

## Identification and classification of open book accounting dimensions by considering inter-organizational cost management: A case study of petrochemical companies listed in Tehran Stock Exchange

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### CHRONICLE

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### ABSTRACT

This study aims to identify and to classify Open book accounting (OBA) dimensions according to inter-organizational cost management (IOCM) in petrochemical companies listed in Tehran Stock Exchange. In this research, there are 18 statistical society financial and accounting experts listed in Tehran Stock Exchange. By studying the theoretical literature and conducted investigations inside and outside of the country and also the experts' comments, the OBA dimensions were identified and then classified by analytical hierarchy process technique. According to the studies and experts' ideas, four dimensions including nature of data and accounting data disclosure practices, uses of disclosed accounting data, conditions of OBA, cost implementation of OBA were identified as OBA dimensions. The results of examinations were shown that, considering the comments on dimensions of nature of data and accounting data disclosure practices, the form of data disclosure plays a more important role. In uses of disclosed accounting data dimension, coordination and planning among team members play the most important role. According to conditions of OBA dimension, trust is the most important one and in cost implementation of OBA dimension, the cost of the other party plays the most important role.

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## 1. Introduction

Open-book accounting (OBA) is an accounting technique in which a particular firm discloses the details related to the cost of data for special partners. For example, a vehicle manufacturer in Germany discloses everything associated with its product's costs including staple, direct and indirect payment, manufacturing overhead, corporate overhead, cost of packaging, transportation, services after sale, research and development and profit for its supplier of raw materials. In other words, the

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supplier of raw materials reveals its overhead costs including waste during production, production requirements, depreciation, and insurance and its practical capacity for the buyer.

To date, OBA is still a new phenomenon and the main reason is that cost data is usually one of the most confidential and sensitive pieces of data in most companies. Disclosing this data to supply chain partners is a practice that appeared with the spread of lean production and supply in the 1990s (Windolph & Möller, 2012; Shomakhi, 2011; Munday, 1992).

There have been few studies to examine the current procedures and implementation problems on the provider–buyer relationships. Empirical studies have shown that 30% of suppliers of electronic components, disclosed cost data of their products for the customers and just 10% of them disclosed this sort of data to subcontractors. Inter-organizational cost management refers to activities, processes or methods that help managers manage the costs that are within the inter-organizational borders. All of the inter-organizational cost management techniques are in common because all of them are inter-organizational cooperation activities with the common goal of generating value for both partners through restructuring inter-organizational costs. According to inter-organizational cost management practices, inter-organizational cooperation facilities reduce the costs in two ways: First, it helps to identify the ways, which would increase the relationships between companies and second, it helps companies as well as buyers and suppliers to find more ways for reducing the cost of product. Management accounting practices discussed in management literature of inter-organizational cost are able to detect in cost price and reporting and disclosure section.

## **2. Related literature**

Kajüter and Kulmala (2005) discussed about the contingency framework and theoretical and managerial implications, contributing to reduce the deficiency in two steps: First, they described a single case study of a German car manufacturing and, second, explained the results of a cross-case analysis in three Finnish manufacturing networks and six major reasons on why open-book accounting fails. Suomala (2010) explained that OBA was an accounting template with a seemingly flexible character. He explained how OBA might be used for mitigating the component's price increasing pressures and, thus, controlling the costs of the end product in hybrids resembling very much market conditions by relying on the empirical study. However, the very similar OBA procedures can be implemented to achieve the long-term objectives of partnering in hybrids resembling to a great extent hierarchical structures. He concluded that the best corresponding control archetype for a given OBA application depends on the purpose defined for the inter-organizational cost management (IOCM) activity by participating stakeholders (Rahnamaye Roudposhti & Gholami Jamkarani, 2011).

Agndal and Nilsson (2010) explained that within market procurement characterized by a transactional purchasing strategy, cost data serves to reduce purchase price. Therefore, data disclosure is limited in scope and scale, happens primarily during supplier evaluation and selection and is characterized by an adversarial atmosphere. Hoffjan et al. (2011) stated that open-book accounting could be used in price management and for inter organizational cost management. This includes increasing negotiation pressure on a supplier. Xu (2011) analyzed ICOM circumstance, techniques, and constructed an application framework of cost management in supply chain. He stated that Open book accounting (OBA) is a strategy that leads towards co-operation between firms situated in a supply chain. Meynardie (2012) examined the use of open book accounting (“OBA”) in the construction industry, and specifically concentrated on the use of open book contract clauses; appropriate project delivery systems for open book accounting; the types of projects that lend themselves to open book accounting, and certain benefits and pitfalls associated with the use of open book accounting in the study “Innovative Legal Strategies Developed from Challenging Projects”.

## 2. Dimensions of Open Book Accounting

Cost management practices increasingly transcend traditional firm boundaries (Mouritsen et al., 2001; Dekker, 2003; Cooper & Slagmulder, 2004) and OBA is still a new phenomenon. The main reason is that cost data is usually one of the most confidential and sensitive pieces of information in companies. Disclosing this kind of information to supply chain partners is a practice that appeared with the spread of lean production and supply in the 1990s. In the previous study, OBA includes three interrelated dimensions including nature of data and the purposes of data disclosure; atmosphere of the buyer-supplier relationship, incentives for the supplier to disclose cost data shown in Table 1.

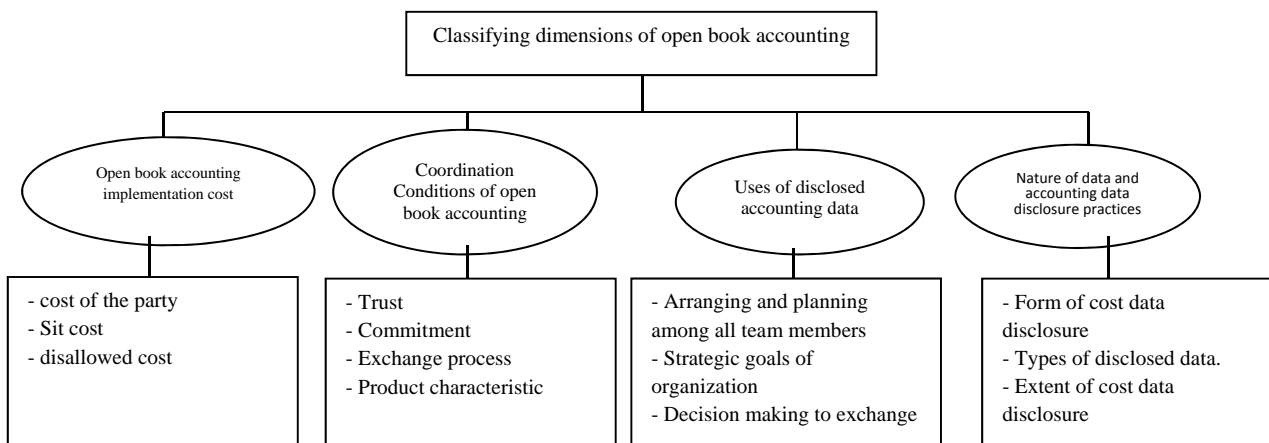
**Table 1**  
Difference perspectives of OBA

Dimensions	Contents
Nature of data and accounting data disclosure practices	(1)Types of disclosed data. (2)Extent of cost data disclosure (3) Form of cost data disclosure
Uses of disclosed accounting data	(1)Support of strategy formulation (2)Decision making (3)Cost planning and control (4)Performance measurement and evaluation (5)Product development and supply chain
Coordination Conditions of open book accounting	(1) Relationship characteristic (2) Exchange process (3) Product characteristic
Open book accounting implementation cost	1)The cost of the sit cost 2) Sit cost 3) disallowed cost

In this article, according to the previous studies, we add a new item of OBA to the last 3 items that is OBA implementation cost, which includes some new cases: These dimensions are obviously interrelated. The purpose of data disclosure influences the kind of data that is requested. The conditions of data disclosure determine what types of data the supplier is willing to share and, consequently, which activities data disclosure might support. Nonetheless, nature, purpose and conditions constitute useful starting points for studying OBA in practice.

## 3. Conceptual model

Due to previous studies and experts' ideas, OBA includes 4 dimensions according to Table 1, Nature of data and accounting data disclosure practices, Uses of disclosed accounting data, Coordination Conditions of open book accounting and Open book accounting implementation cost and now sub-dimensions are determined as Fig. 1.



**Fig. 1.** The conceptual model

According to Fig. 1, first dimension of OBA includes the nature of data and accounting data disclosure practices, which contains form of cost data disclosure, types of disclosed data and extent of cost data disclosure. Form of cost data disclosure means that we focus on providing the data associated with activity history, accounting procedures, accounting changes and post-events after balance sheet. Type of disclosed data indicates the data, which should be disclosed by three features: appropriate: giving least data needed to users in a way not to confuse them. Equanimity is associated with the goal based professional behaviors. Complete represents all related important and effective provided data. Extent of cost data disclosure means that in an ideal world, making decision about extending or the amount of data increases soil welfare.

FASB: the data should be important, effective, on time and recognizable; also should be relied on and the numbers must be true. It is assumed that the data with these features provide society general interests. Second dimension of OBA includes uses of disclosed accounting data containing sub-dimensions as arranging and planning among all team members, strategic goals and organization, decision making to exchange. Arranging and planning among all team members' states that conducting an OBA system needs arranging and planning among all team members and the necessary regulation to make that is the place where the data is available to all interested groups.

Strategic goals of organization mean organization goals and strategies like decreasing costs, increasing interests, and enhancing sales. Decision making to exchange indicates that decision making is a process to decrease distrust, removing doubts about the options in what to be able in choosing reasonably, for instance: someone decides to provide the data for the party and determine he/she receive them or not?

Third dimension is Coordination Conditions of OBA includes sub-dimensions like trust, commitment, exchange process and product characteristics, which shows the parties trust to disclose data. Trust is an element in organization and industry explaining the type of communications. Commitment states that commitment is a base for trust; if two parties (seller and buyer) commit to disclose data, it will be probable to disclose sensitive data without communication.

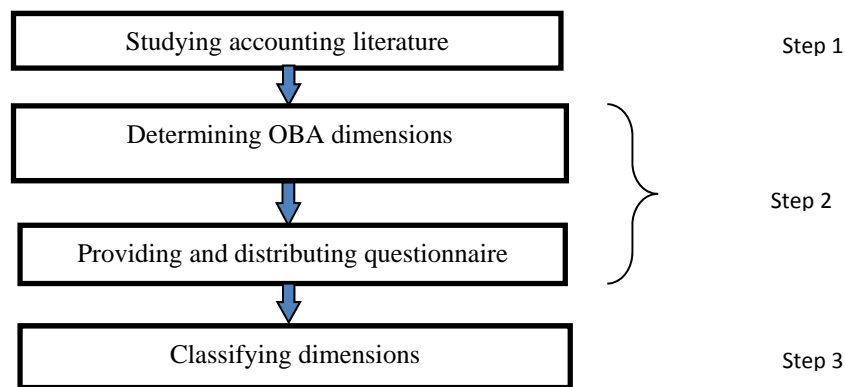
Exchange process means all activities and conduction during a transaction. Product characteristics indicates the factors that may be considered as important ones for the customer like: usage, durability, quality, price, lifetime.

The fourth dimension of OBA includes OBA implementation costs, which contains the sub-dimensions such as cost of the party, sit cost and disallowed cost. Cost of the party dimension means that if the data is disclosed, what will happen; for example: decreasing profit margin. Sit cost indicates that the seller and buyer can receive all their necessary products and services in the least cost and distance, from the network. Information network is available as a modern tool to all providers. Companies and providers use information technology system for observing information. Disallowed cost points to the cost that is not acceptable. Disallowed costs definition includes general and administrative costs, which are not allowed. G&A costs include management, financial, and other expenses dedicated as a collection by a commercial unit. The costs of customer care are not allowed. They includes marketing, selling, production management, advertisement, but not limited to them. Facility costs include repairing the facilities to reuse them. The costs that cannot be determined or dedicate directly, are disallowed.

#### **4. Research method**

This research is a kind of applied and survey research and a questionnaire has been designed for data gathering. First, the necessary information is collected from the library resources in the form of documents and then petrochemical companies financial experts comments are used for the analysis

and completion. To test open book accounting criteria and sub-criteria, analytical hierarchy process (AHP) will be used (Saaty, 2003). Open book accounting implementation is considered as dependent variable and barriers to implementation will be considered as independent variable. Time domain of this research is the summer of 2012. Spatial domain of this research is Tehran Stock Exchange and the population in this research is accepted petrochemical companies that are the members of Tehran Stock Exchange. In this research, the statistical society includes 30 petrochemical companies' financial and accounting experts. Since the studied statistical society is a limited population and considering that comprehensive results in the organization is the aim of the research, so it is decided that the sample includes all the members of the society. Among the distributed questionnaires, 18 petrochemical companies' financial and accounting experts answered to the distributed questionnaires. Data collection in this research is analytical hierarchy process (AHP) questionnaire that collect the importance of dimensions of open book accounting, from the petrochemical companies financial and accounting experts' point of view. According to its goals, this research has 3 phases:



**Fig. 2.** Conduction process of the research

## 5. Data analysis and results

In the first step, after identifying OBA sub criteria, relative importance of each sub criteria is evaluated in order to form a matrix of paired comparisons. In the second step, the comparison matrix of criteria by a group is obtained according to geometric mean.

$$a_{ij} = \frac{1}{n} \prod_{k=1}^n a_{ij}^k \quad (1)$$

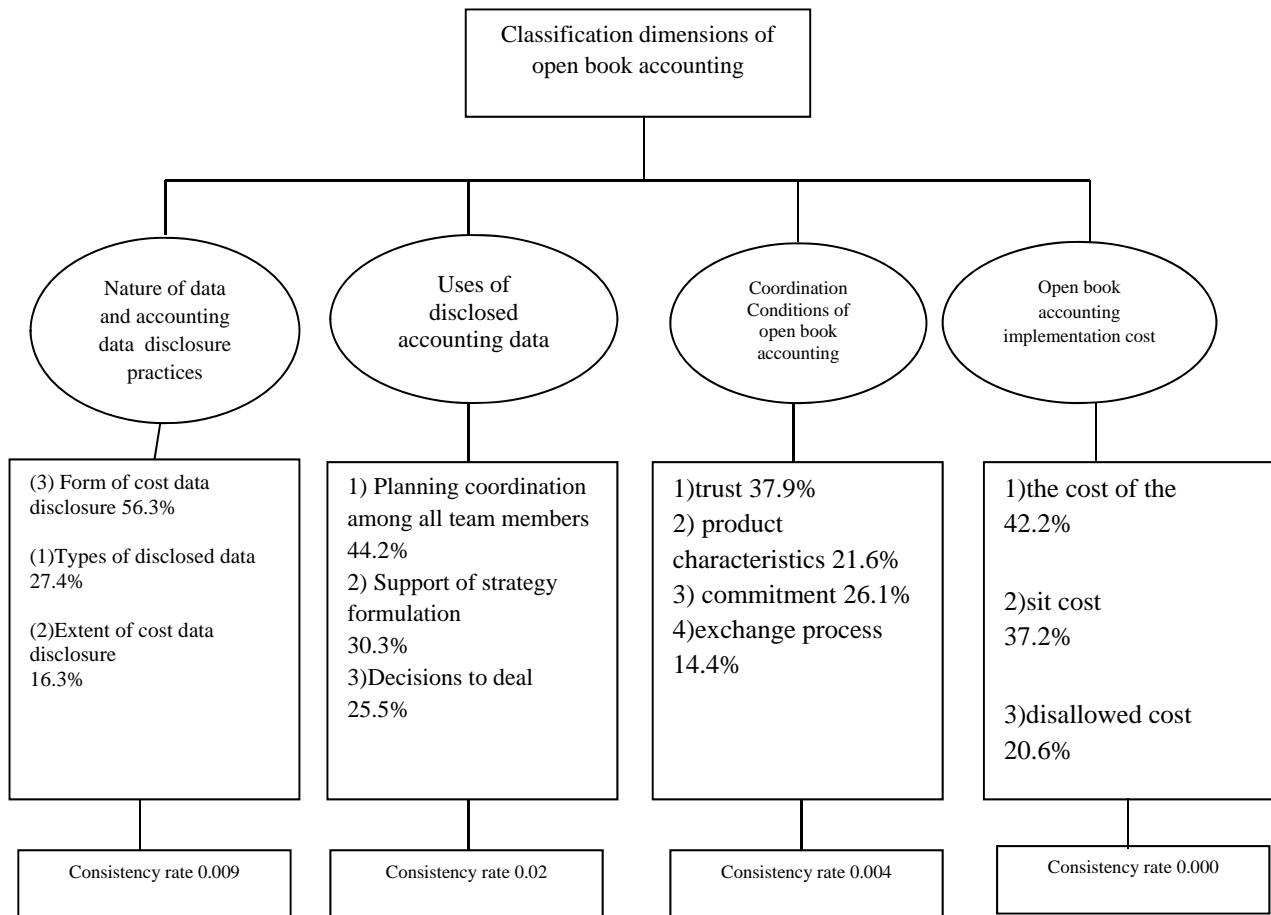
To determine the priority of OBA sub criteria, normalization and weighted average is used. There are numerous techniques for normalization and we use the following normalization technique,

$$R_{ij} = a_{ij} / \sum a_{ij} \quad (2)$$

The third step: after normalization of each line values, weighted average is obtained. The obtained values of weighted average indicate each criterion weight. The results are shown in hierarchical tree in Fig. 3.

## 6. Case study

According to Fig. 3, there are four main levels including “Nature of data and accounting data disclosure practices”, “Uses of disclosed accounting data”, “Coordination conditions of open book accounting” and “Open book accounting implementation cost”. Each of these criteria is broken down into other components. The consistency ratios of all components are well below the acceptable limit, which validates the overall survey.



**Fig. 3.** Data analysis and results

## 7. Discussion

According to petrochemical companies financial and accounting experts' point of view about the nature of data and accounting data disclosure practices methods (types of disclosed data, extent of cost data disclosure, form of cost data disclosure), due to cost management, the form of data disclosure is the most important dimension; it means that the form of data disclosure should be focused more. In addition, its forms should be recognized and their effect on OBA should be considered according to inter-organizational accounting.

According to petrochemical companies financial and accounting experts' point of view, the most important uses of disclosed accounting data (support of strategy formulation, decisions to deal, planning coordination among all team members) is associated with planning coordination among all team members sub-criteria; it means that this dimension should be paid attention more. In addition, its forms should be recognized and their effect on OBA should be considered according to inter-organizational accounting.

According to petrochemical companies financial and accounting experts' point of view, the most important conditions of open book accounting (trust, commitment, product characteristic, exchange process) is related to trust sub-criteria, it means that this dimension should be paid attention more. Besides, its forms should be recognized and their effect on OBA should be considered according to inter-organizational accounting.

According to petrochemical financial experts' point of view, the most important in the open book accounting implementation cost dimension (the cost of the other side, sit cost, disallowed cost) is

related to the cost of the other side sub-criteria, it means that this dimension should be paid attention more. Besides, its forms should be recognized and their effect on OBA should be considered according to inter-organizational accounting.

## 8. Conclusion

As mentioned in Fig. 3, the first dimension of OBA includes the nature of data and accounting data disclosure practices and its sub-dimensions include form of cost data disclosure, types of disclosed data and extent of cost data disclosure. The results have indicated that form of cost data disclosure is the most important issue followed by the type of disclosed data (0.27) and the extent of cost data disclosure (0.163) is the least one in performing OBA among other sub-dimensions of nature of data and accounting data disclosure practices.

Second dimension of OBA includes Uses of disclosed accounting data containing sub-dimensions as arranging and planning among all team members, strategic goals of organization, decision making to exchange. The results indicated that arranging and planning among all team members dimension is the most important (0.442%) followed by strategic goals of organization (0.303%) and the least one is decision making to exchange (0.255%) in performing OBA among other sub-dimensions of Uses of disclosed accounting data.

Third dimension is Coordination Conditions of open book accounting including sub-dimensions like trust, commitment, exchange process and product characteristics. The results indicated that trust is the most important (0.379%) followed by product characteristics (0.261) and the last one is exchange process (0.216%) in performing OBA among other sub-dimensions of Coordination Conditions of open book accounting.

The fourth dimension of OBA includes Open book accounting implementation cost that contains the sub-dimensions like cost of the party, sit cost and disallowed cost. The results indicated that cost of the party is the most important (0.442%) followed by sit cost (0.372) and the least one is disallowed cost (0.206%) in performing OBA among other sub-dimensions of Open book accounting implementation cost.

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