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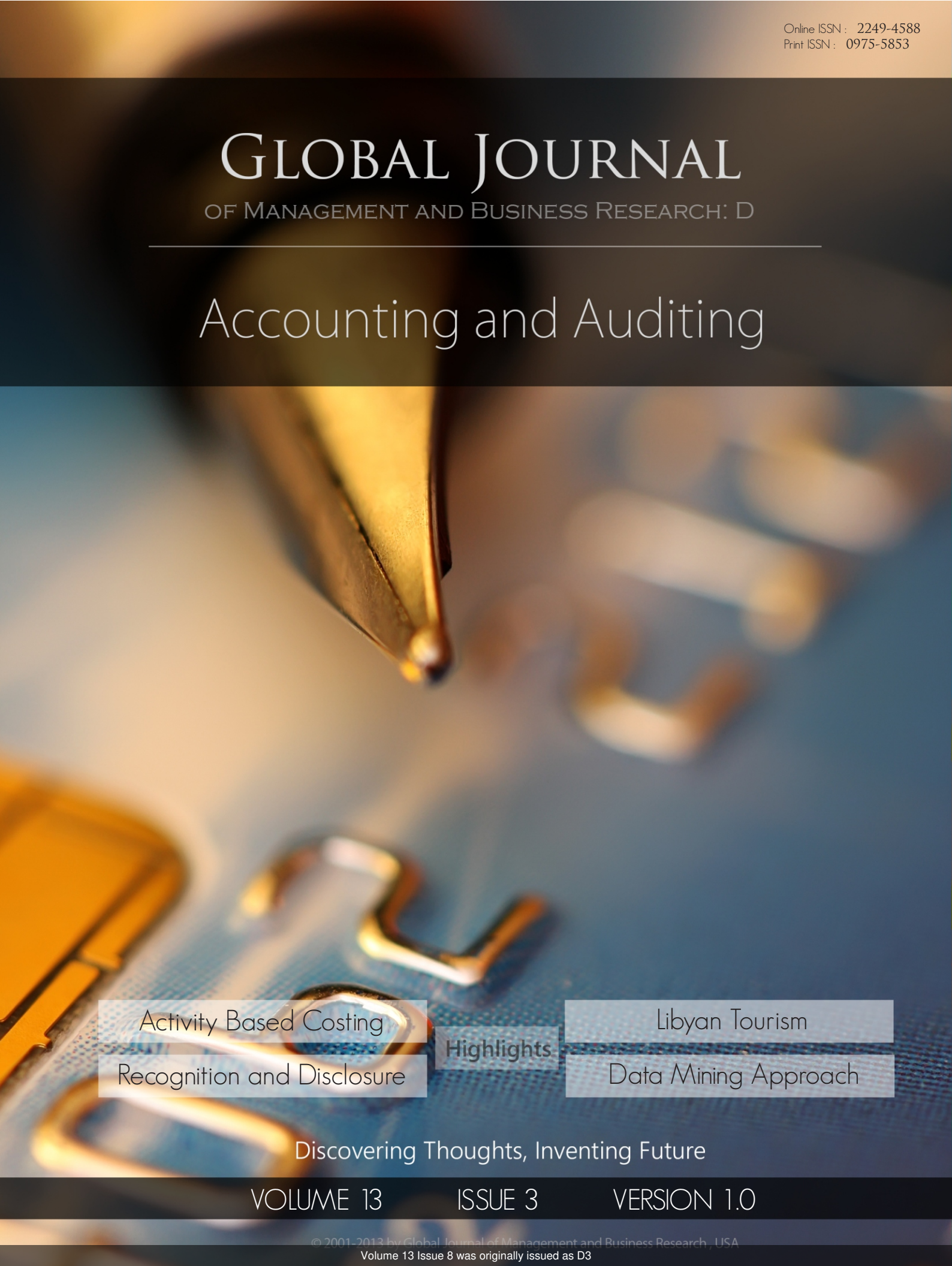
# Global Journal

## of Management and Business Research: D

# Accounting and Auditing



Activity Based Costing

Recognition and Disclosure

Highlights

Libyan Tourism

Data Mining Approach

Discovering Thoughts, Inventing Future

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## Accounting and Auditing

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# Human Resource Accounting: Recognition and Disclosure of Accounting Methods & Techniques

By Md. Amirul Islam, Md. Kamruzzaman & Md. Redwanuzzaman
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*Abstract -* HRA is the process of identifying, measuring data about human resources and communicating this information to interested parties the major objects of the study is to highlight the major characteristics of HRA along with the practical benefits and difficulties in implementations. The study forms mainly the extensive review of related literature based on highly work. The major benefits of such accounting are that it develops effective managerial decision making, quality of management, prevents misuse of human resources, increases human asset productivity, improves morale, job satisfaction and creativity, etc. The constraints involved are that uncertainty of human resources creates uncertainty in valuation of human resources. Nature of amortization is another difficulty, valuation of human resources, their accounting treatments is also difficult as there is no specific IAS/IFRS for such treatment.

*Keywords :* *human resources, management, accounting treatments, human resources capital.*

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# Human Resource Accounting: Recognition and Disclosure of Accounting Methods & Techniques

Md. Amirul Islam [α], Md. Kamruzzaman [σ] & Md. Redwanuzzaman [ρ]

*Abstract -* HRA is the process of identifying, measuring data about human resources and communicating this information to interested parties the major objects of the study is to highlight the major characteristics of HRA along with the practical benefits and difficulties in implementations. The study forms mainly the extensive review of related literature based on highly work. The major benefits of such accounting are that it develops effective managerial decision making, quality of management, prevents misuse of human resources, increases human asset productivity, improves morale, job satisfaction and creativity, etc. The constraints involved are that uncertainty of human resources creates uncertainty in valuation of human resources. Nature of amortization is another difficulty, valuation of human resources, their accounting treatments is also difficult as there is no specific IAS/IFRS for such treatment.

*Keywords : human resources, management, accounting treatments, human resources capital.*

## I. Introduction

Human Resource Accounting (HRA) is a new branch of accounting. It follows the traditional concept that all expenditure on human capital formation is taken as a charge against the revenue of the period as it does not create any physical asset. Modern view is that cost incurred on any asset as human resources need to be capitalized as it provides benefits measureable in monetary terms. Measurement of cost and value of the people to organizations is highly important, costs incurred in recruitment, selection, hiring, training and development of employees along with there economic values are very much relevant for Human Resource Accounting. American Accounting society on HRA defines HRA as follows:[1]

i. It is the process of identifying, measuring data about human resources and communicating this information to interested parties.
ii. Stephen Knauf states that HRA is the measurement and quantification of human organizational inputs like recruiting, training, experience and communi-cations.
iii. It is the art of valuing, recording and presenting the work of all human resources in accounts of an organization.
iv. It is an information system towards the changes in human resources of an organization.

## II. Objectives of Hra

The major objectives of HRA are as follows:

a) Identification of human resource value.
b) Measurement of the cost and value of people to organizations.
c) Investigation of the cognitive and behavioral impact of such information.

## III. Objectives of the Study

a) To review the available models of HRA and focus their appropriateness.
b) To highlight the major characteristics of HRA along with the practical difficulties in implementations.
c) To understand the needs and significance of HRA in the context of business performance measurement.
d) To provide suggestions for developing such accounting practices in our business enterprises.

## IV. Rationale of the Study

Management of human resources in any organizations is very much important from accounting point of view. Valuation of human resources, recording the valuation in accounts and fair disclosure of such information in financial statements are the demand of the stakeholders in the context of enhancing managerial performance and employees' productivity. Investment in developing human resources is not revenue expenditure. Its impact on developing the capability of employees provides benefits for a long period. There is a genuine need for reliable and complete information that can be used in improving and evaluating human resource management. HRA is actually a part of social accounting in which accountants need to apply their specialized abilities to help find solutions to our social problems. We know that accounting is a science of measurement, analysis and communication. The designing of proper accounting system for providing information to the stakeholders is also a difficult task.

Capitalizing human resource costs is conceptually more valid than the expensing approach.

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The information concerning human assets is more relevant to a great variety of decisions made by external and internal users. Accounting for human asset constitutes an explicit recognition of the premise that people are valuable organizational resources and an integral part of a mix of resources. This study will be helpful for the different users of accounting information for their day to day decision making.[2]

## V. Review of Related Literature

Bo Hansson[3] wrote an article on "Is it time to disclose information about human capital investments?" Firms' investments in training their employees constitute a substantial part of the overall investments for an average firm. Despite difficulties in accessing company-based data on training, recent research has shown that these investments generate considerable gains for firms in terms of increased productivity and profitability. The absence of reliable, standardized information on training appears to hamper the ability of investors to stay informed about these investments. It is therefore argued from the current state of research that it might be time for mandatory disclosure of employee training in order to achieve a better allocation of resources in the capital market. Reliable information on company training might not only benefit investors but also lead to a labor market that functions better. Training investments comprise a considerable amount of the overall investments for an average firm. Research in labor economics has shown that firms invest in training whether the training is useful to other (competing) firms or not. From the labor economic literature, we also know that part of the returns to training investments is captured by the employees. Despite difficulties in linking training with company performance measures, several recent studies have shown that these investments produce significant future gains for firms. The current state of sporadic and unregulated reporting of training investments makes it almost impossible for investors to stay informed about these investments. This deficiency is illustrated by the study of Bassi et al. (2004) in which training investments predict future stock returns. The mispricing of stocks reported in this study suggests that, because of lack of standards, investors are not able to penetrate information about training investments. This result further suggests that capital needed for training investments with above average returns is incorrectly allocated by the market. The allocation problem might not only be confined to capital markets; but maybe more importantly, the lack of information about training might also distort the allocation of human capital in the labor market. Individuals interested in continuously upgrading their human capital stock are not assisted to make an informed employment decision by the lack of information about these investments.

The lack of reliable standardized information on training investments calls for accounting regulations supervising the disclosure of these investments. Reliable information on training investments can be achieved within the boundaries of the traditional accounting system, but does not necessary need to be a part of assets on the balance sheet. The main point is that reliable and standardized information on training needs to be provided to investors in order to facilitate their investment decisions. Basically, this could be achieved within boundaries of a firm's income statement. In conclusion, the question posed in this study is whether it is time to disclose accounting information on human capital investments. From the perspective of classifying training as an investment and achieving a more efficient allocation of resources, the answer is in the affirmative.

Ravindra Tiwari[4] authored an article on "Human Resource Accounting-A New Dimension". Human resource accounting (HRA) is an attempt to identify, quantify and report investment made in Human resources of an organization that are not presently accounted for under conventional accounting practice.

Businesses which require a considerable creativity or are science-based show a significant difference between market value and net book value. This difference is for intangible assets (including human skills). However the Human Resources are yet to get recognition in Balance Sheet. Businesses are not properly accounting for it in Books of Accounts .Auditor certifies in his report that balance sheet shows true position of business in spite of the fact that it is not showing the value of human resources . Researches in this field have been slow and researchers are not able to develop a model which is free from major limitations. Major limitation of existing models is that they are not able to identify two effects on Human Capital creation which is back bone of accounting. In this article researchers proposed a model for valuation and accounting of Human resources. This proposed model is not altogether new model but it is an extension of Lev and Schwartz Model (L&S) because at one point it uses Lev & Schwartz Valuation principles, it also removes major weakness of L&S model such as it is able to account for Human Resource in balance-sheet. This model also encourages employee to achieve high level of performance.

The central problem in HRA is recognition time and procedure of recognizing human resources. In this aspect proposed model provides some reasonable basis for recognition time and methodology to recognize it in books of account. Apart from that there is performance evaluation part which boosts morale of employee to show extra performance than normal one.

This model also provides from Profit for unforeseen contingencies which protect company from unforeseen contingencies. This model does not discard Lev & Schwartz model but as a further step it provides entry for accounting for valuation of that model in books. In this model capital cost related to employees has been



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written over expected service life of employee which is one of the basic concepts of accounting. In this model whole of salary paid to employee has been charged in profit and loss A/C(Some part of it has been charged as depreciation/amortization of Human Asset, but this model is also having some limitations such as procedure for calculation can be cumbersome for each employee. While valuing human assets one should not lose sight of the fact that human beings are highly sensitive to external forces and human skills in an organization do not remain static. Skill formation, skill obsolescence or utilization may take a continuous process. Model proposed considers the fact that skills of employee are directly reflected in revenue of organization so why should not be Human Resource capitalized on this basis? In this method subjective-ness has been tried to avoid to the extent possible as actual sales figures has been taken but whole subjective-ness cannot be removed for Human Resource Asset.

Syed Abdulla Al Mamun[5] had an article on "Human Resource Accounting Disclosure of Bangladeshi Companies and Its Association with Corporate Characteristics". This study reports the relationship between corporate characteristics and Human Resource Disclosure (HRAD) level in fifty five randomly selected companies of Bangladesh. The relationships were determined using a HRAD Index (HRADI) under a number of hypotheses. The results of the study show that companies averagely disclose 25% of the total HRAD items. In this study, HRAD has been found significantly related with the size of the company, category of the company (financial or non-financial) and profitability. However, HDAD had no influence on the age of companies.

Human Resource Accounting Information of an organization is very important factor to decision makers in the era of knowledge based economy. As a result, each organization takes serious attempt to disclose its HRA information to insiders and outsider decision makers. In fact, it is becoming an integral part of management report. This study initiates to reveal the relationship between corporate attributes and HRAD of listed companies in Bangladesh. Its results shows that company size significantly associated with HRAI, which leads the conclusion that larger companies with higher market value discloses more HRA information than smaller companies. The possible reason for the result could be that large companies in DSE are motivated to disclose more HRA information in their annual report to uphold their market value. In addition, the results also find the financial companies are disclosing HRA information than non financial companies and company's profitability positively influences companies to report the information in their annual report. It indicates highly regulated financial companies are disclosing more HRA information than non-financial companies. Hence, regulation structure in Bangladesh is enhancing the disclosure practice particularly in the area of HRA. In contrary, the study does not find any relationship between the age of the company and HRAD. It indicates that companies' listing length is not a matter for the company to disclose HRA information. Though the paper finds some association of corporate attributes with HRAD, the level of disclosure of the listed companies are not so high. The mean disclosure value 25% shows that listed companies in Bangladesh disclose only one fourth of the selected HRA disclosure items. So, further research can be done focusing on the reasons of reluctant attitude of listed companies in Bangladesh to disclose the HRA information. Moreover, the scope of the research may be extended by increasing the sample size and cross-industry examination.

Md. Habib-Uz-Zaman Khan[6] wrote the article on "Human Capital Disclosure Practices of Top Bangladeshi Companies". The purpose of this paper is to examine the extent of human capital (HC) reporting in leading Bangladeshi firms using the HC reporting framework, thereby making a contribution to the body of knowledge in the area of HC reporting practice in a developing country context. Using the technique of content analysis, three years of annual reports of 32 leading manufacturing and service sector-companies listed on the Dhaka Stock Exchange (DSE), selected on the basis of the market capitalization, were examined to identify any HC reporting trends. The findings reveal that the HC reporting practices of leading Bangladeshi firms are not as low as projected in relation to the total list of items reported. The most commonly disclosed HC items are information on employee training, number of employees, career development and opportunities that firms provide, and employee recruitment policies.

Moreover, as a result of a degree of intervention on the part of some Bangladeshi regulators, the extent of reporting has increased during 2009/2010. The principal limitations of the study are that it is based on a small non-random sample of firms taken from a single country and drawing solely annual reporting information. This is the first paper that documents HC-related disclosures in the context of a transitional economy such as Bangladesh using multiyear-data. The study contributes to the HC literature by providing empirical evidence of the status of HC reporting in a developing country context.

Using the technique of content analysis, this study investigates the extent of HC reporting and its trend in three years of annual reports of 32 Bangladeshi leading manufacturing and service firms listed on the DSE based on the market capitalization. Overall the results show that sample firms did disclose HC items to at least a moderate level. More specifically, Bangladeshi firms disclose more information on such items as employee training, number of employees, career development, and opportunities that firms provide and



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employee recruitment policies, these items being reported by all of the sample, than other items. Whilst most firms reported on employee benefit in details, more than one half reported the educational backgrounds of employees, employee compensation plans, employee involvement in the community and the list of training programs took place and employees participation. The study reveals that over time the rate of HC disclosures is increasing, possibly driven by the initiatives from the regulators. The study also demonstrates that, among all sectors, the banking sector discloses more HC items while the power and electricity and textile sectors disclose the least of such information. Moreover, more than 30 per cent of firms reported that they have established their own training institutes to reinforce employee excellence. This is an admirable initiative for both employees and the community as a whole but the extent of disclosure of such actions, commonly only a few lines, provides scope for the provision of further information.

Overall, however, HC reporting in Bangladeshi firms can be considered insufficient since items such as employee incentives programmers, employee value, HC statistics (i.e. in terms of profitability per employee, sales per employee), employee skill and competence profiles, etc. were almost completely absent among this sample of firms. This might be due to the fact that the significance of the HC valuation and reporting concept is not yet fully understood by the Bangladeshi human resources managers, or a lack of stern encouragement on the part of regulatory bodies or minimal pressure from stakeholder groups. As a consequence there is significant room for improvement in both the quantity and the quality of disclosure of HC information.

M. Nazrul Islam[7], prepared an article on "A Survey of Human Resource Accounting". Though the theory of human resource accounting was developed much earlier, no universally accepted method of human resource valuation is hitherto developed. In India some public sector companies report the value in the Annual Report as supplementary information but not in the Balance Sheet. In Bangladesh no such reporting is made yet. The cost and value of people should be shown in the published financial statements. Research on human resource accounting is still in infancy. No universally accepted method of human resource valuation is hitherto developed. More research is, therefore, needed in this area for searching a method which would be universally acceptable. In spite of the limitations both in statute and method of valuation, some of the Indian companies have began to provide information of human resource accounting on the annual reports at the end as supplementary statements. Bangladesh in the light of the Indian experience can also start showing the cost and value of people on the published financial statements.

Muhammad Loqman[8] had a study on "Human Resource Accounting (HRA)". Human Resource Accounting (HRA) in recent years, has been receiving attention for two major reasons. Firstly, developments in modern organization theory have made it clear that there is a genuine need for reliable and complete information which can be used in improving and evaluating the management of human resources. Secondly, the traditional framework of accounting is in the process of being expanded to include a much broader set of measurements than was thought possible in the past. It is becoming increasingly recognized that survival and success of an organization in the present complex society depend largely upon the quality of the "human asset". Substantial differences exist in education, knowledge, ability and motivation among the individuals within the same organization and from organization to organization. Further the nature and extent of such relationships as cooperation, communication and conflict differ widely. As such, individual and group characteristics can strongly influence the efficiency and effectiveness of organizational performance. Evaluation of various human resource accounting methods and approaches is done through the following techniques;

1) Approaches Based on Historical Costs;
2) Economic and Current Value Approaches;
3) Replacement Costs;
4) Opportunity Costs;
5) Efficiency Ratios and
6) Expected Realizable Value.

Md. Salimuddin and et.al.[9] had an article on "Intellectual Capital and Corporate Performance: A Value Creation Efficiency Analysis". The study examined the association between intellectual capital and corporate performance of 15 manufacturing companies listed in Dhaka Stock Exchange, value creation indicator used is value added concept and intellectual capital is explained by market valuation, profitability and productivity. The study finds that there is no strong association between the studied variables except relation between a component of VAIC, CEE and the different measures of the firms' performance. Physical capital efficiency is the most significant variable related to profitability while human capital efficiency is of great importance in enhancing the profitability of the company.

Dilip Kumar Sen[10] in his doctoral thesis on "Anatomy of Human Resource Measurement and Accounting" finds that HRA aids the decision making process and the representation of a complete picture of financial position of an organization by quantifying the value of human resources and disclosing the same in external financial reports. He suggested that HRA should come under the fold of GAPP and the IASB should take care of it. The banking industry may use HRA for both internal reporting to cater to human



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resource management decision making and external reporting to aid external users of financial statements. The banking companies should disclose HRA information in a narrative supplementary statement within the framework of conventional framework of external financial reporting.

Md. Akhtaruddin,[11] wrote the article on "Human Resource Accounting a Survey on Its Applicability in the Public Sector Enterprises of Bangladesh". Public sector enterprises in Bangladesh occupy a commanding position in the economy. But in spite of their major contribution in the economy in terms of value added and employment, their overall performance has remained unsatisfactory. The performance of an enterprise depends, to a great extent, on the qualified, trained and experienced human resources. But these key assets are neglected and are given less importance for their development. Development and maintenance of human resources require reliable information and it is HRA which would serve the purpose. The study made an opinion survey regarding the applicability of HRA in public enterprises. Majority of the respondents favored the introduction of HRA in our public enterprises.

Although human resources are vital to the success of enterprises, yet emphasis is given to the accounting for physical resources but not so for accounting for human resources. This view is gradually changing and the introduction of HRA is being contemplated in our enterprises. The researcher conducted an opinion survey to examine the views of the experts in the filled of accounting with regard to the applicability of HRA in the public sector enterprises. The results of opinion survey show that majority of the respondents are in favor of introducing the HRA in our business enterprises while a negligible percentage of the respondents opposed the introduction of HRA in our business enterprises. A greater number of the respondents also recognized the need for treatment of human resource as an asset and they accepted the definition of human asset for the purpose of accounting for employees. Majority of the respondents accepted the objectives of HRA and agreements for introducing HRA in our sector corporation. Even the prescribed model was accepted by the majority of the respondents. However the $x^2$ test of the variables reveals that in most of the cases cal. $x^2$ is more than the Tab. $x^2$ i.e. there is significant number of response in favor of the importance, introduction, objects and definition of HRA. This is more encouraging for the attempt to introduce HRA in our sector corporations.

Dilip Kumar Sen[12], another article on "Human Resource Accounting: Where Does it Stand Today?" No doubt, HRA has some practical problems on the road to its implementation. Hence, the criticisms that may be stated are: Human resources do not satisfy the criterion of "ownership" required of an asset in the conventional sense of the Steam. No organization has any legal right to the services of manpower in future. HRA measures lack quantifiability, objectivity and verifiability. It is really very hard to put a quantitative value to such attributes as morale, loyalty, proficiency, intelligence, skill etc. Since the period for which an employee will be with an organization is uncertain (except for the rare cases of contracted or bonded terms of employment), critics may logically point out that the rate of amortization would be subjective and because of this uncertainty such costs should not be recapitalized. Neither companies act or tax law docs have any provision for implementing HRA.

Tax laws do not recognize human resources as assets. Companies act is also silent on this issue. Assigning a human resource value may have a demoralizing effect on large segments of the working population. In the matter of both the base date valuation and the estimates of subsequent investments and depletion in human assets, elements of subjectivity cannot be ruled out. There is no generally accepted accounting principles based uniform HRA method available for adoption by different firms/companies. As a sequence, any attempt towards inter-firm comparison in this area might be erroneous.

Md. Akhtaruddin,[13] had an article on "Human Resource Accounting In Banking Industry". The term "human resource' refers to the personnel employed in an organization. In banking there are different categories of employees viz. executives', officers, supervisors, clerical staff etc. The management of human resource is of utmost importance to a bank as most of the bank employee expenses accounts for about 25 per cent of the bank total operational costs. Like a manufacturing industry, the personnel department of a bank deals with issues related to recruitment, selection, training and administration. But no attention is given to the valuation of human assets. Unlike financial and physical assets, the valuation of human resources cannot be measured, recorded and analyzed in monetary term and reported in the published statements. Whatever is spent on the acquisition, training and development, transfer, replacement of employee by a bank is generally treated as revenue expenses. No part of the cost of human resources is capitalized and shown on the bank's balance sheet as Asset. The concept of accounting for human resource is still a new one and at the experimental stage. There are some limitations in measuring the value of human resources. More research work is required in this area to overcome the shortcomings. There is no doubt that human asset is key factor to the successful operation in a service industry like banking. So the costs involved in banking personnel should be identified and measured and shown on the Balance sheet of a bank as an asset. To a developing country like Bangladesh, the introduction of the system in Banking is of special importance.

Aminul Islam[14], had a study entitled "Human asset Accounting a Myth or Reality?" In I973, the



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American Accounting Association "AAA) formed a Committee on Human Resource Accounting and made it responsible for identifying, examining and proposing alternative methods of human resource accounting. This project was undertaken in response to the increasing concern within the accounting community that a major asset ("human asset) within the organizational entity was being handled without proper recognition with respect to its accounting treatment and impact on financial planning and decisions. This negligence of human asset (human employees) apparently distorted the financial information presented in the income statement, balance sheet and the statement of changes in financial position.

While the concept of human resource accounting may have some theoretical value for financial statement presentation, its practical applications are extremely confined. Financial statement presentations, based on human resource accounting will probably be more misleading than helpful. However, the concept does have some very definite promise as a tool for evaluating employees for salary and promotion purposes. It is clear that human resources, by their very nature, cannot be termed assets and therefore, should not be capitalized and placed on the statement of financial position. If one would like to circumvent this limitation and actually devise a definition which could encompass human resources, their inclusion in financial statements would still be misleading because there is no practical method to attach a realistic monetary value. However, the most important task facing those who wish to advance work for human resource accounting, is to demonstrate the usefulness of human resource accounting systems.

## VI. Methods and Procedures Followed

The study is exploratory in nature based on extensive review of relevant studies done earlier and comparative pictures of the various aspects of HRA have been discussed to arrive at concluding remarks.

## VII. Findings and Observations

### a) *Benefits of HRA*

Labor is the father of wealth and it should be taken in to consideration in estimating wealth. Cost incurred on any human resources need to be capitalized as it gives benefits measurable in monetary terms. The major benefits of HRA are as follows:[15]

i. It develops effective managerial decision making.
ii. It enhances the quality of management.
iii. It prevents misuse of human resources.
iv. It helps the efficient allocation of resources.
v. It increases human asset productivity.
vi. It improves their morale, cooperation, job satisfaction and creativity.
vii. It develops human efficiency.
viii. It influences the individual behavior, attitude and thinking in desired direction.
ix. It helps in long term investment decisions.
x. It facilitates good performance measurement assessing strengths and shortcomings of an organization.
xi. The success of an organization depends on quality working force at al levels. It develops business success rapidly.
xii. It provides good basis of human asset control.
xiii. It helps the development of management principles.
xiv. It ensures good monitoring of effective uses of human resources.

### b) *Constraints of HRA*

i. There is no specific guideline for measuring the cost and value of human resources.
ii. Uncertainty of human resources creates uncertainty in its valuation in a realistic approach.
iii. Sometimes discouraging attitude of human resources may frustrate them leading to low productivity.
iv. While valuing the human assets, demand for rewards and compensation might be higher.
v. The nature of amortization to be followed is yet to be fixed up.
vi. Tax laws do not recognize human assets and in that sense it might be theoretical only.
vii. Several methods are available in valuing human resources but there is lack of their wide acceptance.
viii. There is need for developing suitable methods for its valuation.
ix. IAS/IFRS/BASs do not provide any guidelines for the treatment of HRA approach.[16]

### c) *HR Treatment in Financial Accounting Perspective*[17]

i. Identify the asset's cost and estimate the period of amortization.
ii. There is difference in opinion in calculating intangible assets, deferred charges in international accounting literature.

### d) *Managerial Accounting Perspective*

There are good uses of acquisition costs and learning costs, substitution costs, opportunity costs and replacement costs, economic value models, standard cost method, competitive bidding method, non monetary measures etc.

### e) *Measurement of HRA*

The approaches used for measuring HR are mainly cost approach and the economic value approach. The cost approach may be historical cost and replacement cost basis. The historical cost of human resources is the sacrifice that is made to acquire and develop the resource. Cost of recruiting, selection, hiring, placement and orientation etc. are included here. Salaries, time spent by the supervisors for induction and training are also included.



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The replacement cost is the cost of human resources to be spent for existing employees, are to be replaced. Costs of recruiting, selection, hiring, placement, orientation on the job training might be incurred to replace human assets. Other cost methods are standard cost method and competitive bidding method. In the standard cost method, standard costs related to recruitment, hiring, training and development are fixed up annually. The total costs show the worth of human resources.[18S]

*f) Human Resource Value Concepts*

Practically two models of human resource value are prescribed one by flamholtz and other by likert and Bowers.

*g) Flamhotz's Model*[19]

This model provides that a measure of individual value is created from the interaction of two variables like

i. The individual's expected conditional value
ii. The probability that the individuals maintain membership in the organization.

Conditional value is realized from the person's services. It comprises mainly three factors like productivity, transferability and promo ability. Person's skills, activation level are the major determinants, organization determinants are role of the individual and rewards, people expect from the firm.

*h) Group Value Concept*

There are three variables influencing the group value of human resources:

i. The causal variables are controllable factors like structure of the organization, management policies, decisions, business, and leadership strategies, skills and behavior etc. General business condition is taken as uncontrollable and excluded from this orbit.
ii. The intervening variables are the internal state of health and performance capabilities of the organization, loyalties, attitudes, motivations performance goals, perceptions of all members etc are significant.
iii. The end result variables are the dependent variables reflecting the results achieved by the organization. There are productivity, costs, scrap loss, growth share of the market and earnings.

*i) Steps in Accounting for Human Resources*

The first step is to determine what HR costs are to be capitalized. This is essentially matter of classification HR costs into asset and expense components. Cost should be treated as assets if the expected benefits from them relate to future time periods. It has future service potential.

The second step is to amortize the cost incurred by a organization on its employees for recruiting, hiring, orienting, familiarizing, training and developing them. it involves measurement of that portion of the human assets service carrier, which is consumed during a particular accounting period. The main purpose behind amortization of human assets cost is to match the consumption of a human assets services with the utility derived.

The third step is to appreciate the value of organization employees every year at a particular percentage rate. This is needed because human resources appreciate in value because of their experience over years. The more an employee ages, the more he/she gains experience and value.

The fourth step is to adjust human assets accounts. When a material change in an organization employees expected working life occurs (because of any of the factors, namely, bad heath, early retirement plan, technological obsolescence), the employee assets needs to be adjusted. This amortization of human assets is analogous to a write-off of physical assets. In certain cases, adjustment of human assets accounts becomes necessary.

*j) Recording of Costs Related to Human Resources*

It has already been pointed out earlier that (1) social cost (2) acquisition cost including costs of recruitment, hiring, selection and placement of employees,(3) orientation and on-the-job training costs, including salaries paid to the employees during their probationary period, (4) formal training development costs of employees, (5) separation costs of employees, (6) costs incurred for gravid female employees, (7) rewards for extra –ordinary performances and academic attainments and (8) extra –ordinary health costs needed to be "assetized" since the benefits from them are expected to be derived for more than one year.

To fulfill one vital accounting principle – "matching of costs and revenues" one is required to "assetize" the eight categories of costs mentioned above. On the other hand, all the elements of "maintenance expenses" need to be treated as revenue expenses and charged to revenue accounts of the periods concerned.

## VIII. Accounting Treatment of Human Resources Accounting

The accounting treatment of human resources under various methods can be done in three parts-

*a) Real Capital Cost Part*

i. All capital cost associated with the human resources, such as – training cost, should be capitalized by

| | |
|---|---|
| Human resources capital (HRC) | Dr. |
| Bank | Cr. |

ii. And the cost should be written off during the working life of the employee, as-



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| | |
|---|---|
| Income statement | Dr. |
| Human resources capital (HRC) | Cr. |

*b) Present Value of Future Salary/ Wage Payment*

i. At the time of capitalizing value of human resource according to Lev & Schwartz valuation (weather at the year end or at the during year), whenever we hire human asset or company want to begin accounting for human asset –

| | |
|---|---|
| Human resources capital (HRC) | Dr. |
| Human resources reserve | Cr. |

ii. At the time of Salary Payment-

| | |
|---|---|
| Salary | Dr. |
| Cash | Cr. |

iii. At the year end we should calculate HRC value according to Lev & Schwartz model. Now difference of HRC in books and HRC now calculated shall be debited in the form of HRR and balance amount should be debited in income statement to close salary-

| | |
|---|---|
| Human resources reserve | Dr. |
| Income Statement | Dr. |
| Salary | Cr. |

iv. If difference is more than salary then balance should be credited to P&L A/C. Now amount debited in HRR should be charged in form of depreciation/amortization from income statement-

| | |
|---|---|
| Income Statement | Dr. |
| Human resources capital | Cr. |

*c) Suggested use of Fund for HRC*

i. Fund for HRC should be used only for some specific purpose such as- training of employees, writing off of abnormal losses caused due to leaving/death of employee, welfare of employees so that they may be more satisfied etc entry for transferring will be-

| | |
|---|---|
| Income Statement | Dr. |
| Fund for HRC | Cr. |

ii. Entry for capitalization of human resource with the same amount will be-

| | |
|---|---|
| HRC | Dr. |
| Human Resource Adjustment | Cr. |

iii. In case of abnormal losses generate for many years after leaving/death of employee these losses can be written off from fund over these years. Entry will be-

| | |
|---|---|
| Fund for HRC | Dr. |
| Income Statement | Cr. |

iv. Reverse entry at the time of leaving/death of employee will be-

| | |
|---|---|
| Human Resource Adjustment | Dr. |
| HRC | Cr. |

Amount capitalized in previous year (in this part) should be basis for incentive for current year.

## IX. Conclusions

Human resources are the energies, skills and knowledge of people which are applied to the production of goods or rendering useful services. It is the method of identifying and measuring data about human resources and communicating the information to interested persons. While valuing human resources, emphasis can be given on acquisition costs, substitution costs, opportunity costs, replacement costs, economic value models standard cost method, non monetary measures etc. As per accounting standards disclosure of human resource accounting information follows historical cost approach to human asset valuation but this fails to show current cost. This is why economic value approach is more relevant. Still true cost of capital for discounting the net cash flows related to human assets is also difficult to find out. As a result replacement cost valuation method and non monetary behavioral approach might be suitable for hair valuation of human resources of an organization. Our Companies Act 1994 does not provide for valuation of human resources. As result disclosure of such information has become voluntary to our business management. There is need to prescribe the specific provisions for valuing human resources and disclosing the details of investment in human assets in the form of training and development expenses, salaries and other allowances etc through annual reports.

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# Current Trends of Application of Activity Based Costing (ABC): A Review

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*Abstract -* Activity-based costing (ABC) is a method for determining true costs. Though ABC is a relatively recent innovation in cost accounting, it is rapidly being adopted by companies across many industries, within government and other organizations like institutions, finance or service sectors. In the light of current practices, this paper emphasizes to understand the need and importance of ABC costing in the organizations. This is coupled with management methods, an extensive range of uses, empowering utilization of ABC information for a wide variety of company functions and operations such as process analysis, strategy support and time-based accounting, monitoring wastage and quality along with productivity management.

*Keywords :* *activity based costing, value added activity, cost drivers.*

*GJMBR-D Classification :* *JEL Code: D23*




*Strictly as per the compliance and regulations of:*




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# Current Trends of Application of Activity Based Costing (ABC): A Review

Nitin Kumar [α] & Dalgobind Mahto [σ]

*Abstract -* Activity-based costing (ABC) is a method for determining true costs. Though ABC is a relatively recent innovation in cost accounting, it is rapidly being adopted by companies across many industries, within government and other organizations like institutions, finance or service sectors. In the light of current practices, this paper emphasizes to understand the need and importance of ABC costing in the organizations. This is coupled with management methods, an extensive range of uses, empowering utilization of ABC information for a wide variety of company functions and operations such as process analysis, strategy support and time-based accounting, monitoring wastage and quality along with productivity management.

*Keywords : activity based costing, value added activity, cost drivers.*

## I. Introduction

In recent years, companies have reduced their dependency on traditional accounting systems by developing activity-based cost management systems. Traditional costing systems have a tendency to assign indirect costs based on something easy to identify (such as direct labor hours). This method of assigning costs can be very inaccurate because there is no actual relationship between the cost pool and the cost driver. This can make indirect costs allocation inaccurate. Initially, managers viewed the ABC approach as a more accurate way of calculating product costs. But ABC has emerged as a tremendously useful guide to management action that can translate directly into higher profits. The Activity Based Costing (ABC) is designed to assign costs to activities which enable more accurate cost information.

The interest of manufacturer's in the ABC system grown significantly under the rapid growth of some markets especially in the manufacturing area, the increasingly growing indirect costs under the use of automated systems and the need for more accurate cost information to better manage the business and gain competitive advantages. Activity-based costing is a process where costs are assigned due to the cause and effect relationship between costs and the activities that drive these costs. Moreover, the ABC approach is broadly applicable across the spectrum of company functions and not just in the factory.

ABC reveals the links between performing particular activities and the demands those activities make on the organization's resources, so it can give managers a clear picture of how products, brands, customers, facilities, regions, or distribution channels both generate revenues and consume resources. The profitability picture that emerges from the ABC analysis helps managers focus their attention and energy on improving activities.

Productivity is critical for the long-term competitiveness and profitability of organizations. It can be effectively raised if it is managed holistically and systematically. Productivity measurement is a prerequisite for improving productivity. As Peter Drucker, who is widely regarded as the pioneer of modern management theory, said: "Without productivity objectives, a business does not have direction. Without productivity measurement, a business does not have control."

Measurement plays a very important role in the management of productivity. It helps to determine if your organization is progressing well. It also provides information on how effectively and efficiently the organization manages its resources.

An integrated approach to productivity measurement:

- Provides a comprehensive picture of the organization's performance.
- Highlights the relationships among different ratios and units, and allows the organization to analyze the factors contributing to its productivity performance.
- Helps diagnose problem areas and suggest appropriate corrective actions.
- Enables the organization to monitor its performance over time and against the performance of other organizations.

### *a) Resources and Various Cost Drivers*

An activity is a specific task or action of work done. It can be a single action or an aggregation of several actions. For example: moving inventory from workstation 'A' to workstation 'B'. B is an activity that may require only one action. Production set-up is an activity that may include several actions.

i. *Activity Driver*

The best single quantitative measure of the frequency and intensity of the demand placed on an activity by cost objects or other activity. It is used to assign activity costs to cost objects or to other activities.

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ii. *Activity Work*

Performed by people, equipment, technologies or facilities. Activities are usually described by the 'action-verb-adjective-noun' grammar convention. Activities may occur in a linked sequence and activity-to-activity assignments may exist.

iii. *Cost Object*

Any product, service, customer, contract, project, process or other work unit for which a separate cost measurement is desired.

iv. *Resource*

A resource is an economic element needed or consumed in performing activities. For example: Salaries and supplies are resources needed or used in performing manufacturing activities.

v. *Resource Driver*

The best single quantitative measure of the frequency and intensity of the demand placed on a resource by other resources, activities, or cost objects. It is used to assign resource costs to activities, and cost objects, or to other resources.

vi. *Resources Economic*

Elements that are applied or used in the performance of activities or directly support cost object. They include people, materials, supplies, equipment, technologies and facilities.

*b) Explanations to Resources and Various Cost Drivers*

A cost driver is a factor that causes or relates to a change in the cost of an activity. Because cost drivers cause or relate to cost changes, measured or quantified amounts of cost drivers are excellent bases for assigning resource costs to activities and for assigning the cost of activities to cost objects. A cost driver is either a resource consumption cost driver or an activity consumption cost driver.

A resource consumption cost driver is a measure of the amount of resources consumed by an activity. It is the cost driver for assigning a resource cost consumed by or related to an activity to a particular activity or cost pool. Examples of resource consumption cost drivers are the number of items in a purchase or sales order, changes in product design, size of factory buildings, and machine hours.

An activity consumption cost driver measures the amount of an activity performed for a cost object. It is used to assign activity cost pool costs to cost objects. Examples of activity consumption cost drivers are the number of machine hours in the manufacturing of product X, or the number of batches used to manufacture Product Y.

Value-added activity: Value-added activities change the form, fit or function of a product or service. These are things for which the customer is willing to pay. Non-Value-added activity: Activities that do not add value to the process are called non-value added activities. These activities do not help create conformance to the customer's specifications, and are something for which the customer would be unwilling to pay for.

The difference of value added activities and non value added activities are tabulated in table 1.

*Table 1 :* Difference between Value Added activity and Non Value Added activity

| Point | Value Added Activity | Non Value Added Activity |
|---|---|---|
| 1 | Providing worth or merit to an activity as defined by the customer. | No merit or worth to an activity as defined by the customer. |
| 2 | Activities must be performed to meet customer's wants and needs. | The activity does not need to be done to generate output. |
| 3 | Actions are value added if the customer cares, if something is physically changing for the best and you do the step right the first time. | It does not add value to the service or product. |
| 4 | Value added activities essentially change the product or service and the customer is willing to pay for them. | In essence it is something the customer is not willing to pay for. |
| 5 | Providing worth or merit to an activity as defined by the customer. | No merit or worth to an activity as defined by the customer. |

## II. Aims and Objectives of Study

With ABC, an organization can soundly estimate the cost elements of entire products and services. That may help inform a company's decision to either. Identify and eliminate those products and services that are unprofitable and lower the prices of those that are overpriced. Or identify and eliminate production or service processes that are ineffective and allocate processing concepts that lead to the very same product at a better yield. In a business organization, the ABC methodology assigns an organization's resource costs through activities to the products and services provided to its customers. ABC is generally used as a tool for understanding product and customer cost and profitability based on the production or performing processes. As such, ABC has predominantly been used to support strategic decisions such as pricing, outsourcing, identification and measurement of process improvement initiatives.

Therefore, a study has been carried out to apply this technique in order to derive maximum advantage in a manufacturing setup. The basic intents are as follows:

- To study the ABC technique in comparision with traditional form of costing.



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- To remove the distortions caused by traditional costing systems in direct and indirect costing.
- That is because activity-based management takes the best attributes of absorption-based.
- To determine the cost variables.
- To devise the methodology for optimization of cost.

## III. Literature Review

The selection of the right cost calculation method is of critical importance when it comes to determining the real product profitability as well as clients and other calculation objects. Traditional cost calculation methods often provide false information. The literature offers many examples of big companies that have given up traditional methods and applied a new method: Activity-Based Costing (ABC). They discovered that many products that are manufactured generate losses and not profits. Managers, based on incorrect calculations, mistakenly believed in the profitability of each product.

ABC contends that this approach captures the economics of the production process more closely than traditional unit-based cost systems, thereby providing more "accurate" cost data as said by Cooper and Kaplan (1988) [1].

Cooper (1991) [2] further suggested that ABC approach measures the costs of objects by first assigning resource costs to the activities performed by the organization, and then using causal cost drivers to assign activity costs to products, services, or customers that benefit from or create demand for these activities.

Similarly, Carofi (1996) [3] explained that ABC advocates claim of activity-based costing systems providing detailed information on the value-added and non-value-added activities performed by the organization, the costs associated with these activities, and the drivers of activity costs. This information allows managers to reduce costs by designing products and processes that consume fewer activity resources, increasing the efficiency of existing activities, eliminating activities that do not add value to customers, and improving coordination with customers and suppliers. The increased information about activities and cost drivers is also expected to enhance quality improvement initiatives by identifying the activities caused by poor quality and the drivers of these problems.

Many non-value-added activities such as counting, checking, and moving increase the duration of a process or are driven by the amount of time a product takes in an activity. By identifying activities that cause non-value-added time, ABC can assist in justifying investments in cycle time reduction and provide the detailed information needed to minimize delays as said by Borthick (1995) [4].

Hutton et al. (1996) [5] examined the role of activity based costing (ABC) in a logistics management environment. Drawing upon literature from the areas of management accounting, logistics management, and production management, the authors argue that logistics concepts reveal that many cost reduction programs carried out in an ABC environment are inappropriate. The use of logistics techniques will reduce complexity; this has significant consequences for ABC systems and organisational structures.

Krumwiede (1998) [6] suggested that the critical success factors change at different stages of implementation for information innovations such as ABC. Using mostly contextual and organizational factors found to be associated with ABC success in prior studies, this study tests how these factors affect ten stages of the ABC implementation process. Based on a survey of U.S. manufacturing firms, different factors become important as higher stages of ABC implementation are reached. Evidence is also found that the direction and level of importance for many factors varies by stage. For instance, a high quality information system may lead to rejecting ABC before adoption or abandoning it after implementation has started, but it also appears to enable reaching the highest implementation stage. Studies that combine ABC firms from several implementation stages to test certain success factors may distort their significance levels or reject other factors that are only important for certain stages.

The essential conditions for activity based costing (ABC) and for costs proportional with output volume (CVO), such as variable material and component costs, to measure economic costs defined as incremental costs by Bromwich & Hong (1999) [7]. Without this property these costing systems may give incorrect signals in decision making, such as in pricing, in altering the product portfolio, in make or buy and outsourcing decisions and in cost management.

Marinus & Bouwman (2002) [8] investigated the improvement in financial performance that is associated with the use of Activity-Based Costing (ABC), and the conditions under which such improvement is achieved. Internal auditors furnish information regarding company financial performance, extent of ABC usage, and enabling conditions. Confirmatory factor analysis and structural equation modeling are used to investigate the relationship between ABC and financial performance.

Michael et al. (1998) [9] described conditions under which both conventional costing and linear activity-based costing can yield poor approximations to actual expenditures. The results for linear activity-based costing shows that linear activity-based costing may not of ABC usage and a comparison of the results of the two surveys. Adoption rates were found to be similar, with NZ companies showing slightly lower rates of implementation of ABC than UK companies William et al. (2003) [10]. However, once they had implemented the method, NZ companies demonstrated greater commitment to ABC across more areas of the firm than UK companies. Strong correlations were found in the



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different uses of ABC by industry sector, but there were contrasting perceptions on the success and importance of some ABC applications.

Innes et al. (2000) [11] reviewed the results of two UK surveys of activity-based costing (ABC) in the UK's largest companies. These provide an opportunity to assess the changes which have occurred in the ABC adoption status of companies over a recent five year period. For the ABC users, some comparative information is provided on the nature of the ABC systems in use, their designers, the uses to which they have been putting and the levels of success and importance which participants attribute to them.

According to Agliati (2002) [12] the basic feature of the costing systems in a multinational enterprise can be analyzed with respect to four aspects: the structure of the industrial product cost, the methodology adopted to trace costs into the cost pools, the allocation methods followed to post costs to the reporting subjects, and the methodologies devised to support comparisons between service and support costs.

Roztocki (2001) [13] examineed the use of the Integrated ABC-and-EVA Information System for the management of new technology projects. The advantages of integrating the Activity-Based Costing system with the Economic Value Added financial performance measure and the positive impacts of this integration on project costing. Further, Kerr & Larson (2002) [14] present that ISO 900 and Activity Based Costing (ABC) are two useful tools for logisticians. Both of these tools can support efforts to improve customer service and/or reduce total costs. They investigated whether these two techniques are implements together as complements, are kept separate, or are considered competitors for scarce resources (money, time and talent). They revealed that relatively few firms are using both ISO and ABC. They suggests that practicing logisticians view ISO and ABC as separate initiatives. While the quality systems group led the charge to ISO registration, Finance and accounting implemented the ABC model.

Bjornenak & Mitchell (2002) [15] analysed the activity based costing literature which has been accumulated in the UK and USA accounting journals over the fourteen year period since the first articles on ABC emerged. This evidence is used both longitudinally and cross sectionally to gain insights into how ABC started, how it has been communicated, how it has been researched, how it is constituted, how it has generated attention and how it has developed and changed. Roztocki & Weistroffer (2005) [16] propose a framework for evaluating information technology investments, integrating value chain analysis with activity-based costing and fuzzy logic. The proposed method should be particularly useful for businesses in emerging economies, where an uncertain economic environment is often combined with a lack of dependable, historical accounting data.

Anand (2004) [17] presented the theory and practice of cost management. The initial developments in activity-based costing, and issues in activity-based costing implementations such as factors influencing its success, degree of interest and adoption, and its relationship with firm value along with case studies are reviewed. The strategic cost management issues such as customer profitability analysis in a value-chain analytic and life cycle costing framework are reviewed. Out of the 53 firms, 26 respondent firms are using activity-based costing for product pricing and operational feedback in Corporate India. The examination of responses conditional on ABCM-adoption revealed that the firms which have adopted ABCM were significantly more successful in capturing accurate cost information for value chain analysis and supply chain analysis as compared to the firms which had not adopted ABC. To have detailed information on value-added and non-value added activities followed by the need to be competitive in the industry in terms of price, quality and performance is the major motivation for the introduction of the activity-based costing in Corporate India.

A lot of practitioners explain that ABC systems are expensive to implement, time consuming and hard to adjust. For instance, Kaplan & Anderson (2007) [18] described the ABC system of Hendee Enterprises, a Houston-based manufacturer of awnings. They explain that the ABC software took three days to calculate costs for the company's 150 activities, 10,000 orders and 45,000 line items. McChlery et al. (2007) [19] stated that financial pressures facing UK universities have increased the demand for good financial management information. The government wants higher education institutions to adopt standardized full economic costing. This article describes an activity-based management (ABM) model which has been successfully used to cost institutions' activities down to appropriate levels of focus, linking the activities to income streams and arriving at a form of value added. The model is extremely flexible allowing information to be collected for different levels of focus: faculty, department, programme, module/project or support unit.

Feridun & Al-Khadash (2006) [20] investigated the link between the practice of Activity Based Costing (ABC), Just-in-Time (JIT), and Total Quality Management (TQM) as strategic initiatives and the improvement in corporate financial performance of 56 industrial shareholding companies in Jordan. Analysis shows that 26.8% of the companies under consideration use at least one of the strategic initiatives. The awareness level of the importance of using the strategic initiatives is found to be significantly high among the financial managers, but such awareness is not reflected in the implementation of these initiatives. Furthermore, strong



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evidence emerges that the use of strategic initiatives leads to improvement in financial performance of the companies under consideration.

Askarany et al. (2007) [21] presented that for past two decades, it has been argued that traditional management accounting practices have failed to cope with the requirements of technological changes in manufacturing practices. It has been claimed that traditional management accounting techniques are unable to satisfy the users of such techniques in terms of providing them with timely and detailed information. In response to this issue and to overcome the shortcomings of traditional management accounting techniques, activity based-costing (ABC) was introduced in 1980s. The level of implementation of ABC is still lower than those of traditional management accounting techniques.

Askarany & Yazdifar (2007) [22] used the results of two survey studies to explore the most important contextual factors influencing the implementation of activity based-costing across firms. Using the results of above surveys, they examines the level of association between attributes of innovation and the diffusion of activity based-costing. The findings suggest that the relatively low implementation of ABC across firms implies that decision makers remain unconvinced that whether ABC's advantages over traditional accounting techniques are high enough to pursue them to implement ABC in practice. In other words, they suggest that one of the main influential factors significant to the implementation of ABC links to its attributes in terms of its relative advantage over traditional techniques; its complexity; its compatibility; the observability of its results and its trialibility.

Venieris & Cohen (2005) [23] claimed that ABC is most suitable for companies employing flexibility in manufacturing, as it is a vehicle for more accurately depicting cost causation when the level of overheads increases. Furthermore, the benefits of flexibility in production can only be visible when sophisticated cost accounting systems, such as ABC, are implemented. Manoj Anand (2004) [24] stated that difficult time has its own merits. This is as truer for an individual as much it is for an organization. During this time the entire organization gets an opportunity to display its resilience through its innovative skills and creative abilities which otherwise would decay in dark anonymity in the brightness of prosperity.

Anand et al. (2005) [25] have given a study of activity-based cost management practices being followed by the corporate India. The aim is to understand whether corporate India practices cost management in a value-chain analytic framework. A nationwide survey has been conducted to capture the issues in the design and applications of contemporary cost and performance management tools. The examination of responses conditional on ABC-adoption revealed that the firms who have adopted ABC were significantly more successful in capturing accurate cost information for value chain analysis and supply chain analysis vis-a-vis the firms who had not adopted ABC.

Kaplan and Anderson (2007) [26] described a Time-Driven Activity-Based Costing (TDABC) approach to overhead allocation. This is in integration with a Lean environment in order to help provide accurate product unit costs. Actually, the TDABC requires less accounting transactions than the common ABC allocation method and still turns out an accurate computation of product unit costs, which suggests that it can coincide more with the lean accounting approach to waste elimination. Askarany, et al. (2007) [27] present that even though academics, management accountants and ABC adopters comment on how advantageous the ABC is, its rate of implementation is still low compared to that of the traditional costing allocation method.

Dimitropoulos (2007) [28] described that the costing systems in recent years have shown a significant development and activity-based costing (ABC) specifically has been considered as a major contribution to cost management, particularly in service businesses. The sport sector is composed to a great extent of service functions, yet considerably less have been reported of the use of activity based costing to support cost management in sport organizations. Since the power of information becomes continuously crucial for the implementation of effective business administration, the traditional methods of cost measurement proved insufficient on this issue, leading to the invention of ABC.

According to Bruggeman and Everaert (2007) [29] TD-ABC captures the different characteristic of an activity by time equations in which the time consumed by an activity is a function of different characteristics. This equation assigns the time and the cost of the activity to the cost object based on characteristics of each object. The unit cost of used resources and time required to perform an activity are two parameters for this method. The time-driven approach consists of six steps:

a) Identifying resource groups and the activities for which they are used,
b) Defining the costs of each group,
c) Estimating the practical capacity of each group,
d) Calculating cost per time unit,
e) Determining the required time units for each activity,
f) Calculating cost per transaction.

Charles & Hansen (2008) [30] stated that, with regards to the current competitive environment and product diversity, there should be no doubt that accurate product-cost information is critical for decision makers in organisations. ABC is a more accurate product-costing system than traditional volume-based costing systems especially when organisations are facing higher product diversity.



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Baykasoglu & Kaplanoglu (2008) [31] present that many industries are trying to make better use of SCM by implementing a variety of different techniques such as just-in-time (JIT), total quality management (TQM), lean production (LP), computer generated enterprise resource planning schedule (ERP), Kaizen and activity-based costing (ABC). Among recently developed techniques (such as above), ABC can be considered as one the most talked about techniques for improving SCM and performance in organizations. As narrated by Qian and Ben-Arieh (2008) [32] the role of cost estimation for products and services has become more critical now a days. Before the modern business management times, accounting was being just used to record the costs of products and/or services. However, the important role of cost estimation and cost information appeared after the arrival of modern business management techniques. This is because traditional cost accounting systems were not able to satisfy the needs of modern business management.

Sharma and Gupta (2010) [33] represented that in the present scenario of cut-throat competition, both on price and quality, increasing consumer demands and product differentiation, the traditional costing system has become obsolete and even have led to strategic failures in many organizations when various costs especially the overheads, are incorrectly allocated to product lines. In the historical development of concepts and techniques of cost it accounts that have shifted the attention of management practitioners toward alternative methods of costs allocation. Exploresing the past, current, and future trends of cost accounting in Indian companies, they highlights the distinctive features of Activity-based costing *vis-ii-vis* conventional costing methods and the Activity-based costing implementation process. It shows that Activity-based costing is a definite improvement over the traditional methods on the premise that the costs are collected on the basis of activities rather than products and it can effectively contribute to the top managerial decision-making process. They examined the feasibility of hybrid methods of costing and its use by Indian companies. Finally, they establishes that in spite of superiority of Activity based costing over other costing methods, awareness about it and its implementation is still low in India as compared to the developed countries.

Lutilsky and Dragija (2012) [34] presented possibilities and constraints for implementation of the Activity Based Costing (ABC) method, as a full costing method, at European universities. They investigated the current practice and trends in developing the cost allocation method at universities in the European Union. They analyzed trends and current movements at universities in the EU countries and the major problems in setting the ABC method at a university. By using this information, they proposed guidelines for the development of a full costing system at the University of Zagreb that is based on the following parameters: categories of costs, main activities, cost objects and cost drivers. They show that despite public demands for efficient managing within universities, still, a very small percentage of universities have implemented full costing systems. The most important obstacles for that are: resistance to change, non-reliable data in current account systems, lack of management will and legal barriers. Furthermore, they explains that one of the challenges involved in implementing full costing systems seems to be the fact that universities are still income oriented than cost oriented. Nevertheless, positive trends in implementing a full costing method, respectively the ABC method, are obvious. They highlighted universities in Portugal and Liverpool as universities that have successfully implemented the ABC method as well as all drivers, barriers and benefits that came out from that implementation.

Vazakidis *et al.* (2010) [35] described that in the modern economic environment, the Public Sector aims at the continuous improvement of quality of the provided services. Thus, detailed information with regard to the cost of services is essential along with capable management to take advantage of this information. They studied that the basic beginnings, the processes of activity-based costing and the costing method can be applied in the Public Sector, where the need for precise cost estimating information increases continuously. In results they referred to the structure of a Greek Prefecture, with all the organized divisions and departments. At first, the new method of cost accounting is analyzed. Thereafter, the advantages of this method were pointed and then, follow the application in a specific Department of the prefecture where the results were delivered to the Administration of department under review, for the decision making.

Boris and Petr (2011) [36] presented a basic overview of the application of Activity-Based Costing in an urban mass transport company which operates land public transport via buses and trolleys within the city. The case study was conducted using the Activity-Based Methodology in order to calculate the true cost of individual operations and to measure the profitability of particular transport lines. The case study analysis showed the possible effects of the application of the Activity-Based Costing for an urban mass transport company as well as the limitations of using the ABC methodology in the service industry. Their emphasis is with regards to the application of the ABC methodology, the primary limitation of the accuracy of the conclusions is the quality of the non-financial information which had to be gathered throughout the implementation process. A basic limitation of the accurate data acquisition is the nature of the fare system of the transport company which does not allow the identification of the route that is

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taken by an individual passenger. The study illustrates the technique of ABC in urban mass transport and provides a real company example of information outputs of the ABC system. The users indicated that, the ABC model is very useful for profitability reporting and profit management. Also, the paper shows specific application of the Activity-Based Methodology in conditions of urban mass transport companies with regional specifics.

Shafiee *et al.* (2012) [37] stated that in today's competitive environment, profitability analysis is not just about looking at the profit and loss statement. It is more about knowing which of your customers are making you money and which are losing you money. This paper considers how activity-based costing approach may complement a customer relationship management effort. The model presented in this paper combines the principles of activity-based costing with performance measurement. Applying this model helps managers understand the true costs of providing products and services, and the factors that drive these costs, while addressing other concerns such as customer satisfaction. This approach has the potential to integrate all business processes around the requirements of significant profitable customers, a fact that most of the previous researches fail to acknowledge.

Jinga *et al.* (2010) [38] shows that within Romanian companies' contemporary practices, tools and techniques are still widely adopted than recently developed ones. Romanian practitioners seem to be satisfied with the existing cost systems; the adoption rates of ABC are low and vary between 6% and 12%; while the majority heard about the method but never considered implementing it. Resistance and lack of interest and support from the management, high implementation costs and complicated work processes were considered to be the main challenges identified within companies coming from industries like manufacturing, services or trade.

Cannavacciuolo (2012) [39] presented a model based on activity based costing and analytic hierarchy process to assess the impact of individual competencies on value creation and its application to a case study of a small manufacturing firm. The model is designed to support managers to deal with the following concrete situation: suppose that a company has decided to acquire a new type of equipment/technology to improve a process and deliver a superior performance to its customers, and suppose that this change requires in turn the acquisition of one or more individual competencies. The model will support managers to answer to these questions: what is the cost of acquiring the new competence compared with the value generated by the improved process? Is it preferable to develop the competence internally or to acquire it on the market? In general, we argue that the proposed method can support managers to lay out a systematic description of the problematic link between individual competencies, organizational capabilities and critical market performances. Through the development and application of an analytical tool, this work intends to contribute to bridge the literature on the evaluation of individual competencies with the strategic interpretation of production competencies as organizational distinctive assets for value creation and as sources of sustained competitive advantage.

Dejnega (2011) [40] presented a literature review of the method Time Driven Activity Based Costing, like an instrument to better assignment of costs to activities and their comparison with antecedent method Activity Based Costing. Paper shows the implementation of this method in the condition of manufacturing corporations, distribution centres, agriculture, but also in the field of services, especially in the hospitality. The article is trying to point out the benefits of this method for whole range of companies without difference to branch classification, determine base presumptions for implementation, but also disclose some drawbacks in the application of this new method in the practice with help of case studies, which have been published until this time. The aim of paper is to find out the base principles of method Time Driven Activity Based Costing in its right application.

Terungwa (2012) [41] looked at the practicability of implementing time-driven activity-based costing system (TD-ABC) in small service businesses in Benue State and analyzes profitability of its varying customers. This research is carried out to establish if the application of TD-ABC in small scale service oriented businesses in Makurdi metropolis of Benue State will enhance their performance in terms of profitability. Regarding the goal of this study, the research design is an application research by case study. The researcher randomly selected out of the identified small scale service businesses one Restaurant and studied it using questionnaires, interviews to get data for this work. The result showed that using TD-ABC system, in comparison with their existing method provides more data on cost and profitability of customers served. The conclusion was that managers of small service businesses can make use of time equations in TD-ABC to calculate necessary time for activities engaged in delivering a unit of service. The recommendation is that small service businesses should implement TD-ABC to enhance their cost accumulation process and pricing of services, hence increase their profitability.

Ringelstein (2009) [42] stated that the aim of using an Excel Spreadsheet as a teaching instrument for an Activity-Based Costing assessment task is to motivate students and to provide them with the opportunity to learn computing skills as well as cost accounting techniques. The assessment task is designed to encapsulate the skills required to create a complex spreadsheet using various commands.



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Students work individually on the assessment task using a framework provided to assist them to construct the various layers within the activity-based cost model. The use of computer technology assists students to gain a personal understanding of the issues, and to develop a specific set of skills that are useful for management accountants. This task encourages students to learn and develop critical analytical skills. Furthermore, this paper describes and explains an approach to integrating VB macros into key stages of learning progression.

The ABC aims to analyze the effects of classical (volume-based) and activity based budgeting approaches on target costing practices via a hypothetical application. Also, it is assumed that preferring activity based budgeting rather than the classical one will increase the probability of success of target costing practices. The underlying logical base of this assumption is that in target costing, the specific properties of any product and the required resources to produce it are determined before the production begins, but in classical costing not "Bengu (2010) [43]".

Monroy *et al.* (2012) [44] illustrated that Choosing an appropriate accounting system for manufacturing has always been a challenge for managers. In this article they attempted to compare three accounting systems designed since 1980 to address problems of traditional accounting system. In the first place they present a short overview on background and definition of three accounting systems: Activity based costing, Time-Driven Activity Based costing and Lean Accounting. Comparisons are made based on the three basic roles of information generated by accounting systems: financial reporting, decision making, and operational control and improvement. The analysis reveals how decisions are made over the value stream in the companies using Lean Accounting while decisions under the ABC Accounting system are taken at individual product level, and finally show how TD-ABC covers both product and process levels for decision making. In addition, they shows the importance of nonfinancial measures for operational control and improvement under the Lean Accounting and TD-ABC methods whereas ABC relies mostly on financial measures in this context.

Bruggeman *et al.* (2010) [45] stated that expenses of indirect resources are allocated to the different activities via resource drivers. Besides, activity drivers represent the consumption of activities by the different cost object. According to Bogdanoiu (2009) [46] it can be said that ABC models the causal relationships between products and the resources used in their production and traces the cost of products to the activities through the use of appropriate cost drivers.

Wegmann (2009) [47] analysed the management accounting applications which try to improve the Activity-based Costing method. In the first part, he described them using the Strategic Management Accounting stream. Then, present the main features of these applications. In the second part, examined in details two of these features: The widening of the analysis perimeter and the relevant level of details to analyse the costs. Then, analysed several proposals: Customer Profitability Analysis (CPA), Interorganizational Cost Management (IOCM), Resource Consumption Accounting (RCA) and Time-driven ABC (TDABC). Finally, described an experience observed in the IT supply European division of an international group.

Popesko (2010) [48] presented the detailed consequences of putting in place an Activity-Based Costing system and its structure within the manufacturing industry. He has conducted a number of ABC system applications in manufacturing industries in order to gather the data and information necessary to define application and allocation principles. He determines the methodology of building an ABC system, looking at the essential steps necessary to construct a system in an organization. The other thing which he describes is cost allocation methodology, which is performed within separate stages of implementation. The main thing is the methodological steps within ABC implantation, which include a feasibility study and review, activity and cost object definition, assigning costs to activities, defining the appropriate cost drivers for individual activities, determining the output measures for individual activities, calculating the primary rates of individual activities, assigning the costs of support activities to primary activities, and calculating the costs of defined cost objects.

Popesko and Novak (2008) [49] suggested that Porter model could prove useful as a framework for an activity structure especially suited to manufacturing industries. Porter classified the full value chain as nine interrelated primary and secondary activities. These activities are then further delineated into primary activities that add value to the product from a customer point of view, and support or secondary activities, which ensure the efficient performance of the primary activities. Even though Porter's model has received criticism for its tight focus on operational activities and for neglecting innovation and service processes, its foundation proves very suitable for the construction of a company costing system. The activities identified might also be collated within aggregate processes, which could relate to specific cost objects.

In today's intense global competition, supply chain management (SCM) is as a vital tool for helping managers to improve productivity, profitability and the performance of their organisations. In doing so, SCM requires more accurate cost data regarding all activities and processes within the organisations. Activity-based

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costing (ABC) can significantly contribute to global supply chain management as it is suggested to fulfil the above requirements by providing more accurate, detailed and up-to-date information on all activities and processes in organisations. Contributing to the SCM and ABC literature, current study identifies different types of improvements which ABC can offer to SCM and the performance of the organisations, and it also examines the extent of association between business size as well as business industry. To improve SCM and organisation's performance by increasing the adoption of ABC in organisations, one of the main implications of the findings is that the adoption of ABC in smaller firms needs more attention compared with the larger firms regardless of their industries (manufacturing versus non-manufacturing firms). However, when the decision is made to implement ABC, non-manufacturing firms (rather than manufactur- ing firms) need more attention to proceed with a higher level of adoption of ABC as explained by Askarany *et al.* (2009) [50].

Wegmann (2010) [51] additionally analysed the strategic management accounting concept with an instrumental point of view. He tried to show in what extend the ABC developments could be included in a strategic approach of the management accounting and to test if the ABC is a relevant tool to drive the strategy. He explains that the ABC method seems to be a relevant strategic management accounting tool. Its features should permit a refined analysis of the organizational architecture so that the link between the operational and strategic management could be understand. Then he test this hypothesis using a "state of the art" approach.

More recently, Alcouffe *et al.* (2010) [52] have developed a typology of environmental cost drivers. Wegmann (2011) [53] portrays the Activity-based Costing and Management methods applied in France. They analyze the origins of the methods and their diffusion. Then they present the French situation. Finally, propose a case study that takes place in a French bank. They shows that the ABC and ABM methods are as developed in France as in the Anglo-Saxon countries and that the methods are strategically oriented.

Wegmann (2011) [54] detailed that in France, like in the USA, ABC was considered as a remedy for the crisis of management accounting. Now, the level of diffusion in France is as important as in Anglo-Saxon countries. Not surprisingly, the ABC method is more developed in western countries than in China. Chinese scholars began to do researches on ABC in the 1990s and at the beginnings of the 21st century, we can observe some ABC implementations in Chinese manufacturing enterprises and then in the service industries. He finds a similarity between the Chinese and French situations. In France, he observed some resistances to the Anglo-Saxon way of manage firms and at the beginnings, a tool like ABC has been strongly criticised.

Segovia1 and Khataie (2011) [55] presented that the ultimate reason for firms to adopt Activity-Based Costing and Management (ABC/M) is to improve their financial performance by managing their cost in such a manner that they control them and thus can reduce them. There is a significant difference between cost control and cost reduction. Companies can reduce their costs without necessarily controlling them. Cost control generally leads to intelligent cost reductions, e.g. lean companies. He states that in today's global and competitive business environment, cost control has become a decisive variable in the firm's financial success. The main objective is to shed some light as to whether, how, when, and where telecommunication companies can adopt ABC/M as a means for an effective cost management. It provides evidence as to whether or not ABC/M does have a positive effect on the firm's financial performance.

Gamal *et al.* (2012) [56] presented that in today's global market, a change in strategic and manufacturing practices to a more customer focused system such as the lean manufacturing/lean management system becomes crucial to help companies achieve a good competitive position. At the same time, the current traditional costing system is almost outdated with respect to lean manufacturing systems. The development of a lean accounting system may have resolved the problems faced by lean firms due to their traditional costing systems. However, the suggested lean accounting Value Stream Costing (VSC) tool proposes another dilemma with respect to the conditions required for its effective implementation especially when it comes to the necessity of eliminating shared resources. His study sets a framework that integrates Activity-Based Costing (ABC) in a lean environment in a condition where shared resources are still present. He has conducted a case study on one factory of a multinational manufacturing company operating in Egypt which has recently moved to lean manufacturing. The suggested ABC framework is used to compute the product unit cost for one of the factory products. Within the implementation of the suggested framework different approaches to product costing in lean firms has been compared. The findings of the study gives positive implications of the use of ABC, in the studied factory given a condition of shared resources, which helps the Company's studied factory to achieve a good competitive position.

However, a recent study by Stratton et al. (2009) [57] showed that the use of ABC as a costing tool is still relevant among its adopters. Even managers of non ABC firms desire the implementation of ABC and consider it an ideal costing tool. He mentioned that such desirability and consideration of ABC projects an



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expected increase in ABC adoption in the future too.According to Narong (2009) [58] Activity-Based Costing (ABC) is an approach that assigns costs in an objective way through the "cost and effect relationships" in which each activity cost is identified and assigned to each product or service only if such product or service utilizes the activity. The application of ABC has lead to computing more accurate and reliable product unit costs. This motivates managers to depend on their accurate costs not only to take better short term decisions but also better long term strategic ones that affect product design and product processing activities.

Askarany *et al.* (2012) [59] contributed to the analysis of the factors influencing the adoption of ABC by assessing the contribution of the characteristics of an innovation on adoption. Specifically, they applies innovation diffusion theory to examine the impact of five characteristics of an innovation, and organisation size, industry and location on the decision to adopt activity-based costing (ABC). The best model specification arises when organisations that have adopted ABC are compared with those that have rejected it. The results reveal that organisations are more likely to adopt ABC when they attach a high level of importance to the relative advantages offered by innovations, are large.

According to Swenson & Everaert (2012) [60] the target costing emphasizes cost reduction at the product design stage of the product development cycle, before most product costs are committed or "locked in." Their active learning simulation demonstrates how a management theory is relevant to a business improvement initiative (target costing). As a part of the target costing simulation, student participants work in teams to address a business issue that cuts across functional boundaries. In addition to the accounting function, a target costing initiative requires participation from sales, marketing, and design engineering. Therefore, the simulation begins with the students learning how to build and develop an activity-based product cost for a model truck. In his study the some students are divided into teams and are instructed to reduce the truck's cost through a re-design exercise, subject to certain customer requirements and quality constraints. Half of the teams are assigned a specific cost reduction target, and the other half instructed to reduce costs "as much as possible." Students then strive to reduce the cost of the truck's design by eliminating unnecessary parts, by using less expensive parts, and by using less part variety. As the student teams evaluate potential new designs, they actually use detailed activity cost information from the product costing system to guide their design decisions.

## IV. Discussion

From the review of literatures it is evident that ABC can be used every type of organization; be it a industry, finance, institution or service sector. The salient findings from the survey, the following inferences as a point of discussion can be made:

- Activity Based Costing (ABC) provides more accurate cost data as compared to traditional based costing system. So provide detailed information on the value-added and non-value-added activities performed by the organization.
- Traditional costing system has led to strategic failures in many organizations when various costs especially the overheads, are incorrectly allocated to product lines.
- Costing method can be applied where the need for precise cost estimating information increases continuously.
- Activity-Based Costing approach may complement a customer relationship management effort. The principle of activity-based costing reflect the performance of the company, thus enable to do cost effective business with competitors. In other words, it works as a yardstick of benchmark business performance.
- Applying this model helps managers understand the true costs of providing products and services, and the factors that drive these costs, while addressing other concerns such as customer satisfaction.
- The implementation of ABC is not only in the condition of manufacturing corporations, distribution centres, agriculture, but also in the field of services, especially in the hospitality.
- By using TD-ABC system, in comparison existing method provides more data on cost and profitability of customers served. The managers of small service businesses can make use of time equations in TD-ABC to calculate necessary time for activities engaged in delivering a unit of service. The recommendation is that small service businesses should implement TD-ABC to enhance their cost accumulation process and pricing of services, hence increase their profitability.
- Preferring activity based budgeting rather than the classical (volume-based) one will increase the probability of success of target costing practices.
- Three accounting systems: Activity based costing, Time-Driven Activity Based costing and Lean Accounting. Comparisons are made based on the three basic roles of information generated by accounting systems: financial reporting, decision making, and operational control and improvement.
- Cost allocation methodology is performed within separate stages of implementation. The major part is to explaining the methodological steps within ABC implantation, which include a feasibility study and review, activity and cost object definition, assigning costs to activities, defining the appropriate cost drivers for individual activities, determining the

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output measures for individual activities, calculating the primary rates of individual activities, assigning the costs of support activities to primary activities, and calculating the costs of defined cost objects.

- An effectively implemented Activity-Based Costing system provides accurate product costing and proves a useful aid for managing business operations.
- Porter model delineated into primary activities that add value to the product from a customer point of view, and support or secondary activities, which ensure the efficient performance of the primary activities.
- Activity-based costing (ABC) can significantly contribute to global supply chain management (SCM) as it providing more accurate, detailed and up-to-date information on all activities and processes in organisations.
- To improve SCM and organisations' performance by increasing the adoption of ABC in organisations, one of the main implications of the findings is that the adoption of ABC in smaller firms needs more attention compared with the larger firms regardless of their industries (manufacturing versus non-manufacturing firms). However, when the decision is made to implement ABC, non-manufacturing firms (rather than manufacturing firms) need more attention to proceed with a higher level of adoption of ABC.
- The ultimate reason for firms to adopt Activity-Based Costing and Management (ABC/M) is to improve their financial performance by managing their cost in such a manner that they control them and thus can reduce them.

## V. Conclusion

This paper revealed that the model of activity based costing can be used in every type of organization. It has been successfully implemented and used by many large companies like industries, institutions, or public sector. Based on the literature survey we found that:

- The activity-based costing implementation revealed numerous organizational changes, which resulted from the process of implementation, such as closer connection between management accounting and other operational functions. ABC and any other costing system are not static; it can be established, therefore, like organizations change and business conditions, ABC needs to be updated and maintained. Finally, in transferring its clear picture, ABC has ability to make champions of individuals of specific goods or services.
- Activity-Based Management methods have a broad range of uses, permitting the empowering utilization of ABC information for a wide variety of company functions and operations such as process analysis, strategy support and time-based accounting, monitoring wastage, as well as quality and productivity management.
- ABC provides information for strategic decisions, such as product mix and sourcing decisions that is consistent with the long-run nature of these decisions.
- ABC allows product designers to understand the impact of different designs on cost and flexibility and modify their designs accordingly.
- ABC supports the continuous improvement process by allowing management to gain new insights into activity performance, by focusing attention on the sources of demand for activities and by permitting management to create a behavioral incentive to improve one or more aspects of manufacturing.
- ABC is a tool for managing complexity in manufacturing. ABC provides activity-based information to help managers understand and eliminate complexity. It is also a communication tool between production and marketing and product design that helps minimize product changes which create unnecessary complexity.
- The ABC designer can use the rules of ABC design to simplify the system without sacrificing the accuracy of product cost. A well designed ABC system will also have no more detail than that required by the manufacturing environment.

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# Data Mining Approach to Prediction of Going Concern using Classification and Regression Tree (CART)

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*Keywords :* *data mining, going concern prediction, classification and regression tree, naïve bayes bayesian network, financial ratios, iran.*

*GJMBR-D Classification :* *JEL Code: C53, C81*




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# Data Mining Approach to Prediction of Going Concern using Classification and Regression Tree (CART)

Mahdi Salehi [α] & Fezeh Zahedi Fard [σ]

*Abstract -* This paper has employed a data mining approach for Going Concern Prediction (GCP) for one year ahead and has applied Classification and Regression Tree (CART) and Naïve Bayes Bayesian Network (NBBN) based on feature selection method in Iranian firms listed in Tehran Stock Exchange (TSE). For this purpose, at the first step, using the Stepwise Discriminant Analysis (SDA) has opted the final variables from among of 42 variables and in the next stage, has applied 10-fold cross-validation to figure out the optimal model. McNemar test signifies that there is a significant difference between the two models in terms of prediction accuracy and CART model is able to predict going concern more accurately. The CART model reached 99.92 and 98.62 percent accuracy rates so as to training and holdout data.

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## I. Introduction

Going Concern Prediction (GCP) is an important element in investor's decision-making. Rapid advances in technology, vast environmental changes and increasing competition has affected the security of investment. On the other hand, based on the requirements of Statement on Auditing Standards (SAS) No.59 on every audit the auditor should evaluate whether substantial doubt exists about the firm's ability to continue as a going concern (AICPA, 1988). However, SAS 59 contained the relevant criticized guidelines because of deeply subjective, general, ambiguous (Koh & Killough 1988) and, consequently, assessment of GCP sometimes is a tough process and the complexity of GCP has led the development of several models by employing a multiple financial and non-financial variables that might be signifying going concern opinion for auditor (Martens et al, 2008). Early studies of GCP developed by applying statistical techniques such as multiple discriminant analysis and Logit, probit (McKee, 1976; Kida, 1980; Koh, 1987; Menon & Schwartz, 1987; Koh & Brown, 1991). In recent years, data mining has established, developed and began to appear and grow promptly in the financial area and constructed a new approach for the deep research. Data mining technique via utilizing a large number financial data can be extracting, valuable and unknown knowledge dynamically. Using data mining techniques several research have been conducted in GCP area and the findings indicate that these techniques are able to predict the going concern status of firms and accounting data are useful in GCP (Brabazon & Keenan, 2004; Koh & Kee Low, 2004; Martens et al, 2008; Mokhatab et al., 2011). Nowadays these methods because of the restrictive assumptions of statistical techniques (such as normality, linearity and independence of variables) are used less. This research has applied Classification and Regression Tree (CART) and Naïve Bayes Bayesian Network for GCP. Results from this study will help a manager to keep track of company's performance and to identify significant problems and take efficient measure to reduce the coincidence of failure. In addition, this model helps lenders and other stakeholders to have a clear and comprehensive picture of the firm's prospective status. In addition, auditor can use the survey results in the final stages of the audit engagement as a quality-control device or as a benchmark in auditor judgment. Particularly, the GCP model in this paper can be applied for auditors to assess potential clients and as a means to identify non-going concern firms that might require further consideration.

## II. Research Development

The data set is composed of 146 Iranian manufacturing companies including 73 matched companies in bankrupt firms and firms with going concern status that all of them were or still are listed in the Tehran Stock Exchange (TSE) from 2001-2011. As you can see in Table 1, the 42 proposed variables used in this study are shown. After data collection, this paper applied process of future selection by T-test and Stepwise Discriminant Analysis (SDA) at a significant level of 0.05 and selected final variables. The potential advantages of feature selection are facilitating data visualization and understandable data, reducing the measurement and storage requirements (Ashoori & Mohammadi, 2011). Another purpose of these tests is to determine the financial ratios that can distinguish between the two companies (going concern and non-going concern status). The result of SDA process is shown in Table 2. The ratios that are entered in the

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model are total liabilities to total assets ($x_9$), Retained earnings to total assets ($x_{31}$), Operational income to sales ($x_{36}$) and Net income to total assets ($x_{34}$). After extraction of financial ratios, a model was constructed that explained as a discriminant model in below:

$$Z = -0.374\ X9 + 0.293\ X31 + 0.359\ X36 + 0.384\ X34 \qquad (1)$$

*Table 1 :* Variables used in the research and comparison of means in two groups

| # | Definition of variables | Means of Group 1 | Means of Group 0 | Sig level | # | Definition of variables | Means of Group 1 | Means of Group 0 | Sig level |
|---|---|---|---|---|---|---|---|---|---|
| 1 | EBIT/TA | 0.18 | 0.05 | 0.00 | 2 | LTD/SE | 0.20 | 0.56 | 0.06 |
| 3 | RE/SC | 0.65 | 0.02 | 0.00 | 4 | MVE/TL | 1.40 | 0.66 | 0.00 |
| 5 | MVE/SE | 2.42 | 2.57 | 0.22 | 6 | MVE/TA | 0.77 | 0.48 | 0.00 |
| 7 | Ca/TA | 0.05 | 0.03 | 0.00 | 8 | Size(logTA) | 5.25 | 5.23 | 0.83 |
| 9 | TL/TA* | 0.67 | 0.80 | 0.00 | 10 | CL/SE | 2.27 | 4.76 | 0.00 |
| 11 | CL/TL | 0.86 | 0.85 | 0.94 | 12 | (Ca+STI)/CL | 0.11 | 0.05 | 0.00 |
| 13 | (R+Inv)/TA | 0.57 | 0.57 | 0.88 | 14 | R/S | 0.53 | 0.40 | 0.10 |
| 15 | R/Inv | 1.18 | 1.00 | 0.93 | 16 | SE/TL | 0.63 | 0.32 | 0.00 |
| 17 | SE/TA | 0.35 | 0.22 | 0.00 | 18 | CA/CL | 1.31 | 1.07 | 0.00 |
| 19 | QA/CL | 0.70 | 0.57 | 0.00 | 20 | QA/TA | 0.37 | 0.36 | 0.73 |
| 21 | FA/(SE+LTD) | 0.60 | 0.91 | 0.01 | 22 | FA/TA | 0.22 | 0.24 | 0.63 |
| 23 | CA/TA | 0.70 | 0.68 | 0.66 | 24 | Ca/CL | 0.09 | 0.04 | 0.00 |
| 25 | IE/GP | -0.02 | -1.21 | 0.48 | 26 | S/Ca | 35.30 | 44.80 | 0.11 |
| 27 | S/TA | 0.93 | 0.70 | 0.00 | 28 | WC/TA | 0.13 | 0.00 | 0.00 |
| 29 | PIC/SE | 0.53 | 0.86 | 0.00 | 30 | S/WC | 2.87 | 1.73 | 0.96 |
| 31 | RE/TA* | 0.08 | -0.03 | 0.00 | 32 | NI/SE | 0.42 | -0.03 | 0.00 |
| 33 | NI/S | 0.16 | -0.02 | 0.00 | 34 | NI/TA* | 0.13 | 0.00 | 0.00 |
| 35 | S/CA | 1.34 | 1.07 | 0.00 | 36 | OI/S* | 0.20 | 0.06 | 0.00 |
| 37 | OI/TA | 0.17 | 0.03 | 0.00 | 38 | EBIT/IE | -5.21 | -0.45 | 0.05 |
| 39 | EBIT/S | 0.52 | 0.10 | 0.00 | 40 | GP/S | 0.27 | 0.15 | 0.00 |
| 41 | S/SE | 3.32 | 4.68 | 0.05 | 42 | S/FA | 6.29 | 6.44 | 0.33 |

Group 1: going concern firms and Group 0: non-going concern firms
* : Final variables selected by SDA

CA: Current assets
Ca: Cash
CL: Current liabilities
PIC: Paid in capital
EBIT: Earnings before interest & taxes
FA: Fixed assets
GP: Gross profit
IE: Interest expenses
Inv: Inventory
LA : Liquid assets
LTD: Long term debt
MVE: Marked value of equity
NI: Net income
OI: Operational income
QA: Quick assets
R: Receivables
RE: Retained earnings
S: Sales
SC: Stock capital
SE: Shareholders' equity
STI: Short term investments
TA: Total assets
TL: Total liabilities
WC: Working capital

*Table 2 :* Selected variables in SDA Analysis

| Step | | Tolerance | F to Remove | Wilks' Lambda |
|---|---|---|---|---|
| 1 | Net income to total assets | 1.00 | 100.77 | |
| 2 | Net income to total assets | 0.94 | 56.24 | 0.75 |
| | Total liabilities to total assets | 0.94 | 9.07 | 0.55 |
| 3 | Net income to total assets | 0.51 | 8.62 | 0.52 |
| | Total liabilities to total assets | 0.91 | 11.10 | 0.53 |
| | Operational income to sales | 0.55 | 6.11 | 0.51 |
| 4 | Net income to total assets | 0.48 | 4.75 | 0.49 |
| | Total liabilities to total assets | 0.90 | 8.55 | 0.50 |
| | Operational income to sales | 0.54 | 4.57 | 0.49 |
| | Retained earnings to total assets | 0.77 | 4.37 | 0.49 |



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*a) The Method of Classification and Regression Tree (CART)*

CART, methodology was popularized in 80s by Breiman et al. (1984). In the area of GCP, the goal of the analysis via CART is to obtain a set of if-then rules with acceptable accuracy that determine what companies will have going concern or not in the future. Furthermore, reasons for selecting CART are that is nonparametric and can easily handle outliers. It is flexible and has an ability to adjust in time (Timofeev 2004). In order to obtain the best predictive accuracy, CART is built to minimize the misclassification cost, which takes both variance, and misclassification rates into consideration. It is a significant step to choose the splits on the features that are employed to predict membership in corresponding class of firms. CART computational detail includes itself in finding the best split rules in order to make an uncomplicated, informative and accurate tree. The CART regards all variables as independent in the calculations of split with the training data set. The $i$th samples is expressed as $(X_1^i, X_2^i, \ldots, X_j^i, \ldots, Y^i)$, where $X_j^i$ is the value of the $i$th sample firm on the $j$th feature and the label value of the sample is $Y^i$. Since CART is a binary recursive partitioning method that every leaf of the data splits to two sub-leaves, for classification problem the values of $Y^i$ are binary, e.g., -1 or 1. In the process of splitting, if a feature value $X_j^i \leq C'$ is met, CART follows the rule that a sample goes right, otherwise it goes left. Split at each node will occur only when the split can go to greatest improvement in accuracy of prediction. Specific types of node impurity measure that Breiman et al. (1984) proposed to apply Gini index as the criteria used in order to reduce the impurity in splitting for classification, since it can be estimated more rapidly and be readily extended to include symmetries costs can measure this. In the classification problem of GCP, the Gini index of impurity of a node can be signified as follows (Breiman et al., 1984):

$$I_{gini} = 1 - \sum_j p(c_j)^2$$

Where $p(c_j)$ indicates the relative frequency of the first class in the node. The Gini index reaches a value of zero when only one class is obtained at a node.It means that if all cases in a node belong to the same class, the Gini index will be zero (Li, Sun & Wu, 2010). CART applied backward pruning algorithms. Pruning will be necessary to build smaller tree models that perform better on new data and not just on the training data. CART uses pruning and selecting in each node in the tree when the tree is fit (Soni, 2010). As the classification or regression tree is constructed, it can be used for classification of new data. The output of this stage is an assigned class or response value to each of the new observations. By set of questions in the tree, each of the new observations will get to one of the terminal nodes of the tree. A new observation is assigned with the *dominating class/ response value* of terminal node, where this observation belongs to (Li, Sun & Wu, 2010).

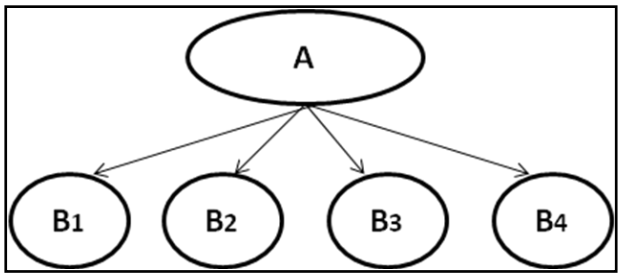
*b) The Method of Naïve Bayes Bayesian Network (NBBN)*

Bayes networks are a powerful tool for relationships between a set of variables and they are a suitable tool for dealing with uncertainty conditions in expert systems (Markov, 2007). The purpose of Bayes network is to establish a model that can classify companies correctly using financial ratios. A NBBN is based on Bayes' rule that is expressed as follows:

$$P(A/B) = \frac{P(B/A)\,P(A)}{P(B)} \qquad (2)$$

In problem solving of going concern, *P(A)* shows the percentage of companies with going concern status and *P(B)* indicates the share of each of the independent variables are used for GCP and P(A/B) is probability of going concern status during one year ahead. An example of a NBBN can be seen in Figure 1. In this figure A is dependent variable and $B_1$, $B_2$, $B_3$, and $B_4$ are independent variables (Sun & Shenoy, 2007).

*Figure 1 :* NBBN for predicting of going concern




## III. Experimental Results

The proposed CART and NBBN models are implemented by using MATLAB 7.6.They are results from the 10 testing data sets by using 10-fold cross validation (See Table 3).

*Table 3 :* Predictive accuracies(%) of CART and NBBN model

| Fold | CART | | NBBN | |
|---|---|---|---|---|
| | Training data | Hold-out data | Training data | Hold-out data |
| 1 | 100.00 | 100.00 | 100.00 | 80.00 |
| 2 | 100.00 | 100.00 | 100.00 | 80.00 |
| 3 | 100.00 | 100.00 | 100.00 | 66.67 |
| 4 | 93.33 | 99.23 | 100.00 | 66.67 |
| 5 | 100.00 | 100.00 | 100.00 | 80.00 |
| 6 | 92.86 | 100.00 | 100.00 | 85.71 |
| 7 | 100.00 | 100.00 | 100.00 | 64.29 |
| 8 | 100.00 | 100.00 | 100.00 | 78.57 |
| 9 | 100.00 | 100.00 | 100.00 | 82.21 |
| 10 | 100.00 | 100.00 | 100.00 | 71.43 |
| Min | 92.86 | 99.23 | 100.00 | 64.29 |
| Max | 100.00 | 100.00 | 100.00 | 85.71 |
| Median | 100.00 | 100.00 | 100.00 | 85.71 |
| Variance | 9.28 | 0.07 | 0.00 | 61.99 |
| Mean | 98.62 | 99.92 | 100.00 | 75.55 |



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CART and NBBN models could classify firms with 99.92 and 100 percent overall accuracy rate in the training data set. In holdout data set, CART and NBBN achieved 92.86 and 75.55 percent accuracy respectively (as shown in table 3). In addition, result of count rules and height of tree created by CART for each set of data show in Table 4.

*Table 4 :* Results extracted by CART

| Fold | Cont Rule | Height Tree |
|---|---|---|
| 1 | 3 | 2 |
| 2 | 3 | 2 |
| 3 | 3 | 2 |
| 4 | 2 | 1 |
| 5 | 3 | 2 |
| 6 | 2 | 1 |
| 7 | 3 | 2 |
| 8 | 3 | 2 |
| 9 | 3 | 2 |
| 10 | 3 | 2 |

As shown in Table 5, the result of McNemar test at 5% level indicates that there are significant differences between the two models in GCP.

*Table 5 :* Results of significance test between two models

| Methods | NBBN |
|---|---|
| CART | -3.536 (0.011) |

[a] *t* statistic , [b] *p* value

According to Table 6, Type I error is the probability that a company with non going concern status to be classified as a company with going concern status and Type II error is the probability that a company with going concern status to be classified as a company with non going concern status.

Costs related to these two types of errors are very different. Costs resulting from incorrectly classifying a company with non-going concern as a company with going concern status (Type I error) is much larger than the Type II error (incorrectly classifying a company with going concern as a company with non-going concern status). In holdout data type I and II error are also equal to 2.5 and 0 percent in CART model and 22.64 and 22.65 percent for obtained model by NBBN.

*Table 6 :* Type I and II error definition in this research

| Prediction | Real status | |
|---|---|---|
| | Non going concern status | Going concern status |
| Going concern status | 1-$P_{22}$ (Type I error) | $P_{11}$ |
| Non going concern status | $P_{22}$ | 1-$P_{11}$ (Type II error) |

## IV. Conclusion

The current study demonstrated feasibility of applying CART and NBBN to predict going concern status with data collected from Iran. This paper considered a set of features that include 42 variables proposed in prior literature dealing with financial status prediction models in Iran and applied SDA to identify potential variables for GCP model and finally four financial ratios were selected and constructed CART and NBBN GCP models based on selected features. Based on the conclusions, the empirical tests show that CART and NBBN models have achieved 98.62 and 75.55 percent accuracy rates for training and holdout data, respectively. Moreover, McNemar's test results indicate that there are significant differences between the two models in predicting of going concern. In summary, obtained results from this research from 146 companies of Iran signify that: CART model has appropriate ability for GCP of firms. Further, this research empirically tested future selection using statistical technique that data mining algorithms can be used for future research.

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# Libyan Tourism and Rescuing Strategy ((Importance of Image))

By Hani Abdullah Ali
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*Abstract -* The tourism industry is one of the most important industries in the world since it employs "more than 250 million people worldwide" (Coshall 2003, p.4).

This industry, which includes transport, lodging, and catering, is expected to generate $12,119 billion of revenues and 279,346,000 jobs in 2016 (Asia-Pacific Economic Cooperation, 2006).

The tourism industry worldwide is also expected to indirectly and directly contribute 10.9% to Gross Domestic Product (Asia-Pacific Economic Cooperation, 2006).

However, the tourism industry is an extremely sensitive and vulnerable activity which can be impacted by important events such as terrorism, political insecurity, and natural disasters (Coshall, 2003).

*GJMBR-D Classification :* *JEL Code: L83*

LIBYANTOURISMANDRESCUINGSTRATEGYIMPORTANCEOFIMAGE

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# Libyan Tourism and Rescuing Strategy ((Importance of Image))

Hani Abdullah Ali

## I. Introduction

The tourism industry is one of the most important industries in the world since it employs "more than 250 million people worldwide" (Coshall 2003, p.4).

This industry, which includes transport, lodging, and catering, is expected to generate $12,119 billion of revenues and 279,346,000 jobs in 2016 (Asia-Pacific Economic Cooperation, 2006).

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However, the tourism industry is an extremely sensitive and vulnerable activity which can be impacted by important events such as terrorism, political insecurity, and natural disasters (Coshall, 2003).

This is exactly what happened to Libya, it is a small country located in North Africa.

According to some, it is a "strategically irrelevant country" with no oil or natural resources, consequently, in order to boost the economy of Libya, the government and tourism authorities should examine the impact of the Libyan Revolution on the tourism industry in order to determine how the industry in Libya can recover from the revolution.

### *a) Purpose*

The purpose of this study is to develop recommendations on how the tourism industry in Libya can recover from the Libyan Revolution impact and get some inspirational methods of dealing with problems though in the market by the advertising ways to cross over the crisis.

### *b) Statement of Objectives*

Since the Libyan uprising, the Libyan economy has experienced a severe decline. The tourism industry recorded a decline of 40% in the number of visitors compared to the Previous year. Investors are anxious about the political situation and Social situation in the country as violence and strikes have been very common since the revolution (Harvey, 2011). The recovery of Libyan's economy depends heavily on how the government and tourism authorities will manage the tourism crisis.

The Libyan tourism stakeholders have to adopt an efficient strategy to recover from the revolution because the tourism industry is very sensitive and depends heavily on security and political stability. So, what is the impact of an event such as the Libyan Revolution on a country which functions essentially thanks to tourism? How have other countries managed tourism crises and to what extent did they succeed? Finally, what should the Tunisian government and tourism authorities do to recover from the Jasmine Revolution?

### *c) Justifications*

It is hoped that the recommendations for a successful tourism industry in Libya after the Libyan Revolution would be helpful for Libyan leaders to make the best decisions in order to attract potential travellers again.

Finally, analyzing the way other countries managed the previous tourism crises would support the paper's recommendations for successful tourism in Libya and result in significant outcomes.

Show the mine importance of concentrating on the advertisements methods as way to recover the image of this industry in future.

## II. Discussion

### *a) Introduction*

Libya "has for over 3000 years witnessed the passage of, Romans, Turks, Italians as colonizers. Libya, compared to the other Arabic and Muslim countries, has solid foundations (standards of health, education). The tourism industry in Libya offers many advantages to tourists such as: beautiful beaches, historical sites, and an excellent climate during the whole year, and comparing with Europeans.

After gaining independence in 1951, Libya was started getting more attention by the foreign investors for 30 years but after the uprising on 17 Feb. 2011 everything has changed.

It has been reported that over 50,000 civilians have been killed by Gadhafi's armed forces since the beginning of the turmoil in the country. The massacre in Libya has frightened the potential tourists of Libya, consequently, many of them have cancelled their trips (Sengupta, 2011).

However, Libya's political and economic weaknesses resulted in uprising and Political instability in the whole country. Consequently, the destination image of Libya, which is a vital component of the decision making of a potential tourist, was significantly damaged.

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In addition to the reports on newspapers and other mass media, have frightened potential tourists and significantly weakened the tourism industry.

Libya has recently suffered from high unemployment, particularly among university graduates where there has been a 20% unemployment rate In addition, the corruption grew significantly during the last 10 years.

But since tourism is a labor-intensive activity, this industry has played a significant role in reducing unemployment in Libya, in addition to the hotel industry's employees, tourism benefits the retailers of souvenirs, restaurants, producers of crafts, and newspapers and so on.

## III. The Impact of Tourism Crises on Other Countries

*a) The Case of Bali*

In 2002, the island of Bali suffered a severe downtown in tourist numbers and bookings due to a series of bombings.

A year later, the number of international visitors increased significantly (Putra & Hitchcock, 2006).

In early 2005, the number of tourist arrivals exceeded all the expectations of the government (Asia Pacific Economic Cooperation, 2006). Bali's authorities took steps to restore tourists' confidence by applying marketing strategies in order to improve the destination image (Putra & Hitchcock, 2006).

The situation of Bali in 2002 was extremely challenging because the bombings targeted tourists specifically, Just after the bombings, the Minister of Tourism established media centres and platforms in Bali and Jakarta in order to cope with the tourism crisis by providing accurate information to the press and the public. During an "Asia-Pacific Economic Cooperation Leaders' Meeting," Indonesia's President asked other countries' leaders to remove travel prohibitions and advisories about Indonesia's destination. He stated that these bans only resulted in social panic as well as a sign of encouragement for the terrorists (United Nations Economic and Social Council, 2005). In addition, the Minister of Tourism organized a trip to get in touch with the victims' families in order to share their pain. This visit was broadcasted to many households worldwide and had a positive effect on the image of the destination.

Furthermore, he held a prayer ceremony to share the sorrow of the victims' families. The quick capture of the terrorists helped the tourism recover quickly. The security norms implemented in the properties in Bali reassured tourists. In addition, the government tried to stimulate local touristic demand in order to show the whole media that everything had returned to normal (United Nations Economic and Social Council, 2005).

The locals were offered discounts and special offers with national airlines (Carlsen & Hughes, 2008).

Perhaps one of the most important achievements of the government was to organize conferences and meetings with different tour operators worldwide in order to demonstrate a return to stability (United Nations Economic and Social Council, 2005).

*b) Media is a Key Player if a Destination is Willing to Recover From a Tourism Crisis*

However, it has to be managed efficiently because it is the main intermediate between the industry and the potential travellers.

Although every destination has unique features, the ways destinations deal with tourism crises are similar (Asia Pacific Economic Cooperation, 2006).

Recent studies demonstrated that the rapidity of improvement of the image of the affected countries "not only depend on the time taken to repair the initial damage, but also on an effective marketing message announcing that the destination is open again" (Carlsen & Hughes, 2008, p. 142).

*c) The Case of SARS in Malaysia*

In 2003, the SARS virus resulted in a loss of activity in major Asian countries. Specifically, Hong Kong, China, and Singapore experienced a decline of 41%, 25%, and 43% of their revenues. Malaysia's tourism, an important hard currency earner, experienced a dramatic fall, too. The number of tourist arrivals declined by 30%. The average hotel occupancy dropped to 50% compared to last year.

The Malaysian government implemented a development strategy composed of 13 measures which assisted economic sectors such as the tourism industry. In addition, $1.9 billion was allocated to manage the tourism crisis in Malaysia.

Promotion targeted the markets which were not affected by SARS such as the Middle East market.

As a result, a tourism campaign was organized to attract potential tourists from Qatar, Kuwait and other Middle Eastern countries. After one year, the industry experienced a full recovery in Asia in terms of arrivals and revenues (153 million arrivals in 2004).

This case study shows that cooperation between governments, agencies, and organizations has played a significant role to reinvigorate the tourism industry (Asia Pacific Economic Cooperation, 2006).

In order to restore tourists' confidence in the destination, a three-month project called the Project Phoenix was created. The Pacific Asia Travel Association (PATA) undertook a proactive public relations campaign in order to deliver positive messages and improve the image of the destination through TV, radio, and online media. This media campaign exceeded past expectations and improved the destination image in only a few months.



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In addition, PATA worked closely with international offices in America and Europe. It also printed ads in well-known magazines such as Fortune Magazine (Europe and Asia) and Time Magazine (The United States).

In order to reduce the sense of panic among potential tourists, the Phoenix Project launched a "Welcome Back" campaign on CNN.

The commercial was estimated to have been broadcasted to 130 million households in different continents.

Other campaigns were launched in "BBC World" and "the National Geographic Channel". In addition, a new website of PATA was created. This website aimed to provide tourists with reliable information about the Asia-Pacific destination.

The website also gave travel offers to the members of PATA, tried to correct the misconceptions of potential travellers about the destination, and provided visitors with information concerning weather and maps (United Nations Economic and Social Council, 2005).

## IV. Conclusion

Through the previous case studies which are discussed, we clearly can recognize the high effect of the rescuing strategies which were established based on the multimedia and the intensive uses by the governments and cooperation with internal and external organizations, the direct impact was so affective specially with using the internet so they could get the credibility back of the customers around worldwide in short time.

## V. Recommendations

In order to rescue the tourism industry in Libya after the damage which has happened because of the negative effect of Libyan civil war the tourism authority must start formulating (rescuing strategy) with focusing on the aspects which are mentioned below:

*a) Increasing the Promotional Budget*

For having a higher impact the government has to build the strategy of rescuing the image of tourism with using high and modern items of promoting and advertising such as making contracts with famous advertising foundations which have long experience of dealing the e_marketing and advanced technologies like digital works, and all of this is supposed to cost more expenses .

*b) Creating Alliances with the Media*

The tourism authorities have to be able to persuade tourists regarding the safety and stability of the destination.

The in-moment communication is very important, especially in the beginning of the crisis.

Consequently, the destination should act as fast as possible (Asia Pacific Economic Cooperation, 2006).

As the destination is topping the news, the government and the different organizations have to cooperate and work together to attract investors and tourists again (CNN Task Group, 2009).

*c) Providing Added Value to Tourists*

The tourism Crisis Recovery Guide recommends the destinations give an added value instead of offering big discounts.

The added value may consist of benefits for dining and visits to attractions (Asia Pacific Economic Cooperation, 2006).

Hoteliers may provide special welcome events for the travellers coming after a crisis, they may offer them a gift for their visit and other kind gestures of hospitality (Tafastrack, 2011).

*d) Working on the Ground*

In order to recover from the crisis effect, tourism authorities should organize familiarization journeys by inviting journalists, high profile celebrities, and tour operators to show them that the destination became safe.

This sort of strategy appears simple to be created. However, the steps are more complicated then how they seem.

*e) Cooperate with Private Agencies*

It needs more engaging with private the tourist agencies for many reasons:

i. The private agencies have more flexibility against the sudden changes of the customers' desires.
ii. They usually connect with the individuals faster and easily.
iii. The main aim of the private agencies is gaining profits so they often hire expert advisers and tour consultants.

*f) Targeting Growing Markets*

Libyan's tourism authorities should also target the most promising markets in its recovery plan. For Instance such as Asian markets which is increasing itself smoothly and concretely by following the exchange travel trips for the tourists from Libya to Asia and doing the same in opposite way.

*g) Promoting Events and Openings*

The destination which has faced a tourism crisis should look for positive news to broadcast all over the world such as arranging reopening for historical sites and making huge events to attract the attention to places and special areas in Libya.

## VI. Limitations of the Research

a) This research has faced several limitations of the information sources because of the condition in Libya , most of the data was away of hands and the



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data on internet was not updated since the beginning of the revaluation.

b) The number of studies about the same topic is not that much.

c) External events in neighbour countries may also have a significant impact on some aspects of the paper.

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Complete support for both authors and co-author is provided.

**4. MANUSCRIPT'S CATEGORY**

Based on potential and nature, the manuscript can be categorized under the following heads:

Original research paper: Such papers are reports of high-level significant original research work.

Review papers: These are concise, significant but helpful and decisive topics for young researchers.

Research articles: These are handled with small investigation and applications

Research letters: The letters are small and concise comments on previously published matters.

**5.STRUCTURE AND FORMAT OF MANUSCRIPT**

The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also.Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research articles and research letters should be fewer than three thousand words, the structure original research paper; sometime review paper should be as follows:

**Papers**: These are reports of significant research (typically less than 7000 words equivalent, including tables, figures, references), and comprise:

(a)Title should be relevant and commensurate with the theme of the paper.

(b) A brief Summary, "Abstract" (less than 150 words) containing the major results and conclusions.

(c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.

(d) An Introduction, giving necessary background excluding subheadings; objectives must be clearly declared.

(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

(f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;

(g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.

(h) Brief Acknowledgements.

(i) References in the proper form.

Authors should very cautiously consider the preparation of papers to ensure that they communicate efficiently. Papers are much more likely to be accepted, if they are cautiously designed and laid out, contain few or no errors, are summarizing, and be conventional to the approach and instructions. They will in addition, be published with much less delays than those that require much technical and editorial correction.





The Editorial Board reserves the right to make literary corrections and to make suggestions to improve briefness.

It is vital, that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

**Format**

*Language: The language of publication is UK English. Authors, for whom English is a second language, must have their manuscript efficiently edited by an English-speaking person before submission to make sure that, the English is of high excellence. It is preferable, that manuscripts should be professionally edited.*

Standard Usage, Abbreviations, and Units: Spelling and hyphenation should be conventional to The Concise Oxford English Dictionary. Statistics and measurements should at all times be given in figures, e.g. 16 min, except for when the number begins a sentence. When the number does not refer to a unit of measurement it should be spelt in full unless, it is 160 or greater.

Abbreviations supposed to be used carefully. The abbreviated name or expression is supposed to be cited in full at first usage, followed by the conventional abbreviation in parentheses.

Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 l rather than 1.4 × 10-3 m3, or 4 mm somewhat than 4 × 10-3 m. Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

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*Abstract, used in Original Papers and Reviews:*

Optimizing Abstract for Search Engines

Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Key Words

A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy and planning a list of possible keywords and phrases to try.

Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

Choice of key words is first tool of tips to write research paper. Research paper writing is an art.A few tips for deciding as strategically as possible about keyword search:

- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

*Acknowledgements: Please make these as concise as possible.*

References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

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Even though low quality images are sufficient for review purposes, print publication requires high quality images to prevent the final product being blurred or fuzzy. Submit (or e-mail) EPS (line art) or TIFF (halftone/photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Do not use pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings) in relation to the imitation size. Please give the data for figures in black and white or submit a Color Work Agreement Form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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## TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

**1. Choosing the topic:** In most cases, the topic is searched by the interest of author but it can be also suggested by the guides. You can have several topics and then you can judge that in which topic or subject you are finding yourself most comfortable. This can be done by asking several questions to yourself, like Will I be able to carry our search in this area? Will I find all necessary recourses to accomplish the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

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**22. Never start in last minute:** Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

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**24. Never copy others' work:** Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

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**26. Go for seminars:** Attend seminars if the topic is relevant to your research area. Utilize all your resources.



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**27. Refresh your mind after intervals:** Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

**28. Make colleagues:** Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

**29. Think technically:** Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

**30. Think and then print:** When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

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**33. Report concluded results:** Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

**34. After conclusion:** Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

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**Key points to remember:**

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

**Final Points:**

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.

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Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

· Adhere to recommended page limits

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- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

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An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

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- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

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- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

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- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
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Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

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- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

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What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

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The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.



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Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

**Discussion:**

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

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- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
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Approach:

- When you refer to information, differentiate data generated by your own studies from available information
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| ***References*** | Complete and correct format, well organized | Beside the point, Incomplete | Wrong format and structuring |

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