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## **FACTORS THAT FACILITATE AND MOTIVATE THE ADOPTION AND IMPLEMENTATION OF ACTIVITY BASED COSTING IN GREEK COMPANIES**

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### **Abstract**

This study aims to assess ABC adoption in Greek companies and explore factors that facilitate and motivate its adoption and implementation. A survey via web-based questionnaires was conducted. The paper examined several organizational, environmental, technical, technological and behavioral, factors that were assessed in relation to ABC-adopters, firms that have implemented ABC, ABC-under consideration, firms that consider adopting ABC, and non-ABC users, firms that do not intend to adopt ABC. The study contributed to the current understanding of how contingency factors could reform the successful adoption of ABC in Greece. It filled a gap in the literature and reduced the ambiguity concerning the current state of ABC adoption and implementation in Greek firms, regarding all major sectors of the economy. It underscores the importance of adopting/utilizing the ABC regarding business processes and association with organization performance and confirmed results of existing studies.

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### **Key Words**

Activity based costing; business process; organizational performance.

## INTRODUCTION

Activity-Based Costing (ABC) is a costing method that identifies activities and assigns the cost of each activity with resources to all products and services according to the actual consumption by each activity. ABC is important since it is impossible to manage something if it is not measured accurately. Hence, ABC improves decision-making by providing timely and accurate cost-related feedback that extends to all business functions (Shields., 1995). Cooper and Kaplan (1991), stated that ABC is a management accounting technique that assigns costs to products and services based on the resources consumed by those products and services.

However, regardless of the advantages of the ABC, its adoption rate is relatively low (Innes, et al., 2000; Pierce, Brown, 2004; Cohen, et al., 2005; Askarany, Yazdifar, 2007). A plethora of reasons has been indicated for this rather low adoption rate, which include the following: cultural, national and structure by (Shields., 1995; Gosselin, 1997; Brewer, 1998), technical variables, identifying and determining activities, assigning resources to activities and selecting cost drivers, by (Innes, et al., 2000; Clarke, et al., 1999; Innes, Mitchell, 1990; Innes, Mitchell, 1995; Chongruksut, 2002) contextual, organizational and behavioral factors such as top management support, firm sector, firm size, product diversity, type of competition, cost structure, internal resources, difficulty adapting to new costing system, resistance to change and training (Shields, 1995; McGowan, Klammer, 1997; Anderson, Young, 1999; Innes, Mitchell, 1995; Anderson, 1995). Thus, according to this research evidence contextual, behavioral, and organizational factors are very crucial in influencing and successfully adopting and implementing the ABC accounting system.

The main objectives of the present study were to determine the current state of ABC implementation among Greek companies. However, this research study was not restricted only to industrial shareholding companies, but it attempted to obtain a more comprehensive picture of various Greek companies regarding their costing system, and their perception of ABC in the major sectors of the economy. Other objectives were to identify the main factors that facilitate and motivate the decision to implement ABC (ABC-Adopters). Specifically, we evaluate companies that are currently using ABC identifying the problems, the challenges, and the benefits that have been encountered concerning the process of adopting and using ABC in Greek companies or firms that consider ABC adoption, while others did not intend to adopt ABC. These issues are examined through an investigation of four research questions:

**RQ-1.** What is the current state of ABC implementation among Greek companies?

**RQ-2.** What are the main contingent factors, including the reasons why some Greek companies implement and use ABC or consider ABC adoption, while others did not intend to adopt ABC at all?

**RQ-3.** What is the degree of success of the business processes that ABC contributes to an organization?

**RQ-4.** Is there any significant association between ABC and organizational performance?

Further, this research contributes to the existing literature by presenting new elements and contingency factors that can facilitate and motivate the adoption of ABC in Greek companies. The outcomes of this research promote scientific knowledge and complement the existing literature by linking ABC with specific business processes and organizational firm performance characteristics.

The remainder of this research paper is structured as follows: a review of the literature and the conceptualization of the model is presented in the next section, the following section is describing the methodology of this research. Next, the survey results are presented, followed by a discussion in this survey, and the last section is presenting the limitations, implications, and opportunities for future study.

**LITERATURE REVIEW**

**Diffusion of ABC**

ABC is claimed as one of the most important management accounting innovations of the twentieth century (Johnson., 1990; Krumwiede., 1998), even though, initially, the adoption of ABC was slow due to the high expenditure involved in employing, sustaining, and maintaining the ABC system. As a result, the ABC system has been used extensively in countries such as the United States of America (USA) (Brierly, 2011), the United Kingdom (UK) (Al-Omiri & Drury, 2007), and Canada (Quinn, et al., 2017). However, ABC has also gained international respect in not only developed countries but in developing economies such as Malaysia ((Ahmad, et al., 2017); (Ruhanita & Daing, 2006)), Taiwan Lou (2017), ((Gooneratne & Wijerathne, 2019); (Babu & Masum, 2019)), and Turkey (Özcan, 2020), since they gain competitive advantages in the pursuit of globalizing their economies. A summary of the research studies that have examined the adoption/diffusion of ABC spanning from 1997 to 2020, is shown in Table 1.

**Table 1:** A summary of previous research/studies that examined the adoption/diffusion of ABC

Study	Country	Population/Characteristics	Response Rate %	Period	Adoption/Diffusion Rate %
Bjørnenak (1997)	Norway	Manufacturing firms, (75) of the largest corporations	57%	1997	30% currently use ABC, 10% considering
Adler (1999)	New Zealand	Manufacturing firms with more than 20 employees (165)	26.2%	2000	4.8% currently use 19.4% considering,
Innes & Michell (2000)	United Kingdom	Firms listed in TIME 1000	22.8%	1999	17.5% currently use ABC, 20.3% are considering, 15.3% have assessed and rejected, and 46.9% have not considered
Chen (2001)	Hong Kong	Manufacturing and nonmanufacturing firms (90)	11.1%	2001	11.1% currently use ABC
Bescos et al. (2002)	Canada and France	Financial Post 500 in Canada and members of the Association of	21.2% in Canada and 4.7% in France	Spring and summer of	23.1% of firms had adopted ABC in Canada and 23% in France.

		Financial Directors and Management Accountants		1999	9.3% were examining the possibility of adopting ABC in Canada and 22.9% in France
Chongruksut (2002)	Thailand	Manufacturing and nonmanufacturing firms (101)	11.9%	2002	11.9% currently use ABC
Cotton, et al. (2003)	New Zealand	Corporate sector members of the Institute of Chartered Accountants of New Zealand (companies with more than 100 employees)	Manufacturing: 25.5% Nonmanufacturing: 18.8%	September 2001	20.3% currently use ABC, 11.1% are considering, 10.8 have assessed and rejected, and 57.8% have not considered
Kianni & Sangeladji (2003)	USA	500 Fortune largest industrial corporations	21.6%	Fall, 1999	40% recently started implementing, 11.8% are having ABC well established
Pierce & Brown (2004)	Ireland	Top 500 companies and top 50 financial services companies from the 2001 Business and finance listings of top Irish firms	23.2%	June 2002	27.9% currently use ABC
Manalo (2004)	Philippine	Top 500 companies	Telephone interviews	2004	17% currently use ABC, 28% are considering, and 55% have not considered ABC
Cohen, et al. (2005)	Greece	Leading Greek companies in the manufacturing, retail, and service sectors	31.1%	March to May 2003	40.9% adopters, 31.9% ABC deniers, 13.6% supporters, and 13.6% ABC unawares
Cinquini, Tenucci (2007)	Italy	Manufacturing firms with sales higher than 25 million euro from Business International Database	42.8%	Not available	28% of high adoption and 37% of low adoption
James, Elmezughi (2010)	Australia	Manufacturing & nonmanufacturing (199)	14.3%	2010	14.3% currently using ABC
Aldukhil (2012)	Australia	Manufacturing and nonmanufacturing firms (108)	28.7%	2012	28.7% currently use ABC
Askarany. (2016)	Oman	Medium, large, and very large (116)	22.6%	2011	12.9% currently use ABC 8.6% have implemented ABC on a trial basis
Ahmad, et al. (2017)	Malaysia	SMEs in manufacturing sector (108)	N/A	2017	16.7% currently use ABC & Adaptation 83.3 have not considered ABC
Pietrzak, et al. (2020)	Poland & Lithuania	Medium, large, and very large organizations (520)	52.50%	2020	21.5% using ABC, 21.1% consider using ABC, 52.5% didn't consider using ABC & 4.9% rejected ABC

Source: Own survey.

## Companies that currently using ABC (ABC-adopters)

ABC-Adopters are companies that have adopted, implemented, and use ABC. Several companies have confronted obstacles trying to adopt and implement ABC. Top management is considered as the most critical factor in influencing the implementation of ABC (Chongruksut, 2002; McGowan & Klammer, 1997; Shields., 1995; Hoang, et al., 2020). Cooper & Kaplan, (1988a); Cooper, (1988b); Groot, (1999); Krumwiede (1998) stated that ABC is useful for organizations with large and growing expenses, increase overheads, it performs well with a large variety in products, and complex operations, customers, and processes. Similarly, several studies, (Bjornenak, 1997; Askarany, et al., 2010; Krumwiede., 1998) claimed that larger firms are more likely to adopt ABC. They argue that larger firms have the required resources and thus, they are more capable of adopting the ABC method. Gosselin (1997) indicated that the organizational structure and its strategy affect the adoption and implementation of ABC. Booth and Giacobbe (1997) found a significant positive association between the overhead level and ABC adoption. Thus, numerous researchers stated that organizations implement ABC as a method of measuring accurate cost

information for product costing (Ahmadzadeh, et al., 2011; Brierly, 2011; Al-Dhubaibi, 2021).

Moreover, Ahmadzadeh et al. (2011) found a positive association between cost structure and the importance of cost information, products and services, and ABC implementation. Cooper and Kaplan (1992) stated that the growing costs and product diversity are also major reasons for the adoption and implementation of ABC. Research also reveals (Pavlatos, 2009) that many companies proceed to the implementation of ABC because they want to modernize their cost accounting system in order to better depict costs or to improve their business processes (Kitsantas, et al., 2020). Also, in the Malaysian context (Zheng, Abu, 2019), researchers found that the ABC system provides actual cost information and increases a firm's profitability.

In addition, the decision to implement ABC is often driven by the need to improve customer profitability analysis, to gain more accurate cost information for pricing, or to prepare relevant budgets and thus presents a better management tool (Ahmadzadeh, et al., 2011; Al-Dhubaibi, 2021). Also, adequacy - internal resources, sufficient time, as well as employees' knowledge and understanding on how to implement influence ABC implementation effectively (Clarke, Mullins, 2001; Hasan, Akter, 2010).

Therefore, reasons that justify the ABC adoption are to improve cost control, cost reduction, cost information for product costing, more accurate allocation of indirect costs, identification of activity costs, improvement of operational efficiency, and thus, it furnishes managers with information for decision making, planning, and organizational performance.

### **Companies that consider adopting ABC (ABC-under consideration)**

Besides ABC-Users, several companies may consider the ABC implementation as a future target or aim and are referred to ABC-Under Consideration. Research evidence indicates that companies that are considering ABC tend to have other priorities and projects (Chung, et al., 1997; Chongruksut, 2002), lack expertise (Chongruksut, 2002; Clarke, et al., 1999; Chung, et al., 1997; Cohen, et al., 2005), and have inadequate resources (Innes, et al., 2000; Chongruksut, 2002; Cohen, et al., 2005; Clarke, et al., 1999; Innes & Mitchell, 1995; Krumwiede., 1998).

A large number of research studies have been conducted to identify critical success factors that motivate and facilitate ABC consideration in companies (Shields., 1995; Brown, et al., 2004; Krumwiede., 1998). Findings show that the influence of ABC consideration is strongly related to behavioral and organizational variables, namely top management support (Hoang, et al., 2020; Abedalqader, 2017), adequate internal resources, and training, but not on technical variables such as the type of software or the nature of the system. Moreover, Krumwied (1998) indicated that various contextual and organizational factors might influence ABC consideration such as cost distortion, size of the firm, top management support, non-accounting ownership, and training.

Therefore, organizations that might include in their future plans the ABC implementation strive to comprehend and interpret the cost causation and behavior, improve accurate cost information for product costing, enhance customer profitability analysis in a more accurate way, improve cost control, more accurate cost information for planning and decision-making, reengineering their business processes and expect organizational firm performance.

### **Companies that never adopted or employed ABC (non-ABC adopters)**

Regardless of the advantages of ABC over Traditional Cost Accounting (TCA) systems, the adoption rate of ABC remains low and several studies described the reasons for the non-adoption of ABC. Companies that do not employ ABC will be referred to as Non-ABC Users. Clarke et al. (1999) found that the major barriers to the adoption and implementation of ABC were the lack of adequate resources and experiences. Numerous studies (Cohen, et al., 2005; Innes, et al., 2000; Chongruksut, 2002; Cooper & Kaplan, 1988; Cooper & Kaplan, 1992), suggested that ABC is very complex to implement, and there are many barriers such as lack of top management support, employee resistance, lack of internal resources, lack of expertise to implement, and satisfaction with the current systems.

Likewise, Anderson and Young (1999), stated satisfaction with the current system, no human resource availability, and lack of resources such as a qualified workforce, time, effort, and resource-consuming. Further, ambiguous and unclear benefits of ABC (Booth & Giacobbe, 1998; Chongruksut, 2002; Cohen, et al., 2005), as well as costly implementation (Chongruksut, 2002; Chung, et al., 1997) can contribute to not adopting ABC.

### **The relationship between ABC adoption and organizational performance**

According to Faeq et al., (2018), ABC implementation and organizational performance are significantly and positively related. The study provided evidence that ABC implementation acts as a mediator between competitive strategies and organizational performance. Elhamma (2015), examined the relationship between the implementation of ABC and the organizational performance among Moroccan firms. The study found that the use of ABC improved overall firm performance.

Zaman (2009) confirmed that the use of the ABC method results in a better overall performance for enterprises that have adopted it in Australia. Ittner et al. (2002) indicated that the ABC method can reduce the inexactitude about the cost allocation and improve the performance. According to McGowan (1998), ABC is considered an effective tool to underline efficiencies, increase innovation, reduce waste and improve relationships and communication across the department, and enhance focus on the attainment of the goals. Further, the use of ABC improves profitability,

performance, decision-making process, enhancing and simplifying the costing process (Kitsantas, et al., 2021).

Moreover, Al-Nuaimi et al. (2017) in their study demonstrated that the adoption of ABC as a sophisticated cost management system has a significant impact on organizational performance. The authors indicated that the adoption of ABC as a cost management system has a direct influence on organizational performance such as enhancing job effectiveness, efficiency, and waste reduction, assisting the firm to achieve their overall goal, enabling managers to make quality and productive decisions and making customer relationship management more effective and efficient.

Theoretically, based upon the literature review, ABC is a sophisticated cost management system and it has a significant impact on organizational performance. The use of ABC affects positively the organizational performance of an organization and it demonstrates superior performance and a high level of contribution to competitiveness, being an important strategic management tool.

## **THE CONCEPTUAL FRAMEWORK FOR THE RESEARCH**

This section presents the conceptualization of the theoretical framework for this study, examining the association of organizational, environmental, behavioral, technological, technical, and contingent factors of the ABC adoption/implementation and investigating whether companies using ABC have a higher level of organizational performance.

According to the theoretical framework of the model, ABC adoption may depend also upon specific contingent factors such as: industry sector, industry size, firm structure, firm nationality (ownership) (Clarke, et al., 1999; Innes, et al., 2000; Pierce & Brown, 2004), product diversity, product complexity, (Clarke, et al., 1999; Pierce & Brown, 2004), type of competition, IT infrastructure/ERP systems, (Innes & Mitchell, 1995; Innes, et al., 2000; Sartorius, et al., 2007; Cohen, et al., 2005; Hoang, et al., 2020), top management support, adequate resources, cost structure (level of overhead), (Cooper., 1987; Bjornenak, 1997; Turney., 1989; Booth & Giacobbe, 1997; Brown, et al., 2004), employees resistance to change, user training and technical issues (identifying and selecting appropriate activities and cost) (Pierce & Brown, 2004; Cohen, et al., 2005; Booth & Giacobbe, 1998; Chongruksut, 2002; Clarke, et al., 1999; Chung, et al., 1997), high cost of procurement, (Chongruksut, 2002; Chung, et al., 1997), other priorities and goals, (Chung, et al., 1997; Chongruksut, 2002), satisfaction with the current system, (Anderson & Young, 1999).

Specifically, this study uses this theoretical framework to examine how “Critical Contingency Factors” and the “Organizational Impact” are associated with ABC success adoption which is defined as ABC-Adopters, ABC-Under Considerations, and Non-ABC Users. Specifically, the independent variables include five (5) groups of contingency variables: Organizational, Environmental, Technological, Technical, and Behavioral Characteristics and the dependent variable is the “Extend of ABC Success”

that is divided into three (3) groups: a) ABC-Adopters, b) ABC-Under Consideration, and c) Non-ABC Users, and the dependent variable, Organizational/Firm Performance Expected, which is divided into two dimensions, financial and non-financial performance.

## **METHODOLOGY**

### **Participants**

The sample of this research study consisted of entities from all major sectors of the Greek economy, including the companies listed on the Stock Exchange of Greece. The criteria used for the selection of the companies (entities) were as follows: a) The total assets must be  $\geq 4,000,000$  euros, b) net turnover must be  $\geq 8,000,000$  euros, and c) the average number of employees during need to be at least 50 employees in the last three years (2016, 2017, 2018) for two consecutive fiscal years. These criteria are also used by the Greek law 4308/2014 to classify companies (entities) as medium, large, or very large. Therefore, our study obtained the aforementioned information for the selected companies (entities) from the Nationwide Company Database (ICAP), which contains information from the register of legal business entities in the Greek Republic, only for medium, large, or very large.

Two hundred and twenty (220) web-based questionnaires were sent via email, and the addressee was the management from the economic, finance, or controlling departments, in the selected companies. To improve the response rate after the questionnaires were sent via email, they were followed up initially with email reminders and then by phone calls. The research was conducted between February 2020 to January 2021. A total of one hundred and two (102) usable anonymous questionnaires were received for this study. Thus, the response rate was 46%. This response rate is considered adequate for this type of survey which was conducted via email (Nulty, 2008) and it is similar to other studies (Al-Omiri & Drury, 2007; Brown, et al., 2004; Askarany, 2016). In addition, Krumwiede (1998), stated that the normal response rate for these surveys is approximately 20%, though many published surveys report lower response rates, such as 12.5%. Table 1 displays information on response rates from similar studies to this one.

In addition, a cover letter (e-mail letter) was sent along with the web-based questionnaire explaining that the research study was being conducted in cooperation with the University of Macedonia, Faculty of Information Systems in the Department of Applied Informatics. This was prepared in order to explain the purpose of the study and the ethical rules regarding this research and provided the participants with complete anonymity and assured that their responses would be treated as confidential according to Greek Law 3627/1956 and Law 22392/1996.

### **Data analysis**



Quantitative data were processed using the Statistical Package for the Social Sciences (SPSS) program groups (Bryman & Cramer, 2001). Descriptive statistics were conducted to describe the sample characteristics. Proportions were computed for categorical variables, and means and standard deviations were used for continuous ones. The chi-squared test or the Fisher's exact test were utilized to tests for statistically significant associations between categorical measures. Any statistically significant differences in the average values of the continuous variables across the various groups of the categorical measures were tested using the t-test or analysis of variance (ANOVA). Post-hoc analysis was performed using the Bonferroni correction to determine any pairwise significant differences.

## RESULTS

Table 2 depicts the survey respondent's position in the company and gender. Respondents within the company held various positions from chief executive officers (CEO;  $n = 9$ , 8.8%), internal auditors ( $n = 6$ ; 5.9%), and costing managers ( $n = 4$ , 3.9%). The majority of the individuals held positions as chief accountants ( $n = 39$ ; 38.2%) followed by accountants ( $n = 23$ ; 22.5%), and chief financial officers ( $n = 21$ ; 20.6%). In addition, over 84% ( $n = 86$ ) of the respondents to the survey were males in comparison to females ( $n = 16$ ; 15.7%).

**Table 2:** Respondent's Position in Company and Gender

	n (%) n=102
<b>Position in Company</b>	
Chief Executive Officer (CEO)	9 (8.8)
Chief Financial Officer (CFO)	21 (20.6)
Chief Accountant	39 (38.2)
Internal Auditor	6 (5.9)
Costing Manager	4 (3.9)
Accountant	23 (22.5)
<b>Gender</b>	
Male	86 (84.3)
Female	16 (15.7)

Source: Own survey.

**RQ-1.** what is the current state of ABC implementation among Greek companies?

The present study examined the current state of ABC-Adopters, ABC-under consideration, and Non-ABC Users among the Greek companies. Table 3 shows the diffusion of respondent companies across the three categories of ABC implementation. The findings showed that eleven ( $n = 11$ ) companies or 10.8%, out of one hundred and two (102) companies were currently using ABC. Eight-eight 8.8% ( $n = 9$ ) of the companies in this sample were under-consideration of implementing ABC in the future and eighty-two ( $n = 82$ ) or 80.4% have not considered ABC as their costing method, and they were still using a different costing method. This indicates that most of these

companies may have been using variable, marginal, direct, by-product, order, full, absorbent, cost-per-production, or standard costing methods.

**Table 3:** Presents the current state of ABC implementation among Greek companies

Description of the Category	Number of the Companies n=102	n (%)	Cumulative %
ABC-Adopters	11	10.8	10.8
ABC-Under Consideration	9	8.8	19.6
Non-ABC Users	82	80.4	100

Source: Own survey.

**RQ-2.** what are the main contingent factors, including the reasons why some Greek companies implement and use ABC or consider ABC adoption, while others did not intend to adopt ABC at all?

The sample characteristics described in Table 4 include organizational (firm size, firm ownership, firm sector, product diversity, competition type, product complexity, short product cycle, and fully automated production), technological (required additional IT resources and integration problems with ERP and cost accounting systems), and behavioral (top manager involvement, adequacy resources, high overhead, accurate allocations of overheads for determining the costs, etc.) components.

Based on the organizational characteristics, almost all of the companies 99% ( $n=101$ ) were anonymous-public companies S.A, and only 1% ( $n = 1$ ) Anonymous Industrial Commercial Company A.I.C.C. and 45.1% ( $n=46$ ) were not a member of a business group, 6.9% ( $n = 7$ ) were a member of a parent of the multinational group, 6.9% ( $n=7$ ) were a member of group subsidiary, 7.8% ( $n = 8$ ) were a member of a subsidiary of the multinational group. However, a number of companies 33.3% ( $n=34$ ) were a member of a business group. Most of the companies surveyed were part of the stock exchange ( $n = 41$ ; 40.2%). A small portion of the companies was owned by the Greek State ( $n = 7$ ; 6.9%). A large portion of the companies surveyed were classified as industrial ( $n = 24$ ; 23.5%), while 22.5% were trade companies, 10.8% were in the foodservice, and only 8.8% were in the construction/materials area. It was found that on average there was a large turnover ( $M = 289,227,109.60$  euros,  $SD = 958,646,573.00$  euros) in the past three years. The average value for assets in the past three years for this sample was 216,174,217.30 euros ( $SD = 699,140,458.10$  euros) and the average number of employees across the different companies was 351.1 ( $SD = 845.3$ ).

In regard to the organizational characteristics, most companies were operating in the same sector of 11-100 ( $n = 51$ ; 50%), although product diversity was also valued high ( $n = 35$ ; 34.3%); however, in the organizational characteristics, the least reported item by the respondents was having a fully automated production ( $n = 6$ ; 5.9%). For the technological factors, we observe that approximately 37.3% ( $n= 48$ ) of the sample indicated very to very much for required additional IT resources, and 37.3%

(n= 38) having integration problems with ERP and cost accounting systems of the sample indicated very to very much.

In examining the behavioral factors, we observe that over half of the sample (n= 57; 55.9%) reported very to very much for the involvement of top management. However, overall, the majority of participants indicated a lack of high overhead (n = 84; 82.4%). Accurate allocation of overheads in determining costs, better pricing of products and services as well as being important in analyzing the profit margin and for precise costing budgets was valued highly (very to very much) by approximately 78 to 81% of the respondents. Most of the sample (92.0%) had none to moderate difficulty in adapting to a new costing system. Over half of the sample (56.0%) indicated not at all to little significant user reaction while high-cost procurement was valued as very to very much by 65.7% of the companies. Most respondents (over 90.0%) indicated moderate to very much satisfaction with their costing system.

**Table 4:** Organizational, environmental, technological & behavioral sample characteristics

Characteristics	n (%)
<b>Organizational</b>	
<b>The corporate type of the company</b>	
Anonymous-Public Company S.A.	101 (99)
Limited Liability Company L.L.C.	1 (1)
<b>Firm sector</b>	
Industrial	24 (23.5)
Trade	23 (22.5)
Construction/material	9 (8.8)
Foodservice	11 (10.8)
Other	35 (34.3)
<b>Environmental</b>	
<b>Product Diversity</b>	
Yes	35 (34.3)
No	67 (65.7)
<b>High level of competition</b>	
Yes	20 (19.6)
No	82 (80.4)
<b>Product complexity</b>	
Yes	14 (13.7)
No	88 (86.3)
<b>Short product cycle</b>	
Yes	11 (10.8)
No	91 (89.2)
<b>Technological</b>	
<b>Required additional IT resources</b>	
Not at all to little	18 (17.6)
Moderate	46 (45.1)
Very to very much	48 (37.3)
<b>Integration problems with ERP and cost accounting systems</b>	
Not at all to little	14 (13.7)
Moderate	50 (49.0)
Very to Very Much	38 (37.3)
<b>Behavioral</b>	
<b>Top Manager involvement</b>	
Not at all to little	22 (21.6)
Moderate	23 (22.5)
Very to very much	57 (55.9)
<b>Adequacy resources</b>	
Not at all to little	3 (3.0)

Moderate	32 (31.3)
Very to very much	67 (65.7)
<b>High overhead</b>	
No	84 (82.4)
Yes	18 (17.6)
<b>Accurate allocation of overheads is critical for better pricing of products/services</b>	
Not at all to little	10 (9.8)
Moderate	14 (13.7)
Very to very much	78 (76.5)
<b>Accurate allocation of overheads is important for analyzing the profit margin</b>	
Not at all to little	5 (4.9)
Moderate	16 (15.7)
Very to very much	81 (79.4)
<b>Accurate allocation of overheads is crucial for precise costing budgets</b>	
Not at all to little	8 (7.8)
Moderate	15 (14.7)
Very to very much	79 (77.5)
<b>Difficult to adapt to new costing system</b>	
Not at all to little	47 (46.1)
Moderate	45 (44.2)
Very to very much	10 (9.8)
<b>Significant user reaction</b>	
Not at all to little	57 (55.9)
Moderate	29 (28.4)
Very to very much	16 (15.7)
<b>High cost of procurement</b>	
Not at all to little	3 (2.9)
Moderate	32 (31.4)
Very to very much	67 (65.7)
<b>Other priorities/goals</b>	
Not at all to little	62 (60.8)
Moderate	12 (11.8)
Very to very much	28 (27.5)
<b>Costing system satisfaction</b>	
Not at all to little	8 (7.8)
Moderate	34 (33.3)
Very to very much	60 (58.8)

Source: Own survey.

Moreover, analyses were also conducted to examine further associations between ABC status (ABC-Adopters, ABC-Under consideration, and Non-ABC users) and specific organizational, technological & behavioral characteristics. Thus, the results of these analyses were presented in Table 5. Overall, the bivariate associations indicated that none of the companies that adopted ABC-Adopters or ABC-Under consideration were owned by the Greek state. Most of the companies that adopted the ABC system were part of the stock exchange ( $n = 7$ ; 63.6%) while Non-ABC Users were mostly not in the stock exchange (62.2%). A large portion of the ABC-Adopters and Non-ABC Users were industrial companies.

However, no significant associations were found between ABC status and organizational characteristics such as firm sector, firm size, corporate type, or firm ownership. We note that product diversity was particularly more evident among the ABC-Adopters (54.4%), indicating that the increasing product diversity may lead to the adoption of the ABC. ABC-Adopters were significantly more likely (45.5%,  $p = 0.025$ ) to report high level of competition, and short product life (36.4%,  $p = 0.019$ ) than the Non-ABC Users.

Investigating the technological characteristics, the research findings of this study showed that companies ABC-Under consideration were more likely to report moderate integration problems with ERP and cost accounting systems ( $n = 7$ ; 77.8%) in comparison to those who adopted ABC and indicated very to very much ( $n = 6$ ; 54.6%). However, none of these associations were statistically significant.

Examining the behavioral characteristics, this research revealed that most of the ABC-Adopters (81.8%) followed by the Non-ABC Users (53.7%) indicated that top management was very much involved. A significantly higher proportion of ABC-Adopters (36.4%) and those ABC-Under considerations (55.6%) reported as having “very to very much” difficulty adapting to a new costing system ( $p = 0.01$ ). Adequacy of resources in this study was more likely to be reported as very to very much by those classified as being ABC-Under consideration (77.8%) and ABC-Adopters (63.6). ABC-Adopters were significantly more likely (27.3%,  $p = 0.047$ ) to report high overhead compared to Non-ABC Users (7.3%). Furthermore, a significantly higher proportion (100%,  $p=0.046$ ) of ABC-Adopters valued accurate allocations of overheads in better pricing of products/services relative to the other groups. However, Non-ABC Users were more likely to report “very to very much” for the high cost of procurement (68.3%), although this finding was not statistically significant.

A significant proportion ( $p = 0.038$ , 55.6%) of those ABC-Under consideration reported that other priorities and goals were very to very much important relative to the other groups. Satisfaction with the current system was higher among ABC adopters relative to the other groups, although, it was not a statistically significant finding ( $p\text{-value}=0.972$ ).

**Table 5:** Bivariate Associations between ABC Status and Sample Characteristics of Organizational, Environmental Technological, Technical and Behavioral

Characteristics	ABC-Adopters $n=11$ (10.8%)	ABC-Under Consideration $n=9$ (8.8%)	Non-ABC Users $n=82$ (80.4%)	
	$n$ (%)	$n$ (%)	$n$ (%)	P-value
<b>Organizational</b>				
<b>The corporate type of the company</b>				0.884
Anonymous-Public Company S.A	11 (100.0)	9 (100.0)	81 (98.8)	
Limited Liability Company L.L.C	0 (0.0)	0 (0.0)	1 (1.2)	
<b>Firm sector</b>				0.735
Industrial	3 (27.3)	4 (44.4)	17 (23.5)	
Trade	1 (9.1)	2 (22.2)	20 (24.4)	
Construction/material	1 (9.1)	1 (11.1)	7 (8.5)	
Foodservice	2 (18.2)	0 (0.0)	9 (11.0)	
Other	4 (36.4)	2 (22.2)	29 (35.4)	
<b>Environmental</b>				
<b>Product complexity</b>				0.142
No	8 (72.7)	7 (77.8)	73 (89.0)	
Yes	3 (27.3)	2 (22.2)	9 (20.0)	
<b>Short product cycle</b>				0.019
No	7 (63.6)	8 (88.9)	76 (92.7)	
Yes	4 (36.4)	1 (11.1)	6 (7.3)	
<b>Product diversity</b>				0.319

No	5 (45.5)	6 (66.7)	56 (68.3)	
Yes	6 (54.4)	3 (33.3)	26 (31.7)	
<b>High level of competition</b>				0.025
No	6 (54.6)	6 (66.7)	70 (85.4)	
Yes	5 (45.5)	3 (33.3)	12 (14.6)	
<b>Technological</b>				
<b>Required additional IT resources</b>				0.980
Not at all to little	1 (9.1)	2 (22.2)	15 (18.3)	
Moderate	6 (54.5)	4 (44.4)	36 (43.9)	
Very to very much	4 (36.4)	3 (33.3)	31 (37.8)	
<b>Integration problems with ERP and cost accounting systems</b>				0.372
Not at all to little	1 (9.1)	0 (0.0)	13 (15.9)	
Moderate	4 (36.4)	7 (77.8)	39 (47.6)	
Very to very much	6 (54.6)	2 (22.2)	30 (36.6)	
<b>Behavioral</b>				
<b>Top management is involved</b>				0.081
Not at all to little	1 (9.1)	1 (11.1)	20 (24.4)	
Moderate	1 (9.1)	4 (44.4)	18 (21.9)	
Very to very much	9 (81.8)	4 (44.4)	44 (53.7)	
<b>Adequacy resources</b>				0.636
Not at all to little	1 (9.1)	0 (0.0)	2 (2.4)	
Moderate	3 (27.3)	2 (22.2)	27 (32.9)	
Very to very much	7 (63.6)	7 (77.8)	53 (64.6)	
<b>High overhead</b>				0.047
No	8 (72.7)	7 (77.8)	76 (92.7)	
Yes	3 (27.3)	2 (22.2)	6 (7.3)	
<b>Accurate allocation of overheads is critical for better pricing of products/services</b>				0.046
Not at all to little	0 (0.0)	1 (11.1)	9 (11.0)	
Moderate	0 (0.0)	0 (0.0)	14 (17.1)	
Very to very much	11 (100.0)	8 (88.9)	59 (72.0)	
<b>Accurate allocation of overheads is important for analyzing the profit margin</b>				0.539
Not at all to little	0 (0.00)	0 (0.00)	5 (6.10)	
Moderate	0 (0.0)	1 (11.1)	15 (18.3)	
Very to very much	11 (100.0)	8 (88.9)	62 (75.6)	
<b>Accurate allocation of overheads is crucial for precise costing budgets</b>				0.093
Not at all to little	2 (18.2)	0 (0.0)	10 (12.2)	
Moderate	1 (9.1)	0 (0.0)	24 (29.3)	
Very to very much	8 (72.7)	9 (100.0)	48 (58.5)	
<b>Difficulty adapting to new costing system</b>				0.000
Not at all to little	3 (27.3)	1 (11.1)	43 (52.4)	
Moderate	4 (36.4)	3 (33.3)	38 (46.3)	
Very to very much	4 (36.4)	5 (55.6)	1 (1.2)	
<b>Significant user reaction</b>				0.000
Not at all to little	2 (18.2)	1 (11.1)	54 (65.9)	
Moderate	3 (27.3)	3 (33.3)	23 (28.1)	
Very to very much	6 (54.6)	5 (55.7)	5 (6.1)	
<b>High cost of procurement</b>				0.383
Not at all to little	1 (9.1)	0 (0.0)	2 (2.4)	
Moderate	5 (45.5)	3 (33.3)	24 (29.3)	
Very to very much	5 (45.5)	6 (66.7)	56 (68.3)	
<b>Other priorities and goals</b>				0.038
Not at all to little	5 (45.5)	2 (22.2)	55 (67.1)	
Moderate	2 (18.2)	2 (22.2)	8 (9.8)	
Very to very much	4 (36.4)	5 (55.6)	19 (23.2)	
<b>Satisfaction with the current system</b>				0.972
Not at all to little	0 (0.0)	1 (11.1)	7 (8.5)	
Moderate	4 (36.4)	3 (33.3)	27 (32.9)	
Very to very much	7 (63.6)	5 (55.6)	48 (58.5)	

Source: Own survey.

Furthermore, analyses were conducted to examine the behavioral, (changing the costing system is considered a time-consuming process, top

management, and the company's addresses supported its ABC adoption, top management provide sufficient resources for its ABC adoption, it is necessary to train users in its implementation stage, additional training provided for its successful operation and training helped to deal with problems that arise), technological (required additional IT infrastructure resources), and technical characteristics (difficulty identifying activities and cost drivers for ABC method and difficulty in planning activities and cost drivers for ABC method) for those companies that adopted ABC or are considering adopting the ABC system. Descriptive statistics are reported in Table 6.

Two-thirds of the sample indicated that the changing of the costing system was a time-consuming process ( $n = 13$ ; 65.0%). The majority of the sample also reported that the top management supported ABC adoption ( $n = 14$ ; 70%) and that the top management provided sufficient resources for its ABC adoption ( $n = 14$ ; 70%). We note that 90% ( $n=18$ ) of the sample found it "very" necessary to train users in its implementation stage while 85% ( $n = 17$ ) indicated that it was "very" important to have additional training for its successful operation. The requirement of additional IT infrastructural resources ( $n = 9$ ; 45%), identification of activities and cost drivers ( $n = 8$ ; 40%), and the planning of activities and cost drivers for the ABC method ( $n = 8$ ; 40%) were reported as important by less than half of the participants.

**Table 6:** Behavioral, technical and technological characteristics among companies with ABC utilization/consideration

Characteristics	n (%)
<b>Changing the costing system is considered a time-consuming process</b>	
Not at all to little	3 (15.0)
Moderate	4 (20.0)
Very to very much	13 (65.0)
<b>The top management and the company's addresses supported its ABC adoption</b>	
Not at all to little	1 (5.0)
Moderate	5 (25.0)
Very to very much	14 (70.0)
<b>The top management provide sufficient resources for its ABC adoption</b>	
Not at all to little	1 (5.0)
Moderate	5 (25.0)
Very to very much	14 (70.0)
<b>It is necessary to train users in its implementation stage</b>	
Moderate	2 (10.0)
Very to very much	18 (90.0)
<b>Additional training was provided for its successful operation</b>	
Not at all to little	2 (10.0)
Moderate	1 (5.0)
Very to very much	17 (85.0)

<b>The training helped to deal with problems that arise</b>	
Moderate	3 (15.0)
Very to very much	17 (85.0)
<b>Required additional IT infrastructure resources</b>	
Not at all to little	4 (20.0)
Moderate	7 (35.0)
Very to very much	9 (45.0)
<b>Difficulty identifying activities and cost drivers for ABC method</b>	
Not at all to little	6 (30.0)
Moderate	6 (30.0)
Very to very much	8 (40.0)
<b>Difficulty in planning activities and cost drivers for ABC method</b>	
Not at all to little	6 (30.0)
Moderate	6 (30.0)
Very to very much	8 (40.0)

Source: Own survey.

**RQ-3.** What is the degree of success of the business processes that ABC contributes to an organization?

Associations between ABC Status (ABC-Adopters, ABC-Under Consideration, and Non-ABC Users) and Business Process Management. An analysis of variance and post-hoc analyses (using the Bonferroni correction) were conducted to determine differences in these characteristics across the three levels of ABC status. These results are shown in Table 7.

The study findings show a significant difference in the average values of pricing policy [ $F(2,99) = 4.473, p = .014$ ], accurate analysis of customer profitability [ $F(2,99) = 5.647, p = .005$ ], precise budgeting [ $F(2,99) = 4.544, p = .013$ ], better allocation of overheads [ $F(2,99) = 5.98, p = .006$ ], better cost-effective design of new products and services [ $F(2,99) = 9.251, p < .000$ ], and generally contributes to better cost decision-making [ $F(2,99) = 13.571, p < .000$ ] between the three levels of ABC status.

In order to determine which pairwise differences were statistically significant, a post-hoc Bonferroni test was conducted. ABC-Adopters scored significantly higher on a number of business processes compared to Non-ABC Users, including pricing policy ( $M_{ABC-Adopters} = 4.45, SD = .69; M_{ABC Non-Users} = 3.7, SD = .81; p = .014$ ). Accurate analysis of customer profitability was significantly higher on average among ABC-Adopters relative to Non-ABC Users ( $M_{ABC-Adopters} = 4.55, SD = .82; M_{ABC Non-Users} = 3.45, SD = 1.06, p = .004$ ). Precise budgeting was significantly higher on average among ABC-Adopters compared to Non-ABC Users ( $M_{ABC-Adopters} = 4.27, SD = .90; M_{Non-ABC Users} = 3.46, SD = .95; p = .025$ ). Better allocation of overheads was significantly higher on average among ABC-Adopters relative to Non-ABC Users ( $M_{ABC-Adopters} = 4.36, SD = .92; M_{Non-ABC Users} = 3.33, SD = 1.07; p = .0106$ ).



In addition, better cost-effective designs of new products and services was significantly higher on average among ABC-Adopters relative to Non-ABC Users ( $M_{ABC-Adopters} = 4.23, SD = .65; M_{Non-ABC Users} = 3.16, SD = 1.04; p = .002$ ). General contributions to better cost decision making was also significantly higher on average among ABC-Adopters relative to Non-ABC Users ( $M_{ABC-Adopters} = 4.55, SD = .69; M_{Non-ABC Users} = 3.13, SD = 1.04; p < .000$ ). Those under ABC-Under consideration also scored on average significantly higher than Non-ABC Users in better cost-effective designs of new products and services ( $M_{ABC-Under Consideration} = 4.11, SD = .78; M_{Non-ABC Users} = 3.16, SD = 1.04; p = .019$ ) and contributing to better cost decision making ( $M_{ABC-Under Consideration} = 4.22, SD = .67; M_{Non-ABC Users} = 3.13, SD = 1.04; p = .006$ ).

**Table 7:** differences in business processes management by ABC-users, ABC-under consideration, and non-ABC users status

	ANOVA Comparison of Means			F-test	P-value	Bonferroni Test of Group Mean Differences		
	(1) ABC-Adopters n=11	(2) ABC-Under Consideration n=9	(3) Non-ABC-Users n=82			(1)&(2) P-value	(1)&(3) P-value	(2)&(3) P-value
	Mean (SD)	Mean (SD)	Mean (SD)					
Pricing policy	4.45 (.69)	4.0 (1.0)	3.7 (.81)	4.473	0.014	0.656	0.014	0.872
Accurate analysis of customer profitability	4.55 (.82)	3.78 (.97)	3.45 (1.06)	5.647	0.005	0.299	0.004	1.000
Precise budgeting	4.27 (.90)	4.0 (.87)	3.46 (.95)	4.544	0.013	1.000	0.025	0.316
Better allocation of overheads	4.36 (.92)	3.89 (1.05)	3.33 (1.07)	5.98	0.006	0.953	0.008	0.399
Eliminating Non-value-added products/services of those that Add Value	3.82 (.75)	3.44 (1.13)	3.18 (1.08)	1.888	0.157	1.000	0.191	1.000
Better cost-effective design of new products/services	4.23 (.65)	4.11 (.78)	3.16 (1.02)	9.251	0.000	1.000	0.002	0.190
Generally contributes to better cost decision-making	4.55 (.69)	4.22 (.67)	3.13 (1.04)	13.571	0.000	1.000	0.000	0.006

Source: Own survey.

**RQ-4.** Is there any significant association between ABC and organizational performance?

An analysis of variance and post hoc analyses using the Bonferroni test were conducted to determine any significant differences between ABC-Adopters, ABC-Under Consideration, and Non-ABC Users in organizational firm performance namely, profitability, return on investment, cost control, business processes, productivity, market share, satisfaction of the customers, satisfaction of the employees, competitiveness, and corporate reputation. These results are shown in Table 8.

We found statistically significant differences between these ABC groups in the average values of cost control [ $F(2,99) = 7.759, p = 0.001$ ], business processes [ $F(2,99) = 5.992, p = 0.003$ ], and productivity [ $F(2,99) = 4.388, p =$

0.015]. In order to determine any pairwise significant differences, a post-hoc analysis with Bonferroni correction was performed.

The study findings show that there was a significant difference between ABC-Adopters and Non-ABC Users in the means for cost control ( $M_{ABC-Adopters} = 4.64, SD = .50; M_{Non-ABC-Users} = 3.76, SD = .82; p = 0.002$ ). In addition, on average, ABC-Adopters scored higher on productivity compared to Non-ABC Users ( $M_{ABC-Adopters} = 4.09, SD = .70; M_{Non-ABC Users} = 3.43, SD = .80; p = .031$ ). The findings of this study in regards to business processes being significantly higher on average among those with ABC-Under Consideration compared to Non-ABC Users are also in agreement with previous research findings ( $M_{ABC-Under Consideration} = 4.22, SD = .44; M_{Non-ABC Users} = 3.49, SD = .82; p = 0.024$ ).

Differences in organizational performance were also assessed and the findings are displayed in Table 8. Overall, the ABC-Adopters scored significantly higher on average than the Non-ABC Users for cost control, business process, and productivity. This indicates higher levels of satisfaction with organizational performance in regards to these components among ABC-Adopters relative to Non-ABC Users.

**Table 8:** Differences in organizational performance of ABC-users, ABC-under consideration, and non-ABC users status

ANOVA Comparison of Means						Bonferroni Test of group mean differences		
	(1) ABC-Adoters n=11	(2) ABC- Under Consideration n=9	(3) Non-ABC-Users N=82	F- test	P- value	(1) & (2) P- value	(1) & (3) P- value	(2) & (3) P- value
	Mean (SD)	Mean (SD)	Mean (SD)					
Profitability	3.82 (.98)	3.78 (.83)	3.43 (.90)	1.369	0.259	1.000	0.545	0.818
Return on investment	3.55 (1.29)	3.78 (.67)	3.33 (.90)	1.101	0.337	1.000	1.000	0.524
Cost control	4.64 (.50)	4.33 (.50)	3.76 (.82)	7.759	0.001	1.000	0.002	0.110
Business processes	4.09 (.54)	4.22 (.44)	3.49 (.82)	5.992	0.003	1.000	0.050	0.024
Productivity	4.09 (.70)	3.89 (.78)	3.43 (.80)	4.388	0.15	1.000	0.031	0.297
Market share	3.55 (1.04)	3.56 (.88)	3.11 (.94)	1.734	0.182	1.000	0.466	0.551
Satisfaction of the customers	3.45 (1.13)	3.44 (.53)	3.05 (1.05)	1.223	0.299	1.000	0.667	0.828
Satisfaction of the employees	3.18 (.98)	3.44 (.88)	3.11 (.93)	0.532	0.589	1.000	1.000	0.926
Competitiveness	4.0 (1.0)	3.89 (.60)	3.43 (.90)	2.798	0.066	1.000	0.145	0.431
Corporate reputation	3.36 (1.12)	3.78 (.44)	3.34 (.96)	.866	0.424	0.997	1.000	0.576

Source: Own survey.

## DISCUSSION

This research study revealed that adopting the ABC method could be very challenging. ABC requires a large amount of adequate resources, commitment among employees, top management support, and sufficient user training. Further, several issues were recognized in identifying activities and cost drivers, such as being costly to implement, requiring additional IT infrastructure, and being time-consuming.

Regardless of the above limitations, ABC has been widely identified as a sophisticated tool that can be used to manage and reduce costs as well as improve organizational and financial performance. ABC provides more accurate costing information for products and services, enhances cost control, and provides managers with relevant and timely information in today's competitive business environment.

The rate of ABC-Adopters was 10.8% in this research study and it was lower than the rate found in previous research studies. This is primarily due to the ten years of economic recession in Greece and covid-19. These two factors may have impacted the ability of Greek companies to invest in new technologies regarding accounting and ERP systems leading to low rates of ABC adoption. For instance, Cohen et al. (2005) conducted an empirical survey in Greece from March to May in 2003 among the Greek leading companies in the manufacturing, retail, and service sectors to investigate the current state of ABC and they revealed that 40.9% of the sample companies were ABC adopters.

We examined associations between ABC status (ABC-Adopters, ABC-Under Consideration, and Non-ABC Users). ABC-Adopters were significantly more likely (45.5%,  $p = 0.025$ ) to report high level of competition, and short product life (36.4%,  $p = 0.019$ ) than the Non-ABC Users. The findings of this study support the results of previous studies between the high level of competition and ABC adoption. According to Copper, (1988b), and Ittner, Lanen W.N., & Larcker (2002) claimed that increasing levels of competition in relation to the shorter life cycle of manufactured products require a change in managing costs.

Examining the behavioral characteristics, this research study revealed that most of the ABC-Adopters (81.8%) followed by the Non-ABC Users (53.7%) indicated that top management was very much involved. According to the literature, one of the first prerequisites for the success of an ABC implementation is top management support for the project ((Hasan, Akter, 2010), sponsorship from top management is a must for the ABC initiative (Gunasekaran, Sarhadi, 1998).

A significantly higher proportion of ABC-Adopters (36.4%) and those ABC-Under considerations (55.6%) reported as having "very to very much" difficulty adapting to a new costing system ( $p = 0.01$ ). Argyris and Kaplan (1994) stated that implementing ABC as a new system may engender resistance. Moreover, the research highlighted that ABC-Adopters (54.6%) and those ABC-Under Consideration (55.7%) were significantly more likely to indicate user reaction as "very to very much" ( $p \leq 0.01$ ).

Adequacy of resources in this research was more likely to be reported as very to very much by those classified as being ABC-Under consideration (77.8%) and ABC-Adopters (63.6). Adequacy of resources has been claimed

as one of the critical factors for the successful implementation and adoption of ABC (Innes, et al., 2000; Clarke & Mullins, 2001). ABC-Adopters were significantly more likely (27.3%,  $p = 0.047$ ) to report high overhead compared to Non-ABC Users (7.3%). Several researchers (Cooper., 1987; Bjornenak, 1997; Turney., 1989; Cooper., 1987) stated that the level of overhead costs is one of the major factors predisposing organizations towards ABC adoption. Moreover, a significantly higher proportion (100%,  $=0.046$ ) of ABC-Adopters valued accurate allocations of overheads in better pricing of products/services relative to the other groups. The results of the study indicated that the accurate allocations of overhead costs played an important reason in adopting the ABC method and also managing a firm regarding costs of products and prices.

However, Non-ABC Users were more likely to report “very to very much” for the high cost of procurement (68.3%) although, it was not a statistically significant. Similarly, Innes and Mitchell (1995) stated several problems are associated with the high costs of ABC implementation and maintenance. A significant proportion ( $p = 0.038$ , 55.6%) of those ABC-Under consideration stated that other priorities and goals were very to very much important relative to the other groups. Satisfaction with the current system was higher among ABC-Adopters relative to the other groups, although, it was not a statistically significant finding ( $p$ -value=0.972).

According to the findings of this study, ABC-Adopters scored significantly higher on a number of business processes compared to Non-ABC Users, including pricing policy ( $M_{ABC-Adopters} = 4.45$ ,  $SD = .69$ ;  $M_{Non-ABC Users} = 3.7$ ,  $SD = .81$ ;  $p = .014$ ). Research evidence reveals that ABC provides better profitability measurements and better-informed strategic decisions about pricing, product lines, and market segments (Blocher, et al., 2013; Dubihlela & Rundora, 2014). Accurate analysis of customer profitability was significantly higher on average among ABC-Adopters relative to Non-ABC Users ( $M_{ABC-Adopters} = 4.55$ ,  $SD = .82$ ;  $M_{Non-ABC Users} = 3.45$ ,  $SD = 1.06$   $p = .004$ ). Ahmadzadeh et al. (2011); Al-Dhubaibi (2021) stated that the decision to implement ABC is often driven by the need to improve customer profitability analysis, to gain more accurate cost information for pricing, or to prepare relevant budgets and create a better management tool. Precise budgeting was significantly higher on average among ABC-Adopters compared to Non-ABC Users ( $M_{ABC-Adopters} = 4.27$ ,  $SD = .90$ ;  $M_{Non-ABC Users} = 3.46$ ,  $SD = .95$ ;  $p = .025$ ). Better allocation of overheads was significantly higher on average among ABC-Adopters relative to Non-ABC Users ( $M_{ABC-Adopters} = 4.36$ ,  $SD = .92$ ;  $M_{Non-ABC Users} = 3.33$ ,  $SD = 1.07$ ;  $p = .006$ ). Krumwiede (1998) stated that ABC is useful for organizations with large and growing expenses, increase overheads, performs well with a large variety in products, and complex operations, customers, and processes. Hence, the ABC method is adopted when the overheads of an organization are high and there are large numbers of products.

In addition, better cost-effective designs of new products and services was significantly higher on average among ABC-Adopters relative to Non-ABC Users ( $M_{ABC-Adopters} = 4.23$ ,  $SD = .65$ ;  $M_{Non-ABC Users} = 3.16$ ,  $SD = 1.04$ ;  $p = .002$ ). ABC is a strategic tool that ensures accurate product costs, eliminating

Non-value-added activities and providing reliable costing information (Cooper & Kaplan, 1988; Johnson., 1990; Turney., 1989). General contributions to better cost decision making was also significantly higher on average among ABC-Adopters relative to Non-ABC Users ( $M_{ABC-Adopters} = 4.55$ ,  $SD = .69$ ;  $M_{Non-ABC Users} = 3.13$ ,  $SD = 1.04$ ;  $p < .000$ ). ABC is a modern costing methodology developed to meet the demand of businesses to provide critical information for decision-making (Almeida & Cunha, 2017). Those under ABC-Under consideration also scored on average significantly higher than Non-ABC Users in better cost-effective designs of new products and services ( $M_{ABC-Under Consideration} = 4.11$ ,  $SD = .78$ ;  $M_{Non-ABC Users} = 3.16$ ,  $SD = 1.04$ ;  $p = .019$ ) and contributing to better cost decision making ( $M_{ABC-Under Consideration} = 4.22$ ,  $SD = .67$ ;  $M_{Non-ABC Users} = 3.13$ ,  $SD = 1.04$ ;  $p = .006$ ).

Moreover, the study findings show that there was a significant difference between ABC-Adopters and Non-ABC Users in the means for cost control ( $M_{ABC-Adopters} = 4.64$ ,  $SD = .50$ ;  $M_{Non-ABC Users} = 3.76$ ,  $SD = .82$ ;  $p = 0.002$ ). In addition, on average, ABC-Adopters scored higher on productivity compared to Non-ABC Users ( $M_{ABC-Adopters} = 4.09$ ,  $SD = .70$ ;  $M_{Non-ABC Users} = 3.43$ ,  $SD = .80$ ;  $p = .031$ ). McGowan (1998) stated that if ABC is implemented successfully, individuals may perceive ABC results in improvements in the quality of their work, accomplishing tasks more quickly, increasing job productivity, improving job productivity, and results in more improved organizational processes. The findings of this study in regards to business processes being significantly higher on average among those with ABC-Under Consideration compared to Non-ABC Users are also in agreement with previous research findings ( $M_{ABC-Under Consideration} = 4.22$ ,  $SD = .44$ ;  $M_{Non-ABC Users} = 3.49$ ,  $SD = .82$ ;  $p = 0.024$ ). According to Pavlatos (Pavlatos, 2009) enterprises proceed to the implementation of ABC because they want to modernize their cost accounting system, to better represent costs, and to improve their business processes (Kitsantas, et al., 2020). Thus, ABC emphasizes the continuous improvement of the business process, solves bottlenecks, provides opportunities to redesign and develop new products and services.

Overall, the findings of this research study revealed that although there are several obstacles in the adoption and implementation of ABC, companies that adopt ABC have significantly more accurate allocation of overhead costs, better business processes, and higher levels of organizational performance relative to the Non-ABC Users.

## LIMITATIONS AND IMPLICATIONS

This study promotes scientific knowledge and complements the existing literature in several ways. In terms of the theoretical implications, this study contributed to the current understanding of how certain contingency factors could reform successfully the adoption of ABC in Greece. It spanned across streams of literature mainly, management accounting literature with a focus on ABC, concepts from psychology, business strategy, organizational performance, and human resources management literature. Moreover, it

involved diverse and major economy sectors such as manufacturing, service, finance sector, etc. As a result, it filled a gap in the literature and reduced the ambiguity concerning the current state of ABC adoption and implementation in Greek firms in major sectors of the economy.

Furthermore, the holistic analysis of the present study added to existing research by comparing TCA and ABC systems and their effects on organizations. It also examined the role of several organizational, environmental, technical, technological, and behavioral factors on ABC-Adopters, ABC-Under Consideration, and Non-ABC Users and highlighted the importance of the integration and assessment of the success of ABC adding new knowledge to the existing literature. Further, it underscores the importance of adopting/utilizing the ABC connection to business processes and association with organization performance, which also filled research "gaps" in this field, since a few studies had examined the role of ABC and its organizational performance. Finally, the current study confirmed the results of existing studies that also emphasized the importance of adopting the ABC method.

However, some limitations should be noted when interpreting the results of this study that can be also highlighted as opportunities for future study. The size of the sample that was obtained in this research study. Covid-19 was a major factor for not obtaining a larger sample, which would allow for more robust results to be obtained. The scope of the study is limited to large and medium size of companies only. Therefore, this limitation may restrict the generalizability of the findings to medium and large and not to small companies. Consequently, future research may increase the range of the selected companies that can allow for more robust results.

Moreover, even though the response rate of this survey was high relative to other similar studies that have examined ABC, the number of firms in each category of ABC-Adopters, ABC-Under Consideration was small, except the Non-ABC Users. Hence, it was difficult to conduct meaningful statistical tests and obtain robust results. However, this research was not restricted only to industrial shareholding companies but obtained a more comprehensive picture of all Greek companies regarding their costing system, having a better perception of ABC in all sectors of the economy. Therefore, the findings and the results of this study may have been different, if a restricted range of companies had been selected within the Greek industrial sector. Hence, more in-depth case studies should be undertaken to explore why some companies have used ABC, have considered using ABC, or why other companies use other suitable cost accounting systems.

At last, future research may use different methodological approaches, both quantitatively and qualitatively to further explore this topic. Large-scale survey questionnaires may allow for large samples of observations in assessing the diffusion stage of ABC.

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