Integrating David programming model with Balance Scorecard (BSC) in order to decrease or eliminate the weaknesses of David's model and performance improvement (case study: Mahan air lines)

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Abstract

Nowadays in this competitive world lots of manufacturing and servicing companies have to resort to new management approaches. Among these, we can point to new approaches to performance evaluation that play signification role in improving the performance of an organization. Balance score card is a recent innovation management that evaluates the organization in four main aspects of management and its aim is provide a comprehensive view of business for managing directors. The purpose of this paper is to study the integratingDavid's Model with balanced scorecard and implementation of BSC in order to decrease or eliminate the weaknesses of David's Model and organization performance improvement in four perspectives. The chief executive officers of Mahan airlines are the statistical population of this research. This population includes 70 persons and the sample size of 60 persons is determined based on Cochrane formula and simple random sampling. The content validity and reliability was confirmed by calculation

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Cronbach's Alpha. The result of this research shows that integrating these two models significantly results in performance improvement and David's model weaknesses in our statistical population.

Key words: David's model, balanced scorecard, Mahan airlines performance, improvement

Introduction

In the last decade, global competition has risen quickly because of rapid changes in technology and extra diversity of products and it causes the organizations to focus the role of continuous improvement of performance as competitive and strategic needs throughout the world. Today organization extremely uses performance measurement, directions of evaluation, control and business processes improvement to keep and reinforce their competitive advantage.(Ghalayini , A.M & Noble ,J.S,1996) Nevertheless the recent studies show the facts that classic performance measurements based on accounting system are not sufficient (Wongrassamee ,P.D & Gradiner,J.E.L.simmons, 2003). For example, eight limitations of classic measurement that have been identified include: They have been based on classic costs management systems- using backward measurements- do not participate in strategy- performing them is difficult practically and they are inflexible and discrete, in conflict with the accepted theory of continuous improvement and ignore customer's need. The studies also find limitations related to classic production management and its strong focus on increasing productivity, cost reduction and increases in profit, that might somewhat decrease the attention to quality improvement, reliability delivery. As a result of these classic limitations, non-classical performance measurements emerged in the literature (Dixon, N.M & Et.al, 1990). These features were essentially related to organization strategy and based on non-financial goals. Therefore multidimensional and integrated performance management systems were developed.

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According to performance measurement revolution we recognize two separated categories include ones that have self-measurement and another category consists of those new performance measurement systems that Design to help managers to measure and improve business processes called Balanced scorecard framework (Kaplan and Norton, 1992). In 1992 Harvard professor Kaplan and Doctor Norton published a paper about a new approach to performance measurement as balanced scorecard that was developed during a research project involving 12 companies (Ibid, 1992). The balanced scorecard consists of a set of criteria that gives managers also a quick perspective of their business. The balanced scorecard was known as the one of the useful, low error and effective 15 management tools until 2001 (Rigby k. 2001). and the number of its users added every day. Research shows about 70% of American companies utilize these tools or are looking to do it (Management Encyclopedia). The balanced scorecard evaluation approach helps organization to win over two key problems: evaluating the organization performance and strategy implementation. Introduction of balanced scorecard with attention to its promotion in 3 generations is to clear its vital duty to make connection between balanced evaluation approach measurements through a series of casual relationships(Niven R. Paul. 2008).

Research objective literature:

The strategies are focal point for organizations movements and inspiration for managers. The strategy of an organization is the manager's plan and instrument to obtain the market position, guide performances, customers' satisfaction, and success in competition and achieve the organizational goals. Chandler (1962): strategy is "to determine long-term and essential goal and purpose of a company". Child (1972):

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strategy is a set of fundamental or sensitive choices about the result of an activity and its tools. Keyy (1999) Business strategy is about the coordination between potential and inner organization's capabilities and its external environment.Drucker (1995) defines strategic decision such as: All decisions concerning the organization targets and the ways to achieve them. (Rahimi, 2007) According to these definitions, strategic affairs called strategy if they have at least three conditions: 1. longtime lasting. 2. Be in a competition environment. 3. be crucial. Thus the strategy is a special kind of ways and approaches to achieve goals if these three conditions are met, it means that experts have different point of view about strategy segmentation because it is possible to classify them by different tastes and standards. It has been used to classifying types of strategies in the most practical method: 1.Main strategy 2. Sub strategy 3.Task strategy 4.Macro strategy.

Strategic management: in 1980 strategic management rose to make more coordination and solidarity in organization goals and certainty of operation and implementation of these plans (Ali Ahmadi, Ali Fateh Ali, Mehdi Taj Din, I. 2002). Facing various events such as organizational movement, market situation, empowering against competition, combining them and how to treat each one is understandable and traceable in strategic management concepts. Therefore, the main priority of management practices is to provide, design, execute and evaluate the strategy. Priority actions are: 1- The necessity forward-looking and the quality of business leadership 2- The necessity of attention to harmony and coordination (Thompson and Strickland 1982). Strategic management could be defined as: the art and knowledge of designing, implementing and evaluating of multi-functional decision that enable the organization to achieve its long term goals. Strategic management focuses some factorsto obtain organization success:

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cooperation of management, marketing finance, production (performance) and research and development computer information system (David,F.R. 1999).Strategic management has three levels: Definition of the strategies, implement the strategies and evaluation of the strategies. William Wirden from Hershi Company knows the reason of his company success in strategic management and say: the path of company's life is determined by planning for long periods of time and we undoubtedly are going to rely on this procedure and reinforce it in the future(David,F.R. 1997). The abstract of preparation and definition of a good strategy is to make sufficient strong position in market and sufficient empowerment to achieve successful performance despite the events, delays and unforeseen cost (Bakhtiari,P. 1982). Strategic management is a term to describe decision-making and operating process. It includes the decision procedure and tasks which lead to the creation of one or more effective strategies to achieve the goals. (Ali Ahmadi, Ali Fateh Ali, Mehdi Taj Din, I. 2002).

Strategic planning: definition of strategy can be done in different ways in different organizations that one of the styles is strategic planning. Strategic planning process provides an attitude and analysis of the organization and its environment. It explains current situation of the organization and identifies effective key factors of success (Fry.L, Fred & Stoner.R, Charles.1995). Definition of strategy in David planning model contains five steps:

1. Determining the organization mission
2. Studying external factors of the organization
3. Studying internal factors of the organization
4. Determining the long-term goals of the organization

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5. Evaluating quantity of different option of identified strategies toadapting internal and external factors and selecting the best one (designing, evaluating, choosing strategies) (David,F.R. 1999). Although determining strategic and operating plans is a difficult and complex process but it is harder to run Successfully. Many organizations failed to execute their full strategies. This is not because of designing of strategies and performance planning of the organization, but perhaps the lack of a strong framework to integrate personnel's and process operation into organization goals makes this fail (Creelman,j.Markhijani,N. 2008). controlling and evaluating strategy is a process that should be considered as an approach to determine limitations of achieving strategic goal(Ali Ahmadi, Ali Fateh Ali, Mehdi Taj Din, I. 2002). one of the important steps of strategic management in organizations is evaluating and control. Performance measurement is a result of strategic and operational planning and considers feedbacks and its necessity and importance to the organization (Rokni Nejad, Mehrdad.2008). Today one of the manager's duties is to define a strategy which brings a competitive advantage for the organization. Manager's operational procedures to execute designed strategy successfully are the most important element of an effective and qualified management, this is necessary in addition to arrange and provide the required team. A good strategy and its successful execution are the most reliable signs to recognize an efficient management. The strategy's value depends on two factors: first how much it makes us competitive advantage. Second how much it costs our competitor to fill this gap between us. Both of these factors refer to nature of opportunity and its origin. And opportunity means causes of advantage incompletely. There is "potential" opportunity for everyone but actual opportunity belongs to specific persons and organization who complete the opportunities factors (Rahimi, GH. 2007).

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The second part of David planning model is to execute the strategies. This part also has 2 steps. In the first step the annual organization goals are defined according to chosen strategy that will be the basis for budget allocation and evaluating the manager's performance and monitoring the progress of tasks and determining their priorities then, the organization policies is set up by these annual goals. The organization policies clear the expectations of staff and managers and it causes the success rate increases (defines annual goals and policy) in the second step, required resources and facilities for executing the strategy in organization is allocated. Resource allocation in organization often occurs as budgeted costs and human resource, however other resources might be necessary for executing the strategies (resource allocation) (Ali Ahmadi, Ali Fateh Ali, Mehdi Taj Din, I. 2002). The third part of David's strategic planning approach is evaluating the strategies that happen in last step. In this step, an active information system is used to evaluate and analysis the process of implementing the strategy to correct any problems that could occur in the way of execution (calculating and evaluating the performance measurement). David's strategic planning model: mission, vision and value statements- external threats and opportunities analysis- internal, weakness, threats and opportunities analysis- define long term goals- define evaluation and choose strategies- define annual goals and policies- resource allocation calculating and evaluating the performance measurement- This is David strategic planning model, strategic management. According to this model strategic management has three main parts includes planning, acting and evaluating the strategy and they are interconnected to each other (David,F.R. 1999). David's model, use a comprehensive framework to plan the strategies; this helps strategists to define, evaluate and choose the strategy (Aarabi, M. and Agha Zadeh, H. andNezami Vand Chegini, H.1385).

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Start phase	
Define the mission and mission statement of organization	
Input phase	
Internal factors evaluating matrix	External factors evaluating matrix
Comparison phase	
Internal and external matrix	SWOT matrix
Decision making phase	
Strategic quantitative planning matrix	

Drawing 1: comprehensive framework of strategy definition (Aarabi, M. and Agha Zadeh, H. andNezami Vand Chegini, H.2006)

The component of David's model: - Mission Statement: is a statement that distinguishes the organization from other organizations and clarifies the range of activities interacted with the product and market (David,F.R. 1997).**Vision:** in the vision statement of the organization these question should be answered: what we want to be? Indeed vision is exactly thing that makes sense to the movement from a static world of mission and values to a dynamic world of strategy. It is a verbal image of the final goal of the organization that could offer 5 or 10 or 15 years later (Niven R. Paul.2008)**Values:** should be considered us a provider of a framework of principles in which decision and actions are made in all aspects of defining, executing and evaluating the strategies (Ibid,1386). **Internal analysis**: every organization has strengths and weaknesses in its domain of functional units those are not equal in the circle of units, and the internal analysis must be done by gathering, classifying and evaluating these strengths and

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weaknesses of the operations (David,F.R. 1997).

External analysis: the purpose is to gather a final list of the opportunities that could be avoided. Strategic Targets: are the goals that the organization should be achieved them by defined planning **Policies:** are tools in which to gain annual goals. It means guidance's, requirements and approaches that should be observed by the organization to achieve the goals. **Executive planning**: less than 10% of defined strategies execute successfully so the phase of executing strategies is so important. **Short-term goals**: or annual goals that organization use them to achieve long-term goals, they should be measurable quantity, read challenger and compatible with other goals and be prioritized. **Control andevaluation indicators**: 3 main activities should be done, analysis internal and external factors that are the basis of the current strategies, calculating and evaluating the operations and the corrective acts (Ibid, 1997). David's comprehensive pattern of strategic management is shown in drawing 2: feedback

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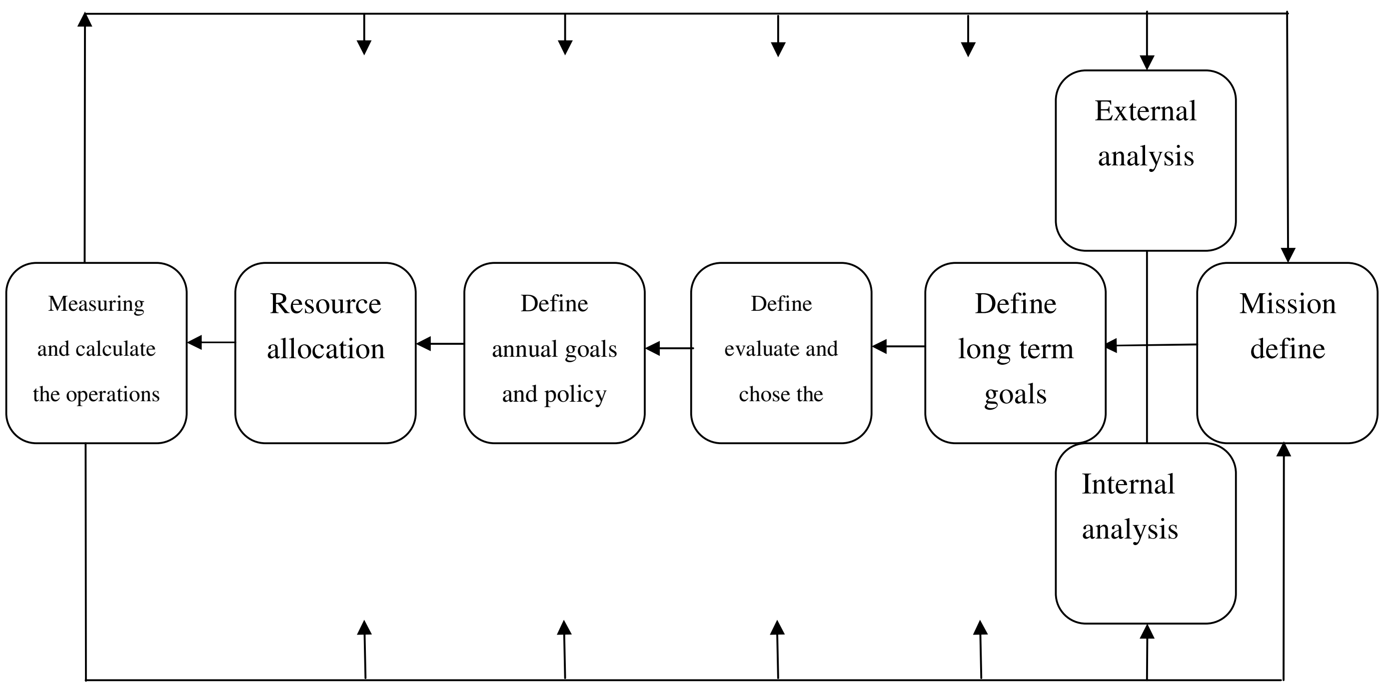


Evaluate the strategy Exe cute the strategy Define the strategy

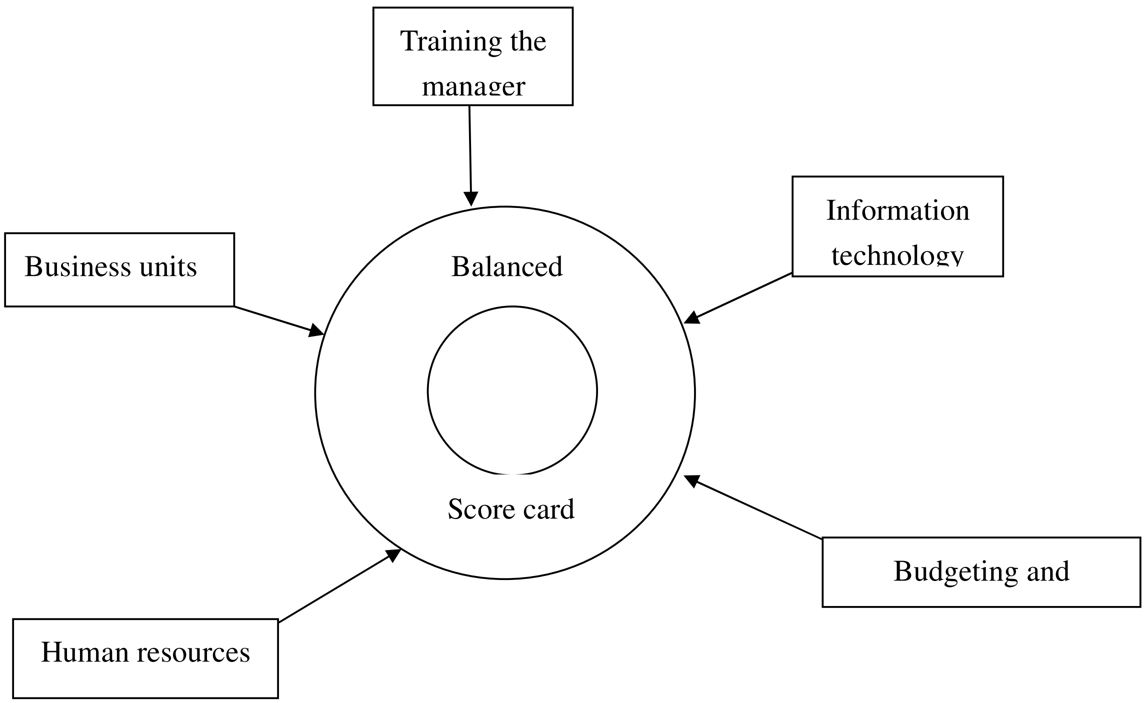
Drawing 2: David comprehensive patter of strategic management (David, 1998)

Create a strategy focused organization: results of a research on 275 managers have shown that the ability of executing strategy is more important than the quality of strategy (Kaplan R.S. & Norton D.P.1992). These managers mentioned executing of the strategy as the most difficult factor in evaluating the organization and the management. This result is perhaps surprising, because in the past two decades management theorists, and business consultants and issues have focused on how to develop the strategies (that will lead to better performance). Developing formulation a strategy never seems never to have been important. Steel other observers agree with the ideas of managers in this research that the ability to execute the strategy could be more important than the strategy itself. In the early 1980s, a research by manager consultants showed less than 10% of defined strategies had been successfully executed (Ibid, 1388). The balanced evaluation approach helped successful organizations to build a modern management system. A system that manages planned strategy. This modern system has three specified parts:

1- Strategy takes place in the center of organization planning.

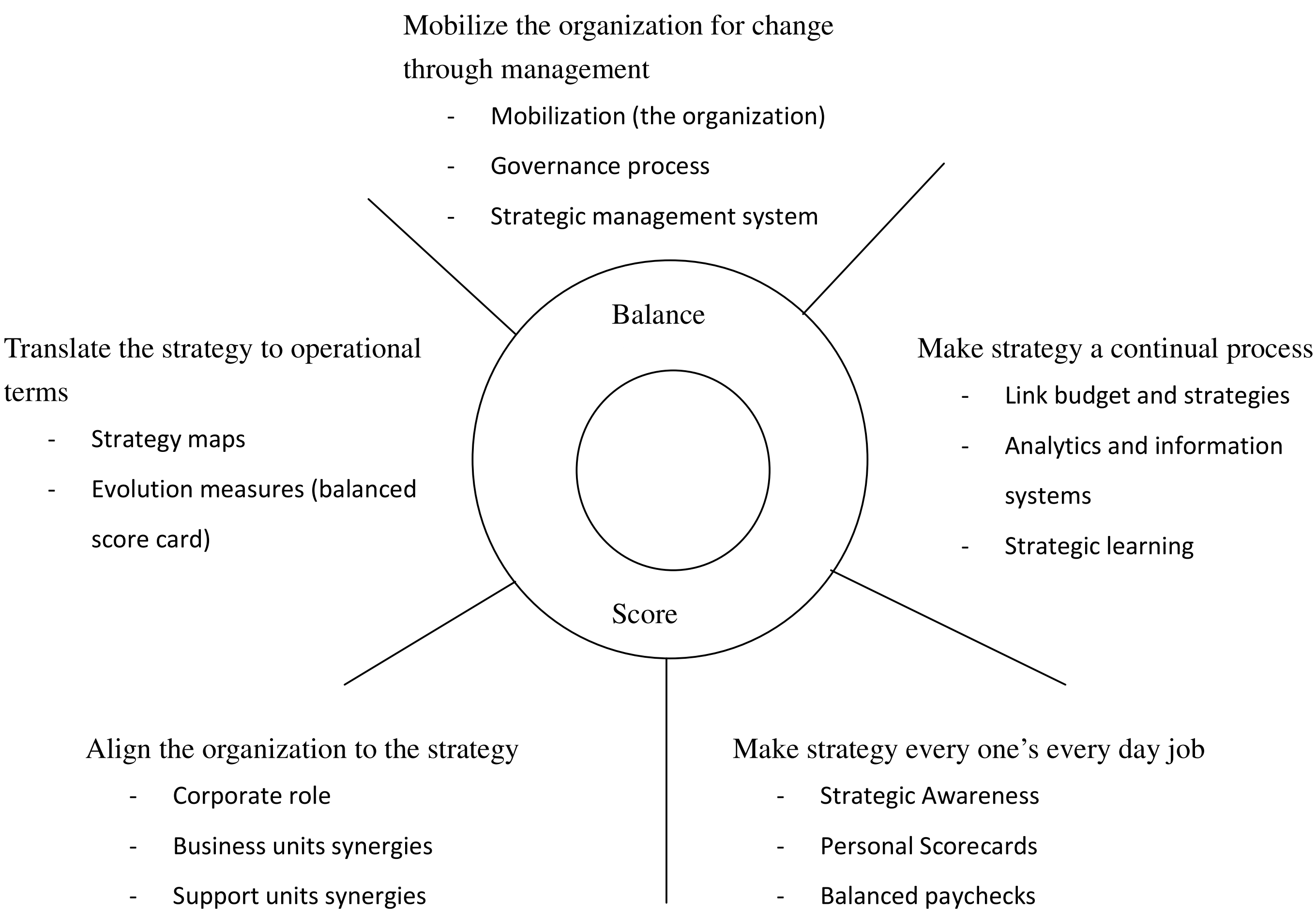
2- Extra ordinary focus on strategy.

3- All employees are mobilized for the fundamentally different performance. The principles of a strategy- oriented organization:



Drawing 3: Aligning and focusing resources to the strategy(Kaplan and Norton, 2009)

The same principles have been observed in practices that are called the principles of a strategy-oriented organization which are shown in Drawing 4:



Drawing 4: Principle of a strategy- Focused Organization (Kaplan and Norton, 2009)

Evaluation: evaluation means to measure operations by comparing the current situation with the desired or ideal state based on pre-determined criteria which posses certain characteristics. In general the scorecard system could be known as a process of measurement and scaling and comparison the amount of and access to ideal situation by standards and certain attitudes in certain domain and certain period of time in which to review, correct and improve (Rahimi, GH.2007). Any attempt to achieve success, should be within framework and improving the organization operation should be based on a process called "operation cycle". Any improving plan should be started by measuring and evaluating. Balanced score card as an evaluating system: balanced score card is known as an performance evaluating tool and an executing strategy tool also to define organization alignment, investment and information today it is known as a general and comprehensive framework for organization changes. Scorecard's components are: strategic maps, indicators, rate of measure, Casual relationship, and organization strategic goals. These components are introduced to separate the goals among 4 point of view that are expressed in the following (Bakhtiari,P.1982). Balanced scorecard is an approach to evaluate non financial measures. The comprehensive balanced scorecard system is a management system that enables organizations to make their vision and strategy clear and actual if the establishment of this system was complete and successful. Then the strategic planning system can be executed (Ibid, 1387). Johnson and Kaplan also believes that the organization is focusing and motioning on accounting information that is suitable for external financial reports and using this information to performance measurement is in dispute. Further more financial measurements do not offer a complete vision of the managers' performance (Namazi, M. and Ramezani, Amir. 2002). Balanced scorecard provides a good composition of financial and non-financial measurements (Bostaniyan, J.2005). This concept as an evaluating system of commercial performance spread believing that "current evaluating performance approaches that emphasize first and foremost financial accounting measures are obsolete". This inventor approach is able to consider software or implicit factors that were immeasurable or cheap. "Balanced scorecard" term makes harmony between short and long term goals, financial and non-financial, directorial and functional indexes and inner outer

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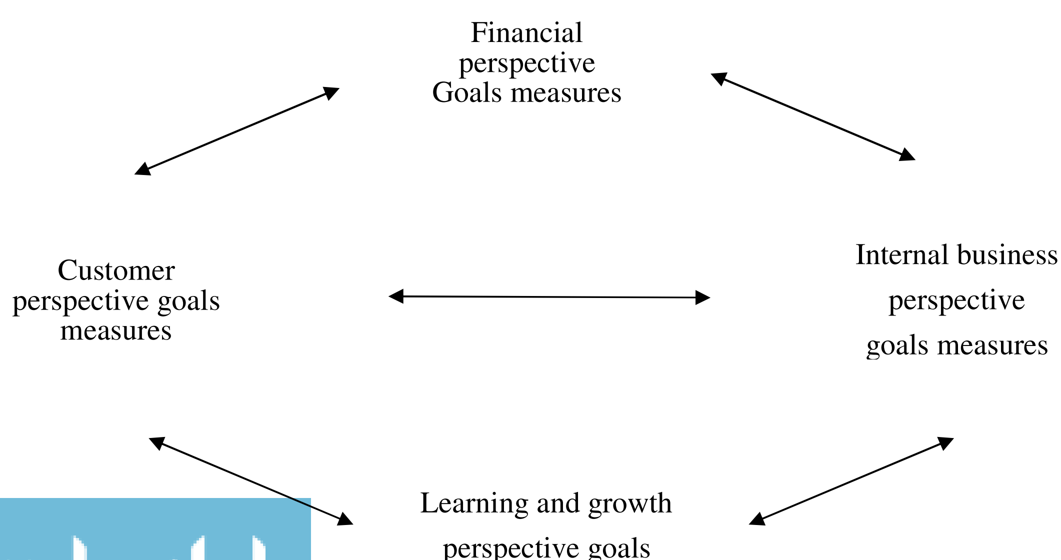
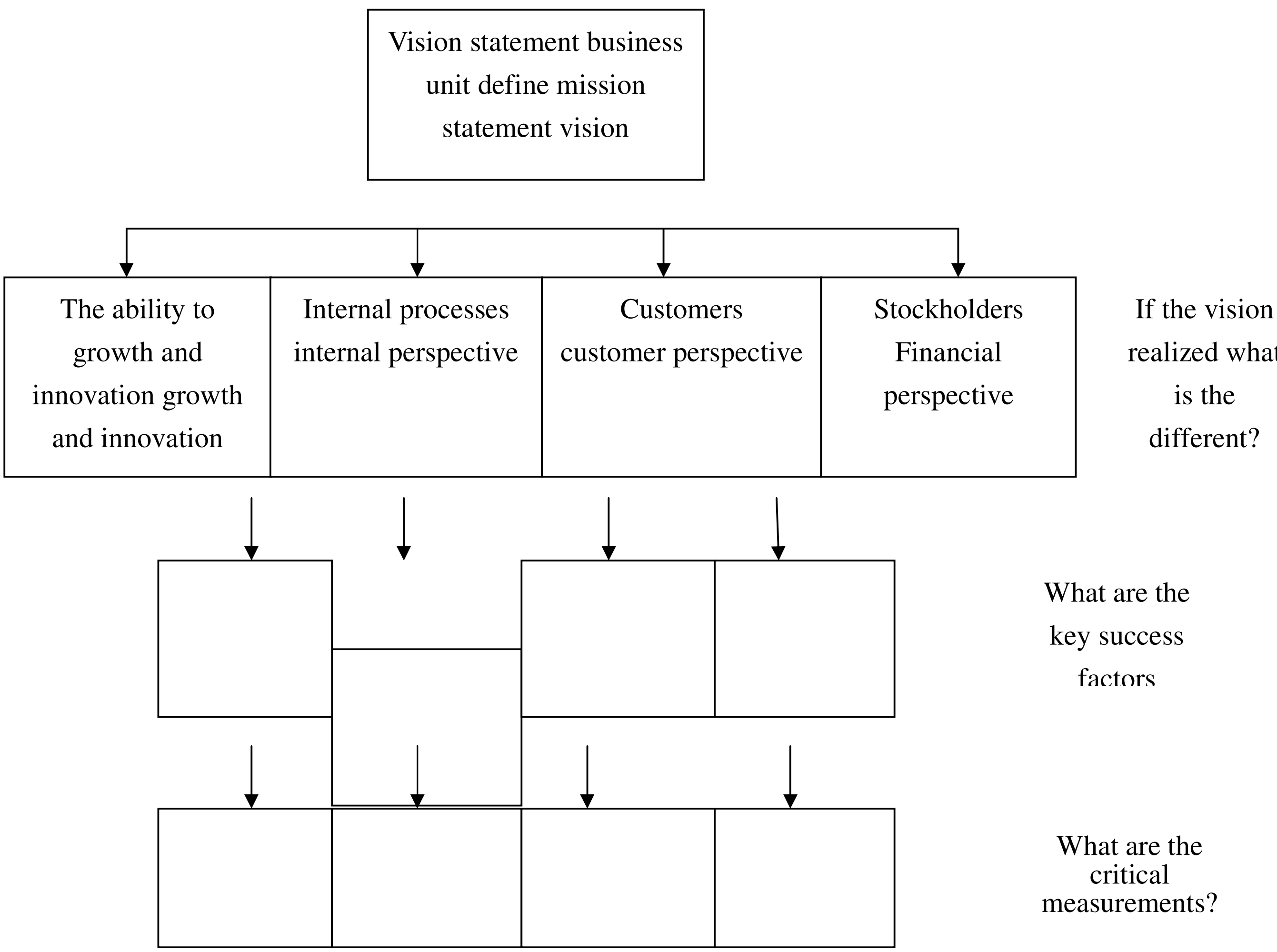
dimensions (Hepworth ,paul.1998). Kaplan and Norton explain: balanced scorecard transforms organization mission and strategy to a group of comprehensive performance measurements and provides a framework for management and strategic assessment (Ibid, 1998). Balanced scorecard is a conceptual framework that transforms organization macro goals in to measureable indicators and provides a balanced distribution between critical financial areas, customers, internal processes, growth and learning (Alvani,M and Seyed Naqvi, M.A.2003) Considering its improvement in 3 generations, balanced scorecard's critical task is to connect measures of evaluation to each other through a series of casual relationships (Niven R. Paul.2008). First generation balanced scorecard has 4categories which have 4 aspects. The balanced term in balanced scorecards means: 1- balancing financial and non-financial indicators 2-balancing inward-looking and out-word looking measures. Balancing forward measurements that focus on future activities and backward measurements that focus on past activities. The 4 aspects of balanced scorecard are: a) financial measurements. b) Customer measurements. c) Performance measurements. D) Growth and learning measurements. The basic framework of balanced scorecard is shown in drawing 5.



Drawing 5: balanced scorecard (basic framework-targets) (Kaplan and Norton, 1992)

Second generation balanced scorecard: balanced scorecard inventors in their second paper in 1993, considered balanced scorecard not only as a measurement system but also a management system and focused its role in vision mission and strategy of the organization (Rigby k.2001). Drawing 6 shows the advanced primary balanced scorecard:



Drawing 6: balanced scorecard (the second generation- 1993)(Rigby k.2001).

Third generation balanced scorecard: in 1996 Kaplan and Norton gave a more developed style of balanced scorecard as a strategic management system (Kaplan R.S. & Norton D.P.1997). They explained: classic management system are unable to connect long-term strategies and short-term tasks, but mangers who use balanced scorecard are not forced to focus on short term financial measures as unique performance measures, and balanced scorecard empowers them to start 4 new management processes that separately or in combination help to make connection between long-term strategies and short term tasks, this process is shown in Drawing 7. Strategy map: next development of balanced scorecard was the introduction of strategy map (Mortinsons& Davison,Tse.1997)Strategy map actually is the use of casual relationships in balanced scorecard. These maps are given to transfer a clear concept of strategy about how to communicate their functions with organization general goals and empower them to act collaboratively to gain desired objectives(Kaplan R.S. & Norton D.P.2001).

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Financial

	Objectives	Measures	Targets	Initiatives
To succeed financially, how should we appear to our share holders?				

Customer perspective

	Objectives	Measures	Targets	Initiatives
To achieve our vision, how should we appear to our customer?				

Vision

And

strategy

Internal business process perspective

	Objectives	Measures	Targets	Initiatives
To satisfy our shareholders and customer, what business processes must we excel at?				

Learning and Growth Perspective

	Objectives	Measures	Targets	Initiatives
To achieve our vision, how will we sustain our ability to change and improve?				

Drawing 7: Third Generation balanced scorecard-1996(Management Encyclopedia, 2001)

Integrating David model and balanced scorecard: the main difference between David's model and balanced scorecard is in the execution phase. In this phase all organization's units, processes and in general the all organization's coordinate with planning strategies and the necessary integration will be created in the organization that the other models lack this ability. Mahan airlines is a strategy-focused organization and in this organization strategic planning is the basis of long-term planning's and goals. The organization's planning utilize David's model. Most models have weakness in implantation, evaluation and controlling, in this organization using balanced scorecard chiefs decided to decrease or eliminate the weaknesses in implementation, evaluation and control.

Balanced scorecard implementation in Mahan Airlines

Creation of the first balanced scorecard could be considered as a systematic process which is about translating organization strategy and mission into targets and performance measurements transparently. This project needs an architect who makes a framework for the process and makes it easier. Also provides required information that balanced scorecard needs them (Kaplan and Norton, 1996). First of all balanced scorecard implementation in the organization needs 2 preliminary steps that are essential: 1) introduce balanced scorecard in the organization 2) define implementation executers. After doing these 2 steps and considering Mahan's special features, performance measurement designing and implementing was executed by balanced scorecard. The basis of performance measurement by balanced scorecard is improving the effectiveness of the plans and organization performances in 4 perspectives (financial- customer- internal businesses- growth and learning). Researches and studies has shown in all of these models there is a strong planning but in many of these models there are weaknesses in implementation, monitoring and evaluation. We know balanced scorecard as a strategy phenomenon of this century and is the best instrument for implementation, evaluation and monitoring. The purpose of this study originally is to create an excellent planning in addition to a good implementation, higher level of evaluation and control in the organizations that appears its effectiveness and efficiency of performance improvement. in this article we will see if integrating David's model and balanced scorecard results in performance improvement or decrease or eliminate weaknesses of strategic planning of this model. The importance of this issue is to improving the performance and as a case study in Mahan Airline. According to researches and studies, David's model among strategic models is one of the most popular that its weaknesses are in implementation, monitoring and evaluation. If we could integrate David's model with balanced scorecard in order to compensate for David's weaknesses in implementation, evaluation and monitoring of strategic planning. Therefore the main purpose of this study is David's model performance improvement and covering its weaknesses through integrating it with balanced scorecard and according to considered population it could result in more appropriate planning in fleet aviation of the country and helps managers to decision and performance evaluation.

Methodology

In this study at first there was an extensive study about the concept of David's model and strategic

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planning and balanced scorecard. And in the next step the study was about deliberation these concepts and comparing them. Balanced scorecard and David's model was explored and the weaknesses of David's model was discovered and it was checked if balanced scorecard implementation eliminate these weaknesses. These studies and implementation of integrating David's model and balanced scorecard gas done as a case study in Mahan Airlines. According to purpose of the study and method of data collection, this is an applied and descriptive-survey research. The method of data collection basis is on descriptive research and on the other hand because data were gathered of the feedbacks from pundits (by questionnaire) the study has a survey aspect. Mahan Airline managers in Tehran and in center office placed in Tehran are the statistic sample and population. In this study raw data were given to SPSS software version 18, and be analyzed. First, by descriptive statistics we described and summarized demographic characteristics of the sample population including age, gender, rate of education and work experience and then we used inferential statistic. T-test is used to investigate the effects of gender variable and ANOVA is used to investigate the effect of rate of education, work experience and the age of repliers. Field and library researches were used to gathering data from questionnaires. Content validity was designed by using the comments of advisor and consultant professors and superior managers were questioned by balanced scorecard with 4 perspectives. The stability of this research was calculated by Cronbach's Alpha that usually more than 0.7 is desirable.

	The number of questions	Cronbach's Alpha
Superior managers	68	Before BSC=0.797

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	68	After BSC=0.972

Structure Of data analysis

Structure of data analysis according to the questionnaires is: given questionnaire to superior managers contains 68 questions that evaluate organization performance before and after balanced scorecard. In this questionnaire 4 perspectives of BSC are questioned as follows: 14 questions of financial perspective, 16 questions of customer perspective, 23 questions internal business perspective and 15 questions of growth and learning perspective. Through analyzing the data of this questionnaire, this will be defined by BSC if weaknesses of strategic planning are decreased and effective improvement is happen about this planning. To this end, after descriptive analysis, inferential analysis has been used to consider effectiveness of the model before and after implementation and analysis of the issue has been mentioned descriptively and inferentially. Finally in further tests in order to analyze the effect of each demographic variable on considered status, T-Test, Mean square Test, analyze of variance and variable ratio have been used.

Conclusions

Effectiveness analysis of BSC model: before and after implementation, superior managers were questioned and Men square Test has been used in both populations before and after implementation of BSC.

H0: implementation of BSC in the organization is not effective

H1: implementation of BSC in the organization is effective and sig=0

As you can see, sig's value is less than 0.5, thus H0 hypothesis based on the absence of effectiveness of

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BSC model in the organization is rejected and we conclude that implementation of this model in the organization is effective. We compare variable ratio before and after BSC implementation in the organization in order to analyze the percentage of improvement and decrease of weaknesses of David's model. Implementation of BSC showed improvement such that %98.3 of repliers believe an improvement of %60=1,2 multiplication in financial perspective, %93.3 of repliers believe an improvement of %65=1,3 multiplication in customer perspective, %100 of repliers believe an improvement of %65=1,3 multiplication in internal businesses perspective, %94.9 of repliers believe an improvement of %65=1,3 multiplication in growth and learning perspective. The improvement range is 1 to 1.5 multiplications. Improvement of 1.2 multiplications in financial perspective, Improvement of 1.3 multiplications in customer perspective, Improvement of 1.3 multiplications in internal businesses perspective and Improvement of 1.3 multiplications in growth and learning perspective is gained. It can be said %60 of improvement and decrease of weaknesses in customer perspective and %65 of improvement in the other perspectives are gained.

Do the weaknesses of David's model decrease or eliminate by using BSC? According to the results, it can be noted that implementation of BSC decrease the weaknesses of David's model significantly.

Inferential demographic data analysis according to the results of independent T-Test

The first sig (significant number) is related to variance test, where sig is greater than 0.05, means that two different genders have similar opinions and H_0 is accepted and where sig is less than 0.05, means that H_0 is rejected and H_1 is accepted and two different genders have different opinions. The second sig is for paired comparisons in two different genders, and the result shows that the average in two populations is

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not equal, means where sig is greater than 0.05, H_0 is accepted and where sig is less than 0.05, H_0 is rejected and H_1 is accepted. In order to establish equality in average in variable of age, educational rate and work experience, variance analysis was used and results in: where sig is greater than 0.05, means that different levels have similar opinions and H_0 is accepted and where sig is less than 0.05, H_0 is rejected and H_1 is accepted and means at least two different levels have different opinions.

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