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Extending the Balanced Scorecard Model in Performance Evaluation of Airlines

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ABSTRACT

Nowadays, airline industry has a very delicate and significant role in sustainable development of countries as the successful performance of this branch of industry can create a strong motivation for other industries of a country by doing its mission, objectives and strategies. Using a suitable evaluation framework like Balanced Scorecard can relate to strategic plans and objectives, evaluate different areas of the organization, as well as presenting a full report of organizational performance. However, in countries where the organizations are significantly influenced by the cultural-religious factors of society, the standard Balanced Scorecard model cannot work out. Thus, in this research, we aim to extend the model by adding “culture and values” perspective as a new and determinant factor. In order to do this, we identified the indictors of the model and localized it by library studies and interviewing the managers and experts of several airlines. Then, the most important functional indicators in areas such as financial, customer and market, internal business processes, learning and growth and culture and values were identified and a questionnaire containing 267 indicators in 5 components for determining the significance of each indicator were randomly distributed among 110 managers and experts of the airlines. The components and indicators of the questionnaire were tested by parametric T-student. Consequently, using TOPSIS technique as one of the MADM decision making techniques, the components and indicators were weighted and ranked. The results show that the “culture and values” is the most important component. According to this, we designed a performance evaluation model for airlines which reflects the values and cultural circumstance of a specific country and it seems that using this model can be applied by all other countries with the similar cultural, social, political and economic context.

Introduction

The airline industry of a country reflects its development and economic conditions as this industry is one of the most important factors in economic, cultural and political development. The world' economic thinkers believe that if in the beginning of 21st century do not pay attention to this sector of industry, the growth and development of these countries will be minimized. Based on this and regarding the climatic and geographical conditions of a country, the role of airline industry as a subsector of transportation industry can be well-expressed in its comprehensive development.

Numerous researches have been conducted on air transportation but none of them has considered the comprehensive performance evaluation in airline industry and presenting a suitable framework. Therefore, in this researchwe intend to present a comprehensive performance evaluation in airline industry, after studying the current situation.

In this regard, to extend the model, the new perspective of "culture and values" as a determining factor in countries in which their organizations are heavily influenced by cultural and religious factors of society, is added to the original balanced scorecard model. Then, in order to localize the model, the indicators related to its five perspectives were identified by interviewing the experts of the industry. It must also be mentioned that even though indicators help describe a project´s goals, results provide the link that evaluates personnel for successful strategy attainment. The potential use of an indicator structure must pursue the creation of an integrated management system (Garcia, et al, 2013). While the literature offers general statements about the successful adoption of the Balanced Scorecard, there are studies about issues concerning the limitations of this approach (Ahn, 2001) and it prompts future researches to be more careful and detail-oriented in BSC adoption.

The result of this research provide the managers of organizations with a balanced framework in planning strategic goals and in successful performance evaluation of airline companies and tackle the problems in this area.

Literature Review

Performance evaluation issues have challenged the researchers and practitioners for many years. Schuler and Briscoe (2004) define this concept as a combination of various variables such as motivation, capability, work condition and expectations. Basically, evaluation systems are designed with respect to condition and requirements of organization. According to DeVries et al (1981), the goal of performance evaluation is to align employee endeavors with main objectives of organization.

It doesn't mean that every single company must design its own evaluation system but that it should customize the existing

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model to its organizational environment because designing a new model may not be cost-effective and there are other models which have gone through the process before and offer many capabilities for the organization. Parker (2000) believes that attributes such as applicability, understandability for public, continuous improvement of evaluation, overweighting of advantages over disadvantages and having realistic, tenable and strong criteria are crucial to a performance evaluation system. Ingram (1997) has particularly emphasized on considering all stakeholders and focusing on customers in processes. Also, Kanji (2002) has offered the following items as the requirement of an effective performance evaluation system:

- Able to evaluate the performance from various and relevant perspectives
- Aligned with values and strategies
- Focused on the sensitive areas
- Valid, realistic and easy to adopt
- Able to compare and supervise the processes
- Aligned with reward and behavior encourage system
- Able to identify the improvement opportunities and to offer improvement strategies

In addition to the items mentioned above, we believe that one of the most significant characteristics of an effective performance evaluation model is its consistency with the cultural and social situation of a country in which the model is going to be applied.

The research of C .C .Yee, and Y.Y.Chen titled "Performance evaluation system using multi-factor evaluation model" was conducted in an ICT company in Malaysia. One of the most important advantages of this research is scoring the indicators and quantifying them. On the other hand, this research suffers from ambiguity in the number of studied indicators, the method and data gathering tools and sample size.In another research, Evecen et al (2009) did a similar research titled "presenting the proposed model for performance evaluation of workers" which was conducted in Turkey. This research did a good job in considering standard performance indices (for managers and employee groups) but this research also suffers from the same problems of the previous research.

Studies on Performance Evaluation with Balanced Scorecard Approach

In the early years of 1990s, Robert Kaplan and David Norton began a research on investigating the success factors of 12 leading American corporations and their performance evaluation method. The result of these studies was published in three papers in Harvard Business Review journal, titled as "Balanced Scorecard: Criteria which drive performance". In these papers, it was discussed that the successful corporations did not solely rely on financial criteria for performance evaluation. Later, when several companies adopted BSC, Kaplan and Norton realized that the companies have not only used this model for performance evaluation, but also for executing the organizational strategy as well. Consequently, they introduced BSC as a tool for strategic management in organizations. Harvard Business Review journal included BSC as one of the best ideas of century.

BSC incorporates the financial criteria which indicate the results of past activities and additionally, complete them by considering non-financial criteria as requirements and drivers of future financial performance. Kaplan and Norton (1992) believe that considering these four perspectives, information overload will be eliminated by limiting the relevant indicators. Also, managers will have to concentrate on a limited number of critical and vital indicators. Also, simultaneous use of different performance perspectives, partial optimization can be prevented. BSC approach allows any organization to implement their distinguishing strategies successfully by returning intangible assets to their real values. This method, translates the strategies of an organization to functional goals, measures, quantitative goals and plan and executive initiations in four perspectives: financial, customer, internal business processes and learning and growth. As a result, balance between retrospective indictors (financial) and prospective indicators (the other three perspectives) will be created. What distinguishes BSC approach from other similar approaches is the concept of casual connections which begins from learning and growth perspective and passes through internal business processes, customer and financial perspectives. This approach is one of the most complete evaluation tools which nearly incorporates all factors involved in performance of an organization in it. The picture below illustrates the four BSC perspectives:

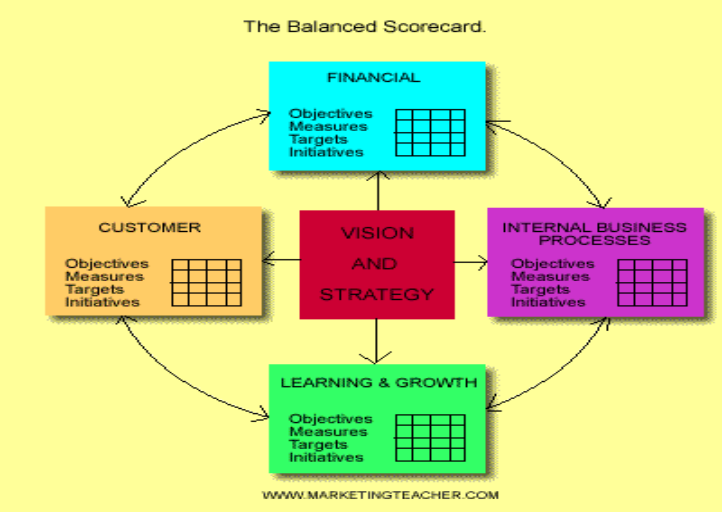

Figure 1. The Balanced Scorecard Perspectives

Norton and Kaplan believe that for conducting a thorough evaluation, organizations must be evaluated from four perspectives:

Financial perspective:

Financial indicators are important components of BSC. This perspective tells us that to what extent the successful implementation of goals in the other three perspectives, will lead to what financial results and achievements. We can try our best, satisfying the customers, increase the quality and reduce the deliverance time of products and services but none of them will matter if these initiatives do not lead to tangible results in financial reports.

Customer Perspective:

Customers are the source of benefit for us, so we must answer to two main questions in this perspective: Who are our target customers? What are our proposed values for them?

These two questions may be simple because most organizations believe that they know their customers and what they offer to them. But, in reality, most organizations have a one-fit-all strategy. Measures in this perspective are extensively used which include: Customer satisfaction, customer loyalty, market share and customer retention.

Internal Business Processes:

In this perspective, organizations must define processes which can help them in continuing value creation for customers and ultimately, all other stakeholders. Achieving the goals in customer perspective is dependent on effective and efficient business processes. Processes must be determined in this

perspective and suitable criteria for monitoring their progression must be designed.

In order to meet the customers' expectations and stakeholders, an organization may need a brand-new collection of operational processes. Development of new products and services, generating services and reengineering of production processes are among the instances of such processes.

Learning & Growth Perspective:

We can reach the goals of the mentioned perspective by considering the goals and criteria in learning and growth perspective which are enablers of the determined goals of the other perspectives. When we determine the goals related to customer and internal business processes perspectives, the gap between skills and capabilities vital for employees and the current capabilities will reveal. The objectives of this perspective must be about closing the gap and developing suitable measures for monitoring and enhancing.

Like other perspectives of BSC, in this perspective, a combination of "lead" and "lag" perspectives are specified. Measures such as customer satisfaction, access to information systems, employee training programs and etc are instances of "lead" measures and employee skills and participation, offering recommendations and new plans are instances of "lag" measures in this perspective.

The important fact about these perspectives is the centrality of vision and strategy of the organization which means that the objectives and criteria that are used for evaluation stem from the strategy.

Shuh and Gin (2005) aimed to propose a systematic and effective model for performance appraisal of airlines using BSC and fuzzy Multiple Criteria Decision Making (MCDM) technique. Also, Fu-Hsiang et al (2011) proposed a performance and communication evaluation model for hotels using BSC and a hybrid MCDM model.. Ultimately, Huei Ho et al (2001) aimed to develop a performance evaluation model for engineering education system using BSC in which they compared BSC with other evaluation models. None of these studies offer sufficient indicators and enough information about the samples they used.

Research Conceptual Model

Regarding the topics mentioned above and the literature review, as well as successful adoption of this model in different organizations, either manufacturing or service-based, it seems that for performance evaluation of organizations in the modern management which is characterized by assumptions such as effective adoption of resources, focus on customer and etc, the best method for performance evaluation is Balanced Scorecard. BSC causes the organizational effectiveness, better than any other similar model.

The primary reasons for adopting BSC in this research is as follows:

- BSC has been endorsed as one of the most important frameworks of performance evaluation.
- It is widely used for performance measurement in U.S. and Europe.
- BSC can be used in a broad range of organizations with different activities.
- BSC is one of the best performance evaluation models for public sector. By focusing on the strategies, it enables organizations to gauge productivity in highly complex and political environments.
- Studies show that 60 percent of top1000 companies in Fortune Magazine have experienced using BSC.
- Long-term and strategic approach of BSC enables the organizations to control the situation, more comprehensively and to increase efficiency, compared to traditional financial management methods. Its adoption keeps growing worldwide

Regarding the importance of moral values and ethical-religious issues, as well as the necessity of morality for manager and employees of organizations as a preventive factor, the sole creation of social status won't be enough and translation of ethical codes to a public culture is mandatory. Also, moral values increase the power of people in confronting the problems and work pressures. Considering the mentioned benefits, we add the new perspective of "culture and values" to the original BSC model. As a result, our proposed model consists of five perspectives: "Financial", "customer"," Internal Business Processes", "Learning and Growth" and "Culture and Values".

It is important to note that in this research, our definition of culture and values encompasses the organizational culture and values which reflects the cultural-religious values of society, as well as the culture and values which are divine and stem from world view and religious beliefs of people and it emerges in the religious indicators such as faithfulness to values, commitment and practicing the religious values, belief on satisfaction on God in activities.

The image below illustrates the initial conceptual model of our research which is the developed version of BSC for airline companies and includes five perspectives:

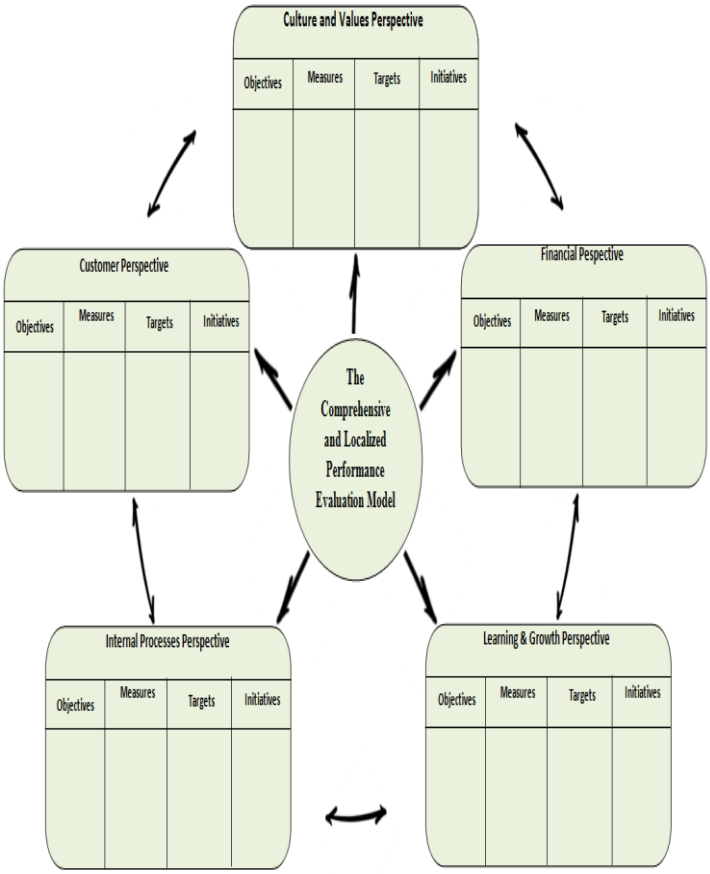

Figure 2. Conceptual Framework

Research Methodology

The research population incorporates managers and experts of 10 airlines who have more than five years of experience and holding at least a bachelor degree and the sampling method is random. The available population is estimated at 1000 experts. Using the Cochran formula in %95 confidence, it was specified that 90 samples are needed to conduct the study. We managed to get data from 110 samples by distributing questionnaire and interviewing. Then, using T-student test, we tested the significance of each indicator and ultimately TOPSIS technique,

the perspectives and indicators were ranked. In order to weight the indicators, we use qualitative method (expert opinion on a 5-point Likert scale). In this research we studied relevant documents and interviewed the experts of airline companies, we came up with the most important functional indicators in five perspectives: financial, market and customer, internal business processes, learning and growth and culture and values. Then, in order to test the significance of each indicator and to rank them, we designed a questionnaire using the 267 indicators identified which are stated are presented in the tables below. Each perspective is divided into several components:

Tool Validity and Data Reliability

The content and appearance validity of the questionnaire were confirmed by 16 experts and university professors. In order to measure the reliability, we used Cronbach Alpha method which gave a total value of 0.993 and it is considered a very suitable value for data reliability. Also, we analyzed the reliability of data about each perspective (financial, customer, internal business processes, learning and growth and culture and values) and results for each test was above 0.75.

Results

To test the significance of each indicator, we define H1 and H0 hypotheses and test each one with T-student in %95 confidence level. The significance of all indicators except the followings was confirmed:

- Number of female managers
- Percent of temporary full-time employees
- Number of part-time employees
- Average number of employment applicants
- Annual employment costs
- Percent of dismissed employees
- Percent of unpaid leave
- Percent of employees with no diploma

After the statistical test, we rank the perspectives and their components in order to investigate their importance. The table below depicts the results:

As it can be seen in the table above, the perspectives are ranked in the following order: Customer, Culture and Values, Learning and Growth, Financial and ultimately, Internal Business Processes.

Discussion

The literature review indicates that in most relevant studies, among the comprehensive performance evaluation models, BSC is a suitable and accepted model for performance evaluation of organizations and in most studies, it is chosen as the main research framework. But these studies are mostly based upon the traditional BSC model and almost none of them have tried to add any new perspective to the model. Also, there has been few research that has offered sufficient indicators for each perspective. The noteworthy point is that none of the researches has considered the "culture and values" perspective of organizations.

On the other hand, investigating other researches shows that in most of them, there is lack of ranking, weighting and identifying the perspectives and indicators. In addition, in those studies which the perspectives have been ranked and the organizations were in service sector, the "customer" perspective has topped the ranking and if the organizations were in manufacturing sector, "financial" perspective has ranked 1st.

The result of the ranking in this research confirms the priority of customers in service-based companies. It must also be mentioned that in all relevant researches, the internal business processes have always been at the bottom of rankings. It seems that in the times when most organizations are using their facilities and capabilities to adopt the most state-of-the-art technologies to produce and develop new services, they cannot gain competitive advantage, merely through accessing a new collection of operational procedures and emphasis on their improvement. Other perspectives are more important in gaining the values who internal and external stakeholders seek and the findings of this research corroborate this fact.For example, in our research the "learning and growth" perspective is ranked higher than "financial" and "internal business processes" perspectives which is the same as the results of Siang Chen et al (2011) research.

Conclusion

With airline managers using the findings of this research and choosing key measures in each of the four perspectives in BSC, along with focus on strategic vision of company, this research offers a new perspective, "Culture and Values" to match evaluation methods with domestic circumstances of a country. Regarding the findings of this research, the "Culture and Values" perspective ranked 2nd in the perspective ranking, with minor difference to the first perspective, the "Customer".

Also, as we expected, the results of the ranking of components indicate the main objectives of perspectives in Balanced Scorecard model as the main objective in customer perspective is satisfying customers and in financial perspective, is gaining profit and income growth in organizations. Besides, in learning and growth perspective, in order to realize the vision of airline companies, innovation and technological change and changeability and continuous improvement must be considered. In internal business processes perspective, attracting the value-creation for customers and ultimately the stakeholders can be achieved through efficiency improvement and productivity.

Since BSC model is used,our extended model focuses on mission, vision and strategies of airline companies and translates them into measuring objectives to define performance indicators. This model, not only is useful in gauging the productivity of airline companies, but is also aligned with strategic plan and is practical in measuring the effectiveness of strategies and policies of the organizations. Additionally, this model allows airline companies to design, implement and execute performance improvement plans in public and private sectors, more efficiently and accurately. Thus, we suggest the adoption of this model, not only to managers of airline companies, but also to managers of all types of organizations.

With regards to the results of this study, our ultimate comprehensive model for performance evaluation in airline companies is depicted in the image below:

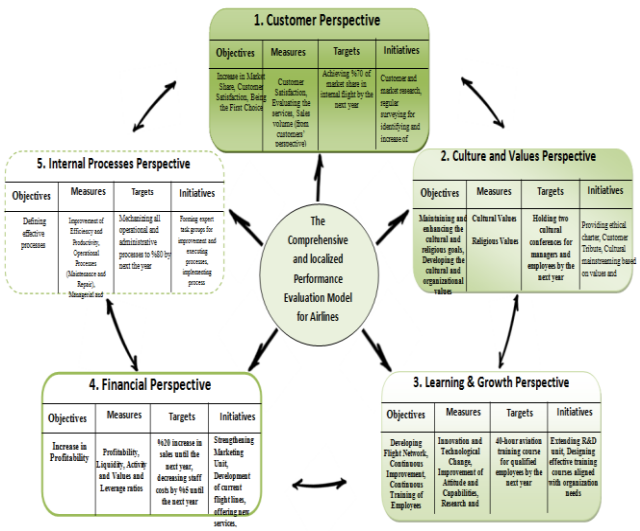

Figure 3. The Ultimate Proposed Model

Table 1. Perspectives and Indicators

Financial	**Liquidity ratios**	Current ratio, Quick ratio, Working capital.
	Growth and Profitability Ratios	Gross profit to sales, Operating profit to sales ratio, Net profit to sales ratio, Return of equity ,Return of assets, Current assets return ratio, Equity ratio, Gross profit to total assets ratio, Return on working capital, Accumulation ratio, company's profit growth rate, company's sales growth rate, Annual growth rate of each share, Ratio of cost of services to sales,ratio of total operational costs to sales value, Capital productivity, ratio of added value to current assets, Output value to current assets ratio,Output value to fixed assets ratio, Operating profit to output value ratio, Added value to output value ratio, Value-added margin, capital share in output value, Total assets productivity, ratio of total costs to total assets, Cost of services to assets, cost reduction rate, break-even point, Margin of safety
	Leverage Ratios	Debt ratio, Long-term debt to equity ratio, Current debt to equity ratio, Total debt in equity ratio, Timesinterestearned, Coverage ratio of financial fixed charge, Fixed assets to equity, debt coverage ratio, Proprietaryratio, Operating leverage, Financial leverage, Total leverage.
	Activity and Valuation Ratios	Total assets turnover, fixed assets turnover, Accounts receivable turnover, Average receivables collection period, Accounts payable turnover ratio, Account pay cycle, Working capital turnover ratio,
Customer	**Customer Satisfaction Indicators**	Customer satisfaction about the quality of services, Customer satisfaction the price of services, Customer satisfaction the time and deliverance of services, Customers loyalty, Customer satisfaction the overall offered services, Customer satisfaction their relationship with organization (polite behavior), the number of satisfied customers, Customer satisfaction about response attitude.
	Sales Volume and the Number of Customers	The number of transported passengers, the number of customers to that of employees, the number of new purchase applicants to the whole service purchase applicants, the number of internal IT customers, the number of external IT customers.
	Evaluation of Offered Services	The rank of company from customer's point of view, Perception of passengers from company and its validity, Ease of access to services, the average number of complaints, the rate of accountability to customers' complaints, the ratio of the numbers of complaints to number of all passengers, the time spent for dealing with complaints, the amount of compensation paid to customers.
Internal Business Processes	**Operational Process (Manufacturing and Maintenance)**	Increase of offering new services, Per capita provision of services, the average delay-time in offering services (flights), the rate of planned flights, the overall flight hours, the number of fleets, the number of transported passengers, the transported passenger-kilometer, transported tonnage-cargo, transported tonnage-kilometer, Offered seat-

		kilometer, supplied tonnage-kilometer, the measure of standardized processes of company (operational, non-operational), the conformity measure of services to standards, the evaluation and investigation costs, the repair and maintenance costs to fix assets, the cost of maintenance labor to overall repair and maintenance costs, the cost of items and repair parts to the overall repair and maintenance costs, the average time needed for emergency and preventive repairs, the maintenance and repair costs to added value.
	Productivity and Improvement of Efficiency	Appraising the efficiency and comparing the production capacity to actual production, the ratio of stoppage time to the overall time, human resources efficiency, fleet efficiency, qualitative effectiveness (physical/value), organizational effectiveness, the average index of overall effectiveness, overall productivity, average productivity of fleet, human resources productivity, capital productivity, utilization index of company's space, Sales-per-employee ratio, ratio of occupied passenger capacity, occupancy factor, ratio of transported tonnage-kilometer-per-employee, ratio of offered tonnage-kilometer per employee, the number of transported passengers to the number of fleet, the number of transported passengers to the number of employees, ratio of added value to employees, ratio of added value to wage and salary, the ratio of added value to the overall working hours.
	Managerial and Structure	Alignment of processes with achieving strategic goals, cyclical control and identification of weak spots of processes, identification of responsibilities in process, evaluating the organizational chart, structure form, identification of official reporting relations and administrative hierarchy level, managers control span, existence of effective communication system in organization, discretion hierarchy,Division of labor within the organization, Complexity in structure, Formality in structure, Centralization or decentralization in structure, Interactive communication among units with systematic approach, marketing costs to total sales ratio, Advertisement cost to total sales ratio, average time of responding to complaints, the percent of responded complaints, Administrative and public costs to total costs, Administrative and public costs to total revenue, Supervision indicator (cost of supervision and investigation to total costs), goal-setting and explaining the goals to employees, Providing instructions and standards and explaining them to employees, Codifying executive procedures for planning and producing services, Controlling and supervising the behaviors of employees, Setting common coordination meetings for managers and employees, Acknowledging and supporting the performance of outstanding individuals, The experience of managers in airline industry, Delegation to

		employees.
	Development of Process Technologies	Changes in hardware (company and competitors), Changes in software (company and competitors), Technology rate and the diversity of services in market by the competitors, IT costs of company to total employees, IT costs to administrative costs.
	Human Resources	Average age of employees, Adaptability of individuals with qualifying conditions, The amount of formality in jobs, Number of employees, Number of female managers, Percent change of number of employees in current period to previous period, number of employees younger than 40, ratio of service employees to administrative and support employees, ratio of temporary employees to permanent staff, number of part-time employees, Percent of full-time permanent employees to total employees, Percent of full-time temporary employees to total employees, Employee motivation, Employee satisfaction of company, Employee job satisfaction, Employee satisfaction with colleagues, Employee satisfaction with direct supervisor, Rate of lawsuit in Social and Work offices, Average number of recruitment applicants, Annual recruitment cost, Employee stability, Average years of experience, Rate of injuries and accidents, Frequency of accidents, Rate of work-related accidents, Job promotion, Investment in safety issues, Investment in health issues, Amount of utilizing current facilities by employees, Amount of utilizing current health facilities by employees, Rate of job absenteeism, Job rotation, Percent of quitting job, Percent of dismissed employees, The time spent for education, Number of courses, Number of course students, Number of on-the-job courses, Average salary of each personnel, Ratio of each employee's wage to his/her working hours, Percent of unpaid leave.
Learning and Growth	**R&D indicators**	Hours spent on research and development, The amount of investment on research and development, Number of R&D projects, Success and benefits of each R&D project, Ratio of R&D costs to total costs, Research projects capita.
	Improvement of Attitude and Capabilities of Employees	Investment of education to total employees ratio, Education effectiveness, Education costs to total costs, Education cost capita, Number of courses, Employee job satisfaction, Employee satisfaction with direct supervisor, Employee satisfaction with company, Employee alignment with corporation strategies, The adaptability of position and jobs, Percent of employees with no diploma, Percent of employees with diploma, Percent of employees with bachelor degree, Percent of employees with masters degree, Percent of employees with PhD degree, Average age of personnel, Average work experience, Knowledge promotion of employees, Number of proposals by employees, Number of approved proposals, Number of

		implemented proposals, Employee proposals capita, Creativity and innovation of employees.
	Innovation and Technological indicators	Procedural innovations (procedures and instructions), Implemented technological changes, Profit gained from generating new services, Investment for developing new markets, Corporation profit growth, Value of selling new services to total sales ratio, Capability of generating new services similar to those of internal competitors, Capability of generating new services similar to those of foreign competitors, Investment trend for equipment or buying fleet, Company sales growth, Level of creativity and inventiveness in generating new services, Amount of attention to new ideas, Growth percent of new services to that of last year, Situation of company's services from market share and sale process perspectives, Costs associated with IT development to total costs, IT education costs to total IT costs, Amount of investment on IT, Database implementation and access to required information.
Culture and Values	**Religious Values**	Employees performance based on religious values, Employees engagement in religious rituals, the commitment of employees to professional dressing, religious-based behavior towards employees, religious-based behavior towards customers
	Cultural Values	Employees alignment with cultural values, commitment to frugality and providence in workplace and organization, Fairness in appointments

Table 2. TOPSIS Ranking Results

Rank	Perspective	Components	Ci
1	Customer (Ci=0.685)	Customer Satisfaction Indicators	0.827
		Evaluation of Offered Services	0.487
		Sales Volume and the Number of Customers	0.262
2	Culture and Values (Ci=0.632)	Cultural Values	0.679
		Religious Values	0.32
3	Learning & Growth (Ci=0.553)	Innovation and Technological indicators	0.668
		Improvement of Attitude and Capabilities of Employees	0.499
		R&D indicators	0.368
4	Financial (Ci=0.552)	Growth and Profitability Ratios	0.597
		Liquidity ratios	0.566
		Activity and Valuation Ratios	0.435
		Leverage Ratios	0.337
5	Internal Business Processes (Ci=0.486)	Productivity and Improvement of Efficiency	0.672
		Operational Process (Manufacturing and Maintenance)	0.562
		Managerial and Structure	0.49
		Development of Process Technologies	0.458
		Human Resources	0.293

The proposed model is the extended version of Balanced Scorecard model and by implementing such comprehensive performance evaluation system, executing corporations' strategy can be measured in the five perspectives. Also, by controlling the strategy through this mean, any deviation from the objectives will be clearly identified and it can consequently bring about understanding the functional expectations for internal and external stakeholders in the organization will be provided. We suggest that the airline companies consider teamwork for monitoring the effective application of our proposed model and ranking the airline companies. In this regard, we suggest developing software for the model for performance evaluation and Airline Corporation ranking.

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