HOW DATA INTEGRATION SYSTEMS AFFECT STRATEGIC DECISION MAKING IN SMALL FIRMS

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ABSTRACT

Small companies increasingly use computer information systems to gather data to improve decision correctness. Therefore, it is important to determine if a type of information system is effective. We focused on systems which integrate data from multiple sources. Although unquestionably aiding large firm managers, integrated data systems may not help smaller firms. The managers may have better knowledge across functional areas. We, therefore, explore, in a small company context, the relationship among data integration systems, information availability and strategic decision correctness.

We collected data from the managing partners of 97 small accounting firms, and found that data integration systems increased information availability, which, in turn, increased the correctness of decisions. The control variables, aligning systems with strategy and technological strength enhanced information availability, but surprisingly, greater investment in systems actually decreased it. Collectively, these findings suggest the type of system is more important than the amount invested.

Keywords: data integration systems, information availability, strategic decisions

INTRODUCTION

As information systems have evolved and decreased in cost they have become more readily available to small companies (Cragg & Zinatelli, 1995). The rate of adoption of computerized information systems by small firms has grown rapidly (Delvecchio & Anselmi, 2006). Similarly, the types of available software packages have also grown. Yet almost all research on types of computer information systems has been conducted on large firms, not small (Montazemi, 2006; Ein-Dor & Segev, 1978).

These findings may not apply to smaller companies because they face unique challenges and operate quite differently

(Montazemi, 2006; Ein-Dor & Segev, 1978). Small firms also often possess less knowledge of, and skills regarding, information systems (Foong, 1999; Igbaria, Zinatelli & Cavaye, 1998; Premkumar and Robers, 1999). Levenburg, Schwarz and Motwani's (2005) finding that micro, small and medium size firms use the internet differently from each other also suggest a firm's size may influence how it benefits from technology.

Furthermore, a recent paper by Delvecchio and Anselmi (2006) stressed that it is especially important for managers of small firms to choose the right type of information system because the investment often represents a significant portion of the firm's scarce resources. Thus it may be important to examine whether specific types of information systems are advantageous to small firms, and what specific benefit they may provide.

One potential benefit of information systems is that they may lead to making more correct strategic decisions. Correct strategic decisions are essential in business. By definition, they enhance firm performance and have substantial ramifications for the future (Eisenhardt, 1989). In particular, making correct strategic decisions may require that managers can easily obtain the concrete information they deem relevant to the decision, which we refer to as information availability. Naturally, a firm may look to a computer-based information system to meet its information availability needs.

Data integration systems may enhance information availability. Specifically, a data integration system is defined as a system that facilitates combining

information from multiple sources into a unified view (March & Hevner, 2007). The systems may also facilitate transaction processing and data collection within firms. For example, there is one major type of data integration systems mechanism, known as an enterprise resource planning system. This system houses all data in a single, easily accessible database, often coordinating data use across business functions and thereby generating real time data from many functional areas (Ranganathan & Brown, 2006).

An abundance of research on the data integration systems of large firms has indicated they increase performance through their ability to improve information availability and strategic decision-making (Law & Ngai, 2007; Hendricks, Singhal & Stratman, 2007). This research, however, may not be applicable to small companies. In larger firms, data integration systems may be needed to overcome the fact that employees have highly specialized tasks which constrains the flow of information among different areas. In contrast, small companies may not have a similar need. Seminal works (e.g., Blau & Schoenherr, 1971; Galbraith, 1977) indicate that small organizations have structures that are more informal and contain employees with less specialized roles. These characteristics may facilitate communication, making data integration systems less relevant.

This assertion, however, is far from a given. Research (e.g., Simon & Houghton, 2003) indicates the cognitive capacity of managers of small firms is more taxed than the cognitive capacity of managers in large firms because the former face more uncertain environments. Thus, these managers,

rather than their larger firm counterparts, may have a greater need for integrated data systems to help them cope by "automatically" providing real time information from diverse areas.

Resolving this issue is crucial for at least three reasons. First, researchers need to identify factors that make information more available to make correct strategic decisions, given its importance to long-term company performance (Hofer & Schendel, 1978). Second, the vast majority of small companies are overwhelmingly purchasing prepackaged computer applications which handle only one function in isolation. This common practice may be a major mistake if we find that integrated data systems enhance information availability and increase the correctness of strategic decision-making. Finally, even though computer information system costs have decreased, they still may represent a large proportion of a small company's resources. Thus, the investments and risks for small companies are quite large. Given these points and the paucity of research exploring computer information systems in small firms, we empirically explore the following two research questions:

RQ₁ *What are the effects of integration on information availability in small companies?*

RQ₂ *What are the effects of information availability on strategic decision correctness in small companies?*

The following section describes the study's theoretical background and presents the hypotheses. The research methods are then detailed and the empirical tests of the hypothesized relationships are reported. Finally, the article discusses the study's findings and implications.

INTEGRATION, AVAILABILITY AND STRATEGIC DECISION-MAKING

As noted, there has been substantial research on factors that may influence the successful implementation of information systems and on the relationship among different types of information systems and company performance (Montazemi, 2006; Ein-Dor & Segev, 1978). These factors include task interdependence, employee training, technical complexity, and strategic alignment (e.g. Levy, Powell & Yetton, 2001; Hendricks et. al., 2007; Law & Ngai, 2007; Sharma & Yetton, 2007). To the best of our knowledge, however, no study analyzed the effects of data integration systems and information availability on strategic decision correctness as it relates to small companies. To explore this issue, we will first discuss the expected relationship between data integration systems and information availability, and then explore whether or not one should expect the relationship to hold true in small companies. Next, we will talk about the possible connection between information availability and making correct strategic decisions, followed again by an exploration of whether the discussion would apply in a small firm context.

Information availability, that is, being able to easily obtain concrete information deemed relevant to a strategic decision, can be achieved by focusing on three main components: time, efficiency and scope. An important feature of data integration

systems is that they can provide data in real time. Real time data collection occurs when firms gather data on a continuous basis and can easily access it. This is in contrast to right-time data, which involves compiling data as it is needed to make a specific decision. Some researchers argue that human beings make snap decisions because they are impatient and avoid using data if it involves extensive effort (e.g., Todd, 2005). Thus, using a system that collects real time data will lead to information that is more current, accurate, and detailed when making strategic decisions (Eisenhardt, 1989). It follows that the ability of data integration systems to easily generate relevant data increases the likelihood it will be available for decision making. In other words, it increases data availability.

Another characteristic of data integration systems, such as ERPs, is that they often store data in a centralized database, thereby providing efficient access to data related to many different firm operations. Practitioners and scholars alike agree that this closely represents the ideal model of an information system, whereby software applications in different business areas access a sole database. This type of system provides for the least amount of data duplication and increases data storage efficiency. In contrast, without such centralized storage, a firm would need to manually compile any data from across areas, a process they may forgo. Thus data integration systems can more efficiently store and retrieve data, suggesting that the data would be more available when needed, because entering and recalling it takes less effort.

Data integration systems also influence the scope of data. More specifically,

such a system collects and combines data from different functional areas. Today's businesses are divided into any number of functions including human resources, accounting, marketing, operations, and finance. As decisions become more strategic, they often involve more functional areas (Hofer & Schendel, 1978). It logically follows that the inclusion of data from different functional areas also leads to greater data availability.

Thus, it appears that the ability of data integration systems to efficiently collect data in real time from different functional areas will increase information availability in general. The question remains though, will they significantly increase information availability in smaller firms? One could argue that managers in small firms are less specialized. This, in turn, could provide them with increased real time information from more functional areas, decreasing the need for an integrated data system.

It is likely, however, that this is not the case. Many factors may decrease communication within small companies, making data integration systems more important. The constant growth present within many small companies can strain communications within the firm, thereby affecting information availability (Street & Meister, 2004). Moreover, the information possessed by employees within the firm may not align with the particular strategic decisions that they must make at any given time. Delvecchio and Anselmi (2006), argued, for example, that even sales people in small companies needed, but often did not have, information from several different areas. This might suggest that integrated data systems could provide

the information even small firm personnel might need. Furthermore, smaller firms may especially benefit from integrated data systems, given that they can utilize quick access to information, which could allow them to outmaneuver larger competitors (Delvecchio & Anselmi, 2006). They therefore may have a greater need for assistance from data integration systems to increase their information availability. Data integration systems in small companies could possibly facilitate the use of information across firm functions, as well as introduce the capability of real time data presentation. We therefore propose the following hypothesis:

H1: *In small firms, use of data integration systems is positively associated with information availability.*

There is substantial evidence that information availability should improve strategic decision-making. It has long been a cornerstone of business strategy that rigorous analysis of a company's data is crucial to decision-making (Hofer & Schendel, 1978). Extending this belief, Eisenhardt (1989) argues that real time information, such as concrete internal information generated from actual operations, leads to decisions that are quicker and more correct. Furthermore, in recent years, there has been a proliferation of large companies, such as E & J Gallo Winery, John Deere and Bank of America, which collect and use massive amounts of operating data to increase decision-making correctness and company performance. Arguably, the source of Capital One, Harrah's and Netflix's entire competitive advantage stems from their analysis of information to make more correct decisions.

Some might argue, however, that obtaining concrete data may be less important to making correct decisions for managers of small firms. For example, one could assert that small firm managers can operate more by the seat of their pants. They may have such a deep understanding of their companies that they do not need more objective information.

We do not believe these assertions are borne out by the facts. Specifically, small firm managers are more prone than large firm managers to exhibit cognitive biases. They may have a "hunch" about objective information, and believe they are correct, but in fact, are frequently mistaken (Forbes, 2005). In more general terms, to a greater degree than managers of larger firms, managers of small firms often do not have the cognitive capacity to deal with their decision environments and make poor choices as a result (Simon & Houghton, 2003; Simon, Miree, Setzkorn, & Figon, 2003). Also, and just as important, they have fewer slack resources, so the cost of these errors can be devastating. It then logically follows:

H2: *In small firms, information availability leads to more correct decisions.*

Methods

We chose to examine public accounting firms, because other firms often turn to them for guidance regarding information system and computer technology selection (Nadel, 1988). Since accounting firms are often the first stop for information system consulting and advice, the information system knowledge and practices that they

themselves employ and understand becomes increasingly important.

Specifically, we targeted public accounting firms across the United States with fewer than 100 employees. One hundred employees is generally considered the cutoff point for small enterprises (Karagozoglu & Lindell, 2004; Robey & Sales, 1994; Simon & Houghton, 2003). Each firm's managing partner responded to the questionnaire, given that he oversees day-to-day operations, and is most often the largest shareholder in the firm. Also, the managing partner generally has the strongest influence on the firm's decision-making.

We obtained a list of 1400 U.S. based accounting firms from www.cpafirms.com, including e-mail addresses and the names of the managing partners. We conducted two mass e-mailings to the managing partners of all the firms. One hundred thirty four responded, providing a 10% response. Those firms with greater than 100 employees were removed from the results, leaving 97 respondents.

Measures

Appendix A details the specific items we used in our survey. We captured <u>data integration systems</u> by measuring the extent to which data collected once was accessed by multiple functional areas. The functional areas were chosen based on an adaptation of Chang's (2006) research on data integration systems. We employed four items utilizing a five point Likert scale to capture the construct. We then averaged the manager's response to the four items (α=.83).

<u>Information availability</u> was measured using five questions. Survey respondents indicated the level of information available for decision-making in general, and in each of the four functional areas. For each question, a five point Likert scale ranged from "rarely having information available" to "almost always having information available." We used the average of the manager's responses (α=.78).

To measure the dependent variable, <u>strategic decision correctness</u>, we asked respondents to indicate the extent to which they felt that the firm made the correct strategic decisions. This too was measured on a five point Likert scale.

Controls

This study utilized several control variables. We used a single item measure to capture <u>technology investment</u>, that is, the firm's expenditure in information technology as a proportion of total firm expenses. This variable should influence information availability and the correctness of strategic decisions. We also used single items to capture the firm's level of <u>technology training</u> and <u>technological strength</u>, as both could also have an influence (e.g., Brostrom, Olfman & Sein, 1990; Compeau, Olfman, Sein & Webster, 1995). In addition, we controlled for <u>strategic IS planning</u>, that is, the extent to which the firm was strategic in planning its information systems implementation, using two items (α=.86). Strategic IS planning could affect both information availability and strategic decision correctness.

Also since executives in larger firms may have less access to all the information flowing within the company, we control for <u>firm size</u>, using the log of the number

of employees (Shrader & Simon, 1997). Finally, we measured <u>job specialization</u> using a single item measure as it also might affect the amount of information executives have available.

Analysis

This study used regression to test the hypotheses. Specifically, to examine H1, we regressed data integration systems on information availability after controlling for the effects of technology investment, technology training, technological strength, strategic IS planning, firm size and job specialization. To test H2, we ran a separate regression. First, we analyzed the effects of technology investment, technology training, technological strength, and strategic IS planning on strategic decision correctness. Next, we entered the independent variable, information availability.

Results

Table 1 presents the means, standard deviations, and correlations among the study variables. The values in the tables suggest that multicollinearity is not a problem, with all correlations lower than .5 (McNamara & Bromiley, 1999). Table 2 contains the results of the two regression models used to test the hypotheses. Model 1 tests Hypothesis 1 by first regressing the control variables and then the independent variable, data integration systems, on the dependent variable, information availability. The results of Model 1 indicate the overall equation is significant (adj. R^2=.20, p<.001). Furthermore, there is a significant positive relationship between data integration systems and information availability ($ß$=.31, p=.001), supporting Hypothesis 1. Information

availability, as expected, was also positively associated with the control variables strategic IS planning ($ß$=.25, p=.01) and technological strength ($ß$=.19, p<.05). Surprisingly, in contrast, technology investment actually decreased information availability, although the relationship was only marginally significant ($ß$=-.13, p<.10).

Model 2 regresses the control variables and the independent variable, information availability, on strategic decision correctness. The overall equation was significant (adj. R^2=.10, p<.01). Furthermore, as Hypothesis 2 argued, information availability increased strategic decision correctness ($ß$ =.22, p<.05). While technological strength was marginally significant ($ß$=.16, p<.10), the remaining controls had no effect on the dependent variable, strategic decision correctness.

DISCUSSION

Research has indicated that computerized information systems may improve information processing, planning, control, and even lead to competitive advantages (Cragg & King, 1993; Chau, 1995; Levy et. al., 2001; Harrison, Mykytyn & Riemenshneider, 1997). Yet little of this research has examined small firms, which are purchasing systems at an increasing rate, even though these systems may represent significant proportions of a firm's budgets and can be difficult to implement.

This research indicates, even for small firms, that data integration systems are associated with greater information availability. In turn, greater information availability increases strategic decision correctness. These relationships suggest

Table 1: Means, Standard Deviations, and Correlations

	Variables	Mean	Std. Dev.	1	2	3	4	5	6	7	8
	Strategic Decision Correctness	3.73	0.92								
1											
2	Availability Information Data Integration	3.96	0.55	0.31***							
3	Strategic IS Systems	2.28	0.97	0.11	0.35^^^						
4	Planning Technology	3.54	0.96	0.26**	36***	0.29**					
5	Investment Technological	1.91	0.96	0.01	-0.08	0.14†	0.07				
6	Strength	3.89	0.72	0.26**	0.24**	0.13	0.28**	0.06			
7	Firm Size Job	1.05	0.45	-0.03	-0.09	0.17|	0.05	0.03	0.04		
8	Specialization Technology	2.54	1.20	0.11	0.02	0.21*	0.22*	0.18*	0.16	0.49***	
9	Training	2.97	1.03	0.194*	0.13	0.24**	0.40***	0.26**	0.48***	0.27*	0.40***

†$p < 0.1$, *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$, All tests are one tailed.
Note: N=97.

Table 2: Results of Regressions

	Dependent Variable	
	Model 1	Model 2
Independent Variables/Controls	Information Availability	Strategic Decision Correctness
Info Availability		0.22*
Data Integration Systems	0.31***	
Strategic IS Planning	0.25**	0.12
Technology Investment	-0.13†	-0.01†
Technological Strength	0.19*	0.16
Firm Size	-0.05	
Job Specialization	-0.14	
Technology Training	-0.45	0.05
F Statistic	4.34***	3.10*
R^2	0.25	0.15
Adjusted R^2	0.20	0.10
N=97 All parameter coefficients are standardized estimates		
† $p<.10$, * $p<.05$, ** $p<.01$, *** $p<.001$		
All tests are one tailed.		

that although small firms may have more informal structures and less specialized employees, they still may not communicate enough among functional areas to aid in their strategic decision making without data integration systems to increase information availability.

This conclusion is consistent with, and complements, two previous studies of small businesses. Delvecchio and Anselmi's (2006) study found that employees in small firms often do not have adequate information available, while Simon and colleagues (2003) determined that managers of SMEs often make major decision errors due to a lack of cognitive capacity. Our research findings may help managers overcome these limitations. They imply that

integrated data systems' ability to produce readily available, concrete, real-time, internal firm information that is shared by multiple functions can help generate more information and greater strategic decision correctness. It could be that managers using these systems gather internal data so efficiently that they have more free time to gather and blend data external to the firm which they use to make more correct strategic decisions. Clearly though, future studies should strive to identify the precise dynamics that explain how integrated data systems aid firms in strategic decision making.

While many findings about technology may be contingent upon firm size (Levenburg et al., 2005), it appears that findings about the usefulness of integrated data systems may be robust. We further explored the robustness of relationships between integrated data systems and information availability, as well as between information availability and correctness of strategic decision making by limiting the sample to firms with less than 50 employees. Using this more stringent cut-off, the overall regression equation testing H1 was still significant (adj. R^2=.25, p<.001) as was the specific relationship between data integration and information availability (ß=.35, p<.001). Similarly, our test of H2 still yielded a significant regression (adj. R^2=.15, p<.01) and a significant association between information availability and strategic decision correctness (ß=.27 p<.01). Given these results, it seems reasonable to conclude that the study's results were not sensitive to the specific size of firms examined.

Regarding the control variables, neither job specialization nor firm size affected information availability. Possibly the lack of relationships may stem from a lack of enough variance in specialization and size because all the firms in the sample were relatively small. In contrast, strategic IS planning may help small firms get the most out of their systems. Our findings complemented that of Olsen and Saetre (2007) who determined that strategic IS planning was critical to niche companies when implementing ERPs, regardless of their size. Likewise, our findings may indicate that the unique operations of small companies, regardless of whether they are serving a niche, may gain from IS planning. Interestingly, though, the strategic alignment of information systems does not directly lead to correct strategic decisions, but instead has an indirect effect through its influence on information availability.

Like strategic IS planning, the technological strength of members of the firm may also aid in the decision making process. Specifically, we found it was significantly related to information availability and marginally significantly related to strategic decision correctness. It should be noted that these findings seem to parallel those of Park, Suh, and Yang's (2007) research on large firms' use of integrated data systems. However, unlike Park and colleagues (2007), one of our findings was only marginally significant. Further research might want to investigate whether differences in size of firms, differences in measures used, or another factor generated the divergence in the magnitude of significance between the two studies.

Unexpectedly, the control variable, greater investment in information technology, actually marginally decreases information availability, and was not related to making more correct

strategic decisions. This could occur if greater expenditures generated more data indiscriminately, making it difficult to convert into available information useful for strategic decision making. This is consistent with Todd (2005) and Olsen and Saetre's (2007) assertion that firms with more data may not make more correct decisions than firms with less, unless it is the right information. The technological strength of a firm was marginally significant to the degree of information availability. This confirmed Park, Suh, and Yang's (2007) finding which indicated that an individual user's understanding of how information systems work, in their case an ERP system, does affect the information systems performance.

LIMITATIONS AND FUTURE RESEARCH

This study was subject to a number of limitations. First, the research examined only one industry, albeit an important one. Future studies may want to analyze the effects of integration in multiple industries including those that are product-oriented. Another limitation stems from the study's focus on primarily one aspect of computer information systems, data integration systems and its effect on the correctness of strategic decisions. Future research needs to examine other aspects of systems.

The subjective nature of our measure of strategic decision correctness may also limit the authority of these findings and may introduce concerns about common method biases. It should be noted, however, that consistent with the suggestions of scholars (Cooper & Artz, 1995; Chandler & Hanks, 1993), we sought responses from the highest

executives in the firms who were most familiar with a decision outcome. It may also be of concern that strategic decision correctness was measured using a single item, even though several researchers (e.g., Bergkvist & Rossiter, 2007; Scarpello & Campbell, 1983) argue that single items sometimes perform as well, or better, than multi-item scales. The complexity of strategic decision correctness, however, might require more than a single question (Loo, 2002). Scholars, therefore, might want to replicate our findings utilizing a multi-item dependent variable.

The reader should also note that an underlying assumption of our study is that roles in smaller firms are less formalized and contained less specialized tasks (Blau & Schoenherr, 1971; Galbraith, 1977). We argued that given these differences, research needs to explore whether small firms would benefit from data integration systems, finding that they did. Conversely, we argued the exponential firm growth that is possible for small companies can inhibit communications and information availability (Street & Meister, 2004). We never directly examined degree of formalization or growth, however, omissions future research should avoid.

Although studies with a response rate of about 10 percent are not unusual (Lussier, Sonfield, Corman & McKinney, 2001), and often published in very well respected journals (e.g., McDougall & Oviatt, 1996, McDougall & Robinson, 1990; Shrader & Simon, 1997), a higher response rate is more desirable. To confirm that our sample was representative, we tested for non-response bias by comparing the survey answers of early respondents to those of later respondents, who are often used as

surrogates for non-respondents (Nwachukwv, Vitell, Gilbert & Barnes 1997). There was no difference at the 10% level of significance on any of the nine variables used in the study. Nevertheless, future research should seek higher responses.

Future research may also want to investigate relationships between information availability and the cognitive capacities of small firm management as mentioned in our research. One suggestion would be the analysis of the result of utilizing information systems that integrate across small firm functions as a method of increasing cognitive capacity of management for the search of external information for strategic decision making by removing routine internal information processing and analysis from their responsibilities.

Managerial Implication

In Delvecchio and Anselmi (2006) study of smaller companies, they argued that, "Given the investments associated with the various forms of software and hardware, firms need to know which forms will make a difference." This study helps fill this need and has several implications for managers. First, they should look into obtaining systems that involve data integration systems. Second, they should spend upfront time considering strategic issues related to these systems. Lastly, if they follow the two suggestions above, they do not necessarily need to invest a greater proportion of their assets in the systems they purchase. In fact, indiscriminate investment in systems may actually be decreasing the amount of usable information they produce. Managers may be facing data overload.

Importantly, most managers appear to be acting in ways that are contrary to this study's findings. Many small companies have turned to packaged computer applications to handle their information needs (Chau, 1995). Packaged software programs are typically purchased off the shelf. Each software package is usually designed to accommodate a specific business function in either a broad range of industries or one specific industry. Small companies usually purchase these applications piece by piece to fit specific needs as they arise, and rarely consider strategic issues (Levy et al., 2001). The resulting piecemeal information system is likely to be a number of applications that do not communicate with each other, or, in other words, are not integrated. Consequently, firms lose the synergistic opportunities available from the integration of data.

Alternatively, even small companies may wish to investigate ERP packages. These packages represent some of the most integrated cross-functional information systems available. The findings of Amrani, Rowe and Maronnat (2006) demonstrated that the part of ERP systems that are already implemented gain additional utility each time a new ERP module is introduced.

Managers often face significant resistance when trying to adopt new systems such as data integration systems. However, one of the keys to overcoming this resistance is helping users perceive that a system is useful and offers benefits (Levenburg et al., 2005). It is, therefore, our hope that this paper's finding about integrated data systems aids in their adoption.

This study also brings to light another practice of managers that may be

erroneous. Chau (1995) found that most small business owners ranked the price of software packages as one of the least important factors in their selection decisions. Given that this study found no relationship between investment and making correct strategic decisions, managers of small firms may want to pay more attention to a system's price.

It is our hope that this paper serves as a starting point to launch other inquiries into this area. Although much is left to be done, this paper nevertheless, establishes possible linkages between data integration systems, information availability and making correct strategic decisions. We hope that our findings stimulate further research into the critical area of the use of computer information systems as it relates to making correct strategic decisions by small businesses.

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APPENDIX A

Measures

Data Integration System: 1=*Do not access* and 7=*Almost all access*

1. To what extent do other business function applications directly access the data captured in your CLIENT RELATIONS and MARKETING Applications?
2. To what extent do other business function applications directly access the data captured in your FINANCIAL Applications?
3. To what extent do other business function applications directly access the data captured in your HUMAN RESOURCE Applications?
4. To what extent do other business function applications directly access the data captured in your CLIENT PLANNING and ENGAGEMENT Applications?

Information Availability: 1=*Almost never available* and 5=*Almost always available*

1. To what extent is the information you need **readily** available for making strategic decisions for your firm?
2. To what extent is the CLIENT RELATIONS and MARKETING information you need **readily** available for making strategic decisions?
3. To what extent is the FINANCIAL information you need **readily** available for making strategic decisions?
4. To what extent is the HUMAN RESOURCE information you need **readily** available for making strategic decisions?

5. To what extent is the CLIENT PLANNING and ENGAGEMENT information you need **readily** available for making strategic decisions?

Strategic Decision Correctness:
1=*Strongly disagree* and 5=*Strongly agree*

1. In hindsight the firm should have changed very few of the important decisions it made.

Technology Investment: : 1=*Strongly disagree* and 5=*Strongly agree*

1. Expenses related to Information Technology comprise what amount of the firm's total expense...

Technology Training: 1=*Strongly disagree* and 5=*Strongly agree*

1. The firm provides extensive training in regards to its technology.

Technological Strength: 1=*Strongly disagree* and 5=*Strongly agree*

1. As a whole, the firm's staff's technical ability is strong.

Strategic IS Planning: 1=*Strongly disagree* and 5=*Strongly agree*

1. Applications were designed/bought and implemented as part of a coordinated, firm level, information system plan.
2. The firm's strategy and mission was considered when designing and implementing the information system applications.