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On cost-informed pricing and customer value:

A resource-advantage perspective on industrial innovation pricing practices

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VALUE:**

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INDUSTRIAL INNOVATION PRICING PRACTICES**

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**ON COST-INFORMED PRICING AND CUSTOMER VALUE:
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PRICING PRACTICES**

Abstract

By empirically testing a framework of pricing strategies and their determinants in an industrial setting, Noble and Gruca (1999a) help to overcome the lack of empirical validation of pricing theory. In a commentary to the article, Cressman (1999) (1) expresses worries about the high percentage of firms that engages in cost-based pricing; (2) raises a definition question on value-based pricing; and (3) stresses that empirical pricing literature does not provide ideas on *successful* pricing practices in relation to customer value created. The aim of this study is to respond to calls for research on successful pricing practices. A perspective from resource-advantage theory (Hunt and Morgan 1995) is used to formulate expectations on the degree to which the use of information on customer value, competition, and costs contributes to the success of a price decision. It is argued that the success of these practices is contingent on the relative customer value the firm has created and the degree to which this position of relative value is sustainable in the competitive market place. These expectations are empirically tested on pricing decisions with respect to the introduction of new industrial capital goods. It is concluded that Noble and Gruca's (1999a) findings on cost-based pricing can be complemented, since our results show that under most circumstances cost-informed pricing makes an important contribution to the success of a price setting. The positive effect of cost-informed pricing on pricing success is particularly important in situations of high competitive intensity. Value-informed pricing has in this situation a negative impact

on pricing success. In situations **where** the **firm introduces** a new product with high relative value, value-informed pricing contributes more and competition-informed pricing contributes less to pricing success. Cost-informed pricing has no effect on the success of a price decision in this situation. In addition, our study **comes across** several measurement issues that **may** have influenced results of prior surveys on pricing practices. By providing a theoretical foundation and empirical **evidence** on **successful** organizational pricing practices in relation to customer value, the authors hope to introduce a perspective on pricing that contributes to an understanding of **how** price decisions are actually made in business.

(Pricing Research; Industrial Marketing; Competitive Strategy)

INTRODUCTION

By empirically testing a **framework** of pricing strategies and their **determinants** in an **industrial** setting, Noble and Gruca (1999a) help to **overcome** the **lack** of empirical validation of pricing theory (Monroe and Mazumdar 1988). Their research effort made **clear** that **our** understanding of **how** price decisions are made by organizations is **still** far from complete (Cressman 1999, Noble and Gruca 1999b). In a commentary to the article, Cressman (1999) raised three important issues regarding Noble and Gruca's (1999a) findings.

First, Cressman expresses worries about the high percentage of firms in Noble and Gruca's (1999a) sample that **engages** in cost-based pricing (56 %), suggesting that these **firms** are ignorant towards the market in price decisions. These worries reflect the **general** belief in marketing that cost-based pricing is a bad **practice** (e.g. Dean 1950, Nagle and Holden 1990). Although Coe (1990) shows that an increase of cost-based pricing **goes** hand in hand with a decrease of innovation strategies, the **lack** of effectiveness of **cost**-based pricing has so **far** been an assumption that is never tested. **Second**, Cressman raises a definition question: What is value(-based) pricing? Does value-based pricing refer to a pricing strategy as 'a **means** by which a pricing **objective** is to be achieved' (Noble and Gruca 1999a, p. 436), or does value-based pricing refer to the use of information on customer value in a pricing decision? Third, Cressman **stresses** that empirical pricing literature does not **provide** studies on *successful* pricing **practices** in relation to the **firm's** efforts to **create** customer value: 'How is it possible that we advocate managers adopt a market orientation, but the literature fails to link pricing **practices** with the drivers of customer **needs**? If pricing **practice** is seen as the **means** through which managers

“harvest” the “seeds” planted in a market-oriented strategy process, why are there no pricing practices based on the value delivered to customers in the marketing literature?’ (Cressman 1999, p. 456).

The third issue is of special importance because it does not relate to research findings or definitions of concepts, but to the relevance of the research question itself. Rather than examining to what extent firms base prices on customer value, costs, or other information, Cressman actually argues that researchers should examine under which value-creating conditions the use of this information leads to successful pricing decisions. This comment is in line with prior calls for research on how firms set prices. Monroe and Mazumdar (1988) see a lack of understanding of how price decisions are actually made as a major shortcoming in pricing literature, while Bonoma, Crittenden and Dolan (1988) even suggest that it brought about a lack of managerial relevance of pricing literature in general. Cressman’s critique led Noble and Gruca (1999b, p. 459) echo these calls, stating that: ‘Research on successful pricing process should be a major priority for future research. In such a research endeavor, the definitions of customer value and value-based pricing should be clear enough to avoid the potential for confusion between academic and practitioner users of the results.’

In this paper, we aim to contribute to answering Noble and Gruca’s (1999b) call, taking into account Cressman’s (1999) useful suggestions. In particular, we will make three contributions to empirical pricing literature. First, our study is the first to examine the success of three pricing practices with respect to different types of information used in a pricing process (respectively on costs, customer value and competition). Second, we will do so in relation to the relative customer value offered by new products and the

degree of sustainability of this value. The theoretical foundation for this is provided by the resource-advantage theory of competition (Hunt and Morgan 1995, 1997). Third, our study comes across several measurement issues that may have influenced Noble and Gruca's (1999a) findings, as well as other prior surveys on pricing practices. Like Noble and Gruca (1999a) we present data from industrial capital industries, which can be used for a possible reinterpretation of their findings on the use of cost information in pricing. Our results reveal that the success of information on value, competition and costs is contingent on the relative value offered by a product, as well as on the degree to which value is sustainable in the market. This suggests that there is no general "bad" or "best" practice with respect to the type of information used in price decisions.

In the next section we will introduce the concepts included in our study. Next, we use resource-advantage theory (Hunt and Morgan 1995) to formulate expectations on the conditions under which information on costs, competition and customer value contributes to successful price decisions. The expectations are tested on 77 introductions of industrial capital goods. The empirical method and results are presented next. In the discussion section we will discuss why Noble and Gruca's (1999a) results may be influenced by several measurement issues, and how they should be interpreted in the light of the findings obtained in our study. We conclude with some interesting avenues for future research.

CONCEPTS

Pricing practices should be distinguished from pricing objectives and pricing strategies.

Pricing objectives refer to what the firm is trying to accomplish with its price setting, and

pricing strategy refers to the **means** by which a pricing **objective** is to be achieved in the market (Noble and Gruca 1999a). Pricing practices on **the other** hand, refer to the set of activities executed by an organization's managers that **lead to a price** decision.' **As such**, pricing practices occur in the context of an organizational process, leading to decisions on pricing strategies and price levels. Thus, whereas pricing strategies are visible in the market in the form of price **changes**, price bundles, price levels within a product **line**, or otherwise, pricing practices are hidden behind the **boundaries** of the organization. Following Day (1994) we consider pricing to be an organizational process of information gathering, exchange and interpretation, that involves discussion and negotiations between different business functions **such** as marketing, production and **finance**. This view on the pricing process is in line with qualitative work on pricing in organizations (e.g. Bonoma, Crittenden and **Dolan** 1988, Hague 1971, Foxall 1972, Pearce 1956).

The empirical pricing literature generally distinguishes among three types of pricing practices (e.g. Piercy 1981, Tzokas, Hart, Agrouslidis and **Saren** 2000, Udell 1972), respectively based on the use of information regarding (1) customer **value** (following Hunt and Morgan (1995), defined as the sum of total **benefits** customers perceive they **will receive** if they accept the market offering); (2) competition (here defined as **prices** of competitors' **products** interpreted in the light of their relative market positions); and (3) **costs** (here defined as the variable and **fixed costs** with respect to the development, production **and** marketing of the new product). These different types of information are

¹ Prior contributions to empirical pricing literature (e.g. Tzokas, Hart, Agrouslidis and **Saren** 2000) **often** use the term pricing methods to **indicate** the activities by which **firms** arrive at price settings. Since the term pricing methods is **often** interpreted as mutually **exclusive** methods, we prefer the term pricing practices, which is in line with our view on pricing as an organizational process that involves organizational practices in which organizations **engage** to some degree (Day 1994).

important because they represent the **basic** elements in the internal **and external environment** of the **firm** on which **prices can** be based (Nagle and Holden 1995).

In the context of a pricing process, firms are likely to use **all** three types of information to some extent, **rather** than focus on a single one. This implies that the **use** of customer value, competition **and cost** information, should be seen as something of degree, **rather** than mutually **exclusive categories**. For this reason we **will** use the terms **cost-informed**, competition-informed and value-informed pricing, in stead of **cost-based**, competition-based and value-based pricing. This conceptualization is in line with Noble and Gruca's (1999a) **finding** that **firms** combine cost-based pricing with pricing strategies that require input of market information.

[Figure 1]

When engaged in a pricing process, organizations should **indicate** and choose from a number of **acceptable price** settings for a product. **A clear** understanding of the range of **acceptable price** settings **will contribute** to **successful decision making** (Monroe 1990). Whereas value- and competition-informed pricing enhance the organization's understanding of the upper-limit of this range, cost-informed pricing does so about the lower-limit (Monroe 1990). As **such**, we **expect** that value-, competition-, and **cost-informed** pricing **will** affect pricing **success**, as indicated in Figure 1. Since a pricing process generally starts with determining pricing **objectives** (Diamantopoulos 1991, Hague 1971), we **define** pricing **success** accordingly as the degree to which pricing **objectives** are achieved.

The **degree** to which pricing **practices contribute** to pricing **success** is contingent on the customer value context (Nagle and Holden 1995). We include two **specific**

dimensions: product advantage and competitive intensity. Product advantage refers to the sum of total benefits customers perceive to obtain compared to competitors' **products**. As **such**, it refers to the actual relative value the product offers. Competitive intensity relates to the degree to which product advantage is likely to be sustainable. Under conditions of high competitive intensity, created customer value **erodes faster** than under conditions of low competitive intensity. In the next **section** we **will** formulate expectations on **how** these dimensions moderate the relationship between value-, competition-, and **cost-**informed pricing and pricing **success**.

PRICING IN THE LIGHT OF RESOURCE-ADVANTAGE THEORY

According to resource-advantage theory (Hunt and Morgan 1995, 1997), a **firm** strives for superior **financial** performance by enabling its resources to **capture** a position of competitive advantage in a certain market or market segment. This position is **captured**: (1) if the **firm creates** more customer value than competitors do at lower or equal **costs** compared to competitors, or (2) if the **firm creates** equal customer value compared to competitors at lower **costs**. This situation is represented in Figure 2 by **cells** 2, 3 and 6 (see Hunt and Morgan 1995 for an elaborate explanation of the competitive position matrix). Firms **can** improve their competitive position by introducing proactive or **reactive** product innovations to the **market**. Proactive innovations offer superior customer value and **reactive** innovations offer customer value equal to competitors (Hunt and Morgan 1997).

[Figure 2]

Value-, competition-, and cost-informed pricing all may positively affect pricing success (Nagle and Holden 1995), but the degree to which they do depends on the customer value context of the product. Table 1 distinguishes between three contexts with respect to the customer value offered by a new product and the degree to which value is likely to be sustainable: (1) high product advantage; (2) high competitive intensity; and (3) high product advantage and high competitive intensity. In terms of Figure 2 product advantage represents the relative customer value dimension. Competitive intensity represents the degree to which a position of relative value captured by an innovation is likely to be sustained. For example, a product representing a high degree of advantage that contributes to a competitive position in cell 3 in Figure 2 at its launch, is in a highly competitive market pushed to cell 2 when a competitor launches a reactive innovation, or even to cell 1 when a competitor introduces a proactive innovation.

[T a b l e 1]

Value-informed pricing informs the firm about the ceiling of the range of acceptable price settings for a new product. It establishes a maximum price that depends on the actual product advantage (Monroe 1990). Thus, the higher the benefits offered by the product, the larger the range of acceptable price settings, the more value-informed pricing will contribute to pricing success (cell 1 in Table 1). Under conditions of high competitive intensity, relative value is likely to erode faster thereby narrowing the range of acceptable price settings (Monroe 1990). Thus, under conditions of high competitive intensity the effect of value-informed pricing on pricing success, is likely to decrease (cell 2). In the situation that a product with a high advantage over competitors' products is launched in a market with intense competition, both effects are likely to occur: the

effect of value-informed pricing **will** increase because of the high product advantage, **but** at the same **time** it **will** decrease because of **the** intense competition. This **means** that the **positive** effect of value-informed pricing on pricing success is not expected to **increase** or decrease under this condition (cell 3).

Competition-informed pricing informs the **firm** about the **ceiling** of the range of acceptable price settings, under the condition that the product is **a reactive innovation**: a product that is launched with the **objective** to match a competitor's position of **superior** value. Because the value offered by the product is equal to that of a competitor's product, the competitor's price setting determines the **ceiling** of the range of acceptable price settings. If the product does have a **higher** advantage than competitors' **products**, competition-informed pricing does not inform the firm about the acceptable range of price settings. Thus, the **higher** product advantage, the **weaker** the effect of competition-informed pricing on pricing success (cell 4). Competitive intensity is not expected to affect the success of competition-informed pricing (cell 5), because it **will** not affect the role of competition-informed pricing in determining the range of acceptable price settings. Under the condition of high product advantage and high competitive intensity, this **means** that we **expect** to **find** a negative effect (cell 6).

Cost-informed pricing informs the **firm** about the lower-limit of the range of acceptable price settings (Monroe 1990). As **such**, cost-informed pricing **will** **contribute** more to pricing success **when** the lower limit of the price setting determines whether the product **will** Capture a position of competitive advantage or not. **Reactive** innovations only **contribute** to a position of competitive advantage if they **can** be brought to the **market** at a lower price (resulting **from** a lower **cost** position) compared to competitors

(cell 2 in Figure 2). As such, firms need a better understanding of their cost position when product advantage is relatively lower in order to understand to what extent they can undercut competitors' price settings of products that offer equal value. In other words: for products that have a high advantage over competitors' products, cost-informed pricing will contribute less to pricing success (cell 7 in Table 1). In a situation of high competitive intensity, danger exists that the product is pushed to a position of lower value, in which it only contributes to a position of competitive advantage if the price can be dropped (cell 1 in Figure 2) (Hunt and Morgan 1995). In order to do so, the firm will need a thorough understanding of its lower-limit in the range of acceptable price settings. Thus, in situations of high competitive intensity, the effect of cost-informed pricing on pricing success is expected to increase (cell 8 in Table 1). Finally, if a product is launched with a high advantage over competitors' products in a market with intense competition, we expect that the negative effect of product advantage is neutralized by the positive effect of competitive intensity on pricing success (cell 9 in Table 1).

The expectations indicated in Table 1 should be viewed in the context of industrial capital goods. First, customer value can relatively easily be quantified in these markets, for instance by an increase of the customer's turnover and/or a decrease of the customer's costs (Anderson and Narus 1998). Second, the purchasing process of industrial capital goods is likely to be less obscured by psychological effects in value- and price perceptions than it is in many other markets (Monroe 1990). The purchase of industrial capital goods is typically a group-process that involves intense information gathering (Ward and Webster 1991). Third, capital goods industries have relatively high unit costs

and fixed investments. As **such**, the consideration of **cost** information might be more important than in other **markets** (Noble and Gruca 1999b).

METHOD

Data Collection and Sample

Like in Noble and Gruca's (1999a) survey, a questionnaire was developed focussing on the **latest** new product development and **launch** in which the **respondent's company** had been involved. This approach avoids the critique on studies examining overall pricing **objectives** and strategies (Diamantopoulos 1991). Questionnaires were mailed to the marketing or general manager in the company.

A questionnaire was mailed to 590 firms drawn from a comprehensive Belgian industry database. The respondents were **contacted** by telephone prior to the mailing in order to request **co-operation**. **After receipt** of the questionnaire, a recall-phone **call** was made and repeated **every** two weeks. Respondents were reminded up to three **times**. A total of 78 questionnaires was finally returned, representing a response **rate** of 13.2 %. One questionnaire was removed **from** the sample since it had too **many** missing values. Overall, considering the complexity and sensitivity of the subject and length of the questionnaire, the response **rate** is satisfactory (Diamantopoulos and Schlegelmilch 1996). We tested nonresponse bias by comparing early, **average** and late respondents (Armstrong and **Overton** 1977). In t-tests for **all** variables included in this study, no significant differences in the **mean** responses were found. We asked respondents to **indicate** on a 10-point scale to what degree they were involved in the **price** setting of the new product. Nearly 80% of the respondents rated this degree with a 6 or **higher**,

suggesting that the questionnaire generally targeted the appropriate respondents within companies. Further we examined correlations between the degree to which respondents were involved in the price setting and the measures included in our study. No significant correlations were found, suggesting that a possible bias in our results as a **consequence** of respondent-selection within companies is unlikely.

Our sample consists of firms **from** the **electronics** and engineering industries. This sample is based on a **subset** of the industries examined by Noble and Gruca (1999a), who focus on firms producing industrial capital goods. The industries that are included in our sample cover 73 % of the industries in Noble and Gruca's (1999a) net sample. Since it is the **objective** of our study to test the effectiveness of pricing practices, we conducted a series of interviews to select industries in which **firms** generally do not suffer **from** a high degree of **demand** uncertainty which **may** affect the degree to which **prices** are based on **specific factors** (Noble and Gruca 1999a).

Measurement

To measure value-, competition-, and cost-informed pricing as **well** as pricing **success**, new multiple-item measures were developed. **After defining** the domain of the constructs, an item pool was created on the basis of an extensive literature review and interviews in various industries (Churchill 1979). Items were measured using a **10-point scale**, the upper-end indicating "played a major role in price setting", and the lower-end indicating "**was** not important at **all** in price setting". **Many** prior studies use mutually **exclusive** category indicators to measure pricing practices (e.g. Piercy 1981, Udell 1972), which do not accurately tap the degree to which different kinds of information are used. **Also** single

item measures (Tzokas et al. 2000) and summated scales (Noble and Gruca 1999a) are unlikely to accurately tap the information used in a pricing process, for two reasons. First, like the domains of many concepts in social sciences, the domains of value-, competition- and cost-informed pricing as defined in this study, are too broad to be measured by a single item (Churchill 1979). Second, asking managers about the information used in a pricing process may be prone to a social response bias, since managers are likely to justify prices on the basis of costs (Foxall 1972, Pearce 1956).

In order to minimize the risk of a social response bias, items on customer value, competition and cost factors were presented in the questionnaire in random order, also including a number of additional items not measuring any of the three groups of pricing factors included in this study. As a final check on a possible social response bias in value-, competition-, and cost-informed pricing, we conducted 10 interviews. In 5 interviews we asked managers to fill out a questionnaire with purified scales of which the items measuring factors on which prices are based were presented in random order. After they finished, we asked them to describe the pricing process of the new product, as well as to indicate what kind of information they used and on what information the final price setting is based, using the interview techniques advised by Pearce (1956) and Foxall (1972). In the other 5 interviews we followed the same procedure but started with the open questions and finished with the questionnaire. In all 10 interviews, the stories told by the managers generally fit the answers to the questionnaire. This leads us to conclude that a social response bias is not a problem in our scales.

With respect to pricing success, measured as the degree to which pricing objectives are achieved, firms may set multiple objectives, but generally set a profit and an output

objective of either a maximizing or **satisficing nature** (Diamantopoulos 1991). For **this reason** we included scale items regarding the degree to which **profit** and output **objectives** of both a maximizing and **satisficing nature** are achieved. Since these items loaded on **one** factor we constructed a general scale of achieving price objectives as the **dependent** variable in our study. Items on the achievement of pricing objectives were **also measured** on a ZO-point scale, the lower end indicating “wasn’t reached at **all**” and the **upper** end indicating “was completely reached”. Measures on product advantage and **competitive** intensity were derived **from** Atuahene-Gima (1995).

After collecting the data, **all** measures used in this study were **subjected** to purification using factor analysis (Churchill 1979). Items that had **very** weak loadings or loaded on more than one factor were eliminated. To enhance discriminant validity, items that **relate** directly to pricing strategies as studied by Noble and Gruca (1999a) were included, like the degree to which the price is based on learning curve **effects** (skimming), penetration, or product line. These items generally loaded on more than one factor which supports our view that pricing strategies are the **result** of a pricing **process** in which different sources of information are used. Next, the reliability **coefficient alpha** of **each** measure was calculated and item-to-total correlations were inspected. Items with low correlations were eliminated. The **final scales** closely represent the **concepts’** domains as they were initially **defined**.

The use of 10-point scales has the advantage that it is the most common rating scale in Belgium, for **instance** in the education system. It has a disadvantage in that extreme scores **may strongly** impact the **mean** of **all** scale items. For this reason we standardized item scores **before** calculating the scale **means**, which **satisfies** the condition that **all** scale

items are equally important (Churchill 1979). All scales used in this study are reported in the appendix.

Theory Testing Approach

The three contingency situations of new product launch were each tested in a moderating regression model, following Sharma, Durant and Gur-Arie's (1981) two-step approach for testing moderating effects. In the first step we ran moderating regressions analyses including simple effects of all components, as well as multiplicative interaction terms of independent and proposed moderator variables (e.g. value factors multiplied by product advantage) (Irwin and McClelland 2001). Significant interaction terms suggest the existence of pure moderators, which implies that the moderator variable (product advantage, competitive intensity) modifies the form of the relationship between the independent variable (e.g. cost-informed pricing) and the dependent variable (pricing success).

If no significant interaction is found one should examine the existence of a different type of moderators, so called homologizers (Sharma, Durant and Gur-Arie 1981). Homologizers influence the strength of the relationship, but don't interact with the predictor. Value-informed pricing might for instance explain more pricing success variance in situations of high product advantage than in situations of low product advantage. Homologizers can be tested for by partial correlation analysis within subgroups, created on the basis of a median split of the proposed moderating variable. A significant difference between the two situations using Fisher's Z-test, indicates the existence of a homologizer. Subsample analyses are only allowed if there is no significant

correlation of the proposed moderator variable with the dependent or independent variable (Slater and Narver 1994).

RESULTS

The results of the three moderating regression analyses are presented in Table 2. Results of subsample tests for homologizers are listed in footnotes below Table 2.

[Table 2]

The simple effects suggest that value- and tost-informed pricing generally **contribute** to pricing success, whereas competition-informed pricing generally has no effect. These findings suggest that in genera1 value-informed pricing informs the **firm** about the **upper-limit** and tost-informed pricing about the lower limit in the range of **acceptable** price settings and that a better understanding of this range enhances pricing success. The simple effects **also** show a significant relationship between competitive intensity and pricing success. This is in line with Diamantopoulos and Mathews’ (1994) **finding** that pricing **objectives depend** on the **firm’s** environment. More **specifically**, we explain the effect as that **firms** in highly competitive environments are more satisfied with achieving price **objectives** than **firms** in stable environments and thus report **higher** scores on pricing success.

With respect to our findings on high product advantage, we **find** a significant positive effect for value-informed and a significant negative effect for competition-informed pricing. We **find** no effect for tost-informed pricing, but a subsample test reveals that **cost-informed** pricing **contributes** signifikantly **less** to pricing success in situations of high

product advantage than in situations of low product advantage. These **findings** are in line with our expectations.

In situations of high competitive intensity, we **find** a negative effect for value-informed, a positive effect for cost-informed and no effect for competition-informed pricing, which **confirms** our expectations. A subsample test here is not allowed since there is a significant correlation between competitive intensity and pricing success.

In situations of high product advantage and competitive intensity, we **find** no effect for value-informed, a negative effect for competition-informed and a positive effect for **cost-informed** pricing. A subsample test on value-informed pricing is not significant. The positive effect of **cost-informed** pricing is contrary to our expectations. We **will discuss** this **finding** in the next **section**.

DISCUSSION

The **objective** of our paper is to improve our understanding of **successful** practices by **means** of which **firms** arrive at price decisions, as this has been repeatedly emphasized as a major gap in empirical pricing literature (**Bonoma**, Critenden and **Dolan** 1988, Monroe and Mazumdar 1988, Noble and Gruca 1999b). Specifically, we focused on the degree to which different types of information **contribute** to pricing success under different conditions of customer value creation and different degrees to which customer value is **likely** to be eroded by competitive **forces**. Our results show that the success of using information on customer value, competition and **costs** in price decisions, is contingent on the customer value created and the competitive intensity of the market. This suggests that the success of pricing practices is not as straightforward as sometimes suggested (e.g.

Cressman 1999). In addition, we note that prior surveys on the use of **information** in price decisions **may suffer from** shortcomings with respect to several measurement issues (Coe 1990, Noble and Gruca 1999a, Piercy 1981, Tzokas, Hart, Argouslidis and Saren 2000, Udell 1972).

Our results on price decisions for new product introductions in **markets** for industrial capital goods suggest that value-informed pricing helps **the firm** in **achieving** its pricing **objectives**. The rationale behind this **finding** is that value-informed pricing generally increases the organization's understanding about the **upper-limit** in the range of acceptable price settings. If product advantage is high, the **upper-limit** of the range of acceptable price settings is **higher**, and value-informed pricing thus becomes more important. **However**, in **markets** with intense competition, the contribution of **value-informed** pricing to pricing success decreases, since the actual advantage is less sustainable over **time**. If the product has no superior advantage over competitors' **products**, but aims to attack a competitor's superior position - a **reactive** innovation - competition-informed pricing **contributes** more to success. In this situation, competition-informed pricing informs the organization on the **upper-limit** of acceptable **prices** for this type of innovation.

Our results **also** suggest that **cost-informed** pricing increases the organization's **understanding** of the lower-limit of the range of acceptable price settings, thereby **contributing** to pricing success. This is especially the case in competitively intense **markets**, where **products** might need to **compete** more on price over **time**. The contribution of **cost-informed** pricing to pricing success is **also** contingent on product advantage. **However**, we **find** here a subtle **difference** compared to **our** expectations.

Products with a **low** advantage compared to competitors (**reactive** innovations) **only** **obtain** a position of competitive advantage if they **can** be offered to customers at a **lower** price **than** competitors' products. For this reason **cost-informed pricing** has a **strong** effect on pricing success for this type of innovation. **However, this finding doesn't imply that** cost-informed pricing has a negative effect on pricing success for **products with** a high advantage. For this type of innovation, organizations **may also** inform **themselves** about the lower-limit of the **acceptable** price settings, but this **practice** generally does **not** increase, nor decreases pricing success. As **such**, the only situation in which **cost-informed pricing** is decreasingly **successful**, is under **very** low competitive intensity.

In addition, our study **comes across** four measurement issues that **may** have **affected** Noble and Gruca's (1999a) **findings** as **well** as **findings** from other studies. First, pricing **practices** are different **from** pricing strategies and thus should not be included in the same measurement instrument (Coe 1990, Noble and Gruca 1999a). Pricing **practices** refer to the use of information in a pricing **process** that leads to price decisions, and pricing strategies refer to **how** the **firm** tries to **achieve** its pricing **objectives** in the market **place**. **Second**, the use of **all** three kinds of information (customer value, competition and **costs**) should be included. Including only **cost** information in a study as Noble and Gruca (1999a) do, **will** lead to an incomplete picture of the degree to which **firms neglect market information** in their price decisions. Third, in the context of a pricing **process**, **firms** are unlikely to **rely** exclusively on a single kind of information. Thus, a measure with multiple **mutually exclusive categories** (Coe 1990, Piercy 1981, Udell 1972) is less likely to **capture** the diversity in the types of information used in a pricing **process**. Fourth, measuring the degree to which **firms** use different types of information in a pricing

process might be prone to a social response bias. Managers tend to justify prices in terms of costs in order to leave an impression of a “fair” pricing practice (Pearce 1956, Foxall 1972). For these reasons we developed new multiple-item measures on the concepts of cost-informed, value-informed, and competition-informed pricing that indicate the degree to which different kinds of information are used to arrive at a price decision.

Taking into account these measurement issues and the contribution of cost information to pricing success, the high percentage of firms that indicated that they engage in cost-based pricing in Noble and Gruca’s (1999a) research does not seem surprising after all. Their finding may not imply that these firms are ignorant of their market, the contrary may be the case: firms evaluate their competitive position for which a clear understanding of their cost positions is a necessary condition for the product to survive on the market. Our findings are in line with Noble and Gruca’s (1999a) finding that demand uncertainty antecedes cost-based pricing. In situations of high competitive intensity, the demand for the new product becomes difficult to predict. Under these circumstances firms don’t just rely increasingly on cost information, it also helps them to make successful price decisions.

As suggested by Nagle and Holden (1995) and Cressman (1999) our findings indicate that creating customer value, followed by a price decision based on this, is a route to pricing success. However, there is no simple rule that states that pricing success will improve if prices are based more on customer value information. Also the degree to which value can be sustained is an important consideration. In situations in which firms have little competition, or value can be sustained otherwise • for instance through protection by patents • a combination of creating customer value and value-informed

pricing **will pay** off. We find that new **products** that intend to match the value offered by competitors, are best priced on the basis of competitor information. For example, this seems to be a safe approach for **companies** following strong market leaders in highly **concentrated markets**. The **finding** that the use of **cost** information has no negative effect on pricing **success** in situations in which the firm has created superior customer value, and that it even has a positive effect in situations of intense competition, shines a new light on the results of prior studies. For instance, Coe (1990) interpreted an increase of cost-based pricing throughout the 1980s as a **consequence** of a parallel decrease of innovation strategies. Our results suggest that the increased use of **cost** information in pricing **can also** be **caused** by the growing competition during that decade.

Limitations and Future Research

This study **also** has some limitations that present opportunities for future research. First, our study is limited to the **selected** industries and in its geographical scope. We limited our sample to a **subset** of industries examined by Noble and Gruca (1999a). Future research **may** test the generalizability of findings presented in this study in **contexts** other than industrial capital goods.

Our study is theoretically limited to dimensions of product advantage and **competitive** intensity, that moderate the effectiveness of pricing **practices** in new product launch. Following the rationale of resource-advantage theory (Hunt and Morgan 1995), also relative product **costs may** impact the effectiveness of pricing **practices**. This is an interesting avenue for **further** research. Future research **may also** focus on other **aspects** of the pricing **process, such** as the degree to which it is formally planned, the involvement of

different business **functions**, and its relationships with actual resources, **such** as market orientation.

References

- Anderson, J.C. and J.A. Narus 1998. Business Marketing: Understand **What** Customers Value. *Harvard Business Review* **76(November-December)** 53-65.
- Armstrong, J. S., T. Overton 1977. Estimating Nonresponse Bias in Mail Surveys. *J. Marketing Res* **14(August)** 396-402.
- Atuahene-Gima, K. 1995. An Exploratory Analysis of the Impact of Market **Orientation** on New Product Performance-A Contingency approach. *J. Product Innovation Management* **12** 275-293.
- Bonoma, T. V., V. L. Crittenden, and R. J. Dolan 1988. **Can** We Have Rigor and **Relevance** in Pricing Research. In: Devinney, T. M. (ed.), *Issues in Pricing, Theory and Research*. Lexington, Lexington, MA.
- Churchill, G. A. Jr. 1979. A Paradigm for Developing Better Measures of Marketing Constructs *J. Marketing Res* **16(February)** 64-73.
- Coe, B. J. 1990. Strategy in Retreat: Pricing Drops **Out**. *J. Business and Industrial Marketing*, **5(Winter/Spring)** 5-25.
- Cressman, G. S. Jr. 1999. Commentary on: Industrial Pricing: Theory and Managerial **Practice**. *Marketing Sci* **18(3)** 455-457.
- Day, G. S. 1994. The Capabilities of Market-Driven Organizations. *J. Marketing* **58(October)** 37-52.
- Dean, J. 1950. Pricing **Policies** for New **Products**. *Harvard Business Rev.*, 28 45-55.

- Diamantopoulos, A. 1991. Pricing: Theory and Evidence-A Literature Review. In: Baker, M. J. (ed.) **Perspectives** on Marketing Management. John Wiley and Sons, Chicester.
- and B. P. Mathews 1994. The **Specification** of Pricing Objectives: Evidence from an **Oligopoly** Firm. *Managerial and Decision Economics*. **15** 73-85.
- and B. B. Schlegelmilch 1996. Determinants of Industrial Mail Survey Response: A Survey-on-Surveys Analysis of Researchers' and Managers' Views. *J. Marketing Management*. **12** 505-3 1.
- Foxall, G. 1972. A **Descriptive** Theory of Pricing for Marketing. *European J. Marketing*. **6(3)** 190-194.
- Hague, D. C. 1971. *Pricing in Business*. George Allen & Unwin Ltd, London.
- Hunt, S. D. and R. M. Morgan 1995. The Comparative Advantage Theory of Competition. *J. Marketing*. **59(April)** 1-15.
- and ----- 1997. Resource-Advantage Theory of 'Competition: A Snake Swallowing its Tail or a General Theory of Competition?'. *J. Marketing*. **61(October)** 74-82.
- Irwin, J. R. and G. H. **McClelland** 2001. Misleading Heuristics and Moderated Multiple Regression Models. *J. Marketing Res.* **38(February)** 100-109.
- Monroe, K. B. 1990. *Pricing: Making Profitable Decisions*. McGraw-Hill, New York.
- and T. Mazumdar 1988. Pricing-Decision Models: Recent Developments and Opportunities. In: Devinney, T. M. (ed.), *Issues in Pricing, Theory and Research*. Lexington, Lexington, MA.
- Nagle, T. T. and R. K. Holden 1995. *The Strategy and Tactics of Pricing: A Guide to Profitable Decision Making*. Prentice Hall, Englewood Cliffs, NJ.

- Noble, P. M. and T. S. Gruca 1999a. Industrial Pricing: Theory and Managerial Practice. *Marketing Sci.* **18(3)** 435-454.
- and ----- 1999b. Response to the Comments on 'Industrial Pricing: Theory and Managerial Practice'. *Marketing Sci.* **18(3)** 458-459.
- Pearce, I.F. 1956. A Study in Price Policy," *Economica*. **23(May)** 114-127.
- Piercy, N. 1981. British Export Market Selection and Pricing. *Indust. Marketing Management*. 10 287-297.
- Sharma, S., R. M. Durand, and O. Gur-Arie 1981. Identification and Analysis of Moderator Variables. *J. Marketing Res.* **18(August)** 291-300.
- Slater, S.F. and J.C. Narver 1994. Does Competitive Environment Moderate the Market Orientation-Performance Relationship. *J. Marketing* **58(January)**, 46-55.
- Tzokas, N., S. Hart, P. Argouslidis, and M. Saren 2000. Industrial Export Pricing Practices in the United Kingdom. *Indust. Marketing Management*. 29 191-204.
- Udell, J. G. 1972. *Successful Marketing Strategies in American Industry*. Mimir, Madison.
- Ward, S. and F.E. Webster Jr. 1991. Organizational Buying Behavior. In: Robertson, T.S. and H.H. Kassaraian (eds.). *Handbook of Consumer Behavior*. Prentice Hall, Englewood Cliffs, 419-458.

Figure 1: Conceptual Framework

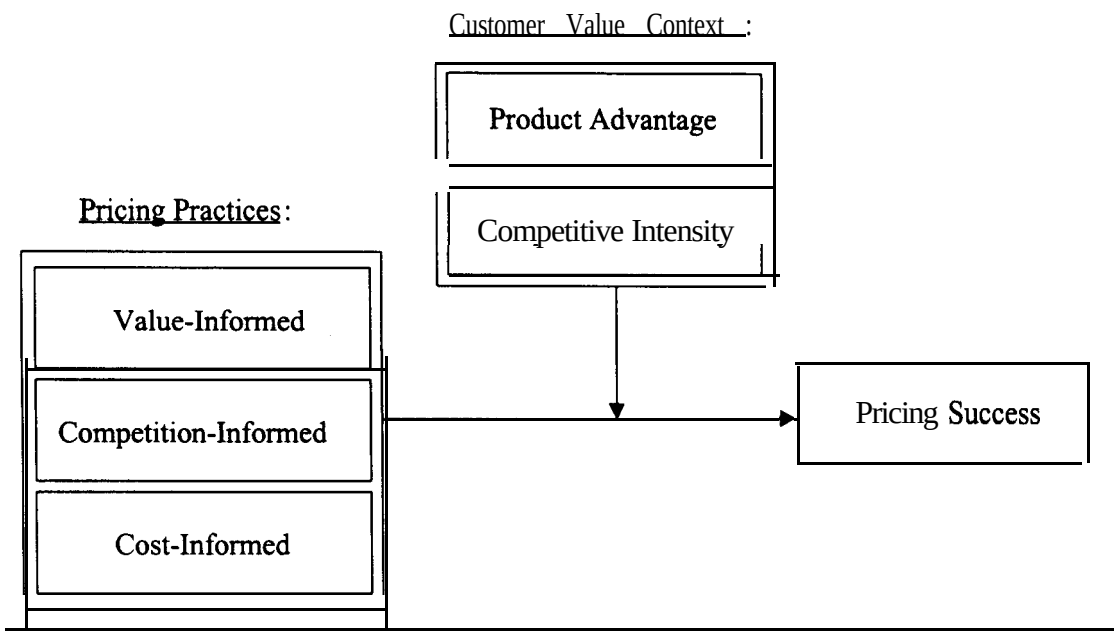


Figure 2: Competitive Position Matrix *

		Relative Resource-Produced Value		
		Lower	Parity	Superior
Relative Resource Costs	Lower	1 Indeterminate Position	2 Competitive Advantage	3 Competitive Advantage
	Parity	4 Competitive Disadvantage	5 Parity Position	6 Competitive Advantage
	Higher	7 Competitive Disadvantage	8 Competitive Disadvantage	9 Indeterminate Position

*Read: The marketplace position of competitive advantage identified as Cell 3 results from the firm, relative to its competitors, having a resource assortment that enables it to produce an offering for some market segment(s) that (a) is perceived to be of superior value and (b) is produced at lower costs.

Source: Hunt and Morgan (1997)

Table 1: Expectations on the Success of Pricing Practices in Different Situations of Value Creation and Sustainability^a

Customer Value Context:	High product advantage	High competitive intensity	High product advantage and high competitive intensity
Pricing Practice:			
Value-Informed	1 +	2	3 0
Competition-Informed	4	5 0	6
Cost-Informed	7	8 +	9 0

^a**Read:** (cell 1) the **higher** product advantage, the more **value-informed** pricing **contributes** to pricing **success**.

Table 2: Results of Moderating Regression Analyses (Standardized Coefficients)
Dependent variable: Pricing Success

	Product Advantage	Competitive Intensity	Product Advantage and Competitive Intensity
Simple effects:			
Value-informed pricing	.55 ^a	.25 ^c	.39 ^b
Competition-informed pricing	-.04	.02	.08
Cost-informed pricing	.29 ^b	.22 ^d	.17
Product advantage	.09		.18
Competitive intensity		.31 ^b	.24 ^d
Product advantage * competitive intensity			-.16
Interaction effects of product advantage with:			
Value-informed pricing	.32 ^c		
Competition-informed pricing	-.33 ^b		
Cost-informed pricing	.06 ¹		
Interaction effects of competitive intensity:			
Value-informed pricing		-.37 ^b	
Competition-informed pricing		-.03	
Cost-informed pricing		.21 ^c	
Interaction effects of product advantage * competitive intensity with:			
Value-informed pricing			-.14 ²
Competition-informed pricing			-.28 ^c
Cost-informed pricing			.31 ^c
Df	69, 7	69, 7	67, 9
F	5.82 ^{''}	6.78 ^{''}	5.00 ^{''}
Adjusted R ²	.31	.35	.32

a: $p < .001$ 1: negative homologizer: $r_{\text{low}} = .33$, $r_{\text{high}} = .09$, $z = 5.64$, $p < .000$.

b: $p < .01$ 2: no homologizer found: $r_{\text{low}} = .35$, $r_{\text{high}} = .40$, $z = 1.17$, not significant.

c: $p < .05$

d: $p < .1$

APPENDIX: SCALE ITEMS AND RESULTS OF FACTOR ANALYSIS

Pricing Practices

To what degree were the following **factors** included in the price setting **process** of the new product? In other words: to what extent did you take into account the following elements while determining the price of the new product?

Value-Informed Pricing (Alpha = .81) (Eigen value = 3.05)	Factor loading
The advantages of the product compared to competitors' products	.83
The customer's perceived value of the product	.63
The advantages the new product offers to the customer	.72
The balance between advantages of the product and price	.64
The advantages of the product compared to substitutes	.77

Competition-Informed Pricing (Alpha = .91) (Eigen value = 6.52)	Factor loading
The price of competitors' products	.78
The competitor's current price strategy	.90
The estimation of competitor's strength to react	.81
The market structure (number and strength of competitors)	.87
The degree of competition on the market	.79
The competitive advantages of competitors on the market	.76

Cost-Informed Pricing (Alpha = .75) (Eigen value = 2.41)	Factor loading
The variable costs of the product	.82
The price necessary for break-even	.66
The investments in the new product	.75
The share of fixed costs in the cost price	.75

Product advantage (Alpha = .74) (Eigen value = 1.61)	Factor loading
Please indicate to what degree the following statements are typical for the new product:	
The product offered higher quality than competing products (Atuahene-Gima 1995)	.83
The product solved problems customers have with competing products (Atuahene-Gima 1995)	.64
The product was very innovative and substituted an inferior alternative (Atuahene-Gima 1995)	.78

Competitive Intensity (Alpha = .73) (Eigen value = 1.49)	Factor loading
Please indicate to what degree the following statements are typical for the market in which the new product is launched:	
Intense price competition (Atuahene-Gima 1995)	.88
Strong competitor sales, promotion and distribution systems (Atuahene-Gima 1995)	.63
Strong and good quality competing products or services (Atuahene-Gima 1995)	.55

Pricing Success (Alpha = .89)		Factor loading
(Eigen value = 5.16)		
To what extent were the following <u>price objectives</u> effectively achieved with the new product:		
Achieving a certain market share		.68
Maximizing market share		.74
Maximizing profits		.73
Achieving a certain pay back period		.77
Achieving a predetermined ROI		.82
Realize a certain growth in profits		.83
Maximize the profitability of the product over the entire life cycle		.69

Results of factor analysis are reported **after** a varimax rotation.