

**ERRORS SMALL BUSINESS MANAGERS MAKE
IN PRODUCT INTRODUCTION DECISIONS:
WHAT WERE THEY THINKING?**

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ABSTRACT

One of the most important strategic decisions managers of small businesses make is deciding what products to introduce. Introducing the right product can improve firm performance. Introducing the wrong product, or even the right product at the wrong time can result in large losses and possibly jeopardize a firm's longevity. It is especially important to examine small firm managers' product introduction decisions because they often use less formal procedures, have more power and face less organizational inertia. Thus, while their autonomy may allow them to act on their conclusions more readily, a lack of formality may generate more judgment errors. Therefore, it's vital to understand the issues that should be considered in new product introductions and explore some of the common misperceptions small firm managers have regarding these issues.

Toward this end, this study examined the success factors (component conditions that are prerequisites for the introduction's overall success) managers considered during recent new product introductions and their confidence in these factors' achievability. In an effort to determine where managers might be making their most critical decision errors, the authors also examined which success factors were the most difficult to achieve and which were most critical to overall product performance.

INTRODUCTION

One of the most important strategic decisions small business managers make regards product introduction. Introducing the right product (at the right time) can enhance firm performance and generate competitive advantage, while introducing the wrong product may lead to large losses and even firm demise (Brown & Eisenhardt, 1995). While about half of new products introduced eventually fail, the economic outcome of the introduction is, in part, a function of managerial choices made early in the product introduction process (Calantone, Schmidt & Song, 1996). Product introductions, however, take place within a climate of uncertainty, and the information needed to make high quality decisions is often ambiguous and hard to obtain (Simon, 1993). Thus, it is not surprising that managers relying on faulty assumptions (Cooper, 1975) often kill products that would otherwise succeed, or accept products destined to fail (Cooper & Kleinschmidt, 1996). It is especially important to examine the small firm managers' product introduction decisions because these managers often use less formal procedures, have more power, and face less organizational inertia. Thus, their autonomy may allow them to act on their conclusions more readily. Yet, a lack of formality may generate more judgment errors. Finally, a small firm's narrow product line makes any single product failure particularly devastating.

Yet, little is known about the specific decision errors small firm managers make, and how these errors impact product performance (Scott, 1999). Specifically, there are two elements that may greatly affect the quality of the manager's product introduction decision.

The first element relates to whether the manager of small companies considered all necessary success factors. These success factors refer to component conditions that are prerequisites for the introduction's overall success (e.g., competition, product quality, speed, rate of technological change, etc). Neglecting these important issues can have disastrous consequences (Solymosy, 2000).

The second element refers to managers' confidence in their ability to achieve the success factors they did consider. For example, managers who considered speed before introducing a product may have been completely confident or moderately confident in their ability to introduce the product quickly. Excessive confidence, however, may cause managers to select ill-advised products that lead their firms down "pathways to disaster" (Barnes, 1984). Furthermore, initial unwarranted confidence may decrease the managers' contingency planning and increase their up-front investments, thereby hampering their flexibility to make needed future adjustments (Mahajan, 1992).

Of course managers, particularly those in small firms, may not have the time or the mental abilities to consider every important factor that might affect the success of their product, or to gauge the appropriate level of confidence in that factor's achievability. Thus, it is important to isolate the specific success factors about which managers are most likely to err, and assess how those errors relate to the product's performance.

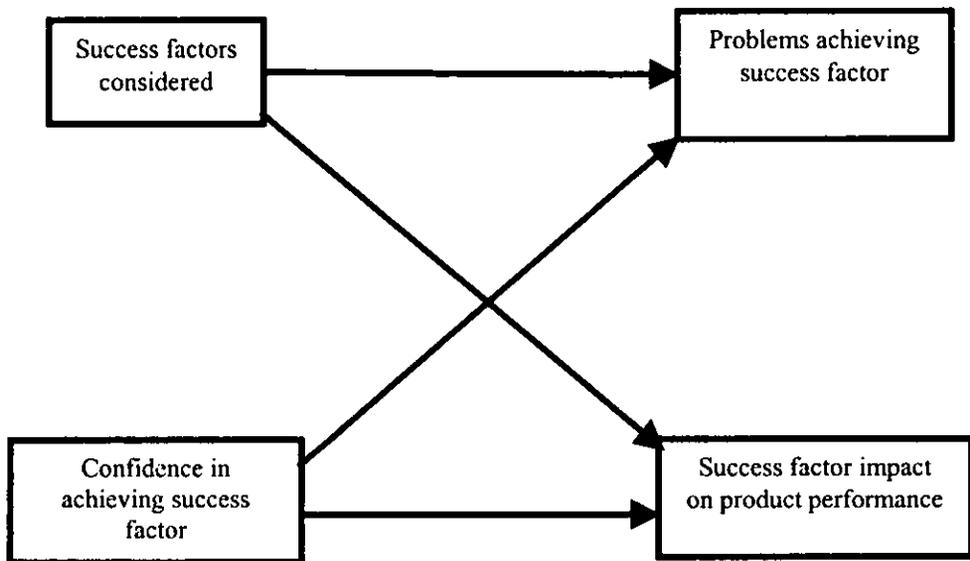
Consider the following scenario. Before introducing a product, most managers may not consider the importance of speed to market, and the few who do may be overly confident in their ability to introduce the product quickly. Yet, most product introductions encounter delays that impact their overall economic performance. To our knowledge, however, no previous research has examined the extent to which such patterns arise with regard to other important success factors. The following questions were therefore explored.

When deciding to introduce a new product,

- 1) Do small firm managers consider those particular success factors that are less frequently achieved?
- 2) Do small firm managers consider those particular success factors that impact product performance most?
- 3) Are managers of small firms more or less confident of achieving success factors that are less frequently achieved?
- 4) Are managers of small firms more or less confident of achieving success factors that impact performance most?

The model posed in Figure 1 captures these issues. The following section describes the study's methodology. Next, findings regarding each of the success factors are reported. Finally, the major findings are summarized and managerial implications discussed.

Figure 1: The Relationship among Success Factors, Confidence, Problems and Product Performance



METHODS

Sample and Research Design

The sample was drawn from the Georgia Technology Sourcebook, which contains a comprehensive list of Georgia-based high technology companies. This study targeted small companies (less than 100 employees) in the computer industry that anticipated introducing a new product to the market within 30 days, or had just launched a product within the past three months. One hundred thirty-five companies met all of the study's selection criteria. The sample size was limited, due to the requirement that small company respondents in the midst of a new product introduction provide data twice during an 18-month period. This tradeoff is reasonable, given the study's exploratory nature, the task difficulty and the multiple calls for longitudinal research linking managerial cognition to firm actions and performance (e.g., Wiseman & Catanach, 1997; Thomas, Clark & Gioia, 1993).

The computer industry was selected because of its frequent product introductions. The sample was restricted to smaller firms due to their importance to the national economy. In the United States, small firms comprise over 80% of all businesses, provide 50% of the Gross Domestic Product, employ 50% of the private-sector work force, and generate over 75% of all new jobs (Riddle, 1997). Data about the different variables was collected in two waves (spanning a total of 18 months): In the first wave, managers from 65 firms agreed to participate in the research, for an initial response rate of 48%. The participating firms did not differ from non-participants in size (measured by number of employees) or age ($p < .10$). In 38 of the firms, two managers played a crucial role in the product introduction decision. Since this research focuses on the manager's perceptions (i.e., the unit of analysis was the individual), both managers were included in the study, thereby generating a final sample size of 103 people. Forty-eight of the respondents were the companies' CEOs or presidents, while the remaining 55 were one level below the CEO. Fifty-five (85%) of the original firms participated in the second wave of data collection.

During the first wave of data collection, managers were interviewed and their responses content analyzed to discover which success factors they considered in product introduction decisions, and their confidence in their ability to achieve those success factors. Appendix A provides a detailed description the specific steps taken during the interview process and content analysis. During the second wave of data collection, a mail survey was used to measure the extent to which a new product introduction encountered problems relating to these success factors. Also, during this phase, data was collected on product introductions' overall performance, so the extent to which problems in achieving each success factor impacted overall performance could be analyzed. Appendix B presents specific measures and where appropriate, the relevant inter-item reliability.

Measures

Success factors managers considered

Content analysis of the interviews indicated that, in the aggregate, managers considered six types of success factors. They are listed and described below. Most managers, however, indicated they only actively considered two or three of these success factors. The factors are admittedly interrelated, suggesting the possibility that even if managers did not explicitly mention a success factor, they might have implicitly incorporated it into their considerations. However, managers' explicit mention of an issue reflects what is at the top of their minds in both thought and action, and hence is most likely to impact performance.

Success factor	Description
Demand	The product's ability to generate sufficient sales
Product quality	The company's ability to develop a quality product.
Technological change	The product's ability to cope with changing external tech. conditions.
Expense	The company's ability control product related expenses.
Competition	Company's ability to cope with competitive reaction to its product.
Speed	Company's ability to get the product to market in a timely fashion.

Level of confidence

Respondents' confidence levels were measured on a scale of 0 to 3 using the following system: "3" = totally confident, "2" = very confident, "1" = moderately confident and "0" = not at all confident. **Totally confident** respondents had no doubt that they would achieve a success factor. **Very confident** respondents also strongly believed that they would achieve a success factor, but acknowledged there was at least a small chance they were wrong. **Moderately confident** respondents more actively acknowledged there was room for error, yet still indicated they were more likely than not to achieve the success factor. Respondents who are **not at all confident** believed that not attaining the success factor was as likely as, or more likely than attaining it.

Problems achieving success factors

Approximately 18 months after the original interviews, each company's managers most familiar with the product introduction were asked the extent to which their product introductions experienced difficulty in achieving each success factor. Because they were the most knowledgeable about the success factor and the product's outcome, these managers were best equipped to assess whether a given success factor was achieved. Further, small firm researchers often use subjective performance assessments because the measures are highly correlated with more objective information (Dess & Robinson, 1984), and small firms often do not have the sophisticated accounting systems needed to provide "hard" data (Covin, et al., 1990).

Specifically, the manager was mailed a survey containing seven-point Likert-type multi-item scales which were used to measure whether an introduction experienced difficulty in achieving a given success factor. Mean scores greater than four on any scale indicated that the product introduction encountered difficulty regarding that success factor. The specific items in the scales were adapted from past product introduction research (Cooper & Kleinschmidt, 1996) and are listed in Appendix B.

Overall product performance

While the aforementioned items were able to capture managers' attainment of particular success factors, and provide insights into the types of problems encountered, they do not measure the product's overall performance level. Thus, the survey also asked managers how satisfied they were with the product's general economic performance. Specifically, the study averages the manager's responses to a two-item, seven-point, bipolar scale ($\alpha = .84$), based upon past product introduction research (Cooper & Kleinschmidt, 1996).

RESULTS

This study examined the four elements of the decision process for each success factor. Namely, it investigated whether managers considered a success factor before introducing a product, how confident they were of the factor's achievability, how frequently they suffered introduction problems and the impact of those problems on the product's overall performance. Table 1 presents these results.

Before discussing the findings regarding specific success factors, however, some insights may be gained by reviewing the overall results regarding the four elements of the decision process. The percentage of managers who considered a particular success factor varied greatly. Specifically, managers considered the most mentioned success factor nine times more

frequently than the least mentioned one. The managers' confidence regarding their ability to achieve success factors was much less varied. Regardless of the success factor, on average, managers fell between being moderately confident and very confident. In actuality, new products encountered problems achieving these success factors an average of 40% of the time with a range from 20% to 70%, depending upon the success factor.

Table 1: Elements of Decision Process

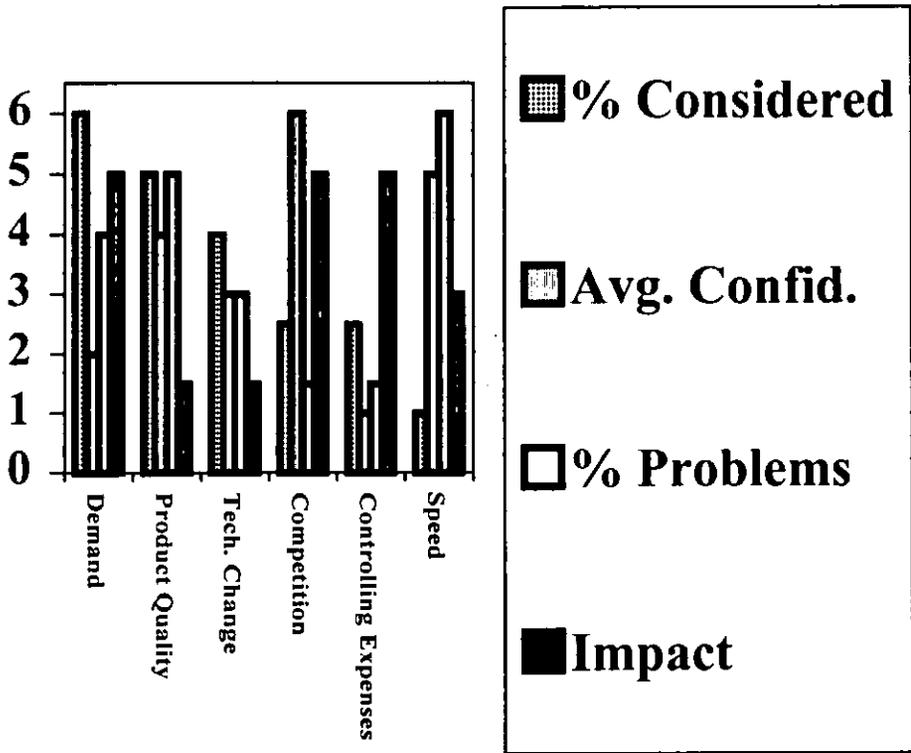
Success Factors Considered							
	Ave. of all SFs ²	Demand	Product Quality	Tech. Change	Comp.	Control Expense	Speed
% Managers Citing Success Factor ¹	37%	93%	50%	30%	19%	17%	10%
Ave. Confidence	1.28	1.19	1.35	1.24	1.71	1.10	1.42
% Managers Citing Success Factor as a Problem ¹	41%	39%	56%	33%	24%	20%	70%
Correlation w/ Performance	-.31	-.38	-.20	-.19	-.38	-.36	-.29
Level of Confidence							
	Ave. % of all SFs	Demand	Product Quality	Tech. Change	Comp.	Control Expense	Speed
% <i>Totally</i> Confident	25%	24%	24%	20%	33%	20%	42%
% <i>Very</i> Confident	24%	21%	30%	27%	33%	20%	0%
% <i>Moderately</i> Conf.	7%	7%	3%	12%	5%	10%	17%
% <i>Not</i> Confident	45%	49%	43%	41%	29%	50%	42%
% <i>Totally</i> or <i>Very</i> Confident	48%	49%	45%	54%	47%	66%	40%

To determine each success factor's impact on overall performance, the correlation between the extent of the product's failure to achieve each success factor with the manager's level of dissatisfaction with the product's overall economic performance (both of which were measured on 1 to 7 scales) was analyzed. Regardless of the success factor analyzed, the extent of the problem was negatively associated with product performance, as the correlations ranged from -.19 to -.38. These correlations were significant.

Are there specific patterns regarding some of the success factors that may cause concern? Below is discussed each success factor in detail, specifically relaying information about where decision elements (consideration, confidence, problems and impact on performance) rank for one success factor relative to where they rank for the other success factors. Figure 2 illustrates this information graphically.

Demand was the most considered success factor. In fact, almost all managers (93%) indicated that demand was critical to their product's success, as compared to the next highest rated factor, product quality, which only half the managers considered. One manager stated, "The existence of the market, that was my primary concern." Another said, "...[if] we only move a small volume of the product, it's not worth our effort to do that..." (Please note that none of the specific quotes from managers is being used as empirical corroboration for the findings; because these quotes are anecdotal. Instead, quotes have been included to clarify points and to increase this paper's readability).

Figure 2: Ranking of Decision Elements by Success Factor



Managers, however, expressed only moderate levels of confidence regarding their product's ability to achieve sufficient demand. As shown in Figure 2, respondents were less confident of their product's ability to generate sales than they were of all the other success factors but one. In fact, half the time when managers mentioned demand, they indicated that they were not at all confident that it would be adequate. The doubt expressed by one manager who was introducing health care management software was typical. He said, "The challenge for us is that ... hospital administrators typically cannot, at first, understand the need for these systems; they are the ones we [really need to convince]. We have not learned how to do that." Thus, it is understandable that a lack of confidence about demand at the outset led at least one manager to rely on analytical tools to guide his thoughts. He said, "We had to develop a comfort economic model. We had to ascertain that we could theoretically sell enough. We did the mathematical calculation."

Although managers frequently expressed little confidence in their ability to achieve adequate demand, they did not encounter an unusually high percentage of demand problems (39% for demand vs. 40% for all success factors). However, when they did encounter a demand problem, it was devastating to the product's overall financial performance. In fact, demand problems had almost twice the negative impact on overall product economic performance ($r = -.38, p < .001$) as some other success factors. This suggests it was appropriate for most managers to consider demand a critical success factor (Wilson & Anell, 1999).

Given the large number of managers who considered demand, their statements were more closely analyzed to see if demand could be broken into smaller categories. In the process,

three sub-categories of demand were uncovered: marketing, product features, and pricing. Table 2 summarizes how frequently managers considered each of the sub-categories, how confident managers were in their achievability and how often they encountered problems relating to these demand subcategories. Each of these subcategories is further explained below.

Table 2: Demand Sub-categories

Success Factors Considered				
	Demand	Marketing	Features	Pricing
% Managers Citing Success Factor ¹	93%	61%	31%	18%
Ave. Confidence	1.19	1.03	1.36	1.00
% Managers Citing Success Factor as a Problem ¹	39%	48%	42%	35%
Level of Confidence				
	Demand	Marketing	Features	Pricing
% Totally Conf.	24%	22%	28%	14%
% Very Conf.	21%	16%	22%	29%
% Moderately Conf.	7%	4%	8%	0%
% Not Conf.	49%	58%	42%	57%
% Totally or Very Conf.	49%	38%	50%	43%

Marketing

The most frequently mentioned (61%) subcategory within demand was the company's marketing expertise, that is, its ability to promote, sell and distribute the product. The following statement by the manager of a company that produces software for casinos reflects this emphasis. "The key to the success of the product ... is going to be ...[the ability] to market it to the gaming industry. The biggest thing is going to ...[be the ability] to educate them about the product." Furthermore, the statements from another executive indicated that this belief was not product specific, "...with any product, you know, marketing is a key issue. Here as well." The concern with marketing was consistent with Lowry and Chapman's (2000) finding that executives identified marketing as their biggest problem area. Furthermore, executives often do not follow the marketing strategies prescribed in the literature (Achua & Lussier, 2002).

On average, managers expressed only moderate confidence regarding their company's marketing ability-- a lower level than expressed about any of six main success factors, including overall demand. Managers who considered the sub-category of marketing may have been right to express a lack of confidence in their ability, given that they encountered demand problems a higher portion of the time (48%) than all managers who considered demand (39%).

Product features

Within the general demand category, some managers explicitly considered whether their product contained features demanded by the market. Most managers, however, mentioned product features less than one-third of the time (31%). On average, managers' confidence regarding this success factor fell closer to moderately confident than to very confident. This

was higher than the managers' average confidence for each of the other two demand subcategories, and higher than the average expressed for all the success factors. This relatively high rating occurred partly because of the high proportion of managers (50%) who were totally confident or very confident that the product's features would generate demand. For example, one totally confident manager explained, "[It's] a very professional product; we're going to a profession that requires it ... we [can] ensure that demand will be there." Another used quite expressive terms when explaining why he was sure the market would value features that made his product easier to use. He stated, "[Users] don't want to fool with [the software]. They want to go click, it's on, get me Joe, okay, away we go."

This relatively high confidence level in the product's features was undeserved. Managers considering product features encountered problems slightly more frequently (42%) than those that occurred for the entire demand category. As one manager explained, "Well, I was more confident at the beginning than I was at the end. [The features] were not meeting the needs of the users."

Pricing

Prior to product introduction, 18% of the managers were concerned whether the market would accept the price they wanted to charge for the product. These managers reported a moderate confidence level, which was lower than the confidence for any of the other success factor categories or the demand sub-categories. In fact, a majority of managers who considered pricing issues reported being not at all confident (57%). For example, one manager who was very concerned about pricing simply stated, "We're rolling the dice here." Yet, the managers considering pricing actually encountered relatively few demand problems (35%). Much to one manager's surprise, a customer told her that the product greatly affected the profitability of his other activities, thus "[Price] really doesn't make much of a difference."

Product quality

In addition to considering a product's overall demand, and its three associated subcategories, managers also considered whether their company could develop a quality product. As Figure 2 illustrates, except for demand, managers (50%) considered product quality more frequently than they considered any other success factor in a product introduction. On average, the managers' confidence regarding their ability to build a quality product fell between moderately confident and very confident, which was a higher average confidence level than most of the other success factors. Furthermore, with the exception of competition, a higher percentage of managers (45%) who considered whether they could build a quality product were very or totally confident that they could deliver this particular factor.

Given this high confidence level, it is surprising that products encountered quality problems more often than they encountered problems with any other success factor except speed. The manufacture of a specialty toner cartridge used by banks and payroll companies serves as a dramatic illustration of the points above. When asked what key factors would be most important, if his product was to be a success, the manager answered in no uncertain terms that "quality has got to be consistent ... we've got to maintain our quality." He further elaborated that he was "very confident" that the product would be high quality, explaining that he was having "no sleepless nights." Further, he told the interviewer that his past experience in manufacturing similar products virtually guaranteed that this one would be reliable. Yet, 18 months later, he indicated quite strongly that this product had extensive technological problems and contained many bugs. In one sense, however, this manager and those who fell into similar traps may have avoided total disaster, because although quality problems no doubt

hurt total performance ($r = -.20, p < .05$), they have a smaller impact on overall performance than almost any of the other success factors.

Technological change

Thirty percent of the managers introducing a new product recognized that external technological change could affect their products' success. This made it the third most mentioned success factor. The respondents considering this factor were slightly above moderately confident, which was less than expressed for three of the other success factors. In the end, products exhibited relatively few problems relating to technological change (33%), and these problems had the least impact on overall product performance ($r = -.19, p < .05$), as compared to the other success factors.

Competition

Despite the fierce level of competition in the computer industry, Figure 2 illustrates that managers considered competition less than they considered most of the other success factors. In fact, less than one manager in five cited the importance of their ability to distinguish themselves from competitors or to cope with the competitors' reactions. On average, those who did consider competition were very confident. This was a higher average score than any other success factor. More than two-thirds of the managers were very confident or totally confident in their competitive capability. For example, a manager in the sample decided to develop software to solve the accounting and database information requirements of property management firms. He claimed he knew the only competitor "very well" and that without question "there was nothing else [like their own product] out there in the market."

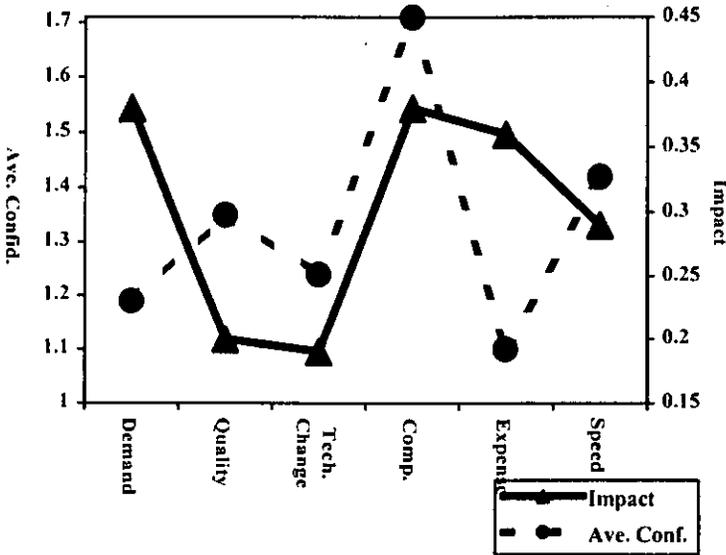
Fortunately for these managers, competition represented one of the lowest percentages of problems. Unfortunately, however, if a problem related to competition did arise, it had a more damaging effect on performance ($r = -.38, p < .001$) than problems associated with any of the other success factors. The data seem to indicate that although problems with competition occur relatively infrequently, the failure to adequately consider competition, and the overconfidence shown when it is considered, might be quite dangerous. The company introducing the property management software may have learned this the hard way. Eighteen months after the introduction, the managers' response to the survey indicated that competition had a major detrimental effect upon their product's economic performance.

Expenses

Prior to the product introduction, a low percentage of respondents (17%) explicitly considered the company's ability to control product related expenses. Controlling expenses was considered less than any other success factor except speed. On average, the managers who did mention controlling expenses were only moderately confident in their ability to do so, which was the lowest level of confidence exhibited by managers. In fact, one-half of these managers were not at all confident. Although one company performed extensive research and provided elaborate projections to determine that their product could be produced at a sufficiently low cost, the manager in charge seemingly dismissed all of the work, saying, "On any costing [projections] you've got to add 20% to whatever your people come up with and use that as a baseline."

While managers' confidence in this category was relatively low, it is interesting that problems related to controlling expenses occurred less frequently (20%) than problems related to any other success factor, and only half as frequently as the average for all problems. One might conclude that the managers lacked confidence because failure to control expenses had one of the strongest negative impacts on product performance ($r = -.36, r < .001$).

Figure 3: % Considered Versus % Problems



Speed

Speed was the least mentioned success factor (10%). However, managers reported the second highest confidence in this area, keeping it balanced between the very confident and moderately confident categories. Actually, managers were twice as likely to be totally confident (42%) when they mentioned speed as when they considered other success factors. Yet, managers encountered problems relating to speed (70%) much more often than they encountered problems with any of the other success factors. In fact, speed-related problems occurred almost twice as frequently as the average percentage for all the success factor problems. Further, speed-related problems may wreak havoc on product performance ($r = -.29, p < .01$) in that speed has a 50% greater impact than two other success factors.

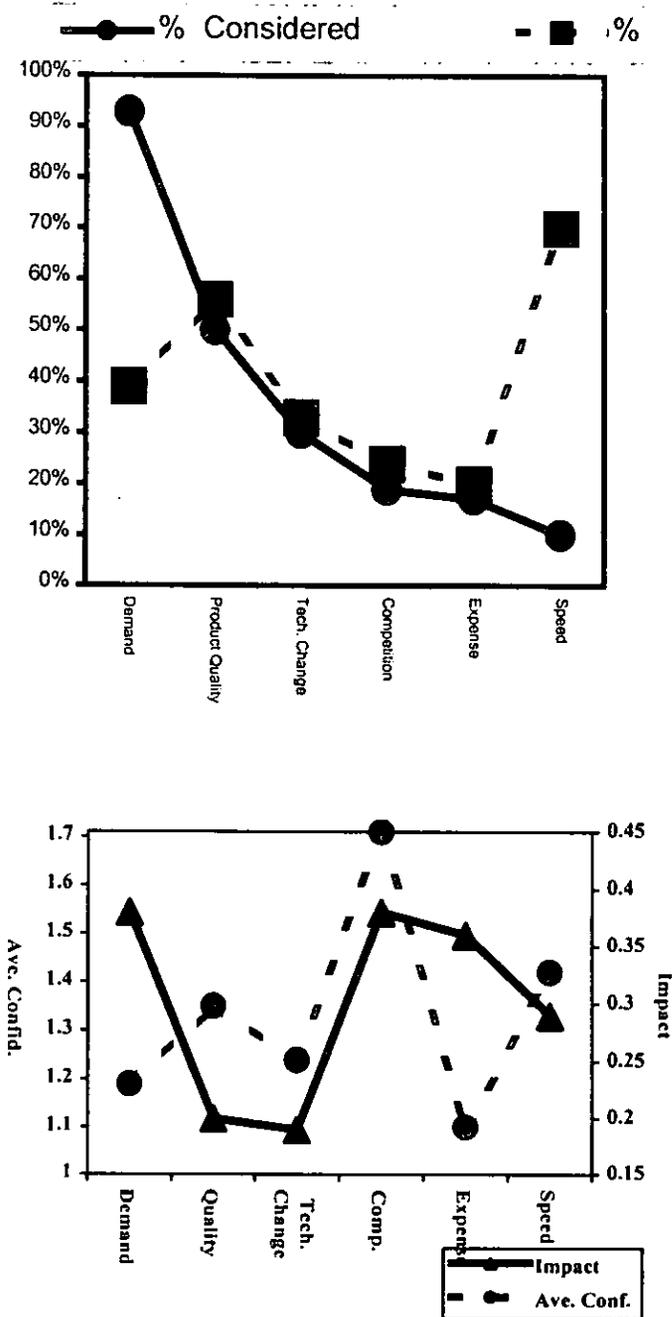
Thus, it is not surprising that many managers were caught off guard when the introduction took longer than expected, and their product's economic performance suffered as a result. As one manager explained, "[The product introduction] is happening ... more slowly than I thought. I thought, [its rapid progress] was a no-brainer really." Another manager explained their overall poor results stating, "The only problem would have been the timing I think. In high technology [industries] it always takes a lot longer than you expected. [We didn't] get it done in the timeframe that we originally estimated."

DISCUSSION AND RECOMMENDATIONS

The quality of a manager's decision process influences the success of his or her actions. For example, managers' pre-introduction consideration of a product's success factor should relate to that factor's achievability. The results of this study, however, indicate that managers may not be making high quality decisions in product introductions. Figure 3 indicates that managers may be making major mistakes in assessing achievability of demand and speed to market. They usually consider demand and have no problems with it, but neglect speed and

usually have problems. Furthermore, Figure 4 suggests that there may be no relationship between the extent to which a success factor's problems impact overall performance, and the amount of confidence managers profess.

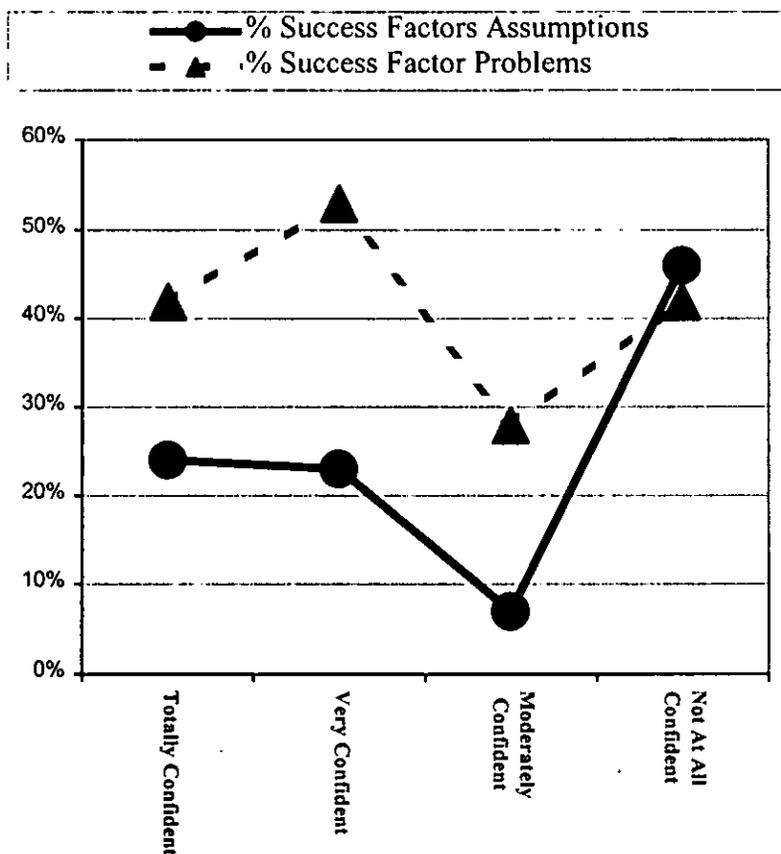
Figure 3: % Considered versus % Problems



Managers' frequent mistakes related to specific success factors raised the question of whether they were making more general errors. An additional analysis was thus performed that compared the aggregate (i.e., without subdividing the data by success factor) percentage of problems that arose when managers expressed different levels of confidence. If managers made accurate assessments, they could be expected to encounter fewer problems when expressing greater confidence.

Figure 5, however, shows this was not the case. Managers encountered problems just as frequently (42%) when they were totally confident as when they were not at all confident. Furthermore, managers encountered difficulties most frequently (53%) when they were very confident, which was almost twice as often as when they were just moderately confident (28%). Figure 5 also indicates the percentage of assumptions managers make at each confidence level. Managers were only moderately confident of achieving success factors 7% of the time, indicating managers display the optimal confidence level with the least frequency! In contrast, managers were over three times more likely to be totally (25%) or very confident (24%), and over six times more likely to be not all confident (45%).

Figure 5: Confidence Levels



It is beyond the scope of this study to determine exactly why managers encountered more or fewer problems at a given confidence level. However, the percentage of problems managers encounter at each confidence level probably depends upon two aspects: the extent to which

the inherent product characteristics hinder success factor achievement, and the extent to which the managers' overconfidence decreases their flexibility to adapt to an unfolding reality. Table 3 provides one possible explanation of these results. Specifically it demonstrates that because the manager is only moderately confident, he or she may remain flexible enough to adapt to changing circumstances. As one manager who was moderately confident of achieving demand explained, "[My] entire [product] strategy is built around being flexible and adaptable. My responsibility is to ... be very opportunistic as we move along. When we take [the product] to market what will happen is clients will tell us, 'That's nice, but I need it to do this,' and we can make the modification necessary." This anecdotal evidence is supported by several scholarly works. Lei, Hitt and Bettis (1996) for example asserted that a product introduction's success depends upon experimentation. Similarly, Krabuanrat & Phelps (1998) argue that decision processes in dynamic environments, as found in technology industries, must facilitate learning and adaptation.

Table 3: Level of Confidence and % Problems

Level of confidence	Do inherent product characteristics make SF achievement difficult?	Is manager likely to be flexible?	% of problems
Totally Confident	No	No	Average % problems (42%)
Very Confident	Somewhat	No	Highest % problems (53%)
Moderately Confident	Somewhat	Yes	Lowest % problems (28%)
Not Confident	Yes	Yes	Average % problems (42%)

Why do very confident managers encounter so many more problems? Possibly their product's characteristics may not make success factor achievement any more likely than the product characteristics of their moderately confident counterparts. Furthermore, very confident managers' certainty may lead to inflexibility. Thus, it seems that the attitude expressed by the following 'very confident' manager may ultimately lead to ruin. He stated, "You're talking about an entrepreneur. Sometimes we don't have our heads in the reality cloud at all. So from just a personal standpoint, I was very confident like everything that we have to do, if we do decide to do it, whether it's realistic or not, we have to be confident." Yet, some researchers profess that overconfidence hurts product performance because it leads managers to act on faulty information (e.g., Sykes & Dunham, 1995). Specifically, they argue that overconfidence causes managers to start down the wrong path (Barnes, 1984), ignore contingency planning (Mahajan, 1992), and fail to monitor their assumptions (Sykes & Dunham, 1995). Such inflexibility in dynamic markets could be devastating.

As a caution to this sentiment, collectively, Figure 5 may suggest that managers need to stay flexible even when they are totally confident or very confident, question whether they are being too optimistic when they are very confident, and avoid situations where they are not confident at all. Given this tendency toward inflexibility, managers should try to remain flexible, even when confidence levels are high. In cases where maintaining cognitive flexibility is difficult, those managers should develop systematic checks and balances that will encourage system-wide flexibility. In addition to these general recommendations, the paper's findings also indicate that managers need to take deliberate steps regarding certain success factors. These recommendations are summarized in Table 4.

Table 4: Recommendations for Management

Success Factor	Recommendation
Demand (Sub-factor – Product Features)	Be wary of drawing conclusions about the product's features or benefits features from small samples. Emphasize quality in marketing efforts.
Demand (Sub-factor – Marketing)	
Product Quality	Proactively plan for delays based on product quality.
Technological Change and Competition	Develop and actively engage in a systematic competitive intelligence process
Speed	1. Consider the up-front time spent planning as a valuable investment that will yield time saving dividends later. 2. Speed is an important success factor that merits careful attention and further analysis.
General Recommendation: Remain Flexible	
<p>Very confident managers' certainty may lead to inflexibility. As a result, managers should seek to remain flexible, even when confidence levels are high. Avoid basing decisions on small samples. Use external advisors. Utilize dialectical inquiry or devil's advocacy. Imagine situations where assumptions underlying decisions don't hold.</p>	

More specifically, managers may need to adjust their actions as they relate to two sub-categories within the demand success factor. Those considering customer preferences for their new product's features displayed above average confidence, but often ran into demand problems. This finding reinforces researchers' concern that managers often fall in love with their own products, only hear what they want to hear, and rely on their gut instinct or feedback from only one or two customers rather than on careful analysis (Huber & Power, 1985; Simon, Houghton & Aquino, 2000). For example, one manager in the sample justified his extreme confidence that the market would appreciate his product's ease of use by explaining, "The one customer that we did visit, found our [product] to be extremely easy to use." This illustrates why managers should be wary of drawing conclusions about their product's features or benefits from small samples.

Interestingly, the opposite pattern arose for managers who emphasized the importance of the market accepting the price they charged for their product, even when the market was not price sensitive. The low confidence level of the manager who stated, "Everyone is cost conscious in this day and age," mirrored the statements and attitudes of others. This misplaced confidence in the marketability of certain product features and over emphasis on price, is especially alarming for smaller firms, such as those in this sample. These firms often pursue focus strategies, and focus strategies are most effective when managers emphasize specialty, rather than low cost, products (McDougall, Covin, Robinson & Herron, 1994). Thus, managers should emphasize quality when they position their products in the marketplace as opposed to price.

A pernicious pattern became apparent regarding the product quality success factor. While many managers recognized the importance of product quality to their introduction's success,

most of them were "very" or "totally" confident that their company could provide a quality product. Yet, products encountered problems related to "bugs" and reliability, more frequently than nearly any other success factor. This suggests that managers may need to either re-evaluate their company's capabilities or re-assess the difficulty in developing quality high technology products. Even with the best-designed products, quality issues can still be pervasive resulting in quality-related delays. Thus, when introducing new products, managers should plan for these delays as a part of the new product introduction cycle.

The destructive impact that competition can have on overall product performance suggests that managers may need to consider competition more carefully when introducing new products. Surprisingly, while demand and competition have the same impact on product performance, almost five times as many managers considered the former as opposed to the latter. Further, managers expressed greater confidence in their ability to handle the competition than they expressed regarding any other success factor. Thus, it is not surprising that other studies found new product failures to be due to firmly entrenched competitors and managers' underestimating these existing firms' reactions (Zajac & Bazerman, 1991).

Thus, before introducing a product, the company should build a competitive intelligence system to methodically assess its competitive environment (in particular its competition), how this competition will probably react and their relevant strengths and weaknesses (Prescott & Smith, 1987). Although such an assessment may be costly relative to the size of a smaller firm's budget, the strong impact of competition on performance suggests that managers may find it more expensive not to gather this information (Prescott & Miree, 1998). Finally, by being creative and innovative in their intelligence gathering efforts, small company managers can radically reduce their costs.

Of all the results this study generated, the ones relating to speed may have the greatest managerial implications. Although the fewest number of managers (only 1 in 10) initially considered speed to market, almost 70% of the products did not proceed in a timely fashion, a far higher percentage than any other success factor! Furthermore, the managers were more confident that they would not encounter problems relating to speed than problems related to almost any other success factor.

Fortunately for managers, a plethora of research exists that provides direction in decreasing product development time (Cooper & Kleinschmidt, 1994). For example, managers should use a cross-functional project team led by a strong product champion. Similarly, one ironic finding is that teams spending more time and effort on up-front homework, such as performing initial product screening, and detailed financial analysis, actually saved time later. Thus, managers should consider the planning time spent up-front a valuable investment that will yield time saving dividends in the future.

Of course recognizing the importance of speed is a prerequisite condition to taking these steps. In this study, the 10% of managers who did consider speed only encountered speed-related problems 40% of time, as compared to the other managers who encountered these problems 73% of time. Managers should recognize speed is an important success factor that merits further analysis and careful attention.

In general, there are several specific steps to avoid becoming overconfident and to stay flexible. First, they should avoid basing decision upon the opinions of just a few people. They should also rely more on external advisors (Lowry & Chapman, 2000). They should, also modify group decision-making processes (Russo & Schoemaker, 1992) such as devil's advocacy or dialectical inquiry (Schweiger, Sanberg & Ragan, 1986). Finally, it may also

prove effective to list reasons for and against reaching a particular judgment and imagine scenarios where one's assumptions don't hold (Keren, 1991).

LIMITATIONS AND FUTURE RESEARCH SUGGESTIONS

The reader should be aware that the demands placed on the study's respondents, such as being in a small company that had just introduced a new product and providing data twice during a year and a half period, limited the study's sample size. Given this study's exploratory nature, the multiple calls to conduct longitudinal research linking managerial cognition to firm actions and performance (e.g., Wiseman & Catanach, 1997), and the difficulty of this task, the tradeoff is reasonable. However, future research should strive to include larger samples. It would also be interesting to consider firms in other industry sectors. This line of inquiry could be extended by considering underlying dynamics, especially flexibility and confidence. Other success factors, other small firm actions and other confidence-mitigating factors could also be examined.

In summary, while it would be ideal for managers to consider and reach accurate assessments about every factor that might even be potentially important to a new product's success, there are limits to a manager's time and mental capabilities. This study, therefore, sought to focus the manager's attention by uncovering some of the more common and important decision errors managers may be making in new product introductions.

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APPENDIX A

Interview and Content Analysis Procedure

Development and Use of Interview Protocols

Semi-structured interviews were relied upon to collect data on the success factors managers identified and their level of confidence in each success factor. To increase the validity and the reliability of the interview process, the interview protocol was pre-tested with eight product introduction or industry experts (including two directors of risk assessment centers), an academic specializing in the computer industry, and six computer company executives who were not included in the final sample. Based on the pre-test feedback, the interviewing protocol was refined to assure that the questions, and the way they were asked, were clear, relevant, not leading, and not value-laden.

After finalizing the interview protocols, the lead author spent four hours training three MBA students, who conducted most of the interviews. During the training, the interviewers were taught to probe for more detail without leading the interviewee, to clarify interview questions, to distinguish between complete and incomplete answers, and to provide the interviewee with specific instructions prior to starting an interview. Covering these issues increased the reliability of the study by ensuring that the interviewers acted in a similar manner. It also increased the validity of the interviewees' responses because the interviewer could clarify misinterpretations and elicit complete answers without coloring a response. Finally, to assure a standardized process, the lead author accompanied each student on his or her first five interviews, after which the interviewers proceeded independently with the remaining interviews. The interviews were conducted in the manager's office and lasted, on average, 30 minutes. Interviews were taped and later transcribed, thereby eliminating any inaccuracy that might have taken place due to faulty memory or incomplete note taking.

To guard against potential bias from the use of retrospective reports, Huber and Power's (1985) recommendations were followed. First, interviews were conducted as close as possible to the time the product introduction decision was made. Second, interviews were limited to the most knowledgeable individuals, namely the one or two managers most involved in each decision. Third, the participants were motivated to provide valid information by a confidentiality guarantee and by an explanation of how the study's result might be useful to them. Rapport was built with the executives through office visits and with unexpected gifts, (two free movie tickets). Lastly, the decisions' importance suggests that the executives' recollections were accurate.

Content Analysis Procedure

Interview responses were then content analyzed to determine which success factors managers considered. Content analysis is a valid way to uncover and measure underlying decision processes and cognitions because the language an individual uses reflects his or her cognitions (Winograd, 1983). Studies with research questions and constructs similar to this one, have successfully utilized content analysis (Dougherty, 1990; Haley & Stumpf, 1989). To develop reliable and valid scores, student coders were not used because their inexperience might lessen their ability to make fine distinctions (Morris, 1994). Instead, it was deemed more appropriate that the two lead researchers conduct the content analysis, given their areas of expertise (both have Ph.D.s in Management and specialize in decision making and product introduction research). They reviewed the relevant literature and trained for 50 hours by reading about content analysis, practicing coding, and receiving coding performance feedback.

The four-step interview coding procedure recommended by Morris (1994) was followed. First, the type of text unit to be analyzed was determined, where text units could be individual words, whole sentences or paragraphs. Using smaller units increases the reliability of coding, but may cause coders to misinterpret information by ignoring context. Individual sentences, or occasionally strings of sentences, contained discrete ideas, and provided the ideal trade off became the unit of analysis. Within the transcripts, all the text units that indicated which success factor the manager considered were therefore identified.

Second, the interview text units were reviewed to develop a coding taxonomy (e.g., did managers consider whether the product could generate sufficient sales). Certain themes emerged consistently from the interview text units from which we generated a preliminary list of the success factor categories. This list was elaborated and refined over several months by discussing randomly selected interview notes that were not included in the final sample. The discussions focused on issues such as which themes should contain particular kinds of interview information, why certain classification decisions should be made, and which codes should be assigned. Extensive definitions were written up, both inclusive and exclusive, for each emerging category. The definitions became the basis for the initial coding rules.

Third, a hold out sample was used to practice coding. Discrepancies were reconciled by elaborating on the reasoning. This process increased both the reliability and validity of the scoring because it enabled greater mutual understanding of the codes. The final coding taxonomy proved to be both comprehensive and reliably coded. Finally, each interview was coded independently, based on the coding rules, to place each text unit that described a success factor into a success factor category. The inter-rater reliability was 98%.

After finishing the coding to determine which success factors the managers considered, an identical content analysis procedure was followed to determine how confident managers were that they could achieve that success factor. The inter-rater reliability was 97%.

APPENDIX B

Measures

Achieving Success Factors

Achievement of success factors was measured using 7-point Likert-type scales that ranged from "strongly disagree" to "strongly agree"

Demand ($\alpha = .74$)

It was harder than anticipated to convince people to purchase our product.
A lack of demand hindered our product sales.

Product quality ($\alpha = .77$)

The product was bug-free. *
The product introduction had technical or R&D problems.

Technological change ($\alpha = .80$)

The product introduction was hindered because of external technological changes.
Technological change made our introduction outdated sooner than we expected.

Competition ($\alpha = .86$)

Competition had a major detrimental effect upon our product introduction.
The actions of competitors hampered our product sales.

Expense ($\alpha = .81$)

The product introduction was much more expensive than anticipated.
The product introduction led to major cash flow problems.

Speed ($\alpha = .70$)

The product introduction proceeded much slower than anticipated. *
 The product introduction stayed on (or ahead) of schedule.
 We moved quickly when introducing the product.

Overall Product Performance

Product performance was measured using the bipolar scale below ($\alpha = .84$).

The product ...

has not led to a major increase in overall company financial performance.	1	2	3	4	5	6	7	has led to a major increase in overall company financial performance.
fell far below profit goals.	1	2	3	4	5	6	7	far exceeded profit goals.

- Items reverse coded

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