

# Using Business Intelligence to Provide a Model for Smartening the Management of Iranian Chain Stores

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## Abstract:

When an organization operates in a highly competitive environment, evaluating the effectiveness of business intelligence systems plays a vital role in better understanding the value and effectiveness of management and investment activities. The purpose of this study was to design a model for smartening the management of Iranian chain stores based on business intelligence, studied by Proma chain store. In this regard, by reviewing the literature and research background, the research model consisting of the concepts of business intelligence, stores, marketing and sales, consumer behavior and organizational agility was examined and according to research conducted by chain stores and companies. A provider of business intelligence tools, a model was implemented and studied in the Proma chain store. The main concern of most chain store managers is to increase the volume of business data and how to analyze it. It will help chain store managers by providing specific dashboards in different areas of the store in order to make rational decisions based on real data.

## Keywords:

Intelligence Model Design, Iran Chain Store Management, Business Intelligence, Proma Chain Store

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## 1. Introduction

In today's business world, the rise of chain stores, the diversity of goods, and the increasing consumer awareness and information about purchasing have doubled the need for business management intelligence. The increasing volume of business information in various areas of finance, manpower, processes, sales, customers, competitors and supply chain has led business owners to use the basic concepts of business intelligence and intelligent diagnostics.

In 2016, Sunil et al. Examined big data analytics in supply chain management between 2010 and 2016. Wieder and Osimitz in 2015, given the symbolic growth of business data, their analysis and analysis are in dire need [1].

The environment in which organizations currently operate is becoming increasingly complex, and the environmental factors of the business are putting pressure on them. Time decision making is the most important management activity in the organization and making accurate and timely decisions is considered a condition for the survival of the organization in the business environment. These decisions require the presence of technology such as business intelligence in the organization to help managers better understand the data and make the right decisions. After the necessity of having business intelligence systems in the organization, choosing the appropriate strategy and tailored to the needs of the organization and identifying and applying the effective factors in the successful manufacturing process of such systems, so that they have the most efficiency, are very important.

In order to study and diagnose the retail industry, the mission and vision of the start-up organization and strategic goals, key performance indicators, necessary rulers and evaluations and process optimization are used to improve the current situation. Business intelligence and diagnostics in this research are done in five perspectives “financial, processes, sales, human resources and supply chain” to increase customer satisfaction, profitability growth and financial sustainability. We gave an overview of Iranian chain stores and asked the elites of the retail and business intelligence industry to provide a comprehensive model for smartening the management of Iranian chain stores based on business intelligence, and of course in the case study of the launch analysis, we put the implementation of the template in the Proma chain store on the agenda.

### **The necessity of doing research:**

Due to the increase in the volume of business data, increasing the awareness of the audience, the presence of informed competitors, rational decision making and in the moment increases our need to be aware of all the assets and capabilities of the business. Geographical dispersion, different and different behavioral patterns of customers in different regions, suppliers and employees with different organizational behaviors, the experience of industry leaders in different parts of the world, owners and stakeholders of this industry to be equipped in this area and what equipment Better and more valuable than business intelligence.

The following is a model for smart store chain management, a model that takes into account different areas to help store management in decision-making and intelligence, and senior managers at different levels based on real business data Decide for yourself.

This model monitors the management of chain stores in five perspectives, based on critical industry standards. Chain store managers can evaluate targeting in two parts compared to annual targeting and in comparison with the average targeting of the past three years. This model is changeable and can evaluate more indicators at different levels

## **2. A Review of Research History**

Eric et al. (2017) The Role of Big Data and Predictive Analysis in the Retail Industry: This paper examines the opportunities and possibilities of big data in retail, especially in the five major dimensions of data - data Related to customers, products,

time, place and distribution channels. Much of the increase in data quality and usability comes from a combination of new data sources, an intelligent application of statistical tools and knowledge embedded in the data along with theoretical insights [2].

Singh and Samalia (2014) *Business Intelligence Approach to Managing Customer Loss*: This article studies customer loss in various competitive industries (such as telecommunications) from the perspective of business intelligence. It also points to the benefits of business intelligence for optimizing process management, value chain, and strategically increasing tangible and intangible assets [3].

Wieder and Osimitz (2015) *The Impact of Business Information on Decision-Making Quality: BI Business Intelligence Systems* have been a top priority for information systems managers for a decade, but there were few people who knew how to successfully manage those systems. They knew from the executive stage. This article examines the direct and indirect effects of BI quality management on the quality of managerial decision making, using PLS analysis of survey responses from senior IT executives in Australia. The results show that this is a general relationship, but also the mediating effects of data / information quality and the scope of business intelligence solutions. This study helps the university and industry by providing initial direct and indirect evidence [1].

The results of fundamental correlation show that the research findings are introduced as an optimal model of entrepreneurship based on the dimensions of intelligent knowledge management and individual characteristics of employees as a contingency model and there is no significant relationship between entrepreneurship with years of service and age.

Abdi Hevelayi et al.[4], studied *Predicting Entrepreneurial Marketing through Strategic Planning (Including Case Study)*.

Haj Abukahaki et al.[5], studied *Identificaion and prioritization of effective indicators on optimal implementation of customer relationship management in the insurance industry(including case study)*.

Taghipour et al.[6], studied *Risk analysis in the management of urban construction projects from the perspective of the employer and the contractor*.

Rezvani Befrouei MA et al.[7], discussed *Identification and Management of Risks in Construction Projects*.

Alamdar khoolaki et al.[8], studied *Effect of integrated marketing communication on brand value with the role of agency's reputation*.

Taghipour et al.[9], studied *Analysing the Effects of Phisical Conditions of the Workplace on Employees Productivity*.

Baghipour sarami et al.[10], studied *Modeling of Nurses' shift Work schedules According to Ergonomics: A case study in Imam sajjad (As) Hospital of Ramsar*.

Taghipour et al.[11], studied *Supply Chain Performance Evaluation in IN The IT Industry*.

Taghipour et al.[12], studied *the Study of the Application of Risk Management in the operation and Maintenance of Power Plant Projects*

Mahboobi et al.[13], discussed Assessing Ergonomic Risk Factors Using Combined Data Envelopment Analysis and Conventional Methods for an Auto Parts Manufacturer. occupational injuries are currently a major contributor to job loss around the world.

Taghipour et al.[14], studied Assessment and Analysis of Risk Associated with the Implementation of Enterprise Resource Planning (ERP) Project Using FMEA Technique.

Taghipour et al.[15], studied Construction projects risk management by risk allocation approach using PMBOK standard.

Taghipour et al.[16], studied The Evaluation of the Relationship between Occupational Accidents and Usage of Personal Protective Equipment in an Auto Making Unit.

Taghipour et al.[17], studied Necessity Analysis and Optimization of Implementing Projects with The Integration Approach of Risk Management and Value Engineering.

Taghipour et al.[18], studied Evaluating Project Planning and Control System in Multi-project Organizations under Fuzzy Data Approach Considering Resource Constraints.

Taghipour et al.[19], studied Implementation of Software-Efficient DES Algorithm.

Taghipour et al.[20], studied Risk assessment and analysis of the state DAM construction projects using FMEA technique.

Taghipour et al.[21], studied the impact of ICT on knowledge sharing obstacles in knowledge management process.

Taghipour et al.[22], studied Assessment of the Relationship Between Knowledge Management Implementation and Managers Skills.

Taghipour et al.[23], studied Evaluation of the effective variables of the value engineering in services.

Khalilpour et al.[24], studied The Impact of Accountants Ethical Approaches on the Disclosure Quality of Corporate Social Responsibility Information an Islamic in Iran.

Taghipour et al.[25], studied Identification and Modeling of Radio Wave Propagation Channel in Industrial Environments.

Taghipour et al.[26], studied Evaluating CCPM method versus CPM in multiple petrochemical projects.

Soleymanpour et al.[27], studied Mathematical modeling for the location-allocation problem allocation of mobile operator subscribers' affairs' agencies under uncertainty conditions.

Taghipour et al.[28], studied Application of Cloud Computing in System Management in Order to Control the Process..

Taghipour et al.[29], studied Evaluation of Tourist Attractions in Borujerd County with Emphasis on Development of New Markets by Using Topsis Model.

Abdollahzadeh & Taghipour [30], studied Identify and Priorize Suitable Area for Ecotourism Development using Multi-criteria Analysis for Development of the Tourism Market in Iran (Nathanz City).

Mirzaie et al.[31], studied The Relationship Between Social Bearing Capacities with Conflict as a Result, in the Perception of the Visiting Historical Sites.

Abdi et al.[32], studied the relationship between strategic planning with entrepreneurial marketing in the saderat bank of north tehran.

Abbasi & Taghipour,[33], studied An Ant Colony Algorithm for Solving Bi-Criteria Network Flow Problems in Dynamic Networks.

Sedaghatmanesh & Taghipour [34], studied Reduction of Losses and Capacity Release of Distribution System by Distributed Production Systems of Combined Heat and Power by Graph Methods.

Taghipour et al.[35], studied A Survey of BPL Technology and Feasibility of Its Application in Iran (Gilan Province).

Seddigh Marvasti et al.[36], studied Assessing the Effect of FRP System on Compressive and Shear Bending Strength of Concrete Elements.

Jalili et al.[37], studied Utopia is considered to be the physical form of an ideal human society where the goals are met.

Khodakhah Jeedi et al.[38], studied The Analysis of Effect Colour Psychology on Environmental Graphic in Childeren Ward at Medical Centers.

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Rezvani Befrouie A et al. [40], discussed the design of high-rise building with ecological approach in Iran (Alborz Province).

Torabi et al.[41], studied Implementation of hierarchy production planning model and its theoretical comparison with manufacturing resources planning.

Taghipour et al.[42], studied Investigating the Relationship between Competitive Strategies and Corporates Performance.

Taghipour et al.[43], studied The identification and prioritization of effective indices on optimal implementation of customer relationship management using TOPSIS, AHP methods.

Taghipour et al.[44], studied Investiged the Relationship between Competitive Strategies and Corporates Performance. Seismic Analysis (Non-Linear Static Analysis (Pushover) and Nonlinear Dynamic) on Cable-Stayed Bridge.

Taghipour & Moosavi.[45], studied A look at Gas Turbine Vibration Condition Monitoring in Region 3 of Gas Transmission Operation.

Taghipour et al.[46], studied The Impact of Working Capital Management on the Performance of Firms Listed in Tehran Stock Exchange (TSE).

Habibi Machiani et al.[47], studied the relationship between social responsibility and brand of companies listed on the tehran stock exchange.

Asadifard et al.[48], studied A Multi-Objective Mathematical Model for Vehicle Routing Problem Considering the Time Window and Economic and Environmental Objectives Using the Metaheuristic Algorithm Based on Pareto Archive.

Taghipour and Azarian.[49], studied The Impact of Extensive Quality Management on Human Relations (Case Study: Education).

Taghipour and Vaezi.[50], studied Safe Power Outlet.

Taghvae yazdi et al.[51], studied The Impact of Intellectual Capital on Organizational Entrepreneurship (Case Study: Mazandaran Science and Technology Park)

Azarian and Taghipour [52], studied The Impact of Implementing Inclusive Quality Management on Organizational Trust (Case Study: Education).

Azarian et al.[53], studied The Effect of Implementing Total Quality Management on Job Satisfaction (Including Case-Study)

Ghadamzan Jalali et al.[54], studied Explain the Relationship Between Intellectual Capital, Organizational Learning and Employee Performance of Parsian Bank Branches in Gilan province.

Tarverdizadeh et al.[55], studied Predicting students' academic achievement based on emotional intelligence, personality and demographic characteristics, attitudes toward education and career prospects through the mediation of academic resilience.

Taghvae yazdi et al.[56], studied The Relationship between Implementation Principles of Implementation with Organizational Accelerations, Ethical Leadership and Empowerment of Managers (Case study: Employees of national banks in Sari, District 1).

Khorasani et al.[57], studied The Location of Industrial Complex Using Combined Model of Fuzzy Multiple Criteria Decision Making (Including Case-Study).

Habibi Machiyani et al.[58], studied Designing a smart model for managing Iranian chain stores based on business intelligence (case study of proma chain store).

### 3. Research Methods

#### **Society and statistical sample:**

A statistical population is a set of individuals or units that have at least one attribute in common. Study and research in the clothing, food, cosmetics, commercial complexes and chain stores in Iran, including managers, sales experts and masters of business intelligence, which is a total of 150 people.

Equivalent to 110 people. It is better to focus on business concerns in establishing business intelligence, and in the first step, plan the problem-solving path and how to implement business intelligence by looking down. And in the second step, by looking down, he established business intelligence in the business.

Our suggestion for businesses and chain store management is the first method, and the management view is important, and if the concern is not answered, we should examine the data sources, or if we face a shortage of data. Based on various process tools, turn qualitative data into quantity to make it usable and visual.

Because the goal of business intelligence solutions is not just to provide a software tool, but also to help store managers in different layers of business, especially senior management, to be able to see the right and make the best decision in the shortest time.

By using the balanced scorecard model and adding a view called supply chain, we proceed step by step according to the importance of the issue in the management of chain stores:

Step 1: Beliefs, attitudes, core philosophy and infrastructure of the organization should be evaluated and developed.

In this way, the mission of the organization, philosophy, why and existential mission should be examined and analyzed. And in this way the following items should be evaluated:

Market opportunities, competitors, financial position, long-term and short-term goals, identifying what satisfies the customer, organizational capacity, strategy, organizational values, mission, vision, requirements, goals that we want to achieve in a given period of time to achieve the results we want to achieve. We need to identify and review any data on the above important items and the data sources associated with each.

Step 2: In this step, the areas and strategic themes of the organization's macro business should be defined and developed. These strategies determine the do's and don'ts and how to do things better and how to succeed.

Step 3: After formulating the strategy, it is necessary to divide this strategy into smaller components and components, which are the goals of the strategy.

Step 4: In the fourth step, a strategic map of the organization's macro strategy is drawn. Which will show how the goals interact with each other and affect each other.

The strategic plan is drawn using the information of the previous step and the balanced scorecard framework. Each goal must be in one of the four parts of the BSC model. This map is obtained by establishing cause-and-effect relationships (if-then) between goals and components of the strategy to identify the key performance of each unit in relation to each other.

In this map, the components and goals of the strategy are related to each other and are properly placed in the table of aspects of the balanced scorecard. Communications between strategy components are used to identify key performance paths in each strategy that show the path to success for customers and stakeholders. A strategy map is therefore a complete solution for describing the value chain to the customer.

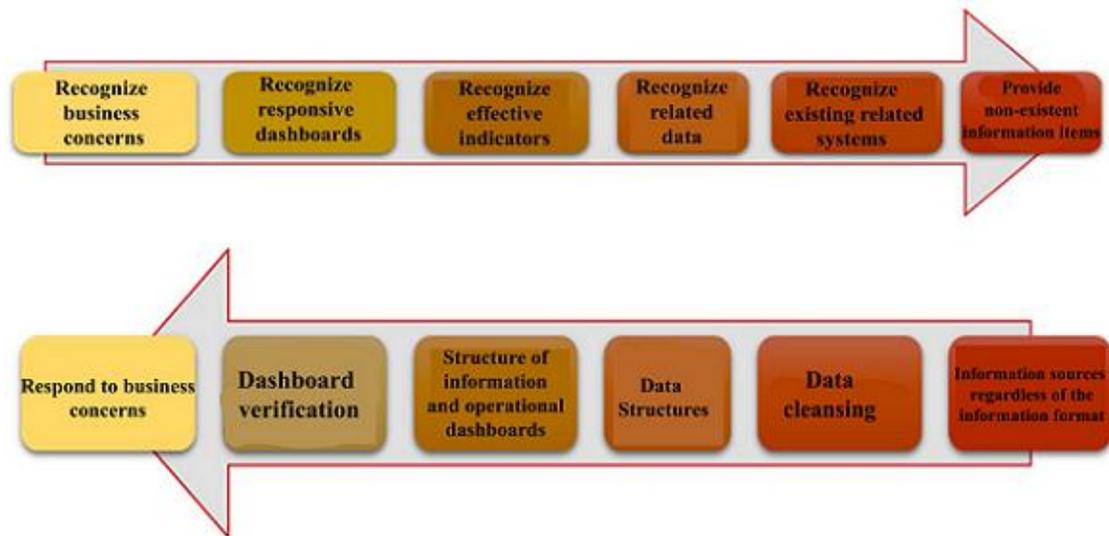
Step 5: After setting the objectives in the framework, the BSC criteria and indicators or their target values are determined. At this stage, key factors and performance criteria are obtained to assess the progress of operational and strategic aspects of the organization and compare strategy with performance. For this purpose, the relationship between expected results and required processes should be well known.

Step 6: In the last step, the priorities, plans and programs that are necessary to achieve the desired goals and ensure the effectiveness of the strategy are determined.

At this stage, for each strategy, one or more goals, and for each goal, one or more criteria, and for each criterion, exactly one goal and a small goal (index) and for each index, a priority and work plan are prepared.

What is the goal ?

What are the next steps?



**Figure 1.** Problem solving path and how to implement business intelligence.

**Table 1.** Financial perspective.

KPI	Strategic objective	Strategy
ROE equity return	Increase the efficiency of portfolio management performance	Creating long-term added value for the beneficiaries
Return on investment		
Rate of return on ROA assets		
invest return rate		
Net present value		
Investment amount (short-term and long-term)		
The share of foreign investment		
Economic value added EVA		
Net sales amount	Achieving business goals	Sustainable income growth
Sales return rate		
Sales growth rate		
Percentage of sales budget realization		
Liquidity ratio		
Operating cash flow ratio		
Net profit margin, gross, operating		
Amount of net, gross, operating profit		
Net, gross, operating profit growth rate		
Earnings per share		
Minimum and maximum dividends		
Liquidity risk		
Commitments to inventory		

#### 4. Designing and Implementation of Data Warehouse

In this section, existing information systems should be examined and information fields and records should be identified. No business intelligence solution in the world records information, but business intelligence systems are upstream tools that connect to existing information sources including financial accounting, sales, business, payroll, warehouse, treasury, customers, etc. They process them and provide them to managers

at different levels in the form of understandable management dashboards and quick and easy decisions in the form of knowledge and intelligence.

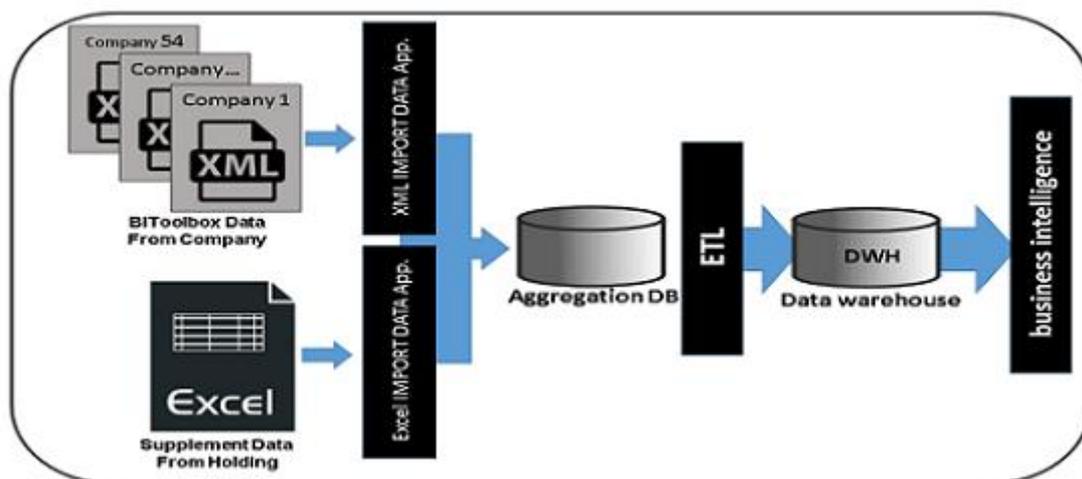
But how is it possible that heterogeneous data, with different formats that can be aggregated, granulated, processed in software systems produced by different companies, and collectively at the service of managers with any volume of information? Stores to be located? Therefore, one of the most important tasks in business intelligence is the production and management of data warehouse because:

- First: The biggest problem of retail business owners and chain store managers in the world is their dispersion and lack of easy access to information produced in their organization, which of course is a little bigger in our beloved country. Iranian businesses spend a lot of time recording data, but unfortunately this data rarely helps the organization make important decisions.

Second: Another big problem of Iranian businesses is that business owners think they do not have enough data or it is not possible to manage the business with the data collected in different systems.

“See and manage your business in a big, comprehensive picture,” says business intelligence.

Therefore, in dream images, which we call the big business image or management dashboard, and in a short time, a decision based on business knowledge and insight, without the need for occasional reporting of specialized personnel or in situations. Drowning paper and report, we will achieve!



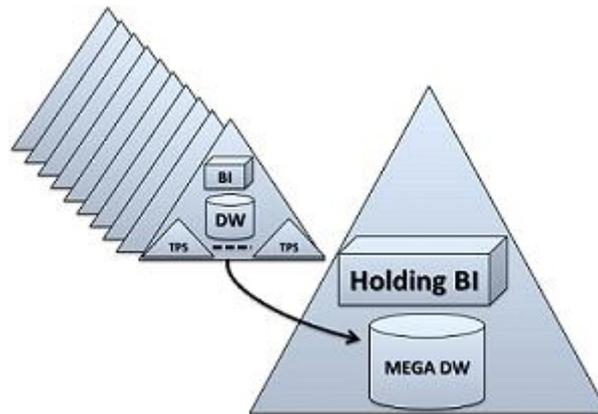
*Figure 2. Data collection from subsystems.*

Collecting data from various systems and departments of sales, finance, administration, security, sales level, warehouse and ...

Integration, data processing and formation of central data warehouse in the parent company and implementation of management and information dashboards in the fields of production, supply, sales, finance and human resources for the parent company and its subsidiaries.

Design and implement effective and result-oriented operational and management dashboards

Understanding and analyzing data becomes very easy when you can, at the same time, have a complete graphical view of most of your business information on your monitor screen. This image can contain a view of your current information and business history.



*Figure 3. Data collection from subsystems.*

Dashboards in chain store intelligence inspired by the method of Al-Bashir et al. In 2008, which were presented in three strategic, tactical and operational sections, are designed in three organizational sections:

- (1) Analytical and complication diagnosis of chain stores
- (2) Strategic with answers to senior managers' questions
- (3) Intelligent simulation and forecasting



*Figure 4. Design and implementation of effective and result-oriented operational and management dashboards.*

The design of chain store intelligent dashboards in this research is done in five perspectives “finance, processes, sales, human resources and supply chain” to increase customer satisfaction, profitability growth and financial sustainability. Dashboard models are classified:

- (1) Supply Management Dashboards
- (2) Sales and Market Management Dashboards
- (3) Marketing and customer management dashboards
- (4) Warehouse Management Dashboards

(5) Financial Management Dashboards

(6) Human resource management dashboards

(7) Strategic Management Dashboards

(8) Cause and effect analytics dashboard

Cost of goods, services in different stores and general management of stores

- Analysis of operating income from rising prices, sales and cost
- Analysis of administrative and general expenses after possible increase or decrease of employees' salaries, transportation and marketing expenses
- Financial analysis of financial cost management resulting from receiving a loan or changing interest rates
- Analysis of non-operating income and expenses due to changes in interest on bank deposits and foreign exchange receivables

One of the main applications of profit and loss face dashboards in smart chain store management:

- In setting and formulating various targeting in different units and forecasting costs and sales
- In preparing asset depreciation tables, increasing debt and entering cash flows in efficient store management
- To extract important items of the company such as operating income, including; Sales, commissions, dividends, guaranteed profits, net and gross income and royalties.
- Assisting strategic store managers in identifying the direction of company policies regarding cost and revenue. Chain store management policies in this regard can be a conservative or aggressive strategy.
- To compare stores, we can compare costs with the costs of similar companies in • With the help of financial dashboards, financial managers will accompany other managers at different levels and the negative view of retrospective financial managers will become their added value in order to advance organizational goals.

#### **Human resource management dashboards:**

Human resources in chain stores and shopping malls are undoubtedly one of the competitive advantages. Talented, specialized, trained, trained and loyal employees are considered the assets of chain stores because they encourage customers to buy and Ultimately, they encourage corporate profitability.

#### **Staff Performance Evaluation Dashboard:**

Based on indicators defined by store managers or senior managers, staff performance is displayed visually. Indicators in the aspects of professional, organizational and individual ethics such as planning and time management, honesty, correspondence, conversations, good manners, neat appearance, order, creativity and ....

Based on the information recorded in the recruitment systems, it is displayed and their share in sales, profit, product group is evaluated. This dashboard can be effective if the reward system is based on sales.

### **Personnel Promotion Management Dashboard:**

Career or career path refers to the employee's progress during his years of service in a job. A career path is a set of occupations that a person pursues throughout the course of his or her working life and includes training people in work plans, goals and hopes, aspirations, feelings, and ambiguities in line with that role.

Among the reasons and necessity of having a career path dashboard in smart chain store management can be equal employment opportunities, quality of work life, competition for talented employees, avoiding old skills and acquiring new skills, retaining employees, optimal use of employees He pointed out that it creates an opportunity for knowledge, development and advancement of employees in the organization.

Providing a career development management dashboard will help managers implement the following:

- (1) Assisting store managers in planning successors, nurturing and training future managers
- (2) Informing the organization and employees about the potential career paths of the organization
- (3) Determining the routes of horizontal movement of the organization's jobs (job turnover)
- (4) Determining the routes of vertical movement of the organization's jobs (job promotion)

### **Overtime Management Dashboard:**

Store management By personnel, rank, relevant unit and other indicators can manage their staff in terms of overtime and related costs.

### **Personnel Facility Management Dashboard:**

The store manager makes the necessary plans to provide special facilities to his employees. Based on indicators such as work experience, contract duration, type of loan, etc.

### **Strategic Management Dashboard:**

With a macro view, it is designed with a colored approach to accelerate the view of the business based on indicators that have already been obtained based on senior management concerns.

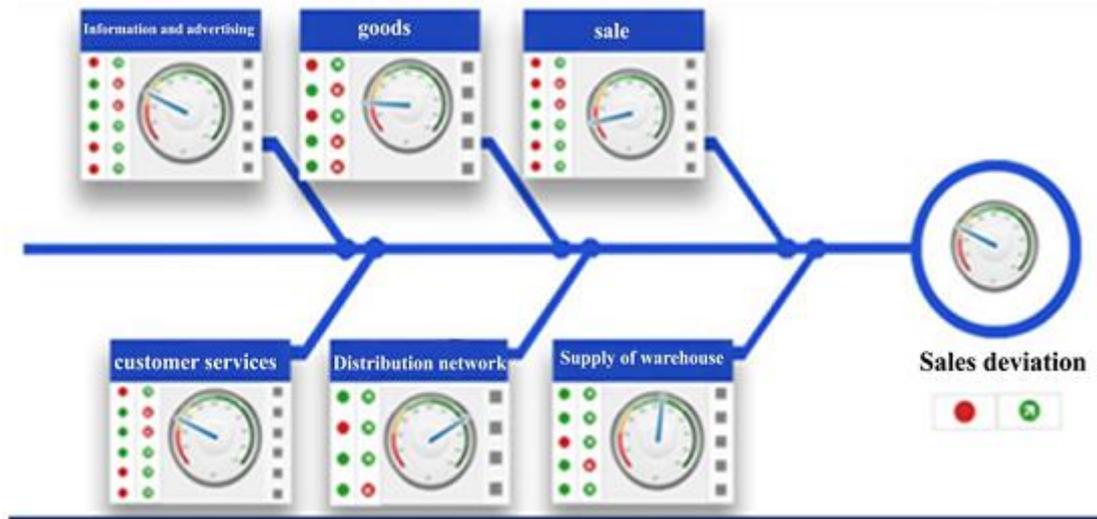
“See and manage your business in a big, comprehensive picture”, says Business Intelligence.

Images that we call the big business image or management dashboard, and in a short time a decision based on business knowledge and insight without the need for occasional reporting of specialized personnel or paper and report in clusters If we drown or queue up for our reports, we will get there.

Management of chain stores based on geographical dispersion:

### **Cause and effect analytic dashboard:**

The ability to move from different layers of the organization, allows us to diagnose based on different data and indicators and achieve the main causes of crises. Innovation and creativity in implementation can work.



*Figure 5. Analytical dashboard of cause and effect for sales complication.*

### Limitations

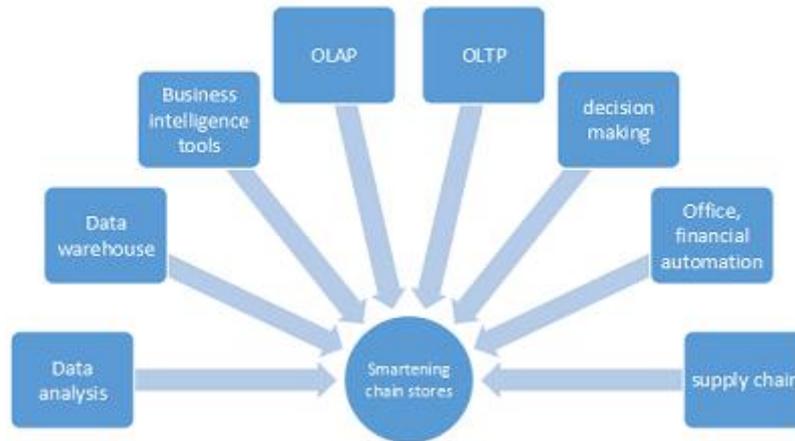
- (1) This research has been done cross-sectionally. Because of this, it makes it difficult to draw conclusions about causality.
- (2) Lack of access to the main dashboards of companies providing business intelligence tools, as well as chain stores that have used business intelligence.
- (3) Lack of trust in the management of chain stores in Iran to access store data
- (4) Sufficient time to evaluate the model used to design management dashboards
- (5) Expansion of stores in the country and study of customer behavior

### 5. Conclusions

After studying the companies providing business intelligence tools, chain store companies using the concepts of business intelligence and Proma chain store in Iran, we came to the conclusion that business intelligence concepts in all chain stores using Business intelligence is the same, and differences in attitudes, creativity, definitions, and regional, geographical, ethnic, and cultural concerns lead to the use of many different dashboards and infrastructures. A combination of approaches offered by companies and chain stores, along with the powerful Tablo Business Intelligence software, has been implemented in the Proma chain store using the “Ralph Kimball” model and the five-layer “In Lee Ong” model. The different layers of business intelligence in the following forms are very clear and tell business facts.

After targeting and program-oriented the pillars of chain stores, processes are improved and agility in stores becomes more transparent. By holding management meetings in recognizing the current situation and identifying the attitudes of business owners and managers, existing concerns, future plans, business situation, human resources, market position, sales share, infrastructure, automation system, goods and its diversity, Maintaining business data, warehouses, sales areas, divisions, etc. Finally wants to achieve a strategic dashboard for senior management of the

organization, that manager, without the need for quantitative data and boring and full tables From the numbers to be able to see the result in the fastest possible time.



**Figure 6.** Process optimization by implementing business intelligence in chain stores.

## Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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