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INVENTORY VALUATION PRACTICES: A DEVELOPING COUNTRY PERSPECTIVE

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Abstract

The purpose of this paper was to study inventory costing methods in greater detail, by identifying the prevailing method of inventory valuation, consistency in application and harmonization with authoritative accounting practices in the context of Bangladesh. A purposive sample of 111 companies across different non-financial sectors was studied to determine the inventory costing method commonly practiced in Bangladesh. This study found a prevailing use of Weighted Average-Cost method across majority of the sample companies. Results also indicated a certain level of disharmony among firms within the same industry, which implied the absence of uniformity regarding inventory valuation practices in Bangladesh. Furthermore, with the exception of one company, consistency of practice was reported over the period 2007-2013. These findings could be useful for both national and international accounting standard-setting bodies and the respective companies, for implementing new rules, reinforcing or reviewing changes in the current rules of inventory valuation in Bangladesh.

Keywords: Inventory Methods, Weighted Average-Cost, FIFO, Accounting Practices, Harmonization, Consistency, Bangladesh.

INTRODUCTION

Research on accounting practices typically addresses the fundamental issue of whether the choice of practice matters (Fields *et al.*, 2001). As such, considerable attention in the accounting literature has been devoted to the discussion of possible reasons behind the choice of inventory valuation methods and effects of such choices (Biddle, 1980). Inventory valuation is a subject of interest among researchers since inventories constitute a substantial portion of a firm's assets and valuation of inventory can have a direct bearing on the "firm's cash flows and presumably also on the firm's value" (Hughes and Schwartz, 1988, p.41). It is therefore absolutely imperative to make proper valuation of a firm's inventories. Valuation leads us to a primary issue in inventory accounting – "the cost flow assumption used to trace the movement of costs into and out of inventory" (Stickney *et al.*, 2010, p.368) – in other words, the costing method used to determine the value of inventory.

Needles and Powers (2012) state that the costing method plays an important role while accounting for inventories, since the value of inventory determined by a costing method affects a firm's net income, cash flows and the amount of income taxes that the firm pays. This paper thus addresses inventory costing methods in greater detail by identifying the prevailing method of inventory valuation, consistency in application and harmonization with authoritative accounting practices from the perspective of a developing country – Bangladesh. The overall objective and significance of carrying out such a study in the context of Bangladesh is to provide government agencies, national and international accounting rule-setting bodies and the respective companies a better understanding of inventory costing methods currently prevailing in the country. Further, based on the findings, the study also attempts to reveal the level of uniformity and consistency in inventory costing practices followed by firms of different sectors in Bangladesh.

Inventory costing Methods

Johnson (1954) defines inventories as products, partially completed products, raw materials and supplies - all of which await the ultimate fruition of sales transactions. Gupta (2005, p.315) provides a more thorough definition of inventories as: "*assets (a) held for sale in the ordinary course of business; (b) in the process of production for such sale; or (c) in the form of materials or supplies to be consumed in the production process or in the rendering of services*." According to Needles and Powers (2012), the value assigned to inventories is the result of two measurements: quantity and cost. In accordance, Narayanaswamy (2011, p.266) states: "*The first step in proper inventory valuation is to determine the physical inventory that belongs to the business.*" A firm may therefore count inventories either on a periodic basis or track inventories based on purchases and sales in order to determine the quantity. Once the quantity is determined, inventories are then

transformed into financial amounts by assigning costs to the physical quantities (Stickney *et al.*, 2010). Bhattacharyya (2012, p.376) refers to cost of inventories as: "*all costs of purchase, costs of conversion and other costs incurred in bringing the inventories to their present location and condition.*" The cost of inventories is commonly computed by using the following four cost formulas:

- Specific Identification
- First-In-First-Out (FIFO)
- Last-In-First-Out (LIFO)
- Average-Cost/Weighted Average-Cost

Specific identification method is a common practice for firms with unique, high-value items as inventories like automobiles, paintings, expensive jewelry and custom-made furniture (Anthony *et al.*, 2003). Weygandt *et al.* (2009) state that cost for such inventories is calculated by clearly identifying each individual inventory items and tracking its movement in and out of stock. However, specific identification becomes impractical if items in inventory are interchangeable. In such cases, firms generally assume the items sold and items remaining in inventory by using the cost flow methods of FIFO, LIFO or Average-Cost (Stickney *et al.*, 2010). According to Rao (2011), FIFO method is generally consistent with the physical flow of inventories in most of the enterprises. It is based on the assumption that the earliest purchases are sold first and the more recent purchases remain in ending inventory (Rich *et al.*, 2012). This implies that FIFO method values ending inventory at the current costs. Stickney *et al.* (2010) claims that this chronological cost flow of FIFO method conforms to good business practice - particularly for items that deteriorate or become obsolete.

LIFO method, in contrast, does not coincide to the actual physical flow of inventory (Khan and Jain, 2010). LIFO method assumes that the more recent purchases are the first to be sold and hence, ending inventory is based on the costs of the earliest purchases (Weygandt *et al.*, 2009). Narayanaswamy (2011) claims that this method of valuation can result in realistic reported profits since current costs is matched to current revenues. However, Needles *et al.* (2011) argue that the value of inventories at earliest prices can present an unrealistic picture of the inventory's current value under LIFO method. An alternative to the FIFO and LIFO method is the weighted-average cost method. Khan and Jain (2010) states that the average-cost system is appropriate where the inventory consists of units which are homogenous, interchangeable and does not follow any specific pattern of physical flow. Under this method, the value assigned to inventory is the average cost of all inventory items available for sale during the period (Needles and Powers, 2012). Due to the technique of assigning average cost, Bhattacharyya (2012) claims that this method smoothens the fluctuations in the cost of inventory items.

In brief, "no one cost method is conceptually superior to any other" (Rich *et al.*, 2012, p.312) for the valuation of inventories. Needles *et al.* (2011, p.292) state that: "*the choice of method depends on the nature of the business, the financial effects and the cost of implementation.*" Companies, therefore, tend to choose a method which is unique to their own situation. Weygandt *et al.* (2009) further suggests that the reason companies adopt different costing methods may vary, but they usually involve three factors – such as the effect of each method on income statement, balance sheet and income tax. This implies that inventory valuation methods can have major effects on the financial statements – a reason why many studies have been conducted regarding the choice, effects of the choice and rationale behind the choice of these costing methods.

Literature review

Past studies related to inventory costing methods have been conducted in two directions. First, there is an impressive body of evidence documenting reasons as to which inventory costing method can be an optimal choice. Most of these studies focused on companies which adopted the inventory costing methods of FIFO and LIFO across United States and Europe (Ibarra, 2008). Sunder (1976) presented a deterministic model to estimate the difference between the net present value of tax payments and cash flows associated with FIFO and LIFO. Based on these differences, the author claimed that companies may choose the best alternative to value their inventories. Hughes and Schwartz (1988) also developed a predictive model to focus on a manager's choice of inventory costing methods in a world of asymmetric information and found tax benefits as a strong rationale behind the choice. In a similar view, the model developed by Cushing and LeClere (1992) considered additional factors like firm size, inventory variability, etc to predict the choice of inventory costing method. The authors concluded that both tax and non-tax considerations influenced the choice and that a predictive model for inventory costing method was still elusive. Another such deterministic framework was presented by Bar-Yosef and Sen (1992), wherein, incentive effects and tax gains were taken into consideration. Authors identified "an optimal inventory accounting policy that calls for a mixed strategy" (Bar-Yosef and Sen, 1992, p.335) – that is, partly FIFO and partly LIFO – and claimed the weighted average method to be the optimal choice.

Conversely, some notable studies examined the reasons behind the choice of inventory costing methods and the effects accruing from these diverse practices. Many researchers (Morse and Richardson, 1983; Hunt III, 1985; Lee and Hsieh, 1985; Dopuch and Pincus, 1988; Kuo, 1993) concluded from their empirical analysis that tax benefits, firm size and high debt levels plays a deterministic role behind the choice of the inventory costing method. Morse and Richardson (1983) particularly claimed that firms of similar size and in the same industry tend to choose the same inventory costing method. Other studies like Dopuch and Pincus (1988), who compared FIFO and LIFO methods based on their effects in the financial statements, concluded that the choice of LIFO method was more related to tax savings.

This study, however, does not aim to develop any predictive model or discuss the reasons behind the choice of inventory costing methods and their effects on the financial statements. Rather, the objective is to identify the inventory costing method commonly used by companies in Bangladesh and to determine whether the selected method is consistently applied within the bounds of accounting standards. Representative studies, in line with the objective of this paper, include Herrmann and Thomas (1995) – where authors claimed FIFO to be more in use across Denmark, Ireland, Netherlands and

UK while Average-Cost method was found popular in France and Portugal. A predominant use of the LIFO method was also noted by this study in Germany, despite there being reservations about LIFO in the accounting standards. Another study by Chung and Narasimhan (2003) stated a general use of the LIFO method by multinational companies in United States.

A similar study was conducted by Jaafar and McLeay (2007) which confirmed the existence of LIFO in Germany. Authors also revealed the use of Average-Cost method across France and Spain and FIFO method in Sweden, Italy and UK. One study which particularly relates to this research have been reported by Ali *et al.* (2006), where a consistent use of the Average-Cost method was found in Pakistan and Bangladesh and FIFO method in India. A recent study by Ibarra (2008) further claimed FIFO to be the most popular inventory costing method among companies in Philippines. To date, there has been no independent study conducted on the inventory costing methods commonly used by companies in Bangladesh. Consequently, the primary focus of this study is to establish the prevailing method of inventory valuation, assess the consistency and harmonization of the common practices across companies in Bangladesh through the methodology of documentary research.

MATERIALS AND METHODS

Bailey (1994) defines the method of documentary research as the analysis of documents that contains information about a particular phenomenon which a researcher wishes to study. According to Ahmed (2010), document researches include published documents of a company like institutional memoranda and reports, census publications, government publications, official statistics and various other written, visual or pictorial sources in different forms. Now, one requirement of Bangladesh Accounting Standards (BAS) 1 is that companies should provide a summary of significant accounting policies that they apply in their organization in the 'notes to the financial statements' section of their annual reports (ICAB, 2008). As such, the accounting treatment and cost formulas applied to determine the value of inventories of a company can be found in the annual reports. Since annual reports are generally published by the companies to present information that will reflect a cohesive financial picture of the organization and not for any research purposes, it can act as secondary data sources for this study.

Annual reports of the selected companies were therefore studied to gather relevant data of their inventory valuation practices over a period of seven years, starting from 2007 till 2013.

The population selected to conduct this study includes all companies, currently listed at the Dhaka Stock Exchange (DSE) during the year 2014. Data has been systematically categorized into 22 different industries, from where banks, financial institutions, insurance firms, telecommunication firms along with debentures, corporate bonds, mutual funds and treasury bonds were excluded from the sample on the basis of purposive sampling method. Tongco (2007) states that the main aim of purposive sampling is to focus on particular characteristics of a population that are of interest to answer a research question. Since the focus of this paper is on inventory valuation practices, only those industries has been selected for this study wherein, firms report inventories as part of their business processes. This non-random technique does not even require a set number of samples, as long as the needed information is obtained (Bernard, 2002). Hence, a total number of 111 out of 155 companies (71.61%) from 14 different industries - which were listed on or before the year 2007, are selected as a sample for this study, as shown in Table 1.

DISCUSSION AND FINDINGS

The cross-sectional sample of companies used for this research indicate the adoption of popular inventory costing methods like Weighted Average-Cost and FIFO across different sectors of Bangladesh. Out of the 111 selected companies, a majority of 78 companies (70.27%) use the Weighted Average-Cost method while 12 companies (10.81%) adopt the FIFO method to determine the value of their inventories in Bangladesh, as shown in Table 2. Only 3 companies (2.70%) are found to adopt more than one method to value their inventories – that is, they applied different costing methods to different components of their inventories (Jaafar and McLeay, 2007). In such cases, the combination of the Weighted Average-Cost and FIFO method is more evident across the selected sample. None of the companies selected for this study has been found to use the LIFO method to value their inventories. However, the research did reveal that there are 18 companies (16.22%) in the sample which did not disclose their inventory costing methods in their annual reports.

Table 1. Sector-wise Population and Sample Distribution

Name of Industry	Population Total Number of Companies (Currently Listed in 2013)	Sample Number of Companies (Listed on or before 2007)	Percentage
Cement	7	5	71.43
Ceramics	5	3	60.00
Engineering	26	19	73.08
Food & Allied	17	15	88.24
Fuel & Power	15	9	60.00
IT Sector	6	4	66.67
Jute	3	3	100.00
Miscellaneous	9	9	100.00
Paper & Printing	1	1	100.00
Pharmaceuticals & Chemicals	24	15	62.50
Services & Real Estate	3	2	66.67
Tannery Industries	5	5	100.00
Textile	31	20	64.52
Travel & Leisure	3	1	33.33
Total	155	111	71.61

Source: Dhaka Stock Exchange (DSE) (http://www.dsebd.org/), 2014

Table 2. List of Companies Selected and the Cost Formulas Applied

Companies	Cost Formulas
A. Cement	
1. Aramit Cement	Weighted-average cost
2. Confidence Cement	Weighted-average cost & FIFO
3. Heidelberg Cement	Weighted-average cost
4. Lafarge Surma Cement	Weighted-average cost
5. Meghna Cement	Weighted-average cost
B. Ceramics	
6. Monno Ceramic	Weighted-average cost
7. Fu-Wang Ceramic	Not disclosed
8. Standard Ceramic	Weighted-average cost
C. Engineering	
9. Aftab Automobiles	Weighted-average cost
10. Anwar Galvanizing	Not disclosed
11. Atlas Bangladesh	Weighted-average cost
12. Aziz Pipes	Weighted-average cost
13. Bd Autocars	Weighted-average cost
14. Bangladesh Lamps	Weighted-average cost
15. Bd Thai Aluminium	Not disclosed
16. Eastern Cables	Weighted-average cost
17. Golden Son Ltd.	FIFO
18. Kay and Que	Weighted-average cost
19. Monno Jute Stafflers	Weighted-average cost
20. National Polymer	Weighted-average cost
21. National Tubes	Weighted-average cost
22. Olympic Industries	Weighted-average cost
23. Quasem Drycells	Weighted-average cost
24. Rangpur Foundry	Weighted-average cost
25. Renwick Jajneswar & Co (Bd)	Weighted-average cost
26. S. Alam Cold Rolled Steels Ltd.	Weighted-average cost & FIFO
27. Singer Bangladesh	Weighted-average cost
D. Food & Allied	
28. AMCL (Pran)	Weighted-average cost
29. Apex Foods	Not disclosed
30. Bangas	Weighted-average cost
31. BATBC	Weighted-average cost
32. Beach Hatchery Limited	Not disclosed
33. CVO Petrochemical Refinery Limited	Weighted-average cost
34. Fine Foods Limited	Weighted-average cost
35. Fu Wang Food	Not disclosed
36. Gemini Sea Limited	Not disclosed
37. Meghna Condensed Milk	Weighted-average cost
38. Meghna Pet Industries	Not disclosed
39. National Tea	Not disclosed
40. Rahima Food	FIFO
41. Shyampur Sugar Mills Limited	Not disclosed
42. Zeal Bangla Sugar Mills Limited	Weighted-average cost
E. Fuel & Power	
43. Bangladesh Welding Electrodes	Weighted-average cost
44. Dhaka Electric Supply Company Ltd.	Weighted-average cost
45. Eastern Lubricants	Not disclosed
46. Jamuna Oil Company Ltd.	Weighted-average cost
47. Linde Bangladesh Ltd.	Weighted-average cost
48. Meghna Petroleum Ltd.	Weighted-average cost
49. Padma Oil Co.	Weighted-average cost
50. Power Grid Company Bangladesh Ltd.	Weighted-average cost
51. Summit Power Ltd.	FIFO
F. IT Sector	
52. Agni Systems Ltd.	Weighted-average cost
53. BDCOM Online Ltd.	Weighted-average cost
54. Daffodil Computers Ltd.	Weighted-average cost
55. Intech Online Ltd.	FIFO
G. Jute	
56. Northern Jute Manufacturing Company	Weighted-average cost
57. Jute Spinners	Weighted-average cost
58. Sonali Aansh	Not disclosed
H. Miscellaneous	
59. Aramit	Weighted-average cost
60. Berger Paints Bangladesh Ltd.	Weighted-average cost

61.	Beximco	Weighted-average cost
62.	BSC	Not disclosed
63.	GQ Ball Pen	Not disclosed
64.	Miracle Industries Ltd.	Weighted-average cost
65.	Savar Refractories	Weighted-average cost
66.	Sinobangla Industries	Weighted-average cost
67.	Usmania Glass	Weighted-average cost
I.	**Paper & Printing**	
68.	Hakkani Pulp & Paper	Weighted-average cost
J.	**Pharmaceuticals & Chemicals**	
69.	ACI Limited	Weighted-average cost
70.	Ambee Pharma	FIFO
71.	Beximco Pharma	Weighted-average cost
72.	Beximco Synthetics	Weighted-average cost
73.	Glaxo SmithKline	Weighted-average cost
74.	The Ibn Sina	FIFO
75.	Imam Button	Weighted-average cost
76.	Keya Cosmetics	Weighted-average cost
77.	Kohinoor Chemicals	Weighted-average cost
78.	Libra Infusions Limited	Weighted-average cost
79.	Orion Infusion Ltd.	Weighted-average cost
80.	Pharma Aids	Weighted-average cost
81.	Reckitt Benckiser (Bd.) Ltd.	FIFO
82.	Renata Ltd.	FIFO
83.	Square Pharmaceuticals Ltd.	Weighted-average cost
K.	**Services & Real Estate**	
84.	Eastern Housing	Weighted-average cost
85.	Samorita Hospital	Not disclosed
L.	**Tannery Industries**	
86.	Apex Adelchi Footwear Ltd.	Weighted-average cost
87.	Apex Tannery	Weighted-average cost
88.	Bata Shoe	FIFO
89.	Legacy Footwear	Weighted-average cost
90.	Samata Leather Complex Ltd.	FIFO
M.	**Textile**	
91.	Al-Haj Textile	FIFO
92.	Alltex Industries Ltd.	Weighted-average cost
93.	Anlima Yarn Dyeing Ltd.	Weighted-average cost
94.	Apex Spinning & Knitting Mills Limited	Not disclosed
95.	CMC Kamal	Weighted-average cost
96.	Delta Spinners Ltd.	Weighted-average cost
97.	Desh Garments	Not disclosed
98.	Dulamia Cotton	Weighted-average cost
99.	H.R.Textile	Weighted-average cost
100.	Metro Spinning	Weighted-average cost
101.	Mithun Knitting	Weighted-average cost
102.	Modern Dyeing & Screen Printing Ltd.	Weighted-average cost
103.	Prime Textile	Weighted-average cost
104.	Rahim Textile	Weighted-average cost
105.	Safko Spinning	Weighted-average cost
106.	Saiham Textile	Weighted-average cost
107.	Sonargaon Textiles	Weighted-average cost
108.	Square Textiles	Not disclosed
109.	Stylecraft Ltd.	FIFO
110.	Tallu Spinning	Weighted-average cost
N.	**Travel & Leisure**	
111.	Bangladesh Services Ltd.	Weighted-average cost & FIFO

Furthermore, sector-wise analysis from Table 3 reveals a definite use of the Weighted Average-Cost method among most of the companies of the 14 industries selected as a sample for this study. However, some companies in these industries, namely engineering, food and allied, fuel and power, IT, pharmaceuticals and chemicals, tannery and textile apply the FIFO method - despite the predominant adoption of the Weighted Average-Cost method in their respective sectors. In fact, a small number of companies from the engineering, cement and the travel sector have also broken this norm to adopt both the Weighted Average-Cost and FIFO method to account for different components of their inventories.

Therefore, it can be stated that whether it is a manufacturing, engineering, utilities or service industries, companies belonging to these sectors show the highest odds of employing the Weighted Average-Cost method to value their inventories in Bangladesh. A study by Ali *et al.* (2006) reported that 82 companies (69.49%) predominantly used the Weighted Average-Cost method and 33 companies (27.97%) used the FIFO method to determine the value of their inventories in Bangladesh during 1997-1998. Ali *et al.* (2006) also claimed that only 3 out of the 118 firms of their sample (2.54%) followed a combination of the Weighted Average-Cost and FIFO method to account for their inventories.

Name of Industry	Disclosed			Not Disclosed
	Weighted-Average Cost	FIFO	Weighted-Average Cost + FIFO	
Cement	4	-	1	-
Ceramics	2	-	-	1
Engineering	15	1	1	2
Food & Allied	7	1	-	7
Fuel & Power	7	1	-	1
IT Sector	3	1	-	-
Jute	2	-	-	1
Miscellaneous	7	-	-	2
Paper & Printing	1	-	-	-
Pharmaceuticals & Chemicals	11	4	-	-
Services & Real Estate	1	-	-	1
Tannery Industries	3	2	-	-
Textile	15	2	-	3
Travel & Leisure	-	-	1	-
Total	78	12	3	18
Percentage		83.78%		16.22%

Sources: Various Annual Reports, 2007-2013

Comparisons with these previous findings indicate a prevailing use of the Weighted Average-Cost method in Bangladesh over the last decade. However, there has been a downward trend in the number of firms using the FIFO method for valuation. Alternatively, a reasonably stable trend can be observed for the use of both the Weighted Average-Cost and FIFO method among firms in Bangladesh. Literature previously reviewed provides many reasons advocating the widespread use of the Weighted Average-Cost method for inventory valuation. Hansen *et al.* (2009) justifies the Weighted Average-Cost method on the basis of its simplicity and claims that this method provides a consistent value for the inventories by merging the cost and output of both the previous and the current period. Rich *et al.* (2012) further states that this method allocates value to the ending inventory and cost of goods sold in such a way, that the allocation falls between the values produced by FIFO and LIFO method. This implies that the Weighted Average-Cost method avoids the high extremes of FIFO and low extremes of LIFO and reports an income and tax amount somewhere between the two ends (Narayanaswamy, 2011). Due to this averaging technique, companies are able to dampen the effects of any increase or decrease in prices for a prolonged period of time (Khan and Jain, 2010). Since Bangladesh has a history of increasing inflationary pressures (Shahiduzzaman, 2009), the Weighted Average-Cost method tends to be a reasonable choice for inventory valuation across the different sectors of Bangladesh.

On the other hand, Weygandt *et al.* (2009, p.261) justify the adoption of the FIFO method by the fact that: '*in a period of inflation, FIFO produces a higher net income because the lower unit costs of the first units purchased are matched against revenues.*" Weygandt *et al.* (2009) further clarifies that a higher net income makes a company more favorable to external users and also ensures management of income-based bonuses. As a result, some firms in Bangladesh adopt the FIFO method for the valuation of their inventories. Rao (2011) argues that the use of FIFO method is specifically suitable if the inventory items are of a perishable nature. Also, inventory items that are prone to obsolescence and variability may typically adopt the FIFO method for valuation purposes (Cushing and LeClere, 1992; Ibarra, 2008). Following this line of argument, it can be stated from this study that companies from the food, dugs and medicine, tannery and textile sectors

have purposely opted for the FIFO method on the basis of the delicate nature of their inventories. A small group of firms in the selected sample has also been noted to follow a combination of both the Weighted Average-Cost and FIFO method to account for their inventories. McLeay *et al.* (1999) argue that multiple valuation practices can be adopted by the firms in order to appropriately capture the different nature of the various components of their inventories. Thus, items of inventory in different operating divisions of a sector may be valued using different cost methods (Jaafar and McLeay, 2007). Some firms of the engineering, cement and travel sector in Bangladesh accordingly use both the Weighted Average-Cost and FIFO method to correctly account for the different components of their inventories.

Harmonization and consistency

The widespread use of the Weighted Average-Cost method reported by this study does not necessarily mean that this inventory valuation method is the optimal choice for every firm across all sectors of Bangladesh. As Khan and Jain (2010) rightly state, there is not one best method to determine the value of inventories. Even accounting standard-setting bodies has not mandated any one method to be the most conceptually correct method to value inventories. In Bangladesh, accounting rules relating to inventory valuation has been described as Bangladesh Accounting Standards (BAS) 2 'Inventories' and has been adopted by the Institute of Chartered Accountants in Bangladesh (ICAB) as on or after January 2007 (ICAB, 2008). Closely modeled on International Accounting Standards (IAS) 2, BAS 2 'Inventories' outlines the specific identification, FIFO and Weighted Average-Cost as acceptable methods of determining the cost of inventory in Bangladesh. Following IAS 2, the use of different cost formulas for inventories with different characteristics has also been authorized by BAS 2 (ICAB, 2008). However, the cost formula of LIFO is not allowed for use by any company in Bangladesh under the directive of BAS 2 'Inventories' (ICAB, 2008).

Findings of this study indicate that the selected firms in the sample has complied with authoritative accounting practices in Bangladesh, since they reportedly follow the benchmark treatments of the Weighted Average-Cost and FIFO method to value their inventories. However, a certain level of disharmony

is also reported by this study among firms within the same industry. A small number of firms from the engineering, cement, food and allied, fuel and power, IT, pharmaceuticals and chemicals, tannery, textile and travel sectors uses FIFO or a combination of both Weighted Average-Cost and FIFO method, in spite of the Weighted Average-Cost method being the established practice in these sectors. Due to differences in business circumstances, practice of alternative accounting treatments has been justified among different firms by Archer *et al.* (1996). Nevertheless, some prior research claims that firms of the same industry should adopt the same accounting treatment so that harmonization of practices can be achieved (Emenyonu and Gray, 1992; Parker and Morris, 2001; Jaafar and McLeay, 2007). This implies that uniformity regarding inventory valuation practices between firms of the same sector in Bangladesh has not been achieved in certain cases.

On the other hand, Ahmed (2008) argues that since consistency is a fundamental accounting assumption, a company must use the same accounting principle over time, even if acceptable alternative methods exist. The annual reports of the 111 companies, particularly the section of notes to the financial statements, has been inspected in respect of BAS 2 'Inventories' for each of the seven years of this study – 2007 to 2013. Findings indicate that majority of the sample companies did not change their inventory costing methods over this six year period. Only one company from the miscellaneous sector of Bangladesh changed its inventory costing method from FIFO to Weighted Average-Cost in between the study period of 2007 to 2013. However, to the best of knowledge, no disclosure of this change has been mentioned in the annual report by the respective company.

Managerial implications

The overall results of this study demonstrate that the Weighted Average-Cost method is particularly practiced across all non-financial sectors in Bangladesh. The most plausible explanation behind this choice is that the averaging technique of this method makes valuation of inventories convenient during times of volatile price changes (Khan and Jain, 2010). However, this study does not claim that the Weighted Average-Cost method is an optimal choice for inventory valuation in Bangladesh. The present study also reports the use of alternative inventory costing methods across various sectors, which can be justified on the basis of different business circumstances (Archer *et al.*, 1996). Yet, a noteworthy difference is observed wherein some firms adopted different valuation techniques despite being from similar industries. Such cases of discord imply that harmonization of accounting practices are not being completely ensured in Bangladesh. Institute of Chartered Accountants in Bangladesh (ICAB) and government agencies like Security and Exchange Commission (SEC) therefore needs to establish new rules in order to standardize the use of inventory costing methods within similar sectors of Bangladesh.

Institute of Chartered Accountants in Bangladesh (ICAB) should also review the current practices of inventory valuation for all companies in Bangladesh. The results of this study claim a consistent application of inventory costing methods among majority of the selected companies in the sample. However, a further review can ensure consistency of accounting practices and suggest possible changes for all

currently listed companies of Bangladesh that are outside the sample of this study. This study can additionally act as a guide for both national and international accounting standard-setting bodies. Findings suggest that one company in the selected sample did not report the change in costing method, while some sample companies did not even disclose the inventory costing methods in their annual reports. Institute of Chartered Accountants in Bangladesh (ICAB) thus needs to reinforce the current accounting rules and disclosure policies relating to inventory valuation in Bangladesh.

Limitations and future research directions

First, due to time constraints, this study assessed the aspect of harmonization of inventory costing practices with respect to only the Bangladesh Accounting Standards (BAS). In the process, firm-specific attributes of different companies in the same sector has been overlooked. Since Jaafar and McLeay (2007) suggest that operating conditions of different firms are important factors in the accounting harmonization process, future research can be done by associating firm-specific characteristics to harmonization of inventory valuation practices in Bangladesh. Second, the findings suggest that some of the companies did not disclose the inventory costing methods they use for valuation in their annual reports. To achieve harmonization of accounting practices authorized by the Bangladesh Accounting Standards (BAS), full disclosure of the accounting methods and procedures is necessary. Hence, a further study can be conducted by taking into account the disclosure compliance of companies regarding inventory costing methods in Bangladesh.

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