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MODERATING EFFECT OF ENVIRONMENTAL MANAGEMENT ACCOUNTING (EMA) ON QUALITY AND COMPETITIVE ADVANTAGE

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ABSTRACT

This paper reviews the effect of EMA on relationship amid product quality and competitive advantage. Review of literature demonstrates that enhancement and improvement in product quality resulted from employing EMA is likely to contribute gaining competitive advantage. Therefore, it is likely that EMA can play a moderator role between product quality and competitive advantage. Based on the findings of literature review, this paper posits a framework that links the moderating effects of EMA on the relationship between product quality and competitive advantage for future empirification.

Key words: Product Quality, Environmental Management Accounting, Competitive Advantage.

1. INTRODUCTION

Growing global nature of competition has caused that customer satisfaction become as a critical factor of firms' success in the global market (Shank and Govindarajan, 1994; Callahan and Lasry 2004). Customer satisfaction when achieve that their expectation be covered by firms. One of the main customers' expectations is offering high quality goods and services by firms. According to Smith and Wright (2004), Dominic et al (2010) and Zhou et al. (2008) product quality has a direct and positive effect on competitive advantage and higher sales. Therefore, product quality became the key concern to firms (Daniel et al. 1995; Flynn et al. 1995; Foster and Sjoblom 1996; Zhou et al., 2008). In addition to profits, quality imposed costs to firms. Therefore, cost of product became prime concern to management accountants in order to measuring and controlling the quality costs (Jasch, 2003; Gale, 2006; Malmi et al. 2004; Foster and Sjoblom 1996; Shank and Govindarajan 1994; Anderson and Sedatole 1998).

Nowadays environmental characteristics of service and products as one of product quality factors has become a critical factor in the buying behaviors of consumers (Inoue, 2011; Zhou, 2008; Azzone and Bertele, 1994). This is because consumers are more aware of environmental issues than before. Therefore, product quality is depending on environmental attributes of products as well as product design and consideration customer requirements (Flynn et al. 1994; Lynch 1999; Porter and van der Linde 1995; Nadai 2001; Wagner 2005, Galbreath and Shum, 2012). In addition to the acquisition, product quality has many other consequences to firm. Based on the above discussion, establishing and maintaining a global competitive advantage could be the main result of quality (Li and Toppinen, 2011; Shank and Govindarajan, 1994; Porter 1991; Flynn et al. 1995; Terziovski et al. 1999). Competitive advantage is described as that in which the firm positions itself in such a way that competitors find it difficult to duplicate its success strategies and the firm will enjoy the durable advantage of this approach (Barney, 1991; Coyne, 1986; Porter, 1985).

It is needed for firm to employ a tool or practice to measure product quality costs and extent of product quality to gain competitive advantage. The scholars suggest EMA which is defined as a new tool in management accounting that tries to identify, collect, analyze, control, and reduce environmental costs (Gadenne and Zaman, 2002; Petcharat and Mula, 2010). In addition to identifying and reducing environmental costs, EMA improve management

decision making through consideration of environmental matters in investment and design decisions (UNDSD, 2001). The incorporation of environmental factors into a firm's decision processes contributes to the reduction of environmental costs and to the enhancement of an organization's long-term viability (Corrigan, 1998). Therefore EMA as a management control system that helps managers to address and manage environmental issues in product design based on the needs of the market (USEPA, 1995; White and Becker 1992; Mannion 1996; Pasurka 2001; Moneva and Llena 2000). Therefore, it is likely to affect the relationship between product quality and gaining competitive advantage.

This paper proposes a framework, which links recognition of *EMA* as moderator on the relationship between *product quality* and *competitive advantage*. The following sections describe the literature review and hypotheses, and finally framework and research method and the psychometric analyses of the measures used in the hypothesis test.

2. LITERATURE REVIEW AND HYPOTHESIS

Product quality has been recognized as a strategic organizational priority for some time. Flynn et al. (1994) argued that quality is a critical component in the design and manufacture of products which are considered superior to those of competitors. Companies reportedly pursue product quality on the presumption that it will improve their competitive position, business success, and differentiate their products (Li and Toppinen, 2011; Carr 1995; Belohlav 1993). Daniel and Reitsperger (1991) indicated that a strategic focus on quality has been widely considered as a fundamental aspect of manufacturing strategy in many firms, and is likely to result in improvements in product demand thereby facilitating the building and maintenance of a competitive position. Hitt and Hoskisson (1997) argued that customers increasingly expect products to be of high quality. Hence, product quality is often considered to contribute to the development of a firm's competitive advantage (Li and Toppinen, 2011; Benson et al. 1991; Flynn et al. 1994; Chang, 2011; Judge and Douglas 1998; Mario et al., 2010).

2.1 EMA as a Moderator between Product Quality and Competitive Advantage

Although product quality contributes to competitive advantage (Zhu, et al., 2008; Domenic et al., 2010; Narasimhan and Schoenherr, 2011), it is likely that EMA plays an influential role in that relation. This is because EMA has the potential to improve societal, customer, shareholder, government, and employee relations. This relationship facilitates the knowing customers' needs and expectations (USEPA, 1995a). Then firms can incorporating them into designing the products and consequently develop their product quality (Callahan and Lasry 2004). Christmann (2004) reported that as public concerns about environmental issues rise, customers increasingly consider environmental factors in their purchasing decisions.

Decisions involving the choice of materials have an impact on the environment, and studies have shown that customers increasingly prefer environmentally sound products and avoid those with environmental downsides during use or disposal (Chang, 2011; Vandermerwe and Oliff 1990; Martin et al., 2010; Post and Altman 1994; Zhang et al. 1997). Customers expect products to be free of harmful materials, and evidence indicates that consumers are prepared to pay more for them (Gunningham 1994; Mirvis 1994). Gunningham (1994) argued that organizations should respond to such evidence on consumer preferences by redesigning their products to make them less environmentally damaging. Therefore, it is likely that a firm's competitive advantage will benefit from such product quality improvements.

In addition to external effects, employing EMA has internal benefits that contribute to product quality that are consequently likely to contribute to competitive advantage such as lower environmental and health risks, reduced disposal costs, waste minimization and higher productivity (Jasch, 2009; Zhang et al. 1997). Since the main focus of EMA is on environmental costs, identification of environmental costs has the potential to promote more accurate product costing. On the other hand, appearing hidden environmental costs through employing EMA, get firms to find and innovate ways to reduce or eliminate such these costs (USEPA 1995a, b).

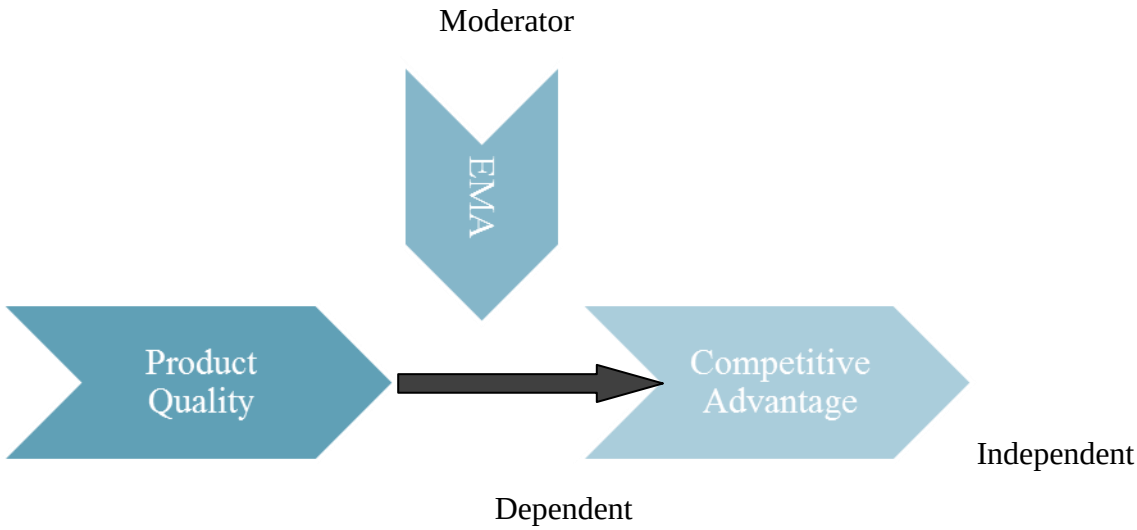
Judge and Douglas (1998) and Burritt (2009) reported that firms can often reduce waste and hence cost through the use of environmentally preferable material substitutes. Environmentally conscious design and manufacturing aims to reduce disposal costs and

environmental risks, improve product quality at lower cost, minimize waste, and increase productivity (Mannion 1996; Rugman and Verbeke 1998; Zhang et al. 1997). Finally, Brady et al. (1999) stated that competitive opportunities exist for companies that address concerns for environmental costs. Therefore, based on the literature, two hypotheses are stated in alternate form as follows.

H1: *Firms with higher level of product quality achieve higher level of competitive advantage.*

H2: *The relation between product quality and competitive advantage is moderated by EMA.*

3. Proposed Framework and Variable Measurement



The proposed framework suggests two hypotheses, which require measurement criteria to be carefully employed. Based on the proposed relationship, the hypotheses and the measurement suggestions are discussed:

The following model is used to test the hypothesis.

$Y = b0 + b1\ X1 + b2\ X2 + \varepsilon$

Where

Y : is competitive advantage

X_1 : is product quality

X_2 : is environmental management accounting

ε : is an error term

For **H1:** *Firms with higher level of product quality achieve higher level of competitive advantage.*

Competitive advantage = b0 + b1 Product quality + b2 EMA + ε

For **H2:** *The relation between product quality and competitive advantage is moderated by EMA.*

Competitive advantage = b0 + b1 Product quality + b2 EMA + b3 (b1 Product quality × EMA) + ε

Conclusion

The conclusion reached in the literature is that firms which address environmental issues can affect the marketability of their products, their competitive position as well as their financial viability (Billing and Scott 1995; Post and Altman 1992). Burritt et al. (2002) indicated that there is increasing stakeholder pressure with respect to the impact of corporate activities on the environment. Nevertheless, the environment presents significant competitive opportunities arising from environmentally friendly products (Thornton et al. 2003; Brady et al. 1999). According to the literature, EMA plays a role in the relationship between product quality and competitive advantage of firms. It means, firms which employ EMA are likely to have greater extent of competitive advantage, because of the effect that EMA has on product quality.

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