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Customer Accounting and Environmental Uncertainty: Sequential Explanatory Study

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ABSTRACT

This study seeks to substantiate its proposition through two research objectives: (1) To investigate the impact of customer accounting (CA) information usage on companies' performance; and (2) to determine the moderating effect of perceived environmental uncertainty (PEU) on the relationship between CA information and companies' performance. This study develops a theoretical framework by applying interaction fit. To answer the research questions, the study follows a sequential explanatory design and the data is collected in two phases. In the first phase, 172 questionnaires are distributed to managers, of which 97 questionnaires are deemed usable. The results of this stage indicate that CA information usage significantly influences organizational performance, and that there is a moderating effect of PEU on the relationship between CA information and organizational performance. The second phase aims to validate the quantitative results via seven semi-structured interviews. The results of the interviews confirm and explain those obtained from the first phase.

Keywords: Customer Accounting Information, Organizational Performance, Perceived Environmental Uncertainty
JEL Classifications: M41, M42, M48

1. INTRODUCTION

Increasing local and global competition, globalization, technological advancements and increasingly demanding customers have all contributed to environmental uncertainty within the services industry, and have modified the characteristics of global competition (Lee et al., 2015), particularly in the Jordanian marketplace (Al-Mawali, 2015a, b; Dwairi et al., 2007). However, under such a progressively competitive environment, companies must strive to remain competitive and to achieve better performance. Therefore, companies should be able to generate and utilize more strategic information regarding external and future events to support and update their business strategy and accomplish higher levels of organizational performance (Ho et al., 2014).

In the theoretical vein, the fundamental assumption of contingent-based accounting studies is that superior organizational performance depends on the fit or match between accounting systems and other contingent factors (such as environmental uncertainty, business strategy, firm size, etc.). Accounting information, especially management accounting information, as the output of an accounting system significantly contributes to the effective functioning of management processes. The essence of such functioning centers decision making is planning, organizing, directing and controlling. To meet this need, management accounting systems (MAS) provide management with information that focuses on decision making (Hill et al., 2014). MAS have long been recognized as an integral component of organizations' information systems and as one of the most essential sources of management information in all types of industries (Mia and Winata, 2014). MAS, as part of organizations' management control systems, monitor organizational performance by providing useful information for management planning and control (Chenhall, 2003), or to aid managers in positioning their organization in a competitive market (Mia and Clarke, 1999). When a company faces increasing and tight environmental uncertainty, management frequently reviews the company's goals and strategies to cope with external, as well as internal, changes. For that reason, management needs an effective MAS. The objective of designing a MAS in such a situation is to help the company achieve its goals. There

is a continuum of MAS designs ranging from traditional to sophisticated control systems, where more sophisticated MAS are expected to improve organizational performance (Agbejule, 2005).

Even though conventional MAS provide important information to decision makers, they frequently fail to report relevant, useful, and timely information that creates the components of competitive advantage, as well as supporting business strategy (Langfield-Smith, 2008; Simmonds, 1981). Increasingly, these conventional systems have been unable to provide useful information to address the current competitive environment, and they are not sufficient to maintain service companies' long-term competitiveness (Drury, 2007; Mia and Patiar, 2001). Management accounting researchers have introduced the concept of strategic management accounting (SMA) in order to overcome the inability of conventional MAS to provide a long-term orientation, and external and ex-ante information (Cadez and Guilding, 2008; Guilding et al., 2000; Roslender and Hart, 2003). The characteristics of SMA overcome the failings of conventional MAS by providing the appropriate information for today's contemporary business environment in order to provide competitive advantages (Roslender and Hart, 2002). Thus, SMA enhancements to traditional and internal-oriented approaches of MAS are necessary to meet the special needs of contemporary business management, especially in relation to strategy implementation and execution.

Several researchers (Al-Mawali et al., 2012; Cadez and Guilding, 2008) have focused on the relationship between management accounting information and organizational performance, but their results have been inconclusive; thus, it is likely that a third variable may affect the relationship and contribute to the mixed results. According to Frazier et al. (2004), moderators can be established when previous studies show a weak or inconsistent relationship between an independent variable and the dependent variable. In testing this assertion, subsequent studies by Agbejule (2005) and Chong et al. (2005) attempted to reconcile the conflicting results in the related areas by using contingency theory. Contingency-based accounting studies provide some evidence for the moderating effect of perceived environmental uncertainty (PEU), which has been considered the most important factor employed in contingency theory, on the relationship between management accounting information and organizational performance (Ajibolade et al., 2010; Gul and Chia, 1994; Gul et al., 1992; Hoque, 2005; Seaman and Williams, 2006).

Previous studies have also indicated that under low environmental uncertainty, managers establish routines and work structures that can be sufficiently managed with the help of limited or ex-post information. Several researchers have argued that even under relatively low PEU, managers who make extensive use of ex-ante information are more likely to end up in information overload, so this information may be dysfunctional and adversely affect their organizational performance (Gul, 1991), or may have a negative impact on the organization's performance (Agbejule, 2005).

SMA comprises many specialist categories, such as competitor accounting, strategic decision-making, and strategic costing (Cadez and Guilding, 2008), and each of these categories plays an important role in providing useful information for strategic purposes (Raman et al., 2009). However, the current study addresses SMA from a different perspective by emphasizing the customer accounting (CA) dimensions based on the following reasons: (1) CA has received less attention in the SMA literature; (2) several studies have used the term "external focus," which is the basis of SMA characteristics, to refer to customers (McManus, 2011; Roslender and Hart, 2003); and (3) CA is the most important information source in a people-oriented industry such as the service sector (Cadez, 2006). CA is considered an interesting topic for both practice and academia. Although many studies have called for research in this area (Foster and Young, 1997; McManus and Guilding, 2008), the academic achievements to date with regards to CA are negligible. This study can also be considered a response to calls for further research into the interface between marketing and MAS, within a strategic management framework. Specifically, this research will provide service companies in Jordan with CA information by which to classify customers based on their profitability to the company. Companies then will be able to update their business strategy to maintain profitable customers. This classification will also allow companies to deal with less or un-profitable customers by offering them new services. Companies can redesign their services, based on CA information, to meet customers' expectations and needs, and in turn enhance customer satisfaction.

Therefore, in the current study, CA was reconceptualized to have four-dimensions: Customer profitability analysis (CPA), lifetime CPA (LCPA), valuation of customer as assets (VCA), and customer equity analysis (CEA). These items are expected to meet organizations' information requirements to support strategic decisions and maintain superior organizational performance under high environmental uncertainty in the service sector. The fundamental argument of the current study is that CA information usage is more likely to lead to higher organizational performance in situations of higher environmental uncertainty. This is because CA is likely to provide information for strategic purposes based on customers' actions. Accordingly, the current study anticipates that PEU will moderate the relationship between information usage from CA and organizational performance.

Following these discussions, the aim of the current study is to contribute to the body of accounting knowledge related to the progress of SMA information expansion from the perspective of developing countries, and Jordan in particular. Specifically, the study focuses on the extent to which CA information is used to focus on customers in Jordanian service companies, and investigates the moderating effect of PEU on the relationship between the level of CA information usage and organizational performance.

2. LITERATURE REVIEW

2.1. Customer Accounting

CA represents a particular set of customer-focus practices that are created within SMA. This issue has become notable, as attention to CA began at the same time as there was a growing need for management accounting to assume a more strategic orientation

(McManus and Guilding, 2008). CA includes all accounting practices for assessing profits, sales, or present value of earnings relating to a customer or customer group (Guilding and McManus, 2002). CA is considered as an interesting topic for both practice and academia (Foster and Gupta, 1994; Foster et al., 1996). Guilding et al. (2001) further discussed CPA and customer asset accounting in a review regarding the potential of CA in the hotel industry. Their analysis demonstrated the importance of considering activities to generate further revenues after the initial sale of a hotel room (such as meals in hotel restaurants, telephone calls, room service, and so forth). Furthermore, Guilding and McManus (2002) outlined the following five CA techniques: (1) CPA; (2) customer segment profitability analysis; (3) LCPA; (4) VCA; and (5) CA (the holistic notion).

In this context, it should be explained that although in Guilding and McManus's (2002) study CA was conceptualized into five-dimensions, in more recent studies (e.g., Cadez, 2006; Cadez and Guilding, 2008) CA has been restructured to include three-dimensions: (1) CPA; (2) LCPA; and (3) VCA. Because these three-dimensions implicitly include the other two (i.e., customer segment profitability analysis and CA as a holistic notion), there is no need to separate the remaining two-dimensions, as it would create an overlap (Cadez, 2006; Cadez and Guilding, 2008). Thus, the current study will discuss the information generated by the three customer-focus techniques identified by Cadez and Guilding (2008). Furthermore, the present study outlines the practices (such as CEA) that entail the basic SMA characteristics highlighted by Guilding et al. (2000), in addition to providing essential information for customer analysis.

As mentioned earlier, most extant CA studies have investigated the extent of CA as techniques (see, e.g., Cadez and Guilding, 2008; Guilding and McManus, 2002) rather than the extent of CA information usage. However, the current study differentiates itself by conceptualizing CA information to incorporate the extent of its usage, rather than the mere collection of the information. This has been done for several strategic reasons. First, organizations often generate enormous amounts of management information, but unless this information is put to actual use, very little can be accomplished (Kohli and Jaworski, 1990). Second, researchers have argued that organizations are often focused more on collecting and storing management information than on improving and investing the quality and usability of the information collected (Zahay, 2008). Third, the contemporary stream of research in management accounting is becoming directed towards investigating the extent of accounting information usage, rather than information collection (Chong and Eggleton, 2003; Mia and Winata, 2008).

Based on these considerations, this study focuses on external information regarding customers. Thus, it conceptualizes CA in terms of the level of the usage of external management accounting information relative to the organization's customers; that is, customer profitably analysis, LCPA, VCA, and CEA. The following four subsections will discuss each of these elements in turn.

CPA is a well-known concept in the management accounting literature. In fact, in some studies, customer account profitability is also referred to as CPA (Guiding and McManus, 2002). This technique provides management information about the profitability of individual customers or customer groups. Basically, CPA involves calculating the costs and revenues from doing business with customers (Foster and Gupta, 1994). Petty and Goodman (1996) considered revenues as simple to calculate. However, there are problems connected with tracing individual costs.

LCPA enables an organization to identify which customers are most profitable in the long term, so that customer relationships can be changed or controlled to increase the organization's profitability (Smith, 1993). LCPA provides management with clearer information including all costs and revenues that will occur in the duration of the relationship between the customer and the organization (Guilding and McManus, 2002). This information gives the management correct signals to pay attention to the concept of LCPA and the long-term customer costs, customer revenues, and customer profitability.

In VCA, customers are treated as future assets that yield revenue (Guilding and McManus, 2002). A specific customer's economic value in the customer lifetime value analysis is the current value of the future cash flows gained from the customer relationship (Pfeifer et al., 2005). However, Guilding et al. (2001) suggested five possible approaches to VCA, one of which is to use the historical cost. In this approach, the money spent on acquiring an asset (customer) is the principal funds. This technique is inadequate for VCA because customer value relates poorly to expenditures spent on building customer loyalty. Furthermore, separating such expenditures causes problems.

CEA is built on three core approaches, namely acquisition, retention, and cross-selling. The application of CEA is well established in the field of marketing (Blattberg et al., 2001), but the way in which CEA combines them is new. However, most companies apply the elements of CEA in isolation. They embark on acquisition drives with special promotions, and develop new customer-service initiatives to improve retention. They may also come up with new product or service lines to increase revenue through cross-selling. Customer acquisition can be defined according to two perspectives: The transaction perspective states that customer acquisition ends with a customer's first purchases (Gupta and Zeithaml, 2006), while the acquisition process perspective states that acquisition includes the first purchase, as well as other non-purchase encounters that both precede and follow the purchase, up until the time the customer makes a repeat purchase, and this includes the acquisition costs (Blattberg et al., 2001).

Customer retention can be defined as customers continuing to purchase the product or services in question over a specified period (Blattberg et al., 2001). However, customer retention does not occur without incurring some costs (Gupta and Zeithaml, 2006). Hemmes and Kane (2000) argued that customer retention might contribute more to costs than to firm profits, unless the firm has targeted the right customers. Even this needs to be linked with CPA to determine which customers are contributing most to the firm's profit. Therefore, firms can maximize customer equity by matching those costs to the retention values of the individual customers, rather

than by acting on the myopic view that retention is free. There are many customer retention techniques, such as toll-free telephone numbers, call-backs, customer clubs, loyalty discounts, comment cards, and so forth (Lowenstein, 1996). According to Gupta and Zeithaml (2006), cross-selling involves the attempt to sell related products or services to current customers, and involves aspects such as assessing the product or service to cross-sell, whom to sell the product or service to, and at which time. Cross-selling reduces the cost of acquiring new customers. In many product categories, customers acquire a product or service in a certain sequence. For example, in financial services customers may start with a checking or savings account and over time buy more complex products, such as loans and stocks (Gupta and Zeithaml, 2006).

CEA links acquisition, retention, and cross-selling in the following way. Lower costs are incurred in servicing current customers due to lower acquisition expenses and efficiencies from servicing expert customers. Thus, revenues are increased as an outcome of repeat purchases and customer referrals. Reichheld and Sasser (1990) concluded that depending upon the industry, companies can increase their profits by between 25 and 85% by reducing customer defections by 5%. In addition, Reichheld (1993) found that in the life insurance industry, a 5% increase in customer retention reduces the cost per policy by 18%.

Based on this argument, CEA information is forward-looking and external in relation to customers. In a sense, this information (acquisition, retention, and cross-selling) already contains the main SMA characteristics; that is, environment orientation (outward-looking) and/or long-term (forward-looking). These two criteria were used by previous studies that considered SMA techniques (e.g., Cadez and Guilding, 2008; Cravens and Guilding, 2001; Guilding et al., 2000). Therefore, it is considered acceptable to include CEA under CA and, consequently, under SMA in general by using the same criteria. In the context of the current study, CEA is conceptualized under SMA, particularly under CA, as the level of information usage regarding customer acquisition, retention, and cross-selling.

2.2. The Linkage between the Usage CA Information and Organizational Performance

The relationship between the usage of CA information and organizational performance can be seen under the broad view of the association between management accounting and control systems, and organizational performance. In the literature, a management accounting and control system is broadly defined as a system that provides useful information to assist managers in their decision making to achieve desired organizational outcomes or goals efficiently (Ajibolade et al., 2010; Cadez and Guilding, 2008; Gul, 1991; Gul and Chia, 1994; Hoque, 2005; Seaman and Williams, 2006). CA as a strategic technique has been developed and acknowledged under the umbrella of SMA. CA provides important information related to customers, plays a critical role in strategic decision making (Guilding et al., 2000), and leads to better organizational performance.

The relationship between accounting information usage and organizational performance has been subject to extensive empirical examination. This extant work provides a somewhat ambiguous picture and has yielded mixed results (Baines and Langfield-Smith, 2003; Cadez and Guilding, 2008). While some studies have shown that a higher usage of management accounting information leads to improved organizational performance, others have been inconclusive and have depended on context, or even provided negative results (e.g., Baines and Langfield-Smith, 2003; Cadez and Guilding, 2008; Cravens and Guilding, 2001; Gul and Chia, 1994; Mahama, 2006; Mia and Chenhall, 1994; Mia and Clarke, 1999).

Despite these mixed results, the majority of findings point to a positive association between the use of accounting information and organizational performance. The rational explanation behind hypothesizing a direct relationship between CA information and organizational performance is based on an idea promoted by the accounting literature. Previous related works have long maintained that one of the primary roles of accounting information systems is facilitating the development and implementation of business strategy (Chenhall, 2003). In this role, accounting information can support the business strategy and develop controls to monitor implementation of these strategies and achieve superior performance (Govindarajan and Gupta, 1985).

In the context of the current study, it is important to recognize the quality of CA, particularly in providing incremental and important information for strategic purposes that cannot be gathered by the traditional accounting information systems. These aspects motivate the following hypotheses.

H1: There is a positive relationship between CA information usage and organizational performance.
H1a: There is a positive relationship between CPA and organizational performance.
H1b: There is a positive relationship between LCPA and organizational performance.
H1c: There is a positive relationship between VCA and organizational performance.
H1d: There is a positive relationship between CEA and organizational performance.

2.3. The Moderating Effect of PEU on the Relationship between CA Information Usage and Organizational Performance

Several studies in contingency theory and management accounting literature have applied different levels of a contingency framework to examine the relationship between management accounting information usage, PEU, and organizational performance (Ajibolade et al., 2010; Duh et al., 2006; Gul et al., 1992; Hoque, 2005; Seaman and Williams, 2006). Several previous studies have considered PEU as an antecedent for accounting information systems, using the basic contingency assumption without examining its effect on organizational performance. However, few studies have implemented the second level of the contingency framework, which examines the impact of the interaction between management accounting information usage and PEU on organizational performance. However, the current study applies the second level of the contingency framework.

Previous studies have provided some support for the moderating effect of PEU on the relationship between management

accounting information and organizational performance. For example, Gul et al. (1992) introduced PEU as the moderator for the relationship between MAS information and organizational performance. The results of their study confirmed that MAS has a positive effect on organizational performance under a high level of PEU, and that the relationship between MAS and organizational performance becomes negative under a low level of PEU. This result suggests that PEU is a pure moderator for the relationship between MAS information and organizational performance. Moreover, Chong et al. (2005) examined the moderating effect of market competition on the relationship between budgetary participation and performance in financial institutions. Their study findings showed that the higher the intensity of market competition, the more positive the association between budgetary participation and performance. Agbejule (2005) reported that under a low level of PEU sophistication, MAS has a negative effect on performance. Seaman and Williams (2006) investigated the moderating effect of PEU on the association between MAS and subunit performance. Their results provided support for the moderating effect of PEU. Duh et al. (2006) examined the moderating effect of PEU on the relationship between features of the budgeting system and firm performance. Their results showed that PEU moderates the relationship.

The relationship between management accounting information, PEU as a moderator, and organizational performance, has been implicitly explained in previous research. Extant studies indicate that under high PEU, managers may require additional ex-ante information (such as CA information) to cope with the environment. The literature also suggests that under unstable environmental situations, managers use ex-ante information extensively to improve the management process and to enhance organizational performance (Mia and Patiar, 2002). In other words, in a situation where PEU is high, it would be more appropriate to provide sophisticated MAS information to managers to assist them to cope with the unpredictable events and improve performance (Gul et al., 1992).

On the other hand, under low environmental uncertainty, managers perform routine and structured tasks that can be sufficiently managed with the help of limited information. Several researchers have argued that in a situation of relatively low PEU, if managers continue to make extensive use of ex-ante information (such as CA information), it would be more likely to result in information overload and may even adversely affect performance (Gul, 1991). Furthermore, Gul et al. (1992) pointed out that in a situation of low PEU, it is easy to apply programmed rules, procedures, and standards to particular jobs. In general, while previous studies have provided some evidence for the moderating effect of PEU on the relationship between management accounting information and performance, no study has yet investigated the moderating effect of PEU on the relationship between CA information and organizational performance (Cadez and Guilding, 2008; McManus and Guilding, 2008; Guilding and McManus; 2002). Overall, there is a considerable body of evidence to support the moderating effect of PEU on the CA-information–organizational-performance relationship. Specifically, based on previous discussions, it seems that under high PEU, CA information improves organization performance. Hence, the following hypotheses have been developed.

H2: The higher the CA information usage, the higher the organizational performance, provided PEU is higher.
H2a: The higher the CPA usage, the higher the organizational performance, provided PEU is higher.
H2b: The higher the LCPA usage, the higher the organizational performance, provided PEU is higher.
H2c: The higher the VCA usage, the higher the organizational performance, provided PEU is higher.
H2d: The higher the CEA usage, the higher the organizational performance, provided PEU is higher.

3. METHODOLOGY

The current research is a sequential explanatory study. The data was collected using a quantitative approach in the first phase, while a qualitative approach was partially applied to enhance the validity of the findings (Creswell, 2009; Modell, 2005). However, the main aim of partially using qualitative data with quantitative data in the current study was to enhance the validity of the research findings, as suggested by Grafton et al. (2011) and Modell (2005). This research strategy has been adopted by many recent accounting studies, such as those by Cadez and Guilding (2008), Davila and Foster (2007), and others.

3.1. Population and Sampling Design

The population included all service companies listed on the Amman Stock Exchange in 2013. Since the service industry is customer-oriented, companies within it tend to generate and use CA information more than companies in other industries (Cadez, 2006). Furthermore, the overall wellbeing of the industry has a great impact on the overall Jordanian economy. For example, this sector contributes around 66.5% of the national gross domestic product and provides more than 70% of the job opportunities for the Jordanian labor force. Thus, it is important to understand the impact of CA information usage on Jordanian services companies' performance in this particular business environment.

In terms of deciding on an appropriate sample size, Sekaran (2003) suggested that a sample of 127 is appropriate from a population of 190. Based on the number of variables in this study and Roscoe's (1975) rule of thumb, a sample size that is more than 30 and <500 is deemed appropriate for most research. However, given the small sampling frame of the study, and to achieve the minimum target sample, 172 questionnaires were sent to top management officers. As part of our strategy to secure a high response rate, a phone call was conducted to each company in order to obtain the name of the most appropriate person to complete the questionnaire. The questionnaires were then delivered and collected within two months. The first wave resulted in 74 usable responses. To maximize the response rate further, additional direct phone calls were made to the respondents to thank them in advance for completing the study and thus remind them to complete it. This yielded an additional 23 responses. Thus, the overall usable response rate was 36.4%.

3.2. Measurements of Variables

3.2.1. CA information (independent variable)

The first three-dimensions (CPA, LCPA, and VCA) were measured using an instrument adapted from previous studies (Al-Mawali et al., 2012). However, as this study added CEA as a new dimension under CA, a new measurement was created based on previous works, such as that of Blattberg et al. (2001) and Gupta and Zeithaml (2006). The items used to measure CEA included the number of customers acquired over a period of time, the cost of acquiring customers, the cost customer retention, the trade-off between acquisition cost and retention cost for customers, future customers' needs, and opportunities for providing new services to current customers. Measurement of the extent of CA information usage was achieved by posing the question: "To what extent do you use the following information for strategic decisions…" This question was directly following by the items, which were listed with Likert-scale choices ranging from "1" (not at all), to "7" (to a great extent). As shown in Table 1, a reliability check for each of the overall dimensions of CA measures produced Cronbach's alpha values that were all above the lower limits of normal acceptability (Nunnally, 1978).

3.2.2. Organizational performance (dependent variable)

The current study measured organizational performance by subjective data using a self-rating approach to assess companies' performance against that of their competitors. The self-rating approach is widely used by researchers in areas such as accounting and marketing orientation (e.g., Cadez and Guilding, 2008; Lee and Yang, 2011). Although it has been claimed that the self-rating approach is subjected to a "leniency" bias, this approach was utilized in the current study for a number of reasons. First, limited published reports were available due to confidentiality restrictions on Jordan service companies' performance. Thus, objective performance indicators were unavailable. Second, objective performance measures have been identified as being of limited value (Govindarajan and Fisher, 1990), and the differences in accounting treatments among companies further delineate the appropriateness of objective measures. Therefore, to avoid problems pertaining to objective measures for assessing organizational performance, Wang (2003) suggested using subjective data. Third, past research has found that the self-rating approach is consistent with objective performance. Fourth, subjective scales provide a larger available sample size than objective measures do (Fugate et al., 2009). Fifth, subjective measurements have been found to be reliable and valid. However, it has been argued that a financial performance measure cannot capture the nature of organizational performance without nonfinancial performance; furthermore, prior studies have indicated that nonfinancial performance measurements are highly associated with future financial performance (Kaplan and Norton, 1992). Therefore, the current study evaluated organizational performance, as well as nonfinancial performance, using financial measures.

A modified instrument based on previous studies on the service sector was used to assess company performance. Each manager was asked to evaluate their company's performance level by comparing it with a major competitor via eight performance indicators. The managers responded to each of the items related to performance using a seven-point Likert scale ranging from 1 = poor to 7 = excellent (Grafton et al., 2010). However, due to the possible problems with self-report measures, in order to ensure the reliability and validity of the indexes and to minimize random fluctuations and anomalies in the data, the respondents were asked to report their companies' performance over the past three years (Katou and Budhwar, 2010).

Table 1: Factor analysis and reliability analysis

Items	Factors loadings	Cronbach alpha	Mean±SD
VCA		0.92	3.23±1.53
VCA 2	0.90		
VCA 5	0.84		
VCA 1	0.83		
VCA 4	0.83		
VCA 3	0.83		
CPA		0.88	5.02±1.27
CPA 6	0.83		
CPA 5	0.81		
CPA 8	0.81		
CPA 2	0.74		
CPA 4	0.73		
CPA7	0.70		
LCPA		0.85	4.14±1.41
LCPA 2	0.80		
LCPA 4	0.77		
LCPA 3	0.76		
LCPA 5	0.76		
LCPA 7	0.71		
LCPA 1	0.70		
CEA		0.85	4.49±1.52
CEA 5	0.87		
CEA 4	0.85		
CEA 6	0.85		
CEA 1	0.70		
CRA		0.81	4.45±1.24
CRA 2	0.87		
CRA 3	0.81		
CRA 8	0.77		
CRA 9	0.64		
Kaiser-Meyer-Olkin MSA	0.77		
Bartlett's test of sphericity	1551.61**		
PEU		0.75	3.23±1.02
PEU 5	0.85		
PEU 4	0.84		
PEU 3	0.80		
PEU 1	0.72		
PEU 2	0.70		
Kaiser-Meyer-Olkin MSA	0.82		
Bartlett's test of sphericity	1783.25**		
OP		0.88	4.45±1.19
OP 1	0.90		
OP 3	0.87		
OP 4	0.77		
OP 5	0.76		
OP 2	0.71		
Kaiser-Meyer-Olkin MSA	0.73		
Bartlett's test of sphericity	1345.31**		

*P<0.10, **P<0.05, CPA1, CPA3, LCPA6, and CEA7 were deleted due to low loading. VCA: Valuation customers as assets, OP: Organizational performance, PEU: Perceived environmental uncertainty, CRA: Customers retention analysis, CEA: Customers equity analysis, LCPA: Life-time customers profitability analysis, CPA: Customers profitability analysis

3.2.3. PEU (moderator variable)

PEU was measured using the instrument applied by Kren and Kerr (1993), which was developed based on Miles and Snow's

(1987) approach. However, many subsequent accounting studies (e.g. Gul, 1991; Gul and Chia, 1994) have measured PEU by adapting Govindarajan's PEU factors. The respondents were requested to indicate their perceptions of the predictability regarding factors including their organization's customers and suppliers; the government; competitors; and technologies, on a seven-point numerical scale anchored at 1 = Highly predictable to 7 = Highly unpredictable.

3.2.4. Control variable

Further data was obtained based on the following control variables: Firm size was measured by the number of employees (≥300 = 1, < 300 = 0), type of service industry (non-financial = 1, financial = 0).

4. ANALYSIS AND RESULTS

4.1. Goodness of Measures

Procedures for testing the goodness of measures must be utilized prior to any analysis. Techniques for testing the goodness of measures suggested by Sekaran (2003) were followed in this study. These included factor analysis and reliability analysis; the results of these are shown in Table 1.

The fourth run for the CA factor analysis yielded five factors with KMO = 0.77, Bartlett's test of sphericity P = 0.00, and anti-image correlation and communalities >.50. The factor loadings for all items were > 0.55. The five factors cumulatively explained 67.4% of the total variance. The eigenvalues were 3.99, 3.93, 3.49, 2.84, and 2.60 for factor 1, factor 2, factor 3, factor 4, and factor 5, respectively. Thus, it can be claimed that the results of the fourth run of factor analyses fulfilled the stipulations highlighted by Hair et al. (2010).

Inspection of the items encompassed in the fourth and fifth factors revealed that the fourth factor captured items reflecting customer acquisition. Therefore, this factor was retained under the name "CEA." However, the items for the fifth factor focused specifically on information about customer retention; thus, this factor was given the name "customer retention analysis" (CRA), as suggested by Gupta and Zeithmal (2006) and Blattberg et al. (2001).

4.2. Correlation Analysis

The last part of the preliminary analysis considered was the bivariate correlations between the constructs incorporated in both the measurement and the theoretical framework. Table 2 represents the correlation matrix for the constructs operationalized in this study.

4.3. Hypotheses Testing

This section presents the results of regression analysis used for testing the hypotheses of the study. Taking into account the two sub-hypotheses after factor analysis was completed, 10 hypotheses were formulated in the current study. Of these, five were related to the direct effect of the CA information dimensions on organizational performance, and five were related to the moderating effect of PEU on the relationship between CA information and organizational performance.

A four-step hierarchical regression was performed to test the hypotheses: (1) The control variables were entered; (2) the independent variables were entered; (3) the moderating variable was entered; and (4) interaction terms were introduced into the equation to test the joint effect of the predictor and the moderator on the dependent variable. The interaction terms were calculated by multiplying the predictor with the moderating variables (Baron and Kenny, 1986).

To determine whether a moderator effect on an anticipated relationship exists, three maximum conditions must be met: (1) The final model must be significant; (2) the F-change must be significant; and (3) the beta coefficient of the interaction term must be statistically significant. Effectively, the moderating effect on the proposed relationship will be demonstrated graphically if the beta coefficient of the interaction term is significant. Consequently, each significant moderating effect was illustrated graphically using a technique recommended by Pallant (2007). This process was carried out in order to test the moderating effect on each of the relationships that linked the five components of CA information with organizational performance. Furthermore, the current study split each component of the CA information into three groups (low, moderate, high) by using 33.33 and 66.67 percentile cut-off points to show significant effect, and divided PEU into two groups (low and high) using the median. Table 3 summarizes the results of the hypotheses testing.

In the first step, only firm size had a significant effect on organizational performance. The control variables together explained about 6.4% of the total variation in organizational performance. The addition of the CA information dimensions in Step 2 explained an additional 33.7% of the variance in organizational performance. This result shows that CPA had a significant impact on organizational performance at $P < 0.05$, $\beta = 0.29$. This means that the higher CPA usage is, the higher organizational performance is. Therefore, H1a is supported. With

Table 2: Pearson correlation coefficients for all variables

Variables	CPA	LCPA	VCA	CEA	CRA	PEU	OP
CPA	1						
LCPA	−0.107	1					
VCA	0.330**	−0.197*	1				
CEA	0.274**	−0.071	0.143	1			
CRA	0.334**	0.033	0.287**	0.206*	1		
PEU	−0.086	−0.199*	−0.089	0.046	−0.266**	1	
OP	0.443**	0.014	0.240*	0.379**	0.430**	0.215	1

*P<0.10, **P<0.05, VCA: Valuation customers as assets, OP: Organizational performance, PEU: Perceived environmental uncertainty, CRA: Customers retention analysis, CEA: Customers equity analysis, LCPA: Life-time customers profitability analysis, CPA: Customers profitability analysis

regard to CEA, the results show that it has a positive relationship with organizational performance at $P < 0.05$, $\beta = 0.21$. This result indicates that the higher CEA usage is, the higher organizational performance is. Thus, H1d is supported. Moreover, the results show that CRA usage has the most significant effect on financial performance at $P < 0.05$, $\beta = 0.27$, such that the higher the usage of customers retention analysis, the higher the financial performance. Therefore, H1e is supported as well. In general, the results from Step 1 support the assertion that usage of CA information leads to the creation of organizational performance. Thus, H1 is partially supported.

An assessment of the beta coefficients for interaction terms (Step 4) shows that PEU only moderated the relationship between two elements of CA information and organizational performance; namely, CPA at $P < 0.10$, ß = −0.857, and CRA at $P < 0.10$, $\beta = 0.6226$. The introduction of the interaction terms significantly increased the model value (as indicated by the significant change in F-values) and increased the R-squared values to around 7%. The model as a whole was significant ($F = 6.858$, $P < 0.01$). However, PEU showed no moderating effect on the relationship between the other three CA information elements (LCPA, VCA, and CEA) and organizational performance.

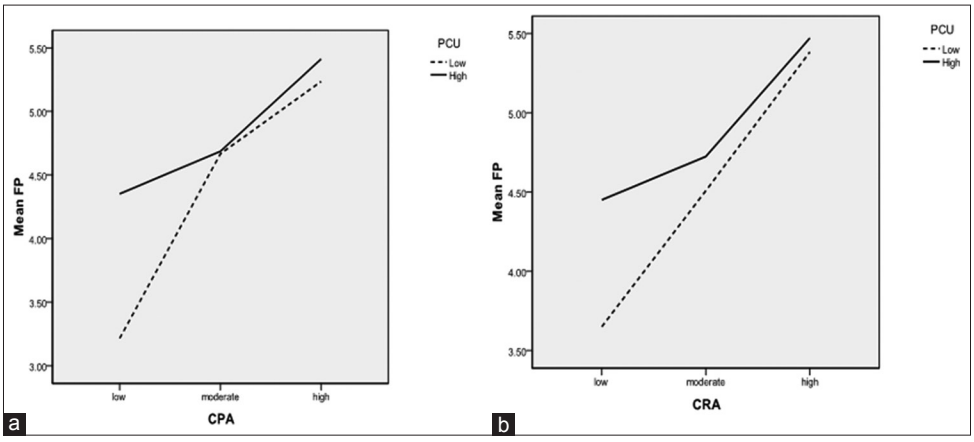
Figure 1a shows that the higher the PEU, the higher the usage of CPA, and the higher the organizational performance. Therefore, H2a is supported. Figure 1b shows that the higher the PEU, the higher the usage of CRA, and the higher the organizational performance. Therefore, hypothesis H2e is supported as well.

Table 3: Moderating effect of PEU on the relationships between CA and organizational performance

Variables	DV: Organizational performance (standard beta)			
	Step 1	Step 2	Step 3	Step 4
Control variables				
Type of industry (services=1, Financial=0)	−0.054	−0.075	−0.064	−0.085
Firm Size (≥300=1, <300=0)	0.296**	0.231**	0.229**	0.189**
Independent variables				
CPA		0.290*	0.267*	0.702*
LCPA		−0.072	−0.062	0.199
VCA		0.030	0.040	0.397
CEA		0.209**	0.222*	0.137
CRA		0.271*	0.268*	−0.106
Moderating variable				
PEU			0.165**	0.840*
Interaction terms				
CPA*PEU				−0.857**
LCPA*PEU				−0.374
VCA*PEU				−0.527
CEA*PEU				0.193
CRA*PEU				0.622*
F-value	3.513**	9.291**	8.977**	6.858***
R^2	0.064	0.401	0.428	0.495
Adjusted R^2	0.046	0.358	0.380	0.423
R2-change	0.064	0.337	0.027	0.067
F-change	3.513**	10.919***	4.461**	2.411**

Significance levels: *P<0.10, **P<0.05, ***P<0.01. VCA: Valuation customers as assets, OP: Organizational performance, PEU: Perceived environmental uncertainty, CRA: Customers retention analysis, CEA: Customers equity analysis, LCPA: Life-time customers profitability analysis, CPA: Customers profitability analysis

Figure 1: (a) The moderating effect of perceived environmental uncertainty on the relationship between customers profitability analysis and organizational performance, (b) the moderating effect of perceived environmental uncertainty on the relationship between customers retention analysis and organizational performance



5. DISCUSSION

5.1. CA Information Usage and Organizational Performance

This section elaborates on the relationship between the level of CA information usage and organizational performance, and illustrates the moderating effect of PEU on the relationship between CA information and organizational performance. The discussion is based on the theoretical perspective, quantitative and qualitative evidence, and conceptual studies.

The results of the current study show that two of the CA information dimensions, namely LCPA and VCA, had no significant impact on organizational performance. One reason for this could be that CA information focuses more on long-term goals and profits (Gupta and Zeithaml, 2006), so the effects of usage of this information might only appear in the future.

On the other hand, the findings show that CPA, CEA and CRA were positively and significantly related to organizational performance. This might be due to several reasons. First, usage of CPA allows companies to turn unprofitable customers into profitable ones by improving processes in order to lower service costs, or customize pricing policies using activity-based pricing, which may improve profitability, and increase focus on profitable customers based on the 80/20 rule, which assumes that 20% of customers generate 80% of profits (Kaplan and Norton, 2001). This information can be used to support customer relationship management strategies, which in turn support organizational performance (Shapiro et al., 1987), as well as supporting management decision-making by classifying customers into hierarchical categories based on profitability and potential for growth (Stuchfield and Weber, 1992). Based on these classifications, the company can employ a number of tactics, such as customized pricing, allocation of promotional expenditure, and product development decisions, that effectively improve its retention strategy, further reducing costs and improving the companies' performance. CPA can also develop scenarios that could enable management to simulate the impact of decisions, such as price adjustments and capacity allocation, on the potential profit contribution of their customer base, thereby strengthening the decision-making process (Noone and Griffin, 1997).

The interview results show that most of the managers believed that extensive CPA utilization would lead to better organizational performance. For instance, Manager E stated:

> Information such as customer profitability allows us to understand how we can serve the customers with lower costs … this leads to enhancing our profitability in one way or another.

Second, the positive impact of CEA and CRA on organizational performance could be explained by the fact that long-term customers buy more and are less expensive to serve, as supported by studies in related area (Ganesh et al., 2000; Hwang et al., 2004). On the other hand, replacing an existing customer with a new one incurs additional acquisition costs (Colgate and Danaher, 2000), and risky strategies that could lead to customers switching to competitors and customer churning behavior overall (Larivière and Van den Poel, 2005). This result is supported by Hogan et al. (2002), who pointed out that usage of CEA enables companies to manage customers as strategic assets, while employing such strategic information could maximize the value of customer equity and achieve higher profits.

The results of the quantitative data analysis were supported and validated by the results obtained through the semi-structured interviews conducted with top managers. Most of the managers confirmed the positive impact of CEA and CRA on organizational performance. Managers A and C provided the following commentaries:

- This information (customer equity and retention analysis) gives us the opportunity to offer the customers other services or we can redesign our services to match with what the customers are willing to pay … at the end, we keep our customers dealing with us (Manager A).
- Customer retention information allows us to keep our expert customers, who [are] less costly to serve (Manager B).

The findings of the current study are also in line with the long-held view in MAS literature that proper use of management accounting information can improve organizational performance (Gupta and Zeithaml, 2006).

5.2. Moderating Effect of PEU on the Relationship between CA Information Usage and Organizational Performance

The statistical analysis showed that PEU moderated the relationship between two of the CA information usage dimensions (i.e., CPA and CRA) and organizational performance. With respect to the moderating effect of PEU on the relationship between CPA and organizational performance (Figure 1a), the study found that companies with low levels of PEU exhibited a strong positive impact on the relationship between CPA usage and organizational performance. However, this was only the case when CPA was lower than the moderate range; when CPA usage was higher than the moderate level, its impact on organizational performance was negligible. A possible explanation for this result is that such sophisticated information is less useful in a relatively stable environment, such that extensive usage of sophisticated accounting information could create an overlap in predictable environmental situations. Therefore, when managers use CPA extensively under low levels of environmental uncertainty, the impact of CPA on performance would be negligible. For companies facing high levels of environmental uncertainty, CPA was found to have a positive influence on the organizational performance at a moderate to high level of CPA usage, while below a moderate level of CPA usage there was only a slight positive impact. A potential reason for this result is that the use of sophisticated management accounting information (such as CPA) enhances companies' capabilities to cope with rapid market changes given high levels of environmental uncertainty, as rapid adjustments to organizational strategies and monitoring help to maintain performance levels.

The results also show that PEU had a significant moderating effect on the relationship between CRA and organizational

performance. A closer look at the results (Figure 1b) reveals that in situations of low PEU, CRA had a continuous positive impact on organizational performance. However, in situations of high PEU, there was a positive relationship between CRA and organizational performance, which became stronger when companies' usage of CRA was higher than the moderate range. A potential justification for these results is that service companies, under low or high PEU, try to reduce costs through customer retention strategies to maintain performance. However, when customer preferences and tastes become more unpredictable (i.e., customer uncertainty increases), customer retention information becomes more useful for managing changes in customers' needs and preferences. While the quantitative data provided little evidence concerning the moderating effect of PEU, the qualitative results indicated such a moderating effect. During the interviews, the managers confirmed the moderating effect of PEU on the direct relationship between CA information and organizational performance. For example, Manager C stated:

> With such unpredictable (customer) preferences situations, we need (CA) information to keep in touch with what is going on in the market to make sure that our company's goals will be meet.

While Manager B indicated,

> CA information gives the company the signs to determine the profitable customers under unpredictable customers' actions situations, to pay more attention to maintain them … those customers contribute to the profitability more than other customers who may not add too much to the company.

As shown above, a contradiction was found in the results of the quantitative and qualitative data. Since PEU was introduced as a moderator based on contingency theory and previous studies, and supported by qualitative data, this contradictory finding could be due to some statistical weaknesses. For example, the insignificant results from the quantitative data could be explained by the strength of correlations between LCPA, VCA, and organizational performance, as well as the correlation between PEU and organizational performance; the correlation among these variables is considered weak based on Cohen's (1988) guideline on correlation strength. Therefore, these weak relationships might not be strong enough to provide significant results.

5.3. Limitations of the Study

Even though this study contributes to the body of the knowledge on CA, the results must be interpreted with caution because of certain limitations. First, the companies in the study sample were service companies listed on the Amman Stock Exchange. Thus, caution should be used in applying the results to other industries, such as manufacturing. The second limitation relates to the nature of data collection in a cross-sectional study, where data were collected at one point in time. Bearing in mind that CA information involves long-term information strategies that need time to be built and nurtured to yield results in terms of organizational performance, a study conducted using a longitudinal framework might be able to illuminate the causal relationships between the variables of concern - which were not captured by the cross-sectional data in this study - and thus provide more accurate results. Third, the research followed a sequential explanatory design and employed a quantitative approach as the primary research methodology, with partial qualitative data only used to validate the quantitative results. Furthermore, interviews are sensitive issues for managers of Jordanian companies, who are more used to participating in studies through paper-based questionnaires. In addition, funding and time limitations prohibited the researcher from using a larger sample of interviewees.

Finally, based on the converging results from the multiple regression analysis it is clear that CA information usage can be used to explain organizational performance variation among Jordanian services companies. The regression analysis results (R^2 values) suggest that a high percentage of variation is still unexplained, despite it being quite common for business research to register low R^2 values. In other words, CA information usage does affect organizational performance, but not strongly enough to discount the effect of other variables on companies' performance variations. Despite the abovementioned limitations, the study constitutes a significant step forward in CA research given the scarcity of CA research undertaken by accounting academicians.

5.4. Suggestions for Future Research

Taking into account the limitations above, the current study provides some suggestions for future research. Researchers can replicate this study and use larger samples in different contexts, such as in different industries or countries. This would not only enlarge the sample size, but also, more importantly, grant the opportunity for direct comparison of model efficacy based on either firm size or country designation. Consequently, this would help to resolve the issue of generalizability and allow for richer analysis of the validity of each hypothesized relationship, as well as the proposed overall framework. Since this study used only service companies registered on the Amman Stock Exchange, future research could broaden the population to include all service companies in Jordan, which would enhance the possibility of further generalizing the findings. Focusing on one industry is also recommended for future research; while this study used a cross-service industries sample, future researchers may generate different results if they focus more deeply on only one type of service industry, such as hotels or insurance companies.

As CA is a relatively new accounting discipline with ongoing development in terms of its conceptual framework, changing the research method to a case study approach may also benefit future researchers, as it would enable them to detail the technical aspects of CA. One of the main objectives of the current study was to investigate the role of PEU as a moderator for the relationship between CA information and organizational performance. Further research could examine other contingency factors, such as management style, business strategy and culture, to advance understanding of the impact of CA on organizational performance.

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