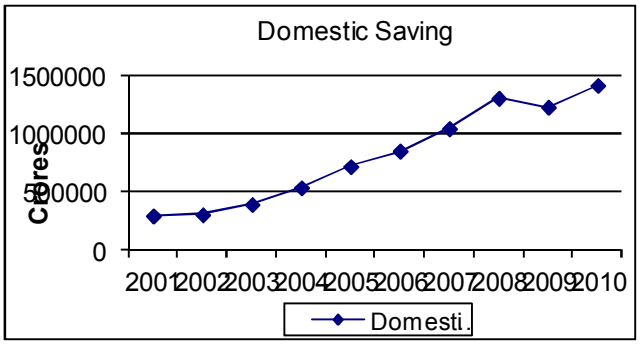

Chart2: Growth of Domestic Saving in India

Table 2 and chart 2 give a summary view of the overall consequences of development on investment in India. Three things are clear from these data. First, the share of FDI in investment increased in India. Second, the aggregate rate of investment increased in India. Third, the domestic saving rate showed a sharp growth.

The results of the regression exercises show that FCI inflows and GNPPC had a significant crowding-out effect on saving by domestic from 2001 to 2010. The results reveals if GNPPC increase by 1 unit, domestic saving (DS) increase by 36.12 units and if FCI increase by 1 unit, Ds increase by 1.55 units. The regression results also show that saving by domestic was strongly and positively related to FCI and GNPPC.

(1) DS = -409126.32 + 36.12 GNPPC + 1.35 FCI
(- 5.147) (9.9) (3.5)
R2 = 0.98376072

In the next step we divided FCI into two parts as Foreign Direct Investment (FDI) , Foreign Portfolio Investment (FPI) and their effect on domestic saving. The results of the regression exercises reveals when FPI change by 1 unit then DS change by 2.05 units and if FDI changes 1 unit then DS changes by 6.16 units. The regression results also show that effect of FDI and FPI were positive on the domestic saving. But, the effect of FDI on the domestic saving is more that FPI.

(2) DS = 320329.849 + 2.05 FPI + 6.16 FDI
(3.2) (6.01) (1.73)
R2 = 0.88017668

The same conclusions can be drawn from the following regression equation:

$Log\ (DS) = \alpha + B1 Log\ (FPI) + B2\ Log\ (FDI)$
Or
$\Delta(DS) = \alpha + \Delta\ (FPI) + \Delta\ (FDI)$

Δ *(DS)* = 6.217727+ 0.279667 Δ *(FPI)* + 0.402153 Δ *(FDI)*
R2 = 0.878832

Where Δ denotes change from 2001 to 2010, the figures in parentheses are t-statistics, and statistical significance at 1% level. Increased FDI inflows crowd out saving by domestic more than FPI.

Conclusion

Domestic recourse mobilization is one of the vital determinants of economic growth. Indian's saving performance is deprived as relative to successive countries in the region that had experienced sustained high growth. Therefore, India needs foreign capital to fill the gap between domestic saving and domestic investment.

Our main conclusion is that FCI inflows to India have a fairly strong crowding-out effect on saving by domestic. However, since one unit of FCI inflows crowds out more than one (1.55) unit of domestic saving, aggregate investment in the India economy still rises above the domestic saving rate. But the same fact also implies that net inflows of FCI necessarily increase the share of foreign investors in aggregate investment. In this study the effect of FDI and FPI on the domestic saving has been examined. Since one percentage change in FDI then 0.4 percent change in domestic saving and by one percent changes in FPI, domestic saving will be changed by 0.27 percent.

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Identification, measurement and management of intellectual capital is a vital important issue for the survival of organization in the field of competition

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Abstract: In the global economy pattern which is based on knowledge and information technology, the intangible assets can be the most important factor in the organizations' success in the field of competition. The physical and financial are replaced by intellectual capital in this pattern and it is considered as the source of value for organizations. Therefore, the key factor in organizations 'success in compactions is identification and measurement of these intellectual capitals on time and managing it. So, first we explore the intellectual capital concepts and present the intellectual capital history then the intellectual capital according to theorists and three basic elements of intellectual capital including human capital, structural capital and relational capital are defined and the intellectual capital measurement methods are briefly presented and finally the intellectual capital management is discussed.
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Keywords: intangible assets, intellectual capital, human capital, structural capital, relational capital.

1. Introduction

The competition expansion between organizations along with the information technology revelation has caused the change in the global economy growth. In this new economy pattern, the physical and financial capitals are replaced by the intellectual capital which is the most important capital.

In the knowledge-based economy, the organizations act on the basis of the knowledge and the most successful organizations are those which use these intangible assets in the best way and faster than other organizations. Therefore, the present and the future success in the competition of organizations mostly depend on the management of this intellectual capital.

According to traditional financial reporting, the value of a firm is summarized the balance sheet while nowadays, the real value of firm is more than tangible assets which are recorded on the balance sheet. Nowadays this value equal's recorded tangible assets pals not recorded intangible assets.

The increasing difference between real market value and its assets net book value on balance sheet which is intellectual intangible assets caused most of the organization look for a new method to measure the intangible assets in which the new apparent field of intellectual capital is focused.

2. Intellectual capital theoretical aspects

For better understanding of intellectual capital, first the organizations, assets are divided in to two categories as fallow:

a. the physical and financial assets which are usually presented on balance sheet.

b. intangible assets which are divided in to two categories:

b1: the intangible assets which are recorded on balance sheet as intellectual properties like copy right, patent and goodwill.

b2: the intangible assets which are called intellectual capital and are not recorded on balance sheet.[9]

The intellectual capital is the available knowledge in an organization in especial time and is a kind of valuable asset which is known as intangible asset of organization. Intellectual capital is more than physical assets and is a kind of valuable asset that is a basis for understanding the intangible assets of organization. Those organizations which can manage these assets well, are in a better situation in companion to competitors. Intellection capital deals with the managing of these assets. Intellectual capital and knowledge management are the important factors in determining the value of organizations and long-term planning. Intellectual capital helps organizations to use intangible assets to create value for organization. Intellectual capital includes market intangible assets, intellectual properties, human capital and structural capital which enable the organization to accomplish its activities and duties.

Therefore, the intellectual capital means the sum of individual's knowledge in the organization and the use of this knowledge in managing and wealth making for organization.

2-1-Intellectual capital history

The intellectual capital was presented by the famous economist, Galbraith to explain the difference

between market value and book value of the organization for the first time. Of course, Peter Drucker used the term "knowledge employee" before him. [3]

In 1995 the first organization which measures its intellectual capital was the biggest insurance company in Swidden called Skandia. Then the Canada commercial bank, one of the seven biggest American bank, provided a plain in which only the companies could receive loan that were valued on the basis of intellectual capital. Many studies have been conducted on intellectual capital from that time and in early 2000. The first intellectual capital standard was published by Denmark and the first Intellectual capital record was reported.

2-2- Intellectual capital definition

There are definitions of Intellectual capital by famous theorists which are listed in the following table:

Table 1-the Intellectual capital delimitation by theorists

N	Researcher	**Definition**
1	Smith.M,(2007)	is a part of organizations assets that causes winning in the competition along with tangible assts
2	Booking.A(1997)	Intellectual capital is the combination of market values, human capital and structural capital
3	Edvinsson (1997)	Intellectual capital includes the assets that aren't physical but are the source of value creation for the organization
4	Svieby.K.E(1997)	Intellectual capital is the immaterial values including employees merits, internal and external structure
5	Pretty. R. and Guthire, J (2000)	Intellectual capital in the economy value of two categories of assets: structural capital and human capital
6	Sullivan.P(2000)	Intellectual capital the knowledge that can be turned into profit
7	Paplus(2003)	Intellectual capital is the difference between market value and book value of the organization
8	Klein.D.A(1994)	Intellectual capital is the intellectual ability that is used for more valuable asset making
9	Bontis.N(1998)	Intellectual capital is the researching and following the effective use of knowledge (final product)in comparison to information
10	Roos.G(1997)	Intellectual capital all the processes and assets that are not recorded on balance sheet traditionally. Also, it includes those categories of intangible assets like: patents, copyright, etc that follow the modern accounting methods.
11	Seetharaman. A(2002)	Intellectual capital is resulted from the difference between market value of an enterprise and replacing expenses of the assets.
12	Dierickx and Cool (1989)	Intellectual capital is the process of knowledge inside the organization

According to the above -mentioned definition by theorists in the table, it can be said that the intellectual capital consists of all knowledge resources that make value for organization, but are not recorded on balance sheet in traditional accounting.

(E.g. experience, relationship with the customers, employees, skills) and also includes all intangible assets (e.g. patent, copy right) which are used in modern accounting.

2-3- Main element of Intellectual capital

Most of the theorists consider the Intellectual capital as the combination of three main elements, that is, human capital, structural capital and relational capital and believe that balance and cooperation between these three elements produce value for the organization the mentioned elements are explained below.

2-3-1-Human capital

Human capital is one of the principle categories of Intellectual capital. This category encompasses all knowledge held and contributed by the employees of an organization. There are a number of ways to describe this knowledge such as education, and experience.

Human capital is the source of value producing. This capital is based on the individual's talents in the organization and its amount depends on the knowledge of individuals in the organization.

Human capital is the knowledge of a person to find the best solutions. That's why when the experienced individuals quit the organization, the organizations quality decreases and the organization downgrades. Of Course the human Capital are not owned by the organization become if a programmer

write a program at home can "the organization claim that program belongs to the organization?"

2-3-2- Structure capital

The structure capital can be divided into two categories:

a. Fundamental assets such as technology and working methods

b. Intellectual properties such as technical knowledge, trading market and patents.

Therefore, structure capital encompasses all nonhuman resources in the organization including guidelines, policies, organizational chart, operational plans.As its mentioned the human capital contains employees experience and knowledge in the organization which are at the service of the organization in the working hours. The structure capital is the ability and revisiting knowledge in the firm that is owned by firm and remains in the firm after the employees leave it. [14]

2-3-3- Relational capital

The relational capital is the existing knowledge in the marketing channels and the relationship with the customers.

This capital encompasses the current value and the future of the relationship with customers. The customer satisfaction maintains the commercial relationship of the firm and improves the validity of the firm in the market. Of course relational capital growth requires the support of human capital and structural capital, that is, the structural and human capital help organizations to develop the relational capital and relational capital development also improves the performance of the firm. In fact, no value produced in market without relational structure. Overall the relational capital is an image of all assets that manage the firm relationship with it's the outside environment. This capital contains the relationship with customers, stockholders, competitors and the society. [1]

Therefore, the components of intellectual capital can be presented as the following:

Diagram1-intellectual capital components

Intellectual capital

Human capital	Structural capital	Relational capital
Knowledge &skill	organizational culture	Formal relationship
working experience	guidelines	informal relationship
customer satisfaction	information systems	partners
training	trading mark	reputation
job creativity	working methods	firm validity
capability	Research &development	customer loyalty

3. Intellectual capital measurement methods

In the knowledge-based economy, the success of the organizations depends on the ability to manage the intangible assets (intellectual capital) and to be able to manage these assets, first they should be indentified and measured.many methods have been presented by theorists to measure the intellectual capital. Some of these methods are briefly explained:

Intangible asset monitor

According to this model, great part of the firm value referred to the knowledge-based intangible assets. it means that market value of a firm equals the equity plus three types of intangible assets, external structure, internal structure and individual capability.[17]

Balanced scorecard (bsc)

On the basis of this method, financial indicators alone are not enough to show the firm value.

Because these indicators do not show the previous events of the firm. Balanced scorecard is used to balance the firm goals through considering the four aspects of financial, customer, internal processes, learning, and development. Therefore, a balance is made between the Rotors perceive indicators (financial indicators) and prospective in dictators customer, internal praxes [6].

Intellectual capital index

This index is a measurement method dependent on the individual thinking that tries' to link the Intellectual capital changes and the market value changes of the firm. Thus, if this index can not reflect the market value changes of the firm, it reforms itself.Therefore, this index helps managers to measure the Intellectual capital of the firm and judge about it and also it pares the way for the comparison between the organization and economy units.[12].

Skandia navigator

The Swedish financial services firm Skandia provides an interesting example of a firm that may be showing the way to the future, by regularly valuing and reporting on their intellectual capital of the knowledge and expertise within the organization.

On the basis of this model, Intellectual capital is divided into two types:

1- Human capital

2- Structure capital

Human capital is in the heads of employees. Structural capital remains in the organization.It should be mentioned that the structure capital itself is divided into customer capital, deriving from the relationship the company enjoys with its customers, and organizational capital schwas' guidelines, policies, organizational chart and operational plan

At Skandia, human capital is further divided into several elements:

Customer focus, process focus and renewal and development focus. In this model, the intellectual capital is a combination of human capital, i.e. the brains, skills, insights and potential of those in an organization and structure capital, i.e. things like the process wrapped up in customers, processes, databases, brands, systems, patent and trading marks.

Value added intellectual capital

Value added intellectual capital was developed by Ante public (2000 and 2003). He operates only in the realm of money and is genuinely interested in the economic value and efficiency of intellectual capital.

In this model the added value is resulted from the difference between input and output [11]:

Value added (VA) = output - input

By input we mean the revenue derived from the goods and services sale and by output we mean all the expenses used for production of goods and services accepts salary cost and depreciation expense. Thus, the added value is:

Value added (VA) = operating profit + salary costs +depreciation expense

The value added coefficient of intellectual capital contains the following components:

a. Value added capital coefficient (VACA): this coefficient shows the value added created as the result of physical assets usage which is presented as follow:

$$\text{VACA} = \frac{\text{VA}}{\text{CA}} = \frac{\text{value added}}{\text{tangible assets}}$$

b. Human capital coefficient (VAHU):This coefficient shows the value added by employees which is calculated as follow:

$$\text{VAHU} = \frac{\text{VA}}{\text{HU}} = \frac{\text{Value added}}{\text{Salary costs}}$$

c. Structural capital coefficient (STVA): This coefficient displays the value added resulted from processes and structure in the organization. Structural capital and efficient coefficient of structural capital is calculated as follow:

Structural capital = value added – salary costs

$$\text{STVA} = \frac{\text{SC}}{\text{VA}} = \frac{\text{Structural capital}}{\text{value added}}$$

Therefore, on the basis of public model, intellectual capital is:

$$\text{VAIC} = \text{VACA} + \text{VAHU} + \text{STVA}$$

Q-TOBIN Model

Tobin's q was developed by James Tobin in 1969 as the ratio between the market value and replacement value of the same physical assets. It is supposed that the market value of the firm equals the book value of the firm. If the market value reflected only the recorded assets of the company, Tobin's q would be 1. If Tobin's q is greater than 1, then the market value company's recorded assets. If Tobin q is Less than, the market value the recorded value of the assets of the company. This suggest that market may be under valuing the company.

This suggests that the market value reflects some unmeasured or unrecorded assets of the company. High Tobin's q values encourages companies invest more in capital because they are “Worth” more than the price they paid for them. The high Tobin's q values in every firm show the investment ratio and technology.

Auditing CI based on Broker Technology

Broking evaluates the intellectual capital value of the organization through diagnostic assessment analysis and analyses the organizations response to twenty questions related to four components of intellectual capital. Intellectual capital encompasses four components:

Market assets: trading marks, customers, distribution methods and trading cooperation's.

Human assets: trading, knowledge and individuals capabilities. Intellectual properties: patent, copy right and trading secrets.

Structural assets: contains a set of management processes.information technology, computer network and financial systems.[2].

4-Organization Intellectual capital Management

Intellectual capital management movement began from Japan by Hiroki Itarni. Hiroki studied the effect of intangible assets on the Japanese firms management.Then, the perspectives of famous economists such as Penrose, Ernerflet, Ausubel on organization valuing based on employees knowledge and capabilities were presented.

In recent years the direction of the economy implies the in human resources, research and

development and information technology.In fact the source of creating the economy value is producing in tangible assets and managing them which are called intellectual capital.

Intellectual capital management helps the organizations to identify their capabilities, maintain and reconstruct them over time.

Several models were presented for intellectual capital management. One of these models is intellectual capital model of Kim,D.Kumer. This model includes six stages:

1. Management Responsibility: It means the intellectual capital manager should plan on the basis of the needs estimating of customers.
2. Resource management: of organization.This is the science of allocating resources among various project or business units, maximizing the utilization of available personnel resources to achieve business gob.
3- IC Indicator Development: To determine these indicators two principles are taken into account: first indicators should be measurable, practical and objective and second the intellectual capital indicators should be taken into account in the research and development process.
4- Measurement and monitoring: After specifying the indicators, intellectual capital team of organization and research and development team monitor the indicators measurement. Indicators measurement is done in internal and external environment and statistical methods like regression is used to analyze the data.
5- Communication: communication is the result of intellectual capital management which is published in the form of intellectual capital statement in the organization and is a common language among all members of the organization.
6- Continuous improvement: Intellectual capital management in this stage tries to make the intellectual capital and permanent throughout the organization.[7]

Therefore, intellectual capital management not only defines and measures the assets and knowledge, but also leads the control and continuous improvement directing of wisdom. In other word, intellectual capital management is the discovering development and improvement process of value in organization.

Result

In business a lot of organizations have concluded that correct measurement and management of intellectual capital can guarantee the survival of organization in competition and is an important factor for winning the game. Intellectual capital of an organization contains there components of human capital, structural capital and relational capital the correct managing of these capitals not only causes the effective internal dominance but also strengthen the external relationship of organization with customers creditors and benefic ivies.Thus, due to the intellectual capital importance, organizations should try to specify and measure these capitals and then manage them in the best way.

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