Towards a Model for Predicting Related Diversification Outcomes
– Merging Views on Synergy

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Abstract

Businesses carrying out related diversification moves with the objective to gain synergy effects have been a frequently occurring phenomenon since the midst of the past century. Plenty of models have been constructed, mainly using external data, in order to predict the outcome of these moves, but a high degree of contradictory results in empiric testing shows that current models are insufficient. Our objective is to present a model which also takes into account the internal data presented by the line of research called horizontal strategies, with the aim of moving towards a more accurate explanatory model for related diversification. This is a study of literature which resulted in a model which may be used for approximations as a strategic planning device. Our main conclusions are that further empirical testing, mainly regarding the behaviour of costs for implementing interrelationships, is necessary in order to create an accurate, explanatory model for predicting the outcome of related diversification.

Key words: Related diversification, horizontal strategies, interrelationships, synergy, strategic management.
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1. Introduction

Over the years a great deal of strategic management research has been devoted to identifying what companies should do to increase the value of their business and achieve a competitive advantage. The term *synergy effect* was first introduced by Igor Ansoff in the 1960’s as a generic definition for the effects derived from the union between two products or markets. The basic idea was that joint effects could lead to an increase in value that was impossible to achieve separately. This relation was often described as 2+2=5.

The hopes of achieving positive synergy effects led many companies in the 1960’s and -70’s to diversify, in other words to expand their businesses. The term *diversification* will be discussed more in depth further on, and especially the elaborate notion of *related diversification* which was developed by American researcher Richard P. Rumelt.

As the number of diversifying companies increased, the field of strategic management began paying more attention to how diversification was connected with positive synergy effects. The results obtained from the abundant research conducted in this area of study were, and still are, inconclusive. In spite of this we still see many examples of companies attempting to achieve synergy effects through diversification. Some succeed, but large proportions do not. These continuously high failure rates indicate that current theories are insufficient predictors of synergy creation in diversification moves.
2. Background

The ideas of Igor Ansoff and Richard P. Rumelt lay the foundation upon which most research on diversification and synergy rests. In order to fully understand the problems to be discussed in this report, an in-depth account of the basic notions of synergy and diversification will be necessary.

2.1 Igor Ansoff

Igor Ansoff (1965) described synergy as joint effects between two products or markets. Synergy, he suggested, occurs when two resources combined generate greater returns than the sums of each part. In all he discusses four types of synergy: sales synergy, operational synergy, investment synergy and management synergy.

Ansoff claimed that the most successful companies where the ones that managed to exploit some specific advantage in the core business through diversifying into carefully selected markets. This diversification would then lead to positive synergy effects. The realization of potential synergies could occur in different levels of the company; through reduced costs as well as through increased revenues. However, with a poor realization strategy, synergies would be limited, or even negative. (Ansoff, 1965:62-4)

2.1.1 Diversification

There were basically no changes in Ansoff’s ideas on synergy from 1965 to 1988 (Ensign, 1998). Many of them are still valid. Especially Ansoff’s suggestions on diversification had significant impact on corporate strategy the following years (Reed and Luffmann, 1986).

The ideas developed by Ansoff regarding diversification focused on relatedness as a way to achieve joint effects. They state that the benefits of a diversification move appear through joint effects, but stem from relatedness. Much of the following research has therefore been devoted to studying how different degrees of relatedness contribute to synergy effects, with Richard P. Rumelt’s theories being among the more prominent.

2.1.2 Related Diversification

Early theories (e.g Bettis and Hall, 1982; Montgomery, 1979) claim that a related
*diversification* strategy is more profitable than a single industry strategy, and that a single industry strategy is more profitable than an unrelated diversification strategy. This is illustrated in figure 1.

![Figure 1. Degree of diversification and performance effects. Source: Palich et al, 2000.](image)

### 2.1.3 Measuring Diversification and Performance

Much of the research on relatedness has relied on external data, such as data gathered from the Standard Industrial Classification (SIC) system. (e.g. Caves et al, 1980; Graham et al 2002; Jacquemin and Berry, 1979; Palepu, 1985; St John and Harrison, 1999.) The SIC system was originally constructed by the federal government as a way of classifying different types of business activity in the U.S. economy (Hall and John, 1992). Through using specific SIC codes when studying companies, the relationship between diversification and performance was examined. The underlying assumption was that if two businesses share SIC codes, they must also share similar input and production or technology functions (Markides and Williamson, 1994). The strength of SIC-codes is their objectiveness. However, this way of examining diversification has been criticized. In short, some consider it a narrow, one dimensional way of measuring and evaluating diversification (Davies and Thomas, 1993; Nayyar, 1992; Markides and Williamson, 1994; Pehrsson, 2006; Montgomery, 1982; Robins and Wiersema).

### 2.2 Richard P. Rumelt

In 1974, Richard P. Rumelt proposed a different way to explain correlations between diversity and company performance. Rather than using SIC-codes or similar means of measurement he categorized 1967’s Fortune 500 companies into nine categories based on certain specialization ratios. The categories where single business, dominant-vertical, dominant-constrained,
dominant-linked, dominant-unrelated, related-constrained, related-linked, acquisitive conglomerate and unrelated-passive. The specialisation ratio expressed the extent of which a company engaged in a certain core business. Single business companies only focus on their core competence and do not diversify. An acquisitive conglomerate is found at the other end of the specialization continuum. Their diversification moves are frequent and involve unrelated businesses. A high specialization ratio indicated a core business focus, whilst a low specialization ratio meant that diversification was conducted into unrelated businesses. Rumelt’s research indicated that the highest performing categories were those that diversified, but maintained a high degree of specialization. (Rumelt, 1974) Again, this is illustrated in figure 1. What has been criticized about Rumelt’s way of measuring is its subjectivity factor.

2.2.1 Rumelt’s Contribution
Rumelt’s impact on the field of diversification research is significant. His classification scheme has gained recognition (Ramanujam and Varadarajan, 1989; Pehrsson, 2006), as have his conclusions regarding the importance of diversifying into related businesses. However, researchers following Rumelt have reached varying conclusions. Many studies have supported Rumelt’s findings (e.g. Bettis and Hall, 1982; Montgomery, 1979; Markides and Williamson, 1994). However, there are also many studies which have questioned them (Christensen and Montgomery, 1981; Lecraw 1984).

2.3 Varying Empirical Findings
In the last decade numerous companies all over the world have abandoned the related diversification strategy in favour of the single business strategy, and others have maintained or extended their unrelated diversification strategy. According to Rumelt’s theory this should result in their producing mediocre results. But in fact some of these companies have done very well (Gottschalg and Meier, 2005). While it would certainly be of interest to study these “deviant cases”, this will not be the subject of this report. Instead we are going to investigate the varying results of companies that followed Rumelt’s notion and actually carried out related diversification moves.

2.3.1 Vain Expectations
Within the mergers and acquisitions field, it is well know that synergies are easily overestimated (Salter and Weinhold, 1979; Batney, 1988). Similar patterns emerge during
organic diversification moves. It is not unusual that benefits from diversification fail to meet expectations (Nayyar, 1992; St John and Harrison, 1999; Good and Campbell, 1998; Palich, 2007; Markides and Williamson, 1994; Reed and Luffman, 1986). This indicates a need for new approaches, because, as Ramanujam and Varadarajan (1989) put it, “We still do not know why synergy in diversification is so elusive to obtain, or why diversification efforts of a given company are sometimes successful and sometimes not.”

These varying empirical results are an important shortcoming of Rumelt’s notion that related diversification will in fact lead to positive synergy effects. It is reasonable that these divergences between theory and practice could call for new perspectives. Although the research done by Rumelt and others has given us important insights on diversification, we argue that there are still pieces missing.

2.3.2 New Perspectives
The perspective so far has been that synergies are created between businesses, thus explaining the usage of nothing but external data. However, Ansoff (1965) was of the opinion that synergy creation might in fact take place at different levels of the company. This could mean, for example, that synergies are created between specific business units or activities, rather than between actual businesses. According to Ensign (1998) “Corporate strategy must move beyond the idea that the primary way of creating synergy is the combination of related businesses.” If this is the case, external data may very well be an insufficient source of analysis. Internal data might provide additional understanding of the diversification process.

2.3.3 Costs of Diversifying
Another critical aspect that has been brought to attention regarding related diversifications is the one of implementation costs (Nayyar, 1992; Gary, 2005). External data could again prove to be insufficient in trying to calculate these company-specific costs. Not being able to estimate implementation costs properly brings the risk of these becoming too high, which may lead to a negative total impact from a diversification move. Relying solely on external data is, according to Nayyar (1992) misleading, because it “[...] implicitly assumes that implementation costs are either independent of types of relatedness, or constant, or negligible.”
2.4 Two Main Lines of Research

We have outlined two major lines of research regarding synergy creation for companies that perform related diversification moves. The first one regards synergy effects as the obtaining of economics of scope when fixed costs are spread over multiple businesses. External data is most often used and the general aim is to gain cost-reducing effects. We have chosen to call this the cost-based view. A further presentation will be made in conjunction with a model created by Australian professor M.S. Gary.

The second branch focuses on understanding in which part of the company there is potential for synergy to be created and how companies should go about achieving it. This is a more subjective line of research as it focuses on less tangible data gathered from within an organization. These are known as horizontal strategies.
3. Problem and Purpose

With the thematic background presented, along with the notion that existing models are insufficient predictors of related diversification outcomes, we have reached the main problem of this thesis.

Because the outcome of diversification is driven by a large number of mechanisms, it might be difficult to create any complete model on related diversification. But even when information is imperfect, actors are forced to make decisions. The main strength of a quantitative model is its possible potential of making outcome forecasts. Different actors have different reasons for being interested in forecasts. Researchers might want to predict market evolution whilst business leaders are interested in predicting company performance. Regardless of motive, many actors may benefit from an explanatory, quantitative model of related diversification.

When using external data to estimate the results of a related diversification move companies will most likely end up with an objective, but inaccurate model. We argue that in order to properly be able to calculate possible effects from a related diversification, an understanding of the actual creation of synergy is imperative. This necessitates subjective, internal data.

3.1 Problem Definition
We have defined the problem as follows: How might a conceivable model for predicting the outcome of related diversification look, if different views on synergy creation are taken into account?

3.2 Purpose
This Bachelor’s thesis aims at presenting a more complete model for predicting the outcome of related diversification moves, by incorporating explanatory, internal data of horizontal strategies into M.S. Gary’s cost-based, quantitative model.
4. Methodology

We have chosen to concentrate our efforts on studying literature, as the aim of this essay is to form a model for understanding the consequences of related diversification, based on the research already done in the area. We find this to be a relevant way of tackling the problem as this particular area of strategic management research has been given high priority by a large number of researchers. There are therefore many different theories, formulated by scholars around the world, for us to study and evaluate. This is a descriptive study as an understanding of the evolutionary research process and means of measurement is necessary in order to grasp why the issue in focus is of interest. Our methodology will also help us comprehend the findings of the researchers.

4.1 Gathering Data

Literature was obtained by searching the electronic databases available at Uppsala University’s library. In the early stages our focus was aimed at finding the most quoted synergy research. Following this we conducted searches for very recent articles to see where the discussion stands today. After that we began tracing the different theoretical aims backwards.

4.2 Qualitative Research

Throughout the research procedure our aim has been to develop an in-depth understanding of the mechanisms that determine why companies choose to diversify and why some succeed in obtaining synergy effects and others do not. The fact that human beliefs and behaviour are a main determinant made us want to conduct a study of qualitative nature. We decided that employing a quantitative research strategy would miss the important aspect of the various conceptions of reality that comes with studying the work of many different researchers.

4.3 Delimitation

Initially, when our goal was to get an overall picture of the research done in the field of synergy effects, we made few limitations to our searches. Once this was done, however, we restricted our searches to the area concerning related diversification. This decision was made after a great deal of literature had been studied and it had become clear that this particular area
was considered amongst the most important. We also chose to focus on collecting information from well-reputed databases such as JSTOR, Business Source Premier, Emerald etc. which all have a high degree of credibility to them. Internet-based search engines were only used to help us find in which of these databases certain information was located.

4.4 Pros and Cons
As we only worked with secondary data from specific databases we consider frequently reoccurring sources to have a high degree of reliability. Obviously those that did not occur as often are more difficult to be proven as reliable. This was mainly the case with articles presented recently and one must take into account that very current research has not been available long enough for others to quote. We have therefore traced the origins of these authors’ opinions by going through the bibliographies of their articles. If we considered their references to be reliable it felt fairly safe to consider their work to be as well.

4.5 Outline
The remainder of the report is structured as follows: First we present the cost-based view of related diversification, followed by a cost-focused model constructed by M.S. Gary. Then we present theories on horizontal strategy. After that, we analyze how the two views can complement each other as a means to try to incorporate horizontal strategies into Gary’s model. Finally, we discuss implications and make suggestions for further research.
5. The Cost-based View

The cost-based research is devoted to determining how companies can benefit from cost-reduction. This cost-reduction is mainly believed to stem from spreading a company’s fixed costs over additional produced units. The term synergy is often referred to as economics of scope and focus lies in achieving this. The data used is mainly external, which provides a good foundation for objective reasoning.

5.1 M.S. Gary

We have selected a model built by Australian professor M.S. Gary in 2005 to illustrate the related diversification. It describes the impact of implementation costs during such moves. Two kinds of costs have been incorporated: costs from overstretching resources and costs from investments in production capacity. In constructing the model, Gary has applied existing theories of diversification and business growth to simulate different outcomes of a diversification move. For example, it incorporates ideas expressed earlier by Nayyar (1992), Ensign (1998), Larson and Finkelstein (1999), and Reed and Luffmann (1986).

5.2 Gary’s Model

The model expresses the outcome of a diversification move in terms of changes in profit margin ($\pi_t$). At time $\theta$, the company adapts a single business strategy. The diversification move is made into a related business. The profit margin is expressed as

$$
\pi_t = \frac{\kappa + (N_t + \varepsilon) - [\Psi + (R_t \cdot \nu) + (N_t \cdot \theta)]O_t}{\kappa + (N_t + \varepsilon)}
$$

The equation might seem complicated at a first glance, but is actually just an expression of a profit margin changing over time, adjusted for impacts from resource overstretching. $O_t$ is the impact from resource overstretching. The rest of the equation is a simple profit margin

$$
\pi_t = \frac{\kappa + (N_t + \varepsilon) - [\Psi + (R_t \cdot \nu) + (N_t \cdot \theta)]}{\kappa + (N_t + \varepsilon)}
$$
κ is total revenues from the core business, \( N_t \) is the number of customers in the new business, \( \varepsilon \) is the revenue per customer from the new business, \( \psi \) is fixed core business costs, \( R_t \) is units of resources that are being shared between the core business and the new business, \( v \) is the variable cost per shared unit, \( \theta \) is variable cost per new business customer.

### 5.2.1 Related Diversification

Gary proposes that because the core business market is considered to be mature all core business cash flows could be held constant over time. The new business is related to the core business. It is important to understand why it has to be this way, because it reflects the fundamentals of economics of scope theories. When the company enters their new market they are able to do so without extending their production base. In other words, the refining assets prior to diversification are sufficient to produce the new kind of output. This is the driver of economics of scope. It occurs because a fixed value of costs is spread over an extended product portfolio. If the diversification was unrelated, the economics of scope would be less likely to appear. This is because investments in new refining assets would push fixed costs upwards, decreasing or eliminating any effect from the economics of scope.

### 5.2.2 Measurement of Time

Gary proposes that time \( t \) is expressed in quarters of a year. The reasons for this will be discussed in the section dealing with overstretching resources.

### 5.2.3 Growth of New Business Customers

\( N_t \) is the number of new business customers at time \( t \). Gary suggests the following standard logistic growth curve to express \( N_t \),

\[
N_t = \frac{PC \cdot \sigma}{1 + \left( \frac{PC}{N_0} - 1 \right) \cdot e^{-g^4}}
\]

\( PC \) is the number of customers in the new business, \( g \) is the growth rate in new customers, and dummy variable \( \sigma \) is zero for all single business companies, and 1 for all diversified companies. Number \( e \) defined to the fifth digit is 2.71828.
Gary points out that the choice of growth curve is of minor importance. Basically any curve could be incorporated, because the choice will only affect the estimated allocation of results over certain time periods. The important thing is that, in accordance with basic theory, the entered business at some time will stagnate, preventing the company from further expansion. The selected growth model will impact the estimated distribution of results in between the time of entering and stagnation, but not the results for the time period as a whole.

5.2.4 The Stock of Shared Resources

$R_t$ is the stock of shared resources. It is expressed as the initial value of shared resources, plus an integral of investment in shared resources over time.

$$R_t = R_0 + \int_0^t i_t \, dt$$

$R_0$ is the initial value of shared resources, $i_t$ is the integral part of investment in shared resources over time, $d$ is the company’s total work demand, $t$ is time. However, the size of $R_t$ is completely controlled by the company, so it must not follow the function. Active management will make investments throughout the diversification move. Passive management will neglect to make any investments whatsoever. The reason why it might be a good idea to invest in $R_t$ as stated by the function is that it will prevent companies from overstretched resources.

5.2.5 Overstretching Resources

$O_t$ is the impact of overstretching shared resources. It is expressed as

$$O_t = O_{t-1} + \beta(u_{t-1} - O_{t-1})$$

$\beta$ is the delay on costs from overstretching. $u_t$ is a function of the company’s organizational slack, $s_t$. It is defined as

$$f(s_t) = 1 \quad \text{when } s_t > 0$$

$$f(s_t) = 1 - \frac{2}{7} s_t \quad \text{when } 0 \geq s_t \geq -0.75$$
\[ f(s_t) = 1.5 \] when \( s_t < 0.75 \)

The mathematics might seem confusing, but the main ideas can be grasped without the functions. What is important to understand, is that \( O_t \) is a multiplier of total costs, and that \( 1 \leq O_t \). It is a function of slack resources. Slack resources are unused resources within a company, for example, idle employees or machines that are not fully utilized. As long as slack resources exist, \( O_t \) will equal one. This is why it is always profitable to make a related diversification move within the slack resource boundary, and with variable revenues exceeding variable costs. Efficiency is automatically improved, because fixed costs are scattered over an extended product portfolio. However, if a company overstretches its resources, \( O_t \) will grow and exceed one. This is the essence of Gary’s model, because if \( 1 < O_t \), costs are inflated.

The idea is that given a level of resources, production is only efficient to a certain output. A company that overstretches this level will face problems as production capacity no longer is sufficient for producing the output. This creates problems: quality suffers from production pressure, bad decision making transpires from stress, and so on. However, these problems do not reveal themselves immediately. Instead, Gary suggests, costs only appear after a period of time, set to three months. This is one of the reasons why time is expressed in quarters. For example, if overstretching resources adversely affect production quality, it might not be detected immediately. The real cost will appear later, when customers make complaints.

Such problems will continue until investments have been made to fit demands from the new output, for instance by investing in shared resources, \( R_t \). If investments are not made, profit margins decline, because efficiency suffers from impacts from overstretching resources. The essence here is avoiding costs of overstretching. Ignoring the functions, what is important to understand is that overstretching resources will increase costs because \( 1 < O_t \), and that this can be avoided by investing in shared resources to increase production capacity.

**5.3 Discussion on M.S. Gary**

Gary’s model rests on one simple mechanism. The idea is that the economics of scope is generated from successful related diversification because fixed costs are spread over an
extended product portfolio. The move into a related business is attractive, since such a move may improve efficiency.

The cost-based branch of research has to a high degree neglected to analyse actual processes within the diversifying company. Related businesses have been assumed to imply economics of scope, and this type of strategy must therefore be superior to others because it lowers average variable costs.

We find the model presented to be strong in the essence that it takes Rumelt’s notion of related diversification a step further. Rather than simply saying that related diversification will result in economics of scope, Gary presents sources of potential negative effects. He stresses the importance of implementation costs from overstretching, especially when managers passively avoid investing in shared resources.

Even though Gary’s model is functional when seen from the cost-based perspective, in recent years some have suggested analysing related diversification from a slightly different angle, namely through using what is called horizontal strategies (Nayar, 1992; Gruca et al., 1997; Ensign, 1998). We shall proceed by accounting for these ideas.
6. Horizontal Strategies

According to horizontal strategies *shared resources* are the sources of synergy. The concept of synergy has expanded from Ansoff’s classification to a definition where resources have gained importance. According to Gruca et al. (1997) “Resources include assets, capabilities, organizational processes, information and knowledge, which may be used to enhance the efficiency and effectiveness of the organization”. This definition will serve as our point of departure when looking at related diversification strategies from the horizontal perspective.

6.1 Interrelationships and Horizontal Strategies

Interrelationships can be defined as the sharing of resources in related activities in the hope of achieving synergy. The relatedness of importance is, according to Ensign (1998), not the one between businesses or business units, but rather between specific activities. These interrelationships can be founded through geographic markets, product lines, customer groups, etc. (Gruca et al., 1997). It is important to remember that synergy is not guaranteed simply because sharing takes place.

Horizontal strategies can be explained as the development of these synergy-creating interrelationships. As value is created, the likelihood of gaining competitive advantage increases and this is a major reason for companies to diversify. It is important to understand that the reason for adapting a horizontal strategy is the notion of increasing the value for all involved units, and thus increasing the value of the company to more than the sum of business unit values (Porter, 1985).

Prescott C. Ensign describes the connection between interrelationships and horizontal strategy through the following matrix:

<table>
<thead>
<tr>
<th>Interrelationships</th>
<th>Activity</th>
<th>Choice</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>sharing</td>
<td>relatedness</td>
<td>to achieve synergy</td>
</tr>
<tr>
<td>R</td>
<td>of resources or skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>developing</td>
<td>value</td>
<td>to achieve competitive advantage</td>
</tr>
<tr>
<td>E</td>
<td>interrelationships</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. The connection between horizontal strategies and interrelationships. Source: Ensign, 1998
6.2 Conditions for Successful Resource Sharing

The company's ability to gain positive effects from related diversification resides in its skills, capacities, and a dynamic resource fit which may find a variety of end uses (Mahoney and Pandian, 1992). Resource sharing can be conducted in many ways, but in order for them to lead to competitive advantage there are certain conditions that need to be fulfilled. To describe these conditions as clearly as possible we will separate the conditions for diversification activities from skill sharing.

6.2.1 Choosing Diversification Activities

First of all, the activities chosen must be a significant portion of total operating costs or assets, in order to make any form of visible impact. The possibility of gaining positive synergy effects is non-existent if the resource sharing does not focus on the company's core competencies (Gruca et al., 1997). However, the effects of sharing will only be positive as long as the company does not face capacity constraints. If an overstretching of the capacity were to take place, the potential for synergy effects will be lost. Secondly, the activities chosen must help to differentiate a business from its competitors. Uniqueness and inimitability are of utmost importance in order to gain positive synergy effects (St. John and Harrison, 1999). Thirdly, the cost of performing shared activities must be lower than if they are done separately (Grandval and Vergnaud, 2006). This can be achieved through improved capacity utilization, increased learning speed, and enhanced product differentiation or by gaining economics of scale. (Porter, 1985; Ensign, 1998) And finally to promote synergy, actions must be fully realized (Gruca et al., 1997).

6.2.2 Sharing Skills

The sharing of skills refers to benefits gained through managerial or technical expertise being used in more than one business unit. The first condition for successful skill-sharing is that there must be some similarity between the units involved. This means that customer base, business strategy or overall know-how should be somewhat similar. This is to enable the experience gained in one part of the company to be used to reduce friction, and thereby costs, when building resources in a new business (Markides and Williamson, 1994). Secondly, it is also important that the skill-sharing takes place in important areas of the business, once again to make a noticeable impact (Brush, 1996; Grandval and Vergnaud, 2006). Thirdly, the more flexible the workers, equipment and materials are, the easier it is to gain synergy effects. For
instance, if the same worker has the skills to perform different tasks he can be utilized wherever he is most needed at a given time (Gruca et al., 1997). However, this notion is only true if there is not enough specialized work for him to do. (Penrose, 1959) Finally, the skills shared must be new or improved for the receiving unit (Porter, 1985).

6.2.3 Diversification, Specialization and Growth

As mentioned earlier, in order for a company to reach its full potential growth success, a certain degree of specialization is necessary. Penrose (1959) claims that in order to best utilize a company's resources one must take into consideration the size of the company's output. For instance, a small company might hire a chemist to test products in the production process. When completing these tasks he will spend the rest of the time performing administrative duties. He is not “idle”, but neither is he providing his most valuable services. This means that the extent to which a resource can be used in a specialized manner depends on the size and type of the company’s output. Thus leading to the following conclusion as summarized by Mahoney and Pandian (1992): “The process of growth necessitates specialization, but specialization necessitates growth and diversification in order to fully utilize unused capacity.”

6.3 Different Aspects of Interrelationships

As clear as above mentioned conditions may appear, it has been shown that the problem when developing horizontal strategies mainly lies in determining what resources and activities are worth sharing and which business units to incorporate. (Ensign, 1998; Grandval and Vergnaud, 2006; Gruca et al., 1997). Therefore, we will now account for some cost-reducing and cost-increasing interrelationships. Some additional value-creating activities will be mentioned as well. These aspects are of great importance in order to make successful diversification decisions, and thus understanding why the horizontal perspective can contribute to an explanatory model for diversification.

6.3.1 Gains from Interrelationships

There are several ways in which a company can reduce its costs by developing a horizontal strategy, where interrelationships and the sharing of resources between parts of business units are in focus. Like the cost-based view, substantial focus has been brought to the cost-reducing effects of related diversification. However, as readers will notice there is also some
mentioning of interrelationships leading to value creating activities for customers, which can be seen as a different type of positive synergy effect.

Lowering production development costs through sharing product designs, components, interfaces, subsystems, human skills and know-how is one positive aspect of engaging in interrelationships. (Markides and Williamson, 1994) There are also possibilities to gain a competitive advantage by minimizing knowledge asymmetry (Tanriverdi, 2005). This stems from the fact that the gathering of knowledge about the quality of products and services is costly for buyers (Akerlof, 1970). By offering joint information as a value creating service to potential customers, the diversified company as a whole can gain substantial benefits. (Nayyar, 1990)

By coordinating its distribution network, a company may carry out multiple sales of products and services within one department. This increases the ability to offer diversified solutions as well as providing a simplified service to multi-business customers. Furthermore loyalty-building costs and distribution network costs may potentially decrease as several business units’ benefit from the same distribution actions. (Grandval and Vergnaud, 2006) However, in order to create a functional distribution network this type of competence needs to be present in the affected part of the company (Markides and Williamson, 1994).

Yet another positive aspect of interrelationships is the possibility to create a customer file that is updated and accessible throughout the entire organization, which may lead to increased quality of customer-knowledge, and thus reduced costs for information gathering. (Grandval and Vergnaud, 2006) This may also lead to better adapted product offerings, which can be seen as a value-adding activity for customers.

A final positive effect is that substantial cost savings can be won through mutual marketing and advertising. The cost of consulting services for customers may also decrease. However, the most important part of the marketing sharing activities is that it offers a possible way to differentiate the company’s offerings from the ones of competitors, and thus removing their means of imitation through regular market mechanisms (Mahoney and Pandian, 1992).
6.3.2 Costs from Interrelationships

Naturally, any changes made to an organization come with downside-risks, meaning the risk of increased costs. Two main types of costs that can be derived from investing in interrelationships are those regarding complexity and rigidity.

Organizational complexity increases when a switch towards more integrated parts of business units takes place. Co-ordinating the changes in management costs money, and the amount depends on the complexity of the activity involved. Gains from learning and economies of scale may be reduced by these co-ordination costs (Gruca et al., 1997; Grandval and Vergnaud, 2006). If the company’s resources are very specialized, more diversification may be needed to sustain growth and to fully utilize capabilities (St. John and Harrison, 1999; Penrose 1959)

As for rigidity costs theory mentions two types. The first type, as explained by Porter (1985), is slowness to react to competition when figuring out what the general interest is. The second one has to do with obstacles that may occur when releasing a new product. (Grandval and Vergnaud, 2006; Gruca et al., 1997)

Grandval and Vergnaud (2006) also mention an additional potential cost of implementing interrelationships, which they call compromise costs. When tasks are shared there is a risk that the chosen option is not the best one for each unit involved, even though the company renders considerable gains overall. For instance, shared advertising might bring focus to an already strong product and make another product appear weak in comparison. (Grandval and Vergnaud, 2006)

6.4 Discussion on Horizontal Strategies

When discussing related diversification from a horizontal strategy perspective, we have found the focus to lie in understanding underlying processes. The idea is to first and foremost figure out what capabilities, and thereby possibilities, there are within a business to realize a related diversification move. This aspect brings attention to the fact that without subjective internal data a trustworthy model for synergy creation in related diversification moves can not be constructed. Furthermore it provides guidelines to what aspects of their businesses managers need to evaluate before making any diversification decisions. In addition to cost-reduction,
horizontal strategies also bring to attention the aspect of value creation for customers, and thus the potential effects on revenue. Since the cost-based view fails to address this particular aspect, we find that the strongest contribution to make to Gary’s model is through the incorporation of the horizontal strategies’ ideas on value creation and revenue-gains, and additional costs in conjunction with pursuing interrelationships.
7. Analysis

We have accounted for the two main branches of research in the area of related diversifications. M.S. Gary has been presented as a well-developed model stemming from cost-based theory. Following that we described the main points of horizontal strategies theory. We will now discuss how the two can complement each other.

7.1 The Contribution of Horizontal Strategies

The way in which horizontal strategy theories aim at developing a deeper understanding of synergy creation within companies brings an important aspect into the cost-focused views of Gary. We see three primary ways in which they contribute towards the creation of a more complete model for a related diversification outcome prediction. These are:

1. the outline of conditions needed in order for successful interrelationships to be possible,
2. the awareness of additional costs related to synergy effects through the creation of these interrelationships,
3. the attention brought to an impact on the revenue-side of diversification, in addition to much discussed cost-reducing activities.

7.1.1 Conditions for Diversification

The prerequisites mentioned by horizontal strategists (e.g. Mahoney and Pandian, 1992; St. John and Harrison, 1999; Markides and Williamson, 1996; Brush 1996) imply that incorporating figures from external data into Gary’s model will not give a reliable indication of the possibilities for a company to obtain positive synergy effects. While we find Gary pertinent, horizontal strategies give us additional information as to when related diversification will in fact lead to positive results.

7.1.2 Costs of Diversification

When it comes to implementation costs, Gary focuses on the actual acquirements of expanding production capacity. We have found it relevant to add the horizontal thoughts of additional implementation costs that might occur as the sharing of resources commences (e.g. Gruca et al., 1997; Grandval and Vergnaud, 2006, Penrose, 1959). Realizing that positive effects may be reduced by the costs of co-ordinating changes, increased rigidity and through compromising the processes in some business units also contributes to a more realistic picture.
of the likelihood of gaining positive synergy effects. However, the fact that these additional costs of implementing interrelationships exists, does not in itself explain how they are to be calculated. So far, the empirical research conducted has not provided answers as how to deal with this. We have attempted to tackle this problem and will discuss our suggestions shortly.

### 7.1.3 The Revenue-side

Gary’s aim is to illustrate the effects of diversification by showing how costs can be reduced. He holds the revenue-side constant with one of his basic assumptions being that the market has reached the point of maturity. Some horizontal strategists (e.g. Nayyar, 1990; Akerlof, 1970; Tanriverdi, 2005) shed light on potential revenue-gains through increasing customer value, thus rejecting Gary’s simplified market picture. As we consider these findings a relevant addition to our aim towards a more realistic model for diversification, we too will refrain from Gary’s simplification.
8. Towards a Model

As actors are forced to make decisions even when information is imperfect, a quantitative model can prove useful thanks to its potential of making clear outcome predictions. One way of creating such a model is to build it around existing ideas on related diversification. We have attempted to do this by adding some of the horizontal strategies’ thoughts to Gary’s model. Gary suggested that costs from overstretching resources or investments in production capacity might have a negative impact on profit margins in a related diversification move. The perspective is cost-based which as yet has not been able to provide a sufficient model for the calculation of synergy effects in related diversification moves. However, what differentiates Gary from his predecessors is that he brings to attention the importance of internal data, which otherwise has mostly been advocated by spokesmen of horizontal strategies. He does this by adding the above mentioned implementation costs to his model. Our intention is to incorporate additional aspects of horizontal strategies, namely those regarding the interrelationships from which value creation, and thus revenue gains, can be derived. These interrelationships, too, come with implementation costs.

Before proceeding in doing this we would like to make an important note from our findings when studying horizontal strategies – there is a lack of information as to when investing in interrelationships actually lead to positive synergy effects. The presented conditions are good indicators but they are far from complete answers. There are no guarantees that investing in interrelationships will generate payoffs and very little research has been devoted to figuring out which investments will be efficient. By efficient investments we mean that the created value exceeds associated implementation costs.

8.1 Quantifying Internal Data

The internal data which is used when studying related diversification from a horizontal perspective is of a philosophical nature rather than numbers and figures. In order to incorporate the horizontal views into Gary’s model, this data must first be quantified. We will propose ways of doing this for value creating activities. As for the costs of implementing interrelationships, we found the matter of quantification to be more complex which will be discussed further on.
8.2 Value Creation

As previously mentioned, horizontal strategists do not refer to cost-reduction as the sole mean of gaining competitive advantage. Increasing a company’s revenues by creating value for customers is an additional aspect. We find it necessary to incorporate this and the above mentioned implementation costs, when attempting to create a credible explanatory model for related diversification.

If companies were to diversify from one perfect market to another, economic theory suggests that they would set prices that equalled their marginal costs. However, if we assume that these markets are differentiated – in other words, consist of sellers who actively seek distinguishing positions in terms of offerings to customer – the markets are no longer perfect. The selling company would face a certain degree of freedom in pricing, and pricing would be affected by the demand curve on the actual market. In theory, demand curves reflect the marginal utility provided to the customer from the goods. (Mankiw, 2001)

Because demand curves are exact expressions of marginal utility, changes in marginal utility results in direct shifts in the demand curve. If increased marginal utility pushes demand upwards, a selling company faces two options to meet up with demand: it could increase output, or increase pricing. This mechanism could be used to approximate the worth of the value creation that steams from interrelationships. With the horizontal strategies’ assumption that interrelationships create competitive advantage, the price mechanism can be used to understand it.

8.2.1 Quantifying Revenues from Value Creation

Gary suggests that the diversifying company’s core business revenues are held constant over time. This is because the market is assumed to be mature, and no customer growth is expected. The assumption is convenient, because it helps to isolate the effects from the diversification move. However, the core business revenue is a product of price and core business customers. If we consider this, core businesses revenues could be redefined as

\[ \kappa = P \cdot M \]
\( \kappa \) are core business revenues, \( P \) is price, \( M \) is the number of core business customers. Since Gary holds core business revenues constant, he neither expects \( P \) nor \( M \) to fluctuate over time. We propose that \( P \) is set floating, fluctuating with changes in buyers’ utility. In other words, if buyers’ utility increases, \( P \) increases as well. For simplicity, \( M \) is still assumed to be constant. \( \kappa \) is then expressed as

\[
\kappa_t = P_t \cdot M
\]

This conveys a situation where \( P_t \) is an expression of buyers’ utility, and buyers’ utility changes over time. This shows how value creation can raise buyers’ utility for a given product and helps illustrate the gains of competitive advantages that stem from value-creating interrelationships. The price mechanism approximates the value of the new competitive advantages. This enables us to presume that if value creation increases buyers’ utility, we should expect prices to increase. Because \( M \) is still assumed constant, it is possible to isolate the synergy effect.

### 8.3 Determining Costs of Interrelationships

In order to quantify the philosophical data of the horizontal views one must determine the costs of engaging in interrelationships. Estimating the value of these costs is tricky as they are closely linked to company specifics (Markides and Williamson, 1994). For example, diversifying companies might need to allocate resources for key members of different departments to exchange knowledge. Predicting the costs for these activities can be difficult, especially as they are likely to require the involvement of a number of actors at different levels of the organization and to differing extents over the diversifying cycle. Moreover, the conditions under which specific companies diversify might affect the need for these activities (Penrose, 1959).

#### 8.3.1 Limited Past Research

Investigating circumstances empirically at each diversifying company is an apparent way of gathering the necessary information in order to determine costs of interrelationships. Ensign (1998) helps elucidate our main problem when attempting to make these determinations in our literature study: “A review of the literature indicates a very limited number of empirical studies that examine the issues of interrelationships, resource sharing, relatedness and the
horizontal organization.” What we can conclude from our findings is that not much has happened in the decade that has passed since Ensign’s article was published, at least not regarding the costs of implementing interrelationships. Approximating values for these costs will therefore be very difficult. However, we do have some ideas about how the costs might behave, and seeing how this is an important aspect in more accurately determining possible synergy effects from related diversifications, we will present our ideas. However, it is important to note that these are merely suggestions and are not to be seen as proof of how these costs actually behave.

8.3.2 Basic Principles
There are cases where costs are likely to be linked to the company’s customer base. For example, when production resources expand to meet demands from an increasing number of customers, coordination problems are prone to occur (Gruca et al., 1997). The demands on sharing information require resources as well. This could be information about the company’s customers – e.g. preferences, buying patterns etc. – but also information on production, technology etc. (Porter, 1985; St John and Harrison, 1999) We therefore find it reasonable to link these costs to the new customer base, $N_t$. Since the number of core business customers is assumed constant in Gary’s model, new business customers $N_t$ is the only customer value growing over time.

8.3.3 Quantifying Implementation Costs
According to some horizontal theorists (e.g. Grandval and Vergnaud, 2006; Porter, 1985) two important cost drivers of interrelationships are complexity and rigidity. Complexity refers to the level of difficulty in sharing and integrating resources between a company’s business activities. Rigidity refers to responding times to shifts in market demands. This notion has led us to the following reasoning: Complexity might increase with growth in customer base and output, and rigidity might increase with growth in output. In Gary’s model, it is assumed that each customer corresponds to an equal amount of goods and payment. So the growth in output follows the growth of $N_t$. Therefore, we have chosen to let the new customer base $N_t$ drive the costs of interrelationships. If this relationship were linear, the costs of implementing interrelationships could be illustrated as

$$I_t = N_t(\text{Complexity} + \text{Rigidity})$$
$I_i$ is the total cost of integrating interrelationships, $N_i$ is the number of new business customers. *Complexity* and *rigidity* constitute two fixed index values. Rather than proposing any exact measurement, we want to illustrate that these are costs that are expected to grow in relation to the new customer base.

But the relationship, however, is unlikely to be linear. Rather, we imagine that marginal costs of implementing interrelationships are likely to be high at an initial stage of diversification, then diminishing throughout the first stages of the implementation phase, and at some point increasing when accumulated investments limit the potential for further improvements. This indicates that costs of implementing interrelationships will be high during the initial stage of the diversification move. If these assumptions are valid, costs of implementing interrelationships could initially outweigh the economics of scope effect. Over time, if implementation proves successful, such negative impacts should be compensated by later gains. This is in accordance with Gruca’s (1997) argument that interrelationships must be fully realized in order to be successful.

### 8.3.4 Down-side Risks

It is important to understand that investments in interrelationships do not guarantee pay-offs. The fact that the implementation of interrelationships comes with costs means that there is a certain degree of risk involved with any such decision. We wish to bring attention to these down-side risks by at least proposing steps towards a way of accounting for such costs. This is an extremely important aspect to add to a model for related diversification, as it potentially explains why so many attempts to diversify have failed. If the costs of implementing interrelationships outweigh the gains, the investment is inefficient and possible synergy effects have turned into dissynergies.
9. The Result – Our Model

We have proposed a way to quantify the possible revenue gains of interrelationships $\kappa_i$ and discussed steps towards a way of quantifying implementation costs $I_i$ that stem from them. We have found these to be missing pieces in cost-based models. The internal data used in the horizontal strategies provides a step towards explaining where and how costs and revenues are created in a related diversification move. By incorporating $I_i$ and $\kappa_i$ into Gary’s equation we get the following model:

$$\pi_i = \frac{\kappa_i + (N_i + \epsilon) - \left[\Psi + (R_i \cdot v) + I_i + (N_i \cdot \theta)\right]}{\kappa_i + (N_i + \epsilon)}$$
10. Discussion

This model is an attempt to contribute to a better way of determining the consequences of related diversification moves. Our intentions have not been to propose $\kappa_i$ and $I_i$ as exact definitions. Instead they figure as illustrations of the internal data used in horizontal strategies. By making these additions we believe that the model’s function as an explanatory device increases, which could prove beneficial for strategic planning, as it facilitates the making of approximations. This can for instance be seen as how adding costs of implementing interrelationships addresses the risk of inefficient investments. This is important since investing in interrelationships does not come with any guarantees of positive synergy effects. Implementing interrelationships may in fact very well fail to pay off. Inefficient interrelationships will generate zero-sum returns. In a worst case scenario, companies might overstretch resources whilst failing in generating pay-back on implemented interrelationships. Any up-side risks have to be weighted against the down-sides.

An important note is that we at this point in time find the model’s ability to predict an outcome from related diversifications limited to specific companies. This is mainly due to the lack of existing research regarding how to estimate the costs of implementing interrelationships. As long as we are unsure of how to weigh the value creating aspect of investing in interrelationships, the up-side risks, against the associated costs, the down-side risks, an adequate analysis of the risks involved is infeasible. If more empirical studies are made so that these costs and their behaviour are better defined, we believe that it may be possible to make general predictions as well.

Other than the difficulties in defining the costs of implementing interrelationships and how to calculate generated risks, there are a few more aspects of uncertainty to our model that should be considered. The fact that we have based our model on Gary’s, which has not been tested empirically, leaves a gap regarding its potential for actual use. Given the current state of knowledge, our version could turn out to be inaccurate or difficult to use due to some unknown flaw in Gary’s original version. We find the risk of this problem to be slim though, thanks to Gary’s simulations which simplify and depict the model’s application. As we see it, the main disturbance from its lack of empirical testing is instead the fact that we have yet to see any implications or contributions from it.
Our using of horizontal strategies in an attempt to increase the understanding of related diversification processes is complicated by the difficulty of concretizing the philosophically natured views. Their focus tends to be company specific which clashes with the cost-based views’ usage of external data to draw general conclusions. This is an additional reason for our being cautious and choosing not to approximate any values in this report. Instead, we believe such an action to be appropriate first after more empirical studies have been conducted.
11. Conclusions

The high failure rate amongst companies which have chosen related diversification shows that existing models are not sufficient predictors of such a move. The cost-based branch of research has provided models based on objective external data whilst horizontal strategies have focused on internal data. Our hope was that the two combined could provide a more accurate model for predicting the outcome of a related diversification move. We have created such a model by adding the horizontal strategies’ views on costs and potential gains from interrelationships to Gary’s cost-based model. The result is a model which we believe can be used for approximations as a strategic planning device, and also as a foundation for future research and empirical studies. Given our current state of knowledge it is not to be seen as an exact predictor of related diversification moves, but rather as a model fit to begin testing the dynamic behaviour of interrelationships.

11.1 Suggestions for Further Research

Neither Gary’s model nor ours has been tested empirically. We find Gary’s ideas on the impact of overstretching and shared resources to be a reasonable first step to research. If proven useful, testing the relationship between interrelationships and value creation would be a good second step. As both are complex in themselves it might be beneficial to separate the two.

We have given suggestions as to how interrelationship costs might behave throughout the diversification move. Further consideration through empirical testing is likely to add valuable insights on the matter. Different kinds of empirical tests could be made. Qualitative research within diversifying companies could possibly identify relevant costs of implementing interrelationships. These costs should somehow be connected to existing or expected but not realized value creations in order to predict up-side and down-side risks of investing in interrelationships. One potential way of investigating value creation might be through analysis of revenue inflows. If an accurate model for calculating the effects of related diversifications is to be constructed, more empirical testing is required.


Mankiw, Gregory. (2001), Principles of Economics. Thomson Learning


Appendix – The Components of Gary’s Model

The stock of shared resources:
\[ R_t = R_0 + \int_0^t i_t \, dt \]

The new business customers:
\[ N_t = \frac{PC \cdot \sigma}{1 + \left[ \frac{PC}{N_0} - 1 \right] \cdot e^{-g_4}} \]

Profit margin:
\[ \pi_t = \frac{\kappa + (N_t + \epsilon) - \left[ \Psi + (R_t \cdot v) + (N_t \cdot \theta) \right]}{\kappa + (N_t + \epsilon)} \]

Total work demands:
\[ dt = \chi + (N_t \cdot \lambda) \]

Level of resources required for efficient operations:
\[ R_t^E = \frac{d_t}{\rho} \]

Percentage difference between current shared resources and the amount of resources required for normal, efficient operations:
\[ s_t = \frac{R_t - R_t^E}{R_t^E} \]

Overstretching shared resources:
\[ O_t = O_{t-1} + \beta(u_{t-1} - O_{t-1}) \]

Company’s original slack resources:
\[ f(s_t) = 1 \quad \text{when } s_t > 0 \]
\[ f(s_t) = 1 - \frac{2}{3} s_t \quad \text{when } 0 \geq s_t \geq -0.75 \]
\[ f(s_t) = 1.5 \quad \text{when } s_t < -0.75 \]

Profit margin adjusted for slack resources:
\[ \pi_t = \frac{\kappa + (N_t + \epsilon) - \left[ \Psi + (R_t \cdot v) + (N_t \cdot \theta) \right]O_t}{\kappa + (N_t + \epsilon)} \]

Discrepancy gap between desired and actual level of shared resources:
\[ i_t = \frac{R^*_t - R_t}{\tau^*_t} \]

\[ R^*_t = \frac{d_t}{\rho^*_t} \]

Adjustment process for target productivity:

\[ \rho^*_t = \rho^*_{t-1} + \omega \left( \frac{d_t}{R_t} - \rho^*_t \right) \]

Model constants:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Units of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta )</td>
<td>Overstretching cost realization delay</td>
<td>1/Quarter</td>
</tr>
<tr>
<td>( g )</td>
<td>New business customer base growth rate</td>
<td>1/Quarter</td>
</tr>
<tr>
<td>( \epsilon )</td>
<td>Revenue per new business customer</td>
<td>$/Customer/Quarter</td>
</tr>
<tr>
<td>( \theta )</td>
<td>Variable cost per new customer</td>
<td>$/Customer/Quarter</td>
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<td>( \kappa )</td>
<td>Core business revenue</td>
<td>$/Quarter</td>
</tr>
<tr>
<td>( \lambda )</td>
<td>New customer work demands</td>
<td>Work units/Resource month</td>
</tr>
<tr>
<td>( \mu )</td>
<td>Variable cost per shared resource unit</td>
<td>$/Resource month</td>
</tr>
<tr>
<td>( N_0 )</td>
<td>Initial new business customers</td>
<td>Customers</td>
</tr>
<tr>
<td>( O_0 )</td>
<td>Initial overstretching on costs</td>
<td>Dimensionless</td>
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<tr>
<td>( PC )</td>
<td>Potential new business customers</td>
<td>Customers</td>
</tr>
<tr>
<td>( \rho )</td>
<td>Maximum efficient productivity</td>
<td>Work units/Resource month</td>
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<td>( \rho^{*0} )</td>
<td>Initial target productivity</td>
<td>Work units/Resource month</td>
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<tr>
<td>( R_0 )</td>
<td>Initial shared resources</td>
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<tr>
<td>( s_0 )</td>
<td>Initial slack</td>
<td>%</td>
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<tr>
<td>( s^* )</td>
<td>Desired slack</td>
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</tr>
<tr>
<td>( \sigma )</td>
<td>New business switch</td>
<td>Dimensionless</td>
</tr>
<tr>
<td>( \tau R )</td>
<td>Time to correct shared resources</td>
<td>Quarters</td>
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<tr>
<td>( ut = f(st) )</td>
<td>Unrealized cost of overstretching</td>
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<tr>
<td>( \chi )</td>
<td>Core business work demands</td>
<td>Work units/Quarter</td>
</tr>
<tr>
<td>( \psi )</td>
<td>Fixed costs</td>
<td>$/Quarter</td>
</tr>
<tr>
<td>( \omega )</td>
<td>Attainment discrepancy coefficient</td>
<td>1/Quarter</td>
</tr>
</tbody>
</table>

Source: M.S. Gary (2005)