

**BRIDGING TWO SOLITUDES:
AN EXAMINATION OF SHARED UNDERSTANDING BETWEEN
INFORMATION SYSTEMS AND LINE EXECUTIVES**

By

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Submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

Faculty of Graduate Studies
The University of Western Ontario
London, Ontario
December 1998

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0-612-40280-0

ABSTRACT

This dissertation research was undertaken to examine the critical set of information technology (IT) -related issues that senior executives need to have a shared understanding of, for IT to be deployed successfully within their organizations. This examination focused on the executive dyad as the unit of analysis. The sample was drawn from large retail organizations operating in North America.

The specific goals of the research were to:

1. Define the critical set of IT-related issues that senior executives need to have a shared understanding of.
2. Create an instrument capable of reliably and validly assessing IT-related shared understanding at the executive level
3. Conduct a preliminary test of a research model linking shared understanding to antecedent factors and success in deploying IT

The research program consisted of two phases. In Phase 1, eight in-depth case studies were conducted. In total, 33 senior executives were interviewed, and asked to discuss their views on shared understanding of IT issues at the executive level – the specific issues, the factors that create it, and its relationship to success in deploying IT. The findings from the first phase were used to refine a preliminary research model and construct an instrument to measure shared understanding. Both were tested in Phase 2.

Phase 2 was a survey based research approach, with an embedded case-scenario approach for measuring shared understanding. A total of 50 executive level dyads were examined in order to assess the refined research model, and test the shared understanding instrument. Significant outcomes from the research program were:

- Definition of Shared Understanding at the Executive Level – key issues identified; confirmation of four dimensional construct
- Measurement of shared understanding – valid and reliable instrument created; case-scenario approach utilized; support found for modeling congruence as interaction
- Preliminary test of the research model – a strong and positive relationship between shared understanding and success in deploying IT was found; Tolerance for Ambiguity, Locus of Control, Previous Success with IT, and Level of Education found to be predictors of level of shared understanding.

Keywords: shared understanding, case-scenario, retail, executive, case study, congruence.

ACKNOWLEDGEMENTS

I have many people to thank for their important contributions to this dissertation. I will start this long list, by thanking my thesis supervisor, Sid Huff. Whether he was in New Zealand and we were communicating via email, or he was in London, and we were still communicating via email, his ongoing support, timely sense of humour, and critical eye for detail were very much appreciated. Many thanks are due also to the members of my dissertation committee – Chris Higgins and Michael Pearce – who challenged my thinking and provided critical feedback along the way.

I could not have completed the dissertation without much help from several key research assistants who contributed in many different ways at various different stages of the research project. Many thanks are due to Jen Scott and Scott Charlton for their hours at the library digging up information on retail organizations, to Lisa Rodrigues for patiently transcribing many hours of audio tapes on the weekends, and to Maria Karabotsos for helping with the final details. A special thank you is owed to Stephanie Gibson for her crucial role in helping me with the final phase of the research, and for her steady supply of gum.

I could also not have completed this dissertation without the tremendous support from my family. My parents, Bob and Sheila Murray, gave me the courage to embark on Ph.D. studies in the first place. My children, Stephanie

and Patrick, put up with many hours when I sat at the computer working on my “stasis” instead of playing Lego or basketball. And my husband, Peter Richardson, provided love, encouragement, and unbelievable support all along the way. I could not have done this without him.

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CHAPTER 1 – INTRODUCTION

1.1 - The Nature and Importance of the Management Issue

In 1991, for the first time ever, companies spent more money on computing and communications gear than the combined monies spent on industrial, mining, farm, and construction equipment (Pritchett, 1994). Many of these investments were failures, generating little value for either companies or their shareholders. As Peter Keen (1991) notes, when asked to comment on doing business in the 1990s, "competence and comfort in handling information technology will be high on the list of new skills demanded of effective managers" (p. 1). Keen goes on to say that "investments in computers and telecommunications now amount to about half of most large firms' annual capital expenditures. This alone makes it part of top business managers' responsibility" (p. 1).

A recent Harvard Business Review article also discusses this role of senior executives in IT decisions (HBR, Vol. 73, No. 5, 1995). At the heart of this discussion is how involved should executives be in IT investment decisions - is delegation still appropriate? The six experts quoted in this article agreed that:

Today IT plays a role in most aspects of a company's business, from the development of new products to the support of sales and service, from providing market intelligence to supplying tools for decision analysis. For a global company, the ability to take information from multiple systems and make it broadly accessible to managers and employees is critical. Many observers believe that this fact, along with

the increased opportunities for using IT to achieve strategic advantage, requires that executives re-examine what they need to know about this resource to manage it effectively. (p. 161)

In short, there is an imperative for executives to know more about managing information technology.

Jarvenpaa and Ives (1991) studied CEO participation and involvement in achieving success in applying IT. They concluded that CEO support "generally takes the form of involvement rather than active participation. Involvement is, however, an effective means of support: a high degree of such support does, in fact, correlate fairly well with IT progressiveness" (p. 204). This finding suggests that indeed researchers are not likely to find active support for IT from the executive ranks, rather that a more passive form of intellectual support (i.e. understanding the "need to know issues") should be expected and studied.

The question remains, however, exactly just what do executives need to know about IT in order to provide the intellectual support that is necessary for the successful deployment of IT in organizations?

At the same time, there is a small but growing body of evidence that indicates that it is the relationship *between* the IT and business domains, and not either in isolation, that is crucial to success in deploying IT in organizations (see for

example, Feeny *et al.* 1992, Chan 1992, Reich 1992) . As such, executive “need to know” issues need to be considered not in isolation but in the context of the relationship with the IT domain. To date, very little research has been conducted in this area. Several of the key studies, related to both executive level involvement and “need to know” issues, are summarized below.

Feeny, Edwards and Simpson (1992) examined the determinants of a successful relationship between the CEO and CIO. Although their sample size did not allow for conventional statistical analysis, Feeny *et al.* (1992) conclude from the study that "successful relationships seem to be linked to a shared vision of the role of IT as an agent of transformation. The CIO's in these successful relationships may have extensive IT backgrounds, but they are accepted into the top management team and are seen to contribute beyond their functional responsibilities" (p. 435).

Reich (1992), in a study that is central to this particular piece of research, studied the linkage between IS and business domains in the insurance industry. Reich (1992) defined the dependent variable in the study, linkage, as "a high level of mutual understanding between IS and business executives about each other's mission, objectives and plans" (p. ii). Reich's findings indicate that high levels of linkage were present in those business units where there was: 1) **shared**

knowledge between IS and business executives, 2) a successful IT implementation history, 3) **shared** beliefs about the value of IT, and 4) communication between IS and business executives. Reich's (1992) study was an important step forward in determining how one set of "need to know" issues, in this case about mission, objectives and plans, **shared** between IS and business executives is related to the successful application of IT.

Although Reich (1992) did not specifically measure IS success, Earl's (1993) findings in his study of Strategic Information Systems Planning (SISP) suggest that many organizations that exhibit high levels of this type of linkage are still unable to exploit the full potential for IT. "Even where SISP was judged to have been successful, the resultant strategies or plans were not always followed up or fully implemented. Even though clear directions might be set and commitments made to develop new applications, projects often were not initiated and systems development did not proceed" (p. 4).

Lederer and Sethi (1988) have made similar conclusions. Their evidence indicates that often times promised resources were not made available, management was hesitant, technological constraints arose, or in the absence of a clear message from management, organizational resistance emerged. The question is why are the necessary resources not made available, despite an apparent clear understanding of and agreement upon objectives and plans?

This dissertation seeks to build upon and broaden Reich's (1992) concept of linkage in the belief that it is not enough, at the executive level in an organization, to have a shared understanding of IT goals and objectives, but that it is also critical to have shared understanding around a further set of issues that are as yet undefined and unexplored.

Specifically, this study will endeavour to identify the key issues that are critical to have shared understanding about. It will probe whether shared understanding around a core set of issues does indeed lead to information systems success. And finally, it will identify and further examine those factors that lead to shared understanding.

1.2 - Research Objectives

The objectives of this research project are to address the following four broad research questions, as an initial step towards finding answers to them:

1. What are the key issues to have shared understanding about?
2. How can shared understanding be assessed reliably and validly?
3. What factors result in shared understanding?
4. Is there a relationship between shared understanding and success in deploying information systems?

These questions will be addressed in the context of strategic information systems decisions in the North American retail industry. As a starting point for addressing the research objectives, a thorough review of the relevant literature was conducted. This review indicated that research into shared understanding in this particular research context, and indeed in other management research domains, is at the initial stages (see for example, Dougherty 1992, Huber 1991, Reich 1992).

As such, a comprehensive two-phase empirical approach was deemed necessary in order to accomplish the aforementioned research objectives, the details of which form the body of this document. Phase 1 is an exploratory study, using a case-study methodology to test a number of propositions. Phase 2 is based on a cross sectional survey approach to test a number of hypotheses generated by the case studies. Both approaches are widely employed in doctoral dissertations, but are used together relatively infrequently, in spite of them providing, in combination, a powerful research methodology.

1.3 - Organization of the Remaining Chapters

The remainder of this document is organized as follows. Chapter 2 contains a review of the relevant literature, and concludes with the development of a preliminary research model and testable propositions. Chapter 3 details Phase 1 of the study, one that involved a series of in-depth case studies.

Chapter 4 describes Phase 2, which is based on a cross-sectional survey approach. Chapter 5 concludes the document with a summary of the research program as a whole, and a discussion of the results obtained as they relate to research and practice.

CHAPTER 2 - LITERATURE REVIEW AND CONCEPTUAL

2.1 - Literature Review

In beginning to examine the issue of shared understanding between senior business executives and information systems executives, there are a number of literatures that are relevant. From the business policy literature, research on top management's effects on organizations provides the backdrop for examining shared understanding at the senior executive level. It also provides insight as to why senior executives make the decisions they do. The organizational learning (OL) literature further illuminates the antecedents of shared understanding. Research on product innovation is useful for understanding the dimensions of shared understanding. And last, but by no means least, the strategic IS and IS expectations literatures discuss shared understanding specifically in the context of information systems.

2.1.1 - Top Management Literature

The first body of relevant literature comes from the business policy domain and is centred around top executives and their effects on organizations. This body of literature, the roots of which can be traced to the pioneering work of Barnard (1938), maintains that the performance of an organization is ultimately "a reflection of its top managers" (Hambrick and Mason, 1984).

Senior managers were front and centre in the earliest management work done by Barnard (1938) and Selznick (1957) and indeed in much of the influential work in the strategy field (Learned, *et al.*, 1961; Andrews, 1971) in the early 1960's right through to the end of that decade. The early seventies, however, saw top managers all but disappear from strategy research. In their quest to demonstrate that management was a science and not an art, strategy research focused on removing the human element and replacing it with well defined all-encompassing methodologies and techniques for minimizing the likelihood that human error would adversely affect the "making of strategy". The late eighties and early nineties have seen senior managers return to the forefront of strategy research, as organizations have looked for "leadership" in these trying economic times. As Hambrick (1989) notes,

That we would return to a focus on top managers was inevitable. Ultimately, they account for what happens to the organization. In the face of the complex, multitudinous, and ambiguous information that typifies the top management task, no two strategists will identify the same array of options for the firm; they will rarely prefer the same options; if by remote chance, they were to pick the same major options, they almost certainly would not implement them identically. Biases, blinders, egos, aptitudes, experiences, fatigue, and other human factors in the executive ranks greatly affect what happens to companies. That is not to say that managers are weak or sinister, only that they are human and finite. As a result, if we want to explain why organizations do the things they do, or, in turn, why they perform the way they do, we must examine the people at the top. (p. 5)

Within this field of research on senior executives, a number of streams have emerged. Two of the streams take distinctly different views of executive effects on organizations and have evolved more or less independently of each other. One stream emphasizes the role of executive experiences - "the wide set of experiences executives bring to their positions, as embodied by such characteristics as tenure, functional background, and education" (Finkelstein and Hambrick, 1995). The demographic stream focuses on the psychological attributes of executives, such as values, cognitive style, and other elements of personality.

The Cognitive Stream

This research stream focuses on the psychological characteristics of executives, such as values, mental models and other elements of personality. The cognitive perspective can trace its roots back to the seminal work by Herbert Simon (1955) in which he described managers as having "bounded rationality". Clearly, one explanation of this "boundedness" can be traced to psychological factors.

There are numerous ways of characterizing people and their minds. The psychological stream of research on senior executives, however, has focused its efforts on three broad fronts: executive values, cognitive models, and other elements of personality.

Executive Values

Hofstede (1980, p. 19) defined values as "a broad tendency to prefer certain states of affairs over others". Rokeach's (1973, p. 159-60) definition is somewhat longer and characterizes values in the following way:

To say that a person "has a value" is to say that he has an enduring belief that a specific mode of conduct or end-state of existence is personally and socially preferable to alternative modes of conduct or end-states of existence.

Hambrick and Brandon (1988) combine these two definitions and define values as "a broad and relatively enduring preference for some state of affairs". Values can be both personal and social. Personal values are concerned with what a person aspires to - prestige, family security, wealth, wisdom. Social values are concerned with what a person finds desirable in others or in society in general - rationality, honesty, courage, and world peace are a few examples.

Beyond these examples of values, researchers have attempted to uncover the underlying dimensions of values. Four values schemes are prominent in the literature - those of Allport, Vernon, and Lindzey (1970), Rokeach (1973), England (1967) and Hofstede (1980). Hambrick and Brandon (1988) synthesized these four schemes and suggest the following as six "core" values dimensions:

Collectivism:	to value the wholeness of humankind and of social systems; regard and respect for all people
Duty:	to value the integrity of reciprocal relationship; obligation and loyalty
Rationality:	to value fact-based, emotion-free decisions and actions
Novelty:	to value change, the new, the different
Materialism:	to value wealth and tangible possessions
Power:	to value control of situations and people

Finkelstein and Hambrick (1995) conclude that "executive values is an open field for research. Even though values are undoubtedly important factors in executive choice, they have not been the focus of much systematic study...the topic of executive values has been relatively dormant for the last twenty years". (p. 54)

Cognitive Models

The second area of cognitive research is centred on managerial cognition. Research in this area has received an increasing amount of attention (for example, Srivastava and Associates 1983; Sims and Gioia 1986; Huff 1990; Walsh 1995) in the last few years. Fundamentally , research on managerial cognition seeks to understand how managers' cognitive models affect their abilities to function –

specifically, how managers distinguish relevant from irrelevant information, interpret their situations, and make decisions based on their beliefs and understandings. A number of different terms have been used to refer to cognitive models (Table 2.1 provides a summary of synonymous terms); however, this research will use the term cognitive model.

There are three fundamental elements of an individual's cognitive model: content, structure and style. At the most basic level, cognitive models consist of everything a manager knows, assumes, and believes. This cognitive content - what an executive knows or doesn't know - forms the foundation for what additional knowledge is sought, noticed, understood and interpreted. The issue of content has not been well studied in managerial cognition research. What researchers have instead focused on is cognitive structure.

Cognitive structure represents the way basic knowledge (i.e. cognitive content) is arranged, prioritized and connected in executives' minds. A cognitive structure is a highly personalized representation of reality, not necessarily aligning with objective conditions. The "map" metaphor is used extensively in literature (see for example Axelrod 1976; Huff 1990 for the term "causal map") on cognitive structures to convey the spatial and directional nature of cognitive structures.

Anderson and Paine (1975)	Managerial Perceptions
Argyris and Schon (1978)	Theory of Action
Axelrod (1976)	Cognitive Maps
Bartunek (1984)	Interpretive Schemes
Bougon, Weick and Binkhorst (1977)	Cause Maps
Brief and Downey (1983)	Implicit Theories
Brunsson (1982)	Organizational Ideologies
Cowan (1986)	Cognitive Frameworks
Cyert and March (1983)	Screens: Bias in Search
Daft and Weick (1984)	Interpretation
Dearborn and Simon (1958)	Selective Perception
Dunn and Ginsberg (1986)	Frame of Reference
Dutton and Jackson (1988)	Issue Categories
Ford and Hegarty (1984)	Cause and Effect Beliefs
Gephart (1984)	Dominant Reality
Ginter and White (1982)	Shared Perspective
Gouldner (1971)	Domain Assumptions
Grinyer and Spender (1979)	Recipes
Hall (1984)	Organizational Cause Maps
Hambrick and Mason (1984)	Selective Perception
Hewitt and Hall (1973)	Quasi-Theories
Isenberg (1984)	Overriding Concern
Janis and Mann (1977)	Quasi-satisfying
Katz (1982)	Functional Fixedness
Larwood and Whittacker (1977)	Self-serving Biases
Lorsch (1985)	Strategic Myopia

Table 2.1 - Terminology for Cognitive Schemas

March and Simon (1958)	Frame of Reference
Maryuma (1982)	Mindscapes
Mason (1969)	World View
Mason and Mitroff (1981)	Assumptions: Tunnel Vision; World View
Meyer (1982s)	Organizational Ideologies
Miles (1982)	Assumptions
Murray (1978)	Strategical Sensitive Blind Spots
Porter (1980)	Blind Spots
Prahalad and Bettis (1986)	Dominant Logic
Ranson, Hinings and Greenwood (1980)	Interpretive Schemes
Salancik and Porac (1986)	Distilled Ideologies
Sapienza (1985)	Shared Beliefs
Schons (1983)	Tacit Understandings
Shrivastava and Mitroff (1983)	Frames of Reference
Shrivastava and Schneider (1984)	Organizational Frames of Reference
Simon (1955)	Givens
Stagner (1969)	Personal Bias
Starbuck and Hedberg (1977)	World View
Steinbrunner (1974)	Grooved Thinking
Stevenson (1976)	Cognitive Perceptions
Turner (1976)	Collective Blindness
Vancil and Green (1984)	Myopia
Walker (1985)	Cognition
Walsh (1988)	Belief Structures
Walton (1986)	Organizational Prototypes
Weick and Bougon (1986)	Cognitive Maps

**Table 2.1 – Terminology for Cognitive Schemas
(Continued)**

Cognitive structures not only delineate simple associations, but also provide for inferences and causality. For example, a manager's cognitive structure might allow for the following inferences to be made: "Information systems managers tend to produce over-optimistic project plans"; "information systems users are always resistant to change". At the highest level, cognitive structure provides for causality in executive beliefs. For example, an executive might believe increased spending on R&D will enhance innovation, or that a new information system will improve employee productivity.

Much of the research on managerial cognition has been focused on developing valid and reliable representations of manager's cognitive structures. Classic studies in this area include Hall's (1976) representations of the causal maps of top executives during the decline of the *Saturday Evening Post*. More recently Narayanan and Fahey (1990) uncovered the causal maps of executives at Admiral Corporation during the last 15 years of its existence.

Less well researched and understood is the link between cognitive structures and strategic choices. Table 2.2 summarizes the key studies in this area. Notable contributions include the Thomas, Clark and Gioia (1993) study in which hospital CEO's labelling of strategic issues (as controllable or uncontrollable) was positively related to subsequent product or service changes actually made by the hospital.

Another important and recent study by Priem (1994) studied thirty-three CEOs of manufacturing firms. Priem found that firms whose CEOs had beliefs (or cognitive structures) that closely adhered to customary prescriptions outperformed those firms whose CEOs had beliefs that differed from the normative ideals. In sum then, there is evidence, however sparse, that executive's cognitive structures affect their strategic choices.

The third component of cognitive models is cognitive style. Cognitive style refers to the how a person's mind works or prefers to work. The issue of cognitive style is nicely summarized by Mintzberg (1976) who asked the question:

Why is it that some of the most creative thinkers cannot comprehend a balance sheet, and that some accountants have no sense of product development? (p. 49)

There are several approaches to explaining differences in cognitive style. Psychologists and medical practitioners conclude that managers may differ in their cognitive styles due to biological factors, particularly in the relative dominance of the two hemispheres in the brain. Indeed Ned Herrmann has constructed a survey instrument, "The Herrmann Brain Dominance Instrument" (HBDI), that captures hemispheric preferences for thinking and acting. Herrmann suggests that people who are left brain dominant - the locus of logic, linear thinking, and intellectual order - make good planners. Conversely, right brain dominant people - the locus of

holistic information processing, imagination, and visual imagery - may make good managers.

Another explanation for cognitive style, somewhat related to the hemispheric model, finds its roots also in psychology, and draws on classic studies by Carl Jung (summarized in Taggart and Robey 1981; Myers 1982; Hurst, Rush, and White 1989). Jung's theory proposes two dimensions of cognitive style: perception (gathering information) and judgement (processing information). Perception can occur through either sensation (S) - physical stimuli taken in by the five senses - or intuition (N) - discerning patterns, gaps, or relationships among stimuli. The second dimension of cognitive style, judgement (or information processing and evaluation), occurs either through thinking (T) - linking ideas using logic and notions of cause and effect - or feeling (F) - basing evaluation on personal and group values.

There has been relatively little research on linking Jungian cognitive types with managerial choices. One of the most interesting studies was conducted by Nutt (1986a). The study asked executives to indicate their readiness to accept several briefly described capital investment proposals. He found that those executives with an ST profile adopted the fewest proposals, demonstrated a general aversion to action and also rated the proposals as highly risky. They appeared to

Authors and Study	Independent Variables	Dependent Variables	Method	Summary of Key Findings
Barr, Stimpert, and Huff (1992)	Mental Models, environment	Organizational Renewal	Cause Maps	Organizational renewal is associated with timely change in mental models
Bougon, Weick, and Binkhorst (1977)	Internal experimental variables	Perceived influence over the organizational environment	Cause maps	Location of mapped variables is linked to perceived influence over situation as well as the number of logical inconsistencies within the situation.
Fahey and Narayanan (1989)	Cognitive structures	Organizational fit	Cause maps	Fit between cognitive structures and environment is often less than perfect.
Fiol (1989)	Intra-organizational boundaries (IOBs) and organization and environment boundaries (EEBs)	Propensity of firms to enter joint ventures (JVs)	Semiotic text analysis	Firms with strong IOBs and weak EEBs are associated with greater propensity to enter JVs.
Gripsrud and Gronhaug (1985)	Objective market structure	Perceived market structure	Sociometric mapping	Managers perceive fewer rivals than truly exist and are more likely to perceive larger rivals as most important.
Hall (1984)	Organizational processes	Firm performance	Cause maps	Firms evolve in unique path-dependent, directions based on policy decisions and critical events.

Table 2.2 - Key Studies Linking Managerial Thinking with Strategy and Performance

Authors and Study	Independent Variables	Dependent Variables	Method	Summary of Key Findings
Huff and Schwenk (1990)	Managerial attributions	Firm performance	Cause maps	Poor performance shifts managerial attributions and attention to the external environment.
Hitt and Tyler (1991)	Strategic choice, decision models	Strategic decision making	Case studies, structured interviews, questionnaires	Application of a rational-normal approach increased variance on the subjects' evaluation of target firms.
Lyles and Mitroff (1980)	Problem solving types, individual characteristics	Problem formation process type	Case study	Information sensing, social structure, and emotion impact problem formulation.
Lyles and Reger (1993)	Formal and informal reporting relationships, external support, joint venture characteristics, joint venture managerial characteristics	Joint venture autonomy	Cause maps	Use of upward influence to gain authority in joint ventures varies in type and complexity from independent or unified organizations.
Porac, Thomas, and Baden-Fuller (1990)	Mental models	Perceptions of and responses to the competitive environment	Cognitive taxonomy	Industry structure is driven by managerial cognitions.
Reger and Huff (1993)	Cognitive processes	Perceptions of organizations	Repertory grid	
Walton (1986)	Cognitive processes	Perceptions of organizations	Repertory grid	Prototypes play a key role in interpretation

Table 2.2 - Key Studies Linking Managerial Thinking with Strategy and Performance (Continued)

have difficulty dealing with the sketchiness and incompleteness of the project descriptions. Executives with SF profiles were more inclined to adopt the projects and considered them to be relatively low risk. NT and NF executives were found to be in between these two extremes. Subsequent to this study, Nutt (1993) found that executives have flexible "multidextrous" decision styles, and do not always exhibit one Jungian type.

Beyond the Herrmann and Jungian conceptualizations of cognitive style, a third view considers cognitive style through the lens of "cognitive complexity". Cognitive complexity refers to an individual's ability to draw mental distinctions among objects (Schneier 1979). Cognitive complexity has been used extensively in organizational behaviour research and has recently been incorporated into research on senior executives. Hitt and Tyler (1991) found that cognitive complexity was not associated with executives' decision models in evaluating acquisition targets. Wally and Baum (1994), on the other hand, did find a link between cognitive complexity and the pace at which executives evaluated acquisition candidates. Cognitive complexity research is in its infancy in the executive decision making context and there is much room for future research.

To briefly summarize to this point, the three elements of cognitive models - content, structure and style - each play an important part in directing managerial attention.

Other Personality Factors

In addition to executive values and cognitions, a number of other personality factors have been studied with respect to top executives. Need for achievement (Miller and Droge 1986), tolerance for risk (Wally and Baum 1994), tolerance for ambiguity (Gupta and Govindarajan 1984), and neuroses (Kets de Vries and Miller 1984) have all been examined in the context of their effect on executive action. For example, Gupta and Govindarajan (1984), in their study of executives' willingness to take risks, found that this factor was more conducive to organizational performance for businesses trying to build their market share than for those trying to generate earnings while maintaining their market share. Two other personality factors, however, have been the subject of far more extensive research efforts than the aforementioned ones: charisma and locus of control.

A large literature exists which examines the relationship between personality characteristics and charisma (see Conger and Kanungo 1988 for a summary). Contemporary thinking on the subject views charisma not so much as a personality trait but more as an enabling or enhancing relationship between a leader and subordinates (House, Spangler, and Woycke 1991). In other words, charisma is not a personality type but rather is affected by personality.

From a subordinate's perspective, actions that have been identified as responses to charisma include:

- performance beyond expectations (Bass 1985)
- changes in the fundamental values of followers (Etzioni 1975)
- devotion, loyalty, and reverence toward the leader (House 1977)
- a sense of excitement and enthusiasm (Weber 1946; Bass 1985), and
- a willingness on the part of subordinates to sacrifice their own personal interests for the sake of a collective goal (House 1977).

Other research on the subject of charisma has been more concerned with identifying the personality traits that result in the previously noted responses. Bass (1985) provides the following list: self-confidence, self-determination, insight into needs and values of their followers, and the ability to enhance or inflame those needs and values through persuasive words and actions. Other traits identified in the literature include: high activity level, confidence, commitment, and the need for power (Conger and Kanungo 1988).

Charismatic executives affect organizations in two ways. First, charismatic executives affect organizations directly through the strategic choices they make. But they also affect organizations more indirectly by influencing others, who in turn make other major choices affecting the organization (Bower 1970).

A final executive personality trait that has received a great deal of attention is locus of control (Anderson 1977; Miller, Kets de Vries, and Toulouse 1982; Miller and Toulouse 1986a; Begley and Boyd 1987; Boone and De Brabander 1993). Locus of control refers to an executive's beliefs about who or what controls his or her life. Much of the research uses Rotter's (1966) characterization of "internal" versus "external" orientations. "Internal" executives believe that events in their lives are within their control. Conversely, "external" executives believe that events in their lives are outside their control and that luck, fate, and destiny are the major contributors to outcomes.

Research on locus of control and executives is unequivocal in indicating that "internal" executives are associated with higher organizational performance than "external" executives (Miller and Toulouse 1986a, 1986b; Brockhaus 1980; Van de Ven, Hudson, and Schroeder 1984). In one of the most comprehensive and widely cited studies on the subject, Miller, Kets de Vries, and Toulouse (1982), using a sample of Canadian senior executives, found that firms led by "internals" were more innovative and likely to be in dynamic environments than those led by "externals". In short, "Managers who believe that their destiny lies in their own hands are more likely to try to control it actively" (p. 245).

In summary, the cognitive stream has focused on the role of executive values, cognitive models and several other elements of personality, primarily charisma and locus of control, as key determinants of executive choices.

The Executive Experiences Stream

The fundamental premise underlying much of the research within the executive experiences stream is that “observable experiences of executives shape their cognitions and values and hence are reflected in their strategic choices.” (Finkelstein & Hambrick 1995, p. 80) A much smaller, yet related, stream has also emerged which posits the reverse, namely that certain environmental characteristics result in certain executive characteristics, the reasoning being that different executive characteristics emerge under different strategic conditions. A third, and smaller yet, stream also exists which essentially combines these two perspectives.

The basic logic for this stream is that certain strategic conditions more naturally fit with certain executive characteristics and that organizational performance is dependent on the extent to which there is alignment between the two. The dominant perspective, however, is the first one described.

Research on executive characteristics has been focused primarily on the following variables: age, ethnic background, gender, level of education, type of

degree earned, major area of post-secondary study, functional experience, and job, organizational, and industry tenure (Bluedorn, Johnson, Cartwright, and Barringer, 1994). Numerous significant relationships have been found between executive characteristics and organizational outcomes, such as strategic choices and performance (see Table 2.3). Three sets of executive characteristics, however, appear to dominate the research: executive tenure, functional background, and formal education.

With respect to executive tenure, there is considerable evidence to support the idea that long-tenured executives are not associated with strategic change in organizations. Tenure has been examined from a variety of perspectives: positional (e.g. Hambrick & Fukutomi 1991; Miller 1991); organizational (e.g. Thomas, Litschert, & Ramaswamy 1991); and industrial (Hambrick, Geletkanycz, and Fredrickson 1993). Quite clearly these are not mutually exclusive, yet as Finkelstein and Hambrick (1995) conclude in their review of the literature, “our strong belief is that each of these forms of longevity has its own effects on executive mind-sets, strategic choice, and performance.” (p. 91).

The evidence related to functional background is not so clear. Dearborn and Simon (1958) argued that exposure to a particular functional area would in effect cause executives to focus on certain information in an ambiguous and

complex business environment and, in turn, to interpret that information from a functional perspective.

Authors and Study	Independent Variables	Dependent Variables	Summary of Key Findings
Bantel and Jackson (1989)	Age, tenure, education	Adoption of innovations	TMT education level and heterogeneity are positively related to adoption of innovations.
Buchholtz and Ribbens (1994)	Age, tenure	Likelihood of takeover resistance	Age has curvilinear relationship with the likelihood of takeover resistance, tenure is not a significant predictor.
Chaganti and Sambharya (1987)	Tenure, functional experience	Asset value, strategic orientation	Tenure and functional experience predict strategic orientation.
Datta and Guthrie (1994)	Insider versus outsider, functional experience, education	Profitability, R&D intensity, firm growth, firm size, firm age	The selection of an outsider CEO is associated with lower profits and firm growth, R&D intensity is associated with selection of CEOs with more education and technical experience.
Eisenhardt and Bourgeois (1988)	Age, tenure, status, history, power	Sales, sales trend, return, CEO ratings	None (model)
Eisenhardt and Schoonhoven (1990)	TMT experience, heterogeneity of industry experience	Firm growth	TMT experience is significantly correlated with growth.
Finkelstein and Hambrick (1989)	Tenure	Compensation	No significant relationship between tenure and pay.
Finkelstein and Hambrick (1990)	TMT tenure	Strategic persistence, strategic conformity, performance conformity, ROE	TMT tenure is positively associated with strategic persistence and conformity, and industry performance.

Table 2.3 - Key Studies Linking Demographic Variables with Strategy and Performance

Authors and Study	Independent Variables	Dependent Variables	Summary of Key Findings
Grimm and Smith (1991)	Age, tenure, education	Change in strategy	Age and experience influence strategic decisions.
Gupta and Govindarajan (1984)	Functional experience, tolerance for risk, ambiguity	Sales growth, market share, profits, R&D, strategic implementation	Experience, tolerance for risk, and ambiguity influence strategy.
Haleblian and Finkelstein (1993)	TMT size, CEO dominance, education, career and functional experience	ROA, ROS, ROE	TMT size and CEO dominance are positively related to performance.
Hambrick, Geletkanycz, and Frederickson (1993)	Firm and industry tenure	Commitment to the <i>status quo</i>	Firm and industry tenure are significant predictors of commitment to the <i>status quo</i> .
Johnson, Hoskisson, and Hitt (1993)	CEO tenure, TMT tenure, education, heterogeneity	Board involvement in strategic decision making	Tenure and education negatively correlated with board involvement, TMT heterogeneity not a significant predictor.
Michel and Hambrick (1992)	TMT tenure, heterogeneity	Diversification strategy, ROA	Cohesion influences diversification posture.
Miller (1991)	Tenure	Strategy match/structure match with environment, ROI, sales growth, income growth	Managerial characteristics predict performance both across and within industries.
Norburn and Birley (1988)	Age, sex, marital status, education, tenure, functional experience	Revenue, number of employees, sales growth	Managerial characteristics predict performance both across and within industries.
O'Reilly, Caldwell, and Barnett (1989)	Age, tenure, social integration	Turnover	Heterogeneity in group tenure leads to turnover.

Table 2.3 - Key Studies Linking Demographic Variables with Strategy and Performance (Continued)

Authors and Study	Independent Variables	Dependent Variables	Summary of Key Findings
Russell (1990)	Personnel ratings	Performance ratings	Biodata are a useful selection tool.
Song (1982)	Functional experience	Diversification strategy	Background is associated with strategy
Taylor (1975)	Age, career experience	Information amount and processing rate, decision accuracy and flexibility	Age, more than experience, influences performance.
Thomas, Litschert, and Ramaswamy (1991)	Age, tenure, functional experience, education	ROI, market share	Alignment of strategy and managers influences performance.
Tsui and O'Reilly (1989)	Age, tenure, sex, race, education	Reputation, effectiveness supervisory affect	Demographic variables are associated with effectiveness and role ambiguity.
Wagner, Pfeffer, and O'Reilly (1984)	Age, tenure, group size, firm age	Turnover, ROI	Demographic variables are predict turnover
Wiersema and Bantel (1992)	Age, tenure, education	Change in diversification (SIC codes)	Tenure is associated with lower change and risk propensity.
Wiersema and Bird (1993)	Age, tenure, education	Top management team turnover	Demographic effects are mediated by context.
Zenger and Lawrence (1989)	Age, tenure, career experience	Technical communications	Demographic variables predict communication patterns.

Table 2.3 - Key Studies Linking Demographic Variables with Strategy and Performance (Continued)

Their findings have since been used by consultants and academics alike as the basis for recommending that executives who are exposed to multiple functions within organizations will have a broader and more useful perspective to bring to complex business situations. Walsh (1986), however, replicated Dearborn and

Simon's (1958) study and found no such functional biases. Finkelstein and Hambrick (1995) suggest a number of reasons for the contradictory findings and eventually conclude that each potential explanation provides an interesting avenue for future research.

The last executive characteristic that has warranted significant attention is formal education. A significant body of research exists suggesting that the education of executives ultimately gets reflected in their organizations. A sizeable stream of research in developmental psychology has also examined the relationship between education and individual values and cognitions (e.g., Smart and Pascarella 1986; Byrne 1984; Cherrington, Condie, and England 1979; Schein 1968; Altmeyer 1966).

At the same time, however, relatively little research has been conducted examining the link between education, executive psychological characteristics and organizational performance. Nevertheless, some interesting observations have been made. Wally and Baum (1994), in their study of 106 CEOs, found a strong correlation between quantity of formal education and cognitive complexity. Hitt and Tyler (1991) found the same, albeit weaker, relationship. Becker (1970a, 1970b) and Rogers and Shoemaker (1971) found that education is linked with receptivity to innovation. Furthermore, similar positive relationships between executive

education level and organizational innovation have been observed across a wide variety of industries including commercial banks (Bantel and Jackson 1989), forest products (Barbosa 1985), and computers (Thomas, Litschert, and Ramaswamy 1991).

To summarize to this point, the vast majority of the research into executive characteristics has been focused around tenure, functional background, and formal education and a convincing number of significant findings have been made. It is interesting to note, however, that although many of the demographic studies have demonstrated significant relationships, the findings are in some cases contradictory.

For example, prescriptions from the executive characteristics research would include hiring young CEOs to initiate significant strategic change. In direct contrast to this prescription, Barr, Stimpert and Huff (1992), in their study on strategic change in the railroad industry found just the opposite - a comparison across a number of companies found that strategic change was associated with the oldest CEO, not the youngest.

This inconsistency points to a more fundamental criticism of the executive characteristics research, namely the "black box" problem. Many interesting relationships between executive experiences and organizational outcomes have been uncovered, but the nagging question is always "Why?" As Hambrick and

Finkelstein (1995) note, "Researchers who use executive experiences to explain executive behaviours sometimes make assertions about psychological characteristics that are being proxied by the experiences." (p. 46) By way of illustration of this point, the finding just discussed linking executive tenure to strategic change might be due to a new executive's "open-mindedness, eagerness to demonstrate efficacy, lack of entrenched relationships, or simply emotional (and possibly physical) energy". (p. 46) These potential causes are typically not studied in executive characteristics research and thus the "box" remains "black".

The cognitive stream's main strength is that it has a sound theoretical base upon which to open up the "black box". As Lawrence (1991) noted, it is better to have an explanation for a relationship than to simply demonstrate its existence. Nevertheless, although conceptually appealing, in practice the cognitive stream poses major limitations for researchers of senior executives (Finkelstein 1988). First, top executives are often unwilling to submit to a battery of psychological tests. Second, the research required to uncover relationships is often longitudinal in nature, and is thus expensive and time consuming, as researchers need to wait to see the effect of psychological characteristics on strategic choices. Lastly, some of the psychological constructs suffer from validity problems and are not particularly useful in practice (Boone and De Branbender 1993; Hodgkinson 1993).

2.1.2 - Product Innovation Literature

While the top management literature provides the justification for examining the phenomenon at the senior executive level and provides some insight into how senior executives affect organizations via their strategic choices, the product innovation literature illustrates that business and information systems executives most likely do represent very different "thought worlds", each concerned with different aspects of information systems and business issues, and making different sense of the total (Dougherty, 1992).

In particular, in the product innovation literature, there is a body of research which considers the differences between groups involved in new product development, namely, R&D and marketing. From this research, there is evidence that more effective interrelations among these functions improves the chances for new product success (Souder, 1981). As Dougherty (1992) notes, however, little is known about the details of these interrelations,

First, if different groups are supposed to "interface", what do they interface about? - that is, what is the content or substance of this activity?...Why is it that they do not "interface" readily?

One of the earliest empirical studies concerned with these interrelations over new product development is Burns and Stalker's (1961) work. They argue that different functions have different expectations and tend to focus on their own tasks.

Thus the main concern for organizations is to integrate these diverse functions. Burns and Stalker (1961) further suggest that organizations must "...give prominence to the co-existence within the working community to the large variety of technical and specialist 'languages'...and equally to the way in which things and events may have a large variety of 'special meanings' for these different people" (p. 55).

Lawrence and Lorsch (1967), in their well known study, argue that different functional units within organizations have different amounts of uncertainty in their environments. They posit that this causes differentiation among these groups in terms of 1) orientation to formality; 2) interpersonal behaviour; and 3) time. Integration is key to making these functions work in concert. As with Burns and Stalker (1961), integration is discussed in terms of structures designed to overcome these differences. Galbraith (1977) goes even further and describes a hierarchy of integrative mechanisms and structures.

However, if one examines the original data in Lawrence and Lorsch's (1967) book, it seems reasonable to infer that these structures (e.g. liaison committee or project team) work because of something more fundamental. It is possible that they generate, facilitate, and channel the kinds of understandings among the differentiated functions that leads to integration at a different level, an interpretive

one, not a structural one. Indeed, in their study, effective integrators were considered more knowledgeable and to have more expertise. In short, integration might not be so much a structure as an interpretive context where shared understanding is created.

This interpretive context has not been pursued to any great extent in research on new product development. Instead, research in this area has split off into three separate streams: differentiation, conflict and politics.

The differentiation research stream has focused on demonstrating that the functional groups have different perspectives on the process of product innovation. Burgelman and Sayles (1985) determined that these two groups have conflicting expectations about the new product development process. Gupta, Ray and Wilemon (1985) asked R&D and marketing managers how they viewed their integration. They found R&D managers to be most dissatisfied with marketing's attempts to commercialize R&D's products. Marketing managers, on the other hand, were unhappy with their input into the goal setting for new products.

A second stream of research in this area examines the conflict over goals and interests between R&D and marketing. Two studies are of particular note. Link and Zmud (1986) found a positive relationship between the

“complementariness” of R&D and marketing, and the innovativeness of the organization's strategy. Based on their findings, the authors go on to suggest that conflict in this context is due to intergroup competition for resources, which in turn leads to distrust and breakdown in communication channels. Reukart and Walker's (1987) study examined the relationship between strategy, formalization, conflicts and conflict resolution approaches. Their results were not conclusive and their study did not provide for much detail as to the essence of the “conflict”.

The third stream of research in this area is focused on studying the political processes involved in new product development. Early work by Schon (1963) identified the product champion as being critical to new product success. Since then, many others (e.g. Kanter 1982; Galbraith 1982) have found support for this earlier finding, in terms of the champion's ability to “persuade and team build” with peers and bosses, and also in terms of their ability to convince senior management of the viability of a new business venture (Burgelman & Sayles 1985). In an information systems context, Higgins and Howell (1990) identified a champion as being critical to IS project success. While champions have been identified as being critical, it remains largely unexplored as to how champions work their magic. It seem plausible, as Dougherty notes (1987), “that championing which creates a certain kind of shared comprehension is more effective than other kinds of championing”. (p. 19)

As noted previously, little research in the area of new product development has examined integration specifically from an interpretive perspective. One recent study (Dougherty, 1992), however, sought to demonstrate that different "thought worlds" exist in the various departments involved in the product innovation process.

As Dougherty notes

An extensive literature tells managers how they ought to develop new products, and how they ought to design their organizations for innovation. This study ... describes how two interpretive schemes can become barriers to effective technology-market linking. Departmental thought worlds partition the information and insights. Each also has a distinct system of meaning which colours its interpretation of the same information, selectively filters technology-market issues, and produces a qualitatively different understanding of product innovation. Organizational product routines reinforce thought world separation by providing for only limited interaction, and further inhibit the kind of collective action that is necessary for innovation.

Dougherty's findings suggest that "innovation requires *collective action*, or efforts to create **shared understandings** from disparate perspectives".

Dougherty (1992) conceives of this shared understanding as consisting of three different dimensions:

1. What people see when they look into the future, including issues that are most uncertain;
2. What people consider to be the critical aspects of the product development process; and
3. How people understand the development task itself.

2.1.3 - Organizational Learning Literature

The organizational learning literature illuminates a further aspect of shared understanding, namely its antecedents. Of particular use, is Huber's (1991) review of the organizational learning literature. In his review of this literature, Huber concludes that such learning can be thought of as four separate constructs or processes - knowledge acquisition, information distribution, information interpretation, and organizational memory. It is not the intent of this research to attempt to address all four processes, but rather to focus on the process of information interpretation. Daft and Weick (1984) define interpretation as "the process through which information is given meaning" (p. 294), and also as "the process of translating events and developing **shared understandings** and conceptual schemes" (p. 286). The term "shared understanding" will be utilized throughout the rest of the dissertation to refer to the product of the interpretation process.

Huber concludes from his review that shared understanding is likely affected by:

- The uniformity of prior *cognitive models* possessed by the organizational units,
- The uniformity of the *framing* of the information as it communicated,
- The *richness of the media* used to convey the information,

- The *information load* on the interpreting units, and
- The amount of *unlearning* that might be necessary before a new interpretation could be generated.

Cognitive Models and Framing

Cognitive models have already been discussed at some length in this literature review but it is worth noting again that it is well established that a person's prior cognitive model will shape his or her interpretation of information (Dearborn and Simon 1958; Ireland, Hitt, Bettis, and DePorras 1987; Walker 1985; Zanonc and Wolfe 1966). It is also well established "that these cognitive maps vary across organizational units having different responsibilities." (Huber 1991, p. 103).

It is also well established that the way in which information is labeled or framed affects its interpretation (Dutton and Jackson 1987; Tversky and Kahneman 1985). For example, in a well known study, Thomas, Clark, and Gioia (1993) found that hospital CEO's labeling of strategic issues as controllable was positively related to subsequent strategic changes actually made by the hospital. As far as this research is concerned, the labeling of a piece of technology as leading edge or established, for example, could affect the development of shared understanding by bringing to bear a whole host of other information associated with such labels.

Media Richness

In addition to the uniformity of cognitive models and framing, organizational learning research indicates that media richness affects the development of shared understanding. Media richness refers to the "medium's capacity to change mental representations within a specific time interval" (Daft and Lengel 1984; Daft and Huber 1987, p. 14). As Daft, Lengel & Trevino (1987) describe the construct as it relates to shared understanding

Communication media differ in their ability to facilitate understanding. Media can be characterized as high or low in "richness" based on their capacity to facilitate shared meaning. A rich medium facilitates insight and rapid understanding.

Huber (1991) concludes that media richness is a two dimensional construct consisting of the variety of cues that the medium can convey, and the rapidity of feedback that the medium can provide. Daft, Lengel & Trevino (1987), however, include two other dimensions, language variety and personal focus, to describe media richness. They further note, that the "richness" measure is based on a blend of all four criteria:

1. Feedback - Instant feedback allows questions to be asked and corrections to be made.
2. Multiple cues - An array of cues may be part of the message, including physical presence, voice inflection, body gestures, words, numbers, and graphic symbols.

3. Language variety - Language variety is the range of meaning that can be conveyed with language symbols. Numbers convey greater precision of meaning than does natural language. Natural language can be used to convey understanding of a broader set of concepts and ideas.
4. Personal focus - A message will be conveyed more fully when personal feelings and emotions infuse the communication. Some messages can be tailored to the frame of reference, needs, and current situation of the receiver.

At the high end of the richness scale is face-to-face communication, and at the low end is unaddressed written communication.

The underlying premise for much of the research on media richness is that in order for effective communication to occur, the richness of the medium should match the level of message ambiguity. Ambiguity or equivocality means that there are conflicting interpretations about an organizational situation (Daft & Macintosh, 1981). Daft, Lengel & Trevino (1987) further describe how equivocality affects managerial decision making

*Equivocality often means confusion, disagreement and lack of understanding. Managers are not certain what questions to ask, and if questions are posed there is no store of objective data to provide an answer....The organization reduces equivocality by pooling opinions and overcoming disagreement. This leads to a **shared***

understanding and social agreement about the correct response. The response to equivocality comes from within the management group in the form of defining what events mean and enacting a solution. (p. 357).

When executives communicate about issues that are well-defined, equivocality is low, and thus communication media need not be particularly rich in order to be effective. In contrast, highly equivocal situations or issues require rich media "to facilitate understanding and the emergence of a common perspective and understanding". (p. 359) One might expect a relatively high degree of equivocality surrounding major, especially leading edge, IT decisions. Therefore, media richness would play an important part in the development of shared understanding.

Information Overload

"Interpretation within or across organizational units is less effective if the information to be interpreted exceeds the units' capacity to process the information adequately". (Huber 1991, p. 103). In other words, if one is overloaded with information, it is difficult to sift through it all and make sense of it. As Schlesinger (1970) noted in his statement made to the Senate Subcommittee on National Security and International Operations regarding the Vietnam debacle:

What happened in Vietnam is that we were simply drowned in statistics; we were drowned in information. A very small proportion of this information was adequately analyzed. We would have been much better off to have a much smaller take of information and to have done a better job of interpreting what that information meant (p. 482)

Thus an interesting issue in this research is whether or not executives feel overloaded with the information necessary to keep up on IT related issues. Certainly with the technology changing so quickly and becoming ever more complex, it is increasingly difficult to keep abreast of the issues. Further to this issue, if overload is a concern, then as the theory indicates, do feelings of overload negatively impact the development of shared understanding?

Unlearning

The final factor in the organizational learning literature found to have an effect on shared understanding is unlearning. Unlearning is a term coined by Hedberg (1981), which he defines as "a process through which learners discard knowledge" (p. 18). Hedberg goes on to say

Knowledge grows, and simultaneously it becomes obsolete as reality changes. Understanding involves both learning new knowledge and discarding obsolete and misleading knowledge. The discarding activity - unlearning - is as important a part of understanding as is adding new knowledge. In fact, it seems as if slow unlearning is a crucial weakness of many organizations (p. 3)

Hedberg (1981) suggests that there are three modes of unlearning

1. *The disconfirmation or disassembly of mechanisms for selecting and identifying stimuli, so that a perceiver no longer knows what is perceived. In other words, people unlearn their world views. Unlearning the belief that IT is capable only of "automating" existing processes is a world view that would be an example of this mode of unlearning.*
2. *The disconfirmation of connection between stimuli and responses, so that a person or an organization no longer knows what responses to make to identified stimuli. This mode of unlearning might be characterized by determining that new information systems (the stimulus) don't have to be built using a traditional structured analysis and design approach (the response), and that prototyping or JAD, for example, are viable alternatives.*
3. *The disconfirmation of connections between responses or response assemblies, so that a person no longer knows how to assemble responses to new situations. An example of this would be dealing with the outsourcing of IT within organizations.*

In the context of IT and the above modes, unlearning beliefs about past information systems project failures and indeed the capabilities for IT (i.e. automating vs transforming) for example, might all be important in developing shared understanding and moving IT forward within organizations.

Research on unlearning has uncovered several effects (Hedberg 1981; Nystrom and Starbuck 1984; Klein 1989):

- Because the organization is without a fact, belief, or script that it previously used, it becomes at least temporarily inactive in the context where this knowledge had been used,
- Focused search is initiated to obtain a substitute fact, belief, or script that plays a parallel role in the organization's functioning, and
- It opens the way for new learning to take place.

Thus it would seem that unlearning of incorrect perceptions or facts would be critical to the development of shared understanding.

In summary, the organizational learning literature suggests that shared understanding is affected by five factors: similarity of cognitive maps and framing, media richness, information overload, and unlearning.

2.1.4 - IS Expectations Literature

It is often implied, if not explicitly stated, that the failures of information systems within organizations are partly the result of mismatched or poorly managed expectations. There has been relatively little research on IS expectations, and what exists has been primarily focused at the user level, not the senior management level.

Three of the more notable studies on expectations have been conducted by Ginzberg (1981), Lyytinen (1988) and Marcolin (1994). The Ginzberg (1981) study examined whether or not users' expectations early in the implementation process could predict eventual IS success. Using the Kolb and Frohman (1970) extension of the Lewin and Schein model of change as a basis, Ginzberg identified five categories of expectations (p. 463-464):

- The reasons for developing the system (its goals and objectives);
- The importance of the problem being addressed;
- The way the system will be used;
- The impact the system is likely to have on the organization; and
- The criteria which should be used to evaluate the system.

Lyytinen (1988) studied the different perceptions of systems failure among different stakeholder groups. He concluded that systems success must be viewed from these different stakeholder perspectives because their expectations are different, and indeed are aligned with their stakes in the IS. Lyytinen described a phenomenon he called IS Expectation Failure which he defined as "a gap between stakeholders' expectations expressed in some ideal or standard and the actual performance" (p. 46). Lyytinen (1988) described typical stakeholder groups as often including systems analysts, various classes of end-users, sponsors, customers, and legislators. Lyytinen's study focused on one of these stakeholder groups, systems analysts.

Lyytinen (1988) posited that IS Expectation Failure occurs in two different phases: development and use. In Development Failures, a stakeholder's main concern is to mould the future IS to fit to its vital interests. In Use Failures, stakeholders are primarily concerned with aligning the IS with their ongoing concerns. Tables 2.4 and 2.5 summarize the dimensions Lyytinen identifies as a sufficient starting point for classifying expectation failure types.

Dimension	Content
Goals	A stakeholder's inability to state goals that are not ambiguous, narrow, conflicting and can be operationalized.
Technology	A stakeholder's inability to choose and implement technology so that design is cost-effective due to organizational policies, prior decisions, etc. A stakeholder's inability to avoid risks of technology change.
Economy	A stakeholder's inability to calculate accurately the economic impact of the system and to provide sound theoretical foundations.
View of Organization	A stakeholder's inability to predict behavioural, psychological, and organizational impacts of the IS.
Process characteristics	A stakeholder's inability to participate in development that provides chances to influence, to communicate and to express authentically opinions.
Self-image	A stakeholder's inability to understand all aspects of IS design and the bias to regard it as a rational process.

Table 2.4 - IS Development Failures (Lyytinen)

Dimension	Context
Technical solution	A stakeholder's inability to design and operate a technical solution that is fast, easy to use, and reliable.
Data problems	A stakeholder's inability to maintain data that is correct, has relevance, and is comprehensible.
Conceptual	A stakeholder's inability to solve their actual problems by the IS.
People's reactions	A stakeholder's inability to develop an IS without adverse effects on work, power shifts, or change in the job qualifications and content.
Complexity problems	A stakeholder's inability to create solutions that are not too complex to manage, understand, maintain, operate and change.

Table 2.5 - IS Use Failures (Lyytinen)

In addition to these failure types, Lyytinen posited four classes of reasons for expectation failures:

1. **Information System Features (ISF)** - hardware, software, prior design decisions, documentation, and so on;
2. **Information System Environment (ISENV)** – user’s characteristics, organizational characteristics and so on;
3. **Information Systems Development (ISD)** – design methods, tools, managing principles and organizational arrangements; and
4. **Information Systems Development Environment (ISDENV)** - the wider environment of systems development such as user and designer population characteristics.

Table 2.6 further illuminates these four classes of reasons.

Marcolin (1994) in her study of users’ expectations and IT implementation, synthesized the Ginzberg (1981) and Lyytinen (1988) studies with related findings from research on attitudes, diffusion of innovation, IS implementation and equity theory. Marcolin (1994) concluded from the study that there are 8 expectation categories for users (p. 99):

1. **Usefulness** - the degree to which using a computer system enhanced the user’s job performance;
2. **Relative advantage** – the degree to which a system is better than the idea it supersedes;

3. **Improvement to knowledge** – the degree to which the system improves knowledge or understanding of the work tasks;
4. **Analytic capability** – the degree to which the system is good for analyzing information;
5. **Strategic orientation** - the degree to which the system helps users become more oriented on strategic issues as opposed to clerical tasks in their jobs;
6. **Fit or compatibility** - the degree to which the system fits with the user's job tasks, work style, and environment;
7. **Ease of use** - the degree to which a person believes that using a particular system is free of effort, and
8. **Contribution to the user's image (profile and value as an employee)** – the degree to which the users' image, prestige, or value as an employee is increased by using the system.

Although these studies are concerned with specific information systems, and indeed not with senior management but instead users' and systems analysts, the expectation categories identified are useful starting points for informing the potential dimensions, and in some case subdimensions, of shared understanding.

Group	Content	Type of Reason
ISF	1. Technical and operational reasons – lack of sophisticated technology	mostly uncontrolled
IS ENV	2. Organizational reasons – Unfitness of the IS to the rest of the organization (age, stage, context, etc.) 3. Individual reasons – Unfitness of the IS to users' capabilities (cognitive style, stress adaptation, motivation) 4. Environmental reasons – Unfitness of the IS to operating organizational environment (stability of IS function, organizational incentives, etc.	mostly uncontrolled mostly uncontrolled mostly uncontrolled
ISD	5. Method based reasons – lack of adequate and powerful methods 6. Decision making based reasons – lack of sufficient attention to types of decision supported 7. Work based reasons – lack of sufficient attention to nature of work 8. Contingency reasons – lack of sufficient attention to contingency factors in ISD (type of system, development environment, risks, etc.) 9. Implementation reasons – lack of sufficient attention to organizational implementation 10. Assumption based reasons – Insufficient attention to biased or wrong assumptions that drive ISD 11. Political reasons – Insufficient recognition of political tactics to undermine the IS	controllable controllable controllable controllable controllable controllable controllable
ISD ENV	12. Analyst based reasons – Insufficient cognitive and social skills of systems analysts and too limited behavioural codes 13. User based reasons – Insufficient skills and capabilities of users and their limited knowledge of computing	controllable controllable

Table 2.6 - Classification of IS Failures (Lyytinen)

2.1.5 - Strategic Information Systems

Since we are in fact talking about making decisions regarding information systems, another body of literature relevant to this dissertation is the information systems literature, specifically that related to the planning of strategic information systems.

We are guilty, in the IS literature, of using a variety of terms to describe essentially the same thing. For the sake of clarity, in this review we adopt the term Strategic Information Systems Planning (Lederer and Sethi 1988; Earl 1993) to refer to those activities associated with the "the process of deciding the objectives for organizational computing and identifying potential computer applications which the organization should implement" (Lederer and Sethi 1988, p. 445).

Research on SISP has proceeded along two fronts - conceptual work aimed at producing various models and methodologies, and empirical studies designed to validate the models and methodologies and demonstrate a relationship between SISP and some measure of performance.

Conceptual SISP Research

Much of the early work on SISP focused on developing models and methodologies. The work was largely prescriptive (see Zani 1970; McFarlan 1971; McLean and Soden 1977; King 1978) and based on a similar set of assumptions: a) that a well defined business planning system exists, the output of which is a set of well articulated business plans, and b) that SISP occurs after the business planning cycle and is concerned primarily with aligning IS plans with existing business plans.

Although many specific methodologies for SISP exist, a generic pattern can be easily discerned (Premkumar and King 1994):

1. identification of business objectives, strategies and critical success factors using information from senior management and business plans;
2. creation, based on the above, of a mission and broad objectives for the IS function;
3. detailed business process analysis leading to an information architecture necessary to support these processes;
4. mapping of new information architecture onto existing systems and identification of deficiencies;
5. formulation of a series of plans designed to address these deficiencies;

As King (1978) and Henderson and Sifonis (1988) note, this pattern represents the classic top-down rational approach to planning, and clearly parallels the conventional strategic planning models of the 1970's and 1980's. As Vitale *et al.* (1986) found, this approach is in fact the predominant mode of IS planning.

Only recently in the IS planning literature have different approaches to IS planning been highlighted (Earl 1993). Despite this work, however, both the existing conceptual IS planning literature and practice are heavily oriented towards a rational top-down method-driven approach to IS strategy formulation and implementation. In other words, the conventional wisdom has been to execute the planning methodology well, and everything will fall into place.

Empirical SISP Research

In terms of empirical research, in an attempt to validate the various models and methodologies, early studies were concerned primarily with identifying those factors that influenced the success of IS planning activities (McLean and Soden 1977; Lederer and Mendelow 1986). Factors found to be influential included: planning time horizon, quality of the business planning system, communication and integration between business and IS planning, level of top management support and user involvement, resources available for planning and plan implementation,

volatility of business environment, status of the IS manager and role of IS in the organization (Karimi, 1988).

Subsequent empirical studies examined the relationship of these individual factors and combinations of factors to overall IS planning success or efficacy. Measures of IS planning success varied by study, but typically took one of several forms: measures of user satisfaction and system effectiveness (Johnston and Carrico 1988; Ives and Learmonth 1984); subjective measures of improvements in communications with top management and users, better appreciation of role of IS within the organization, and better integration with business planning (McLean and Soden 1977; Galliers 1987; Venkatraman and Ramanujam 1987); and, perceptual measures such as fulfilment of planning objectives (Raghunathan and Raghunathan 1991). While the eventual goal of SISP is to align¹ investment in IS with business goals, few researchers have attempted to assess the degree of alignment or its relationship to firm performance. Two notable exceptions are Chan (1992) and Henderson and Venkatraman (1991).

None of these measures has proved to be definitive and IS researchers are

¹several other terms that appear in the literature are equivalent to alignment (Galliers, 1987; Henderson and Venkatraman, 1989) - fit (Venkatraman, 1989; Das, Zahra and Warkentin, 1991; Chan and Huff, 1992), coordination (Lederer and Mendelow, 1989), and linkage (Reich, 1992).

currently debating the relative merits of each. Traditional planning performance measures such as ROI and increase in sales have not proven useful in the context of IS planning, similar to that finding in the strategic planning literature (Pearce *et al.* 1987). Premkumar and King (1994) concede that “research on IS planning has not adequately addressed the performance of planning systems” (p. 79). Nevertheless, the “significant investments in IS and growing claims for deriving strategic advantage through IS has brought the planning performance dimension into prominence” (Premkumar and King 1994). Indeed prescriptions for SISP planning success have been identified:

- Planning time horizon - firms with longer planning horizons have better planning and performance (Bracker *et al.* 1988; Lederer and Sethi 1988; Raymond 1990);
- Quality of business planning system - strong relationship between overall quality of business planning and IS planning (Premkumar and King 1991; Zviran 1990; Lederer and Sethi 1988; McLean and Soden 1977; McFarlan 1971);
- Communication and integration between business and IS planning - successful organizations often use various intra organizational mechanisms such as a steering committee, or IS manager participation in business planning to improve the coordination between the two planning systems (Lederer and Mendelow 1987; Galliers 1987; Lederer and Sethi 1988;

Raghunathan and Raghunathan 1988; Konsynski and McFarlan 1990);

- Status of the IS manager - closer proximity of the IS function to top management and high status of IS executives are related to increased IS planning success (Pyburn 1983);
- Resources (i.e. methodology, IS staff, users and top management) available for planning and plan implementation - inadequacy of these resources is significantly correlated with reduced IS planning effectiveness (King 1988; Lederer and Sethi 1988; Goodhue *et al* 1988);
- Level of top management support and user involvement, both in addition to quality of planning methodology and planning skills of IS staff, were found to be significantly correlated with IS planning success (Adrians and Hoogakker 1989; Brancheau *et al.* 1989);
- Role of IS in the organization - distinct planning characteristics have been identified as most appropriate for different roles of IS in organizations (Raghunathan and Raghunathan 1990; Premkumar and King 1992);
- Volatility of business environment - IS planning organizational impact varies across industries (Porter and Millar 1985; Cash *et al.* 1985; Johnson and Carrico 1988; Ives and Learmonth 1984).

A recent study (Premkumar and King 1994) examining the impact of many of the above factors on IS planning success, concluded that planning resources, the

role of IS, the quality of facilitation mechanisms, the quality of implementation mechanisms and the quality of strategic business planning are significantly associated with the quality and effectiveness of IS planning. Lederer and Sethi's (1988) extensive survey of IS personnel responsible for SISP identified similar key success factors for SISP.

Earl (1993), in his study of 27 organizations, found that the typical SISP experience was deemed by IS executives and business executives to be "worthwhile but in need of some improvement" (p. 3). Two of the commonly mentioned factors contributing to dissatisfaction with SISP were lack of top management support and poor user-IS relationships. As Earl notes, it "is apparent that concerns extend beyond technique or methodology" (p. 4).

On examining these factors in more detail, Earl (1993) found three groupings of concerns related to SISP, which he labeled Method, Process and Implementation.

Method concerns related to the individual techniques, procedures or methodologies employed. Specific concerns were a lack of strategic thinking, excessive internal focus, too much or too little attention to architecture, excessive time and resource requirements, and ineffective resource allocation mechanisms.

Earl notes that general managers in particular emphasized these concerns. He hypothesized that this may have been because "they have high expectations but find IS strategy making difficult" (p. 4)

Implementation concerns centred on the lack of follow-up or implementation of the resultant plans from SISP. Evidence from the interviews suggests that implementation typically did not occur because promised resources were not made available, management was hesitant, technological constraints arose, or organizational resistance emerged. Indeed even when implementation was initiated, plans were not often realized as concerns surfaced about technical quality, the time and cost involved, or the lack of benefits realized.

Process concerns were focused on the lack of line management participation, poor IS-user relationships, inadequate user awareness and education, and low management ownership of the philosophy and practice of SISP.

Earl (1993) concluded that method, process and implementation are all necessary components of successful SISP, with no "single factor likely to lead to universal success in SISP" (p. 5). In fact, the success factors for SISP identified by respondents confirmed this (see Table 2.7).

To date, however, IS researchers have focused on the method portion of what Earl (1993) has called the *SISP approach*. Little attention has been paid to the so-called process component - top management and user support and involvement - arguably the most critical ones.

Rank Order	Success Factor	Number of responses	Primary Frequency	Sum of Ranks	Mean Rank
1	Top Management Involvement	42	15	160	2.55
2	Top Management Support	34	17	140	2.22
3	Business Strategy Available	26	9	99	1.57
4	Study Business Before Technology	23	9	87	1.38
5	Good IS Management	17	1	41	0.65

Source: Earl, 1993

Table 2.7 - Success Factors in SISP

2.1.6 - Senior IS Executive Research

There have recently been several studies which have viewed the strategic management of IS with more of a focus on Earl's so-called process component - namely the role of top management.

Jarvenpaa and Ives (1991) studied CEO participation and involvement in achieving significant success in applying information technology. Participation was defined as an active form of interest in IT such as chairing the IS planning committee or initiating new IT directions. Involvement, on the other hand, was defined as a less active form of interest in which the CEO's attitude or mindset clearly signaled the importance of IT to the organization. These definitions are aligned with Barki and Hartwick's (1994) characterization of the differences between user participation and user involvement. User participation was defined as the activities performed by users during systems development. User involvement was more passive, and was defined as the importance and personal relevance of a system to its user.

The Jarvenpaa and Ives (1991) study concluded that CEO support "generally takes the form of **involvement** rather than active participation. Involvement is, however, an effective means of support: a high degree of such support does, in fact, correlate fairly well with IT progressiveness." (p. 204) This finding suggests that indeed researchers are not likely to find active support for IT from the executive ranks, rather that a more passive form of intellectual support should be expected and studied. This finding indicates that shared understanding is likely a good candidate for describing this form of passive involvement that leads to success in applying information technology.

Feeny, Edwards and Simpson (1992) also looked at top management support. Specifically, they looked at the determinants of a successful relationship between the CEO and CIO. Although not explicitly studied, the underlying assumption in this piece of research is that a successful relationship between the CEO and CIO leads to success in applying information technology. Figure 2.1 illustrates the model that was tested.

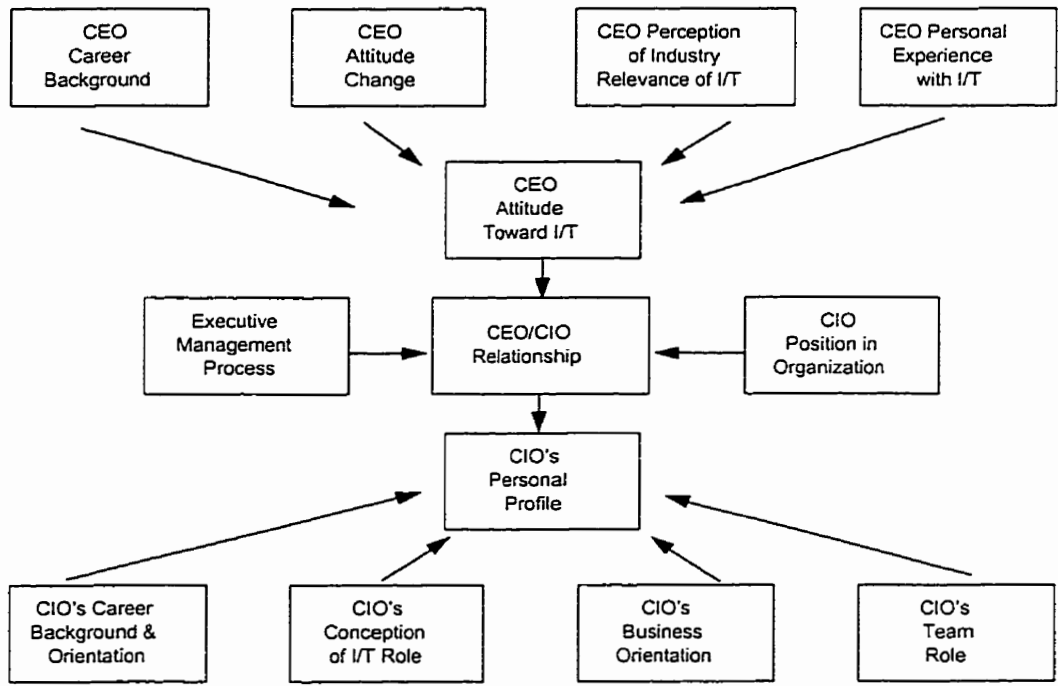


Figure 2.1 - Interview Design Model (Feeny, Edwards and Simpson)

Although their sample size did not allow for conventional statistical analysis, Feeny *et al.* (1992) conclude from the study that "successful relationships seem to be linked to a shared vision of the role of IT as an agent of transformation. The CIO's in these successful relationships may have extensive IT backgrounds, but they are accepted into the top management team and are seen to contribute beyond their functional responsibilities."(p.435) Their findings of other attributes of "excellent" CEO/CIO relationships are summarized in Table 2.8.

CEO ATTRIBUTES	ORGANIZATIONAL ATTRIBUTES	CIO ATTRIBUTES
<ul style="list-style-type: none"> • General management and/or marketing background • Change-oriented leadership • Attended I/T "awareness" seminars • Experienced I/T project success • Perceives I/T as critical to the business transformation 	<ul style="list-style-type: none"> • Personal/informal executive styles • Executive workshops on strategic issues • CIO accepted into executive team 	<ul style="list-style-type: none"> • Analyst background and orientation • Promotes I/T as agent of business transformation • Contributes beyond I/T function • Accurate perception of CEO views on business and I/T • Integrates I/T with business planning • Profile stresses consultative leadership and creativity

Table 2.8 - Attributes of Excellent CEO/CIO Relationships

Similar to the conclusions drawn by Jarvenpaa and Ives (1991), the findings from this exploratory study indicate that a positive attitude with respect to IT is important for the CEO to have. The study goes further, however, and indicates that some specific knowledge about IT is also important. For example, CEO experience with successful IT projects (and presumably with the reasons for its success), and CEO attendance at IT "awareness" seminars are partial ingredients for successful

CEO/CIO relationships. From the CIO perspective, the study found that CIO's who have a good knowledge of the business are more likely to form successful relationships with their CEOs. Taken together, these findings indicate that some form of shared understanding about IT and business issues facilitates the successful application of IT in organizations.

The final study that is relevant to this particular piece of research, and one that this research draws heavily on, is Reich's (1992) study of the linkage between IS and business domains in the insurance industry. Reich (1992) termed the dependent variable in her study "linkage", which was defined as "a high level of mutual understanding between IS and business executives about each others' mission, objectives and plans", (p. ii).

More specifically, Reich conceived of linkage in two dimensions, one intellectual and the other social. The intellectual dimension was related to the content of information technology and business plans. The social dimension was concerned with the IS and business executives' understanding of each others' objectives and plans. Reich's (1992) work focused on the social dimension of linkage, having noted that a growing body of research was focusing on the intellectual dimension (e.g. Chan 1992).

The findings at the business unit level (see Figure 2.2 for research model) indicate that high levels of linkage were present in those business units where: 1) there was shared knowledge between IS and business executives, 2) a successful IT implementation history, 3) shared beliefs about the value of IT, and 4) communication between IS and business executives.

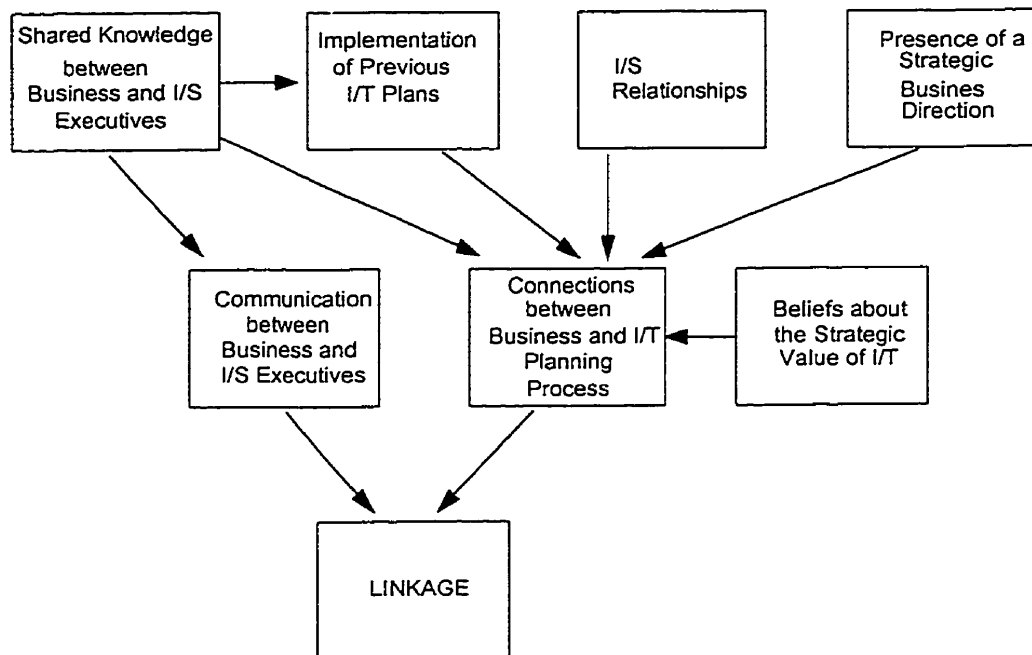


Figure 2.2 - Reich Conceptual Model

2.2 - Research Model and Propositions

As indicated previously, this research study addresses four broad research questions:

1. What are the key issues to have shared understanding about?
2. How can shared understanding be assessed reliably and validly?
3. What factors result in shared understanding?
4. Is there a relationship between shared understanding and success in deploying information systems?

This section describes the development of a preliminary research model, derived from a review of the literature summarized in the previous section, that will be further developed and tested in this research study. The following subsections explain the logic used to develop the individual constructs and make the case for their inclusion in the preliminary research model.

2.2.1 - Shared Understanding

Reich's (1992) study is an important step forward in determining how shared understanding, in this case about mission, objectives and plans, is related to the successful application of IT. Earl's (1993) findings, however, suggest that many

organizations that exhibit high levels of this type of linkage are still unable to exploit the potential for IT.

Even where SISP was judged to have been successful, the resultant strategies or plans were not always followed up or fully implemented. Even though clear directions might be set and commitments made to develop new applications, projects often were not initiated and systems development did not proceed. (p. 4)

Lederer and Sethi (1988) have made similar conclusions. Their evidence indicates that often times promised resources were not made available, management was hesitant, technological constraints arose, or in the absence of a clear message from management, organizational resistance emerged.

This dissertation seeks to build on and broaden Reich's concept of linkage in the belief that it is not enough to have a common understanding of goals and objectives, but that it is also critical to have some shared understanding of issues related to investment priorities and the systems development task itself.

Reich's (1992) study of linkage indicates that the construct is one dimensional, consisting of a shared understanding of the goals and objectives.

Dougherty's (1992) work suggests that shared understanding should be conceived of as three dimensional:

1. What people see when they look into the future, including issues that are most uncertain,
2. What people consider to be the critical aspects of the development process, and
3. How people understand the development task itself.

CIO's are often heard to comment that their success is highly dependent on how well they manage the expectations of those they provide service and/or information systems to. If one conceptualizes the management of expectations as indeed the creation of shared understandings, then the work done by Ginzberg (1981), Lyytinen (1988) and Marcolin (1994) on users' expectations is useful for informing our understanding of the nature of shared understanding.

Ginzberg's (1981) early work on user's expectations regarding the development of new systems indicates that users have, *a priori*, five categories of expectations:

1. The reasons for developing the systems (its goals and objectives);
2. The importance of the problem being addressed;
3. The way the system will be used;
4. The impact the system is likely to have on the organization; and
5. The criteria which should be used to evaluate the system.

Lyytinen (1988) identified two categories of failures related to managing users' expectations: IS Development Failures and IS Use Failures. This research is not focused on the use of individual information systems, thus the IS Use Failures are somewhat less applicable than the IS Development Failures. Lyytinen identified 6 dimensions of IS Development Failures:

1. Goals - a stakeholder's inability to state goals that are not ambiguous, narrow, conflicting and can be operationalized
2. Technology - a stakeholder's inability to choose and implement technology so that design is cost-effective due to organizational policies, prior decisions, etc. Also a stakeholder's inability to avoid risks of technology change
3. Economy - a stakeholder's inability to calculate accurately the economic impact of the system and to provide sound theoretical foundations
4. View of Organizations - A stakeholder's inability to predict behavioural, psychological, and organizational impacts of the IS
5. Process Characteristics - A stakeholder's inability to participate in development that provides chances to influence, to communicate and to express authentically opinions
6. Self-image - A stakeholder's inability to understand all aspects of IS design and the bias to regard it as a rational process

Marcolin's (1994) study of user's expectations is a comprehensive synthesis of the Ginzberg (1981) and Lyytinen (1988) studies. Like Lyytinen's (1988) IS Use failures, Marcolin's (1994) work is focused on the use of specific information systems, and as such is not as applicable to extrapolate from as the original Ginzberg (1981) and Lyytinen (1988) studies.

Taken together, the Reich (1992), Dougherty (1992), Ginzberg (1981) and Lyytinen (1988) findings, the following preliminary working definition of shared understanding results:

Proposition 1: **Shared understanding is a four dimensional construct.**

Proposition 1a: One dimension of shared understanding is related to having a shared future view (i.e., a vision) for IS in the organization

Proposition 1b: One dimension of shared understanding is related to having a shared view of the critical investments necessary for achieving that vision (i.e., doing the right things)

Proposition 1c: One dimension of shared understanding is related to having a shared view of the keys to success in the overall management of IS investment activities (e.g., systems development task) (i.e., doing things right)

Proposition 1d: One dimension of shared understanding is related to having a shared view of the criteria for evaluating successful deployment

2.2.2 - Information Systems Performance

IS research has still not yielded the definitive dependent variable, namely one that measures the "success" of information systems within organizations. A variety of measures have been proposed and tested. The DeLone and McLean (1992) discussion of these measures is a useful summary of the state of affairs.

DeLone and McLean (1992), in their review of seven key MIS publications, identified six major categories of IS success:

- System Quality
- Information Quality
- Use
- User Satisfaction
- Individual Impact
- Organizational Impact

They conclude that there is indeed no single definitive measure of IS success, but rather that the above noted categories are interrelated and interdependent. This research study is not concerned with a particular information system within an organization, but rather success in deploying information systems generally. Thus, a great number of the IS success measures studied by DeLone and McLean are not applicable. Also, given the preliminary nature of the shared understanding construct, to examine in-depth its relationship to the problematic established measures for IS success is not advisable at this stage of the research.

On the other hand, to not at least form initial impressions of the relationship is to miss an opportunity to further our knowledge in this area. To achieve the latter, a single item subjective measure has been included, similar to that employed by Jarvenpaa and Ives (1991) in their study of executive involvement in IT

management. They asked respondents to rate their company's relative IT use within their industry, ranging from industry leader to laggard. The following proposition related to this part of the conceptual model is:

Proposition 2: Shared understanding is directly related to success in deploying IT.

As DeLone and McLean (1992) also note, "much work is still needed, particularly in assessing the impact of information systems on organizational performance". Ideally, this study should measure organizational performance as well; however, because of the preliminary nature of the shared understanding construct, its relationship to organizational performance is best left for a follow-on study.

2.2.3 - Determinants of Shared Understanding

A number of literatures, particularly those that fall under the Business Policy umbrella, suggest that there are a number of factors which contribute to the development of shared understanding. One useful body of literature with respect to the determinants of shared understanding, is the work focused on organizational learning. A synthesis of this literature, as provided by Huber's (1991) review, suggests that the creation of shared understanding is likely affected by:

- The uniformity of prior *cognitive models* possessed by the organizational units,
- The uniformity of the *framing* of the information as it communicated,
- The *richness of the media* used to convey the information,
- The *information load* on the interpreting units, and
- The amount of *unlearning* that might be necessary before a new interpretation could be generated.

Cognitive models, as noted previously, have three components: content, structure and style. Each play an important part in directing managerial attention. At the same time, however, each component is a complex area of inquiry in its own right. Thus it is difficult to incorporate an examination of each component in one single research effort, even though each is an integral part of representing one's cognitive model.

Little research has been conducted on the content aspect of cognitive models. Rather most of the research has been focused on developing valid and reliable representations of managers' cognitive structures. To date, however, the techniques for doing so have proven either to be psychometrically invalid (Streufert & Streufert 1978, Keen & Bronsema 1982, Crossan 1991) or too cumbersome and time consuming (e.g. Repertory Grid Technique) that only the most captive of

business students agree to participate. Less well researched and indeed understood, is the link between cognitive structures and strategic choices, although there are preliminary indications (e.g. Priem, 1994) that executives' cognitive structures affect their strategic choices.

Relatively little research, in an executive decision making context, has been conducted on cognitive style. Nutt's (1986a) study of executive decision making related to capital investment proposals found significant differences along classic Jungian lines. His subsequent study (1993) found that in fact it appears that executives have flexible "multidextrous" decision styles, and do not always exhibit one Jungian type.

To attempt to measure all aspects of cognitive models is not practically possible at this point in time - the techniques available are not mature enough and are also not particularly useful in an organizational research context. Thus it is necessary to choose one aspect of cognitive models to measure, and in this research cognitive style appears to be the most useful choice - a) there are valid and reliable measures available that have been used successfully on practicing managers and b) there are a number of studies (e.g. Nutt, 1986a, 1993) that suggest that cognitive style is related to executive decision making.

Thus the following proposition results:

Proposition 3: Similarity of cognitive styles is directly related to shared understanding

The conceptual model embodies the basic assumption that shared understanding, first and foremost, can only come about through communication.

This communication can occur through different media (e.g. face-to-face, written), occur in many different settings (e.g. formal or informal) and among different types and sizes of groups.

Media richness theory (Daft & Lengel 1986) indicates that communication media differ in their ability to convey information. The richness of media is measured by the ability to provide immediate feedback, convey multiple cues, use natural language and have a personal focus. At the high end of the media richness scale is face-to-face communication, and at the low end is written communication.

In addition to the richness of the media, Reich 's (1992) work suggests that the frequency of communication and the diversity of communication (i.e. IS issues only or a mixture) are likely to affect shared understanding. While the literature review provided many other interesting other considerations related to communication, such as information overload and the degree of unlearning involved (see Section 2.1.3), an in-depth assessment of these as they relate to shared understanding, is beyond the scope of this particular research project. Thus, the

total *level of communication*, consisting of the richness, frequency and diversity of the exchanges is put forth as an initial communication factor posited to affect the development of shared understanding. The resulting proposition is:

Proposition 4: Level of communication between IS and line executives is directly related to shared understanding

Both the business policy and IS literatures indicate that a precursor to shared understanding is shared knowledge. Hambrick (1987) notes that the knowledge required is context specific and that "in-depth familiarity with certain industry, technical, or functional-area issues, legal or regulatory factors, and marketplace trends are illustrative of the knowledge bases that may be needed. Obviously, the more technically or legally complex the business, the greater the knowledge requirements" (p. 95). Reich (1992) notes that "understanding is fostered, in part, when people have similar work experiences (e.g. by being in the same industry, the same organization or in similar roles)" (p. 55). In short, general knowledge relating to both business and IS (i.e. technical) issues are important in the context of this research. Reich's (1992) work further indicates that shared knowledge affects linkage indirectly by impacting the level of communication. Thus the following proposition results:

Proposition 5: Shared knowledge between IS and business executives is directly related to level of communication

The organizational learning literature indicates that the "unlearning" of negative facts or beliefs is an important determinant of shared understanding. As Hedberg (1981) concludes, understanding involves both learning new knowledge and discarding obsolete and misleading knowledge. The discarding activity - unlearning - is as important a part of understanding as is adding new knowledge. This idea of unlearning is especially interesting in the context of information systems given the abysmal statistics regarding delivery on new systems (Standish Group, 1994).

If beliefs about past IS failures are conceptualized as being "negative facts", then the extent to which these negative beliefs have been "unlearned" would be an important determinant of shared understanding. These beliefs can be related to the efficiency of past IT activities (e.g. projects delivered on time and on budget) and also the effectiveness of previous IT investments (e.g. delivered value). Indeed several other key IS studies (see for example, Lederer and Sethi 1988; Premkumar and King 1994) also conclude that the success of previous planning efforts affect current outcomes. Reich (1992) concluded that the "implementation of previous IT plans" affected the 'linkage' construct indirectly by affecting other determinants of shared understanding, specifically level of communication. Thus the following proposition results:

Proposition 6: Success in Implementation of previous IS plans is directly related to level of communication

The final factor suggested by the organizational learning literature as it relates to shared understanding, is the impact of information overload. Essentially the argument put forth is that if one is overloaded with information, it is difficult to create shared understanding simply because there is not enough time and/or mental energy to do so. It seems that this factor would, however, indirectly affect the creation of shared understanding by directly affecting the level of communication. However, it seems likely that senior executives in general, and at least those within a given industry, would suffer from more or less the same amount of information overload. In other words, it is unlikely that information overload is a differentiating factor. Therefore, it will not be included in the research model.

As mentioned previously, the organizational learning literature is especially useful for illuminating the determinants of shared understanding. Research on top management, however, suggests that several additional factors also contribute to the development of shared understanding. Specifically, this body of literature indicates that in addition to cognitions, similarity of other individual factors such as values, need for achievement, tolerance for risk, tolerance for ambiguity, charisma and locus of control are important determinants of executive actions. A sub-stream of this literature suggests also that similarity around other executive characteristics

such as gender, level of education, and type of degree earned (to name just a few) is also important.

Clearly not all of these executive characteristics can be captured in one study. The challenge is to decide which ones are likely to be the differentiating ones. Any senior executive who has ever had to sit on an IS Steering Committee will tell you, and indeed those executives interviewed during the pilot case study did, that many investments in information systems are perceived to be relatively high risk. They are high risk because they usually involve large amounts of money, which could all be wasted if the right choice isn't made. Thus tolerance for risk appears to be a factor that might affect the development of shared understanding.

Similarly, there are very few "right" answers in selecting which technologies to invest in, for many of the same reasons that investments in information systems are perceived to be high risk. If one is not predisposed to dealing in ambiguous situations, this might affect the development of shared understanding. Thus tolerance for ambiguity also appears to be a good candidate for a differentiating executive characteristics.

A great number of studies, as detailed in Chapter 2, have found that a number of demographic variables differentiate between executive choices. From

these studies, the primary demographic variables that are likely to be differentiating factors in this research context are: tenure, functional background and formal education.

In short then, tolerance for ambiguity, tolerance for risk, tenure, functional background and formal education appear to be the key executive characteristics of interest. Thus the following proposition results:

Proposition 7: Individual Differences are directly related to shared understanding

2.2.4 - Preliminary Research

From a synthesis of the various literatures reviewed in this chapter, the conceptual model depicted in Figure 2.3 emerges.

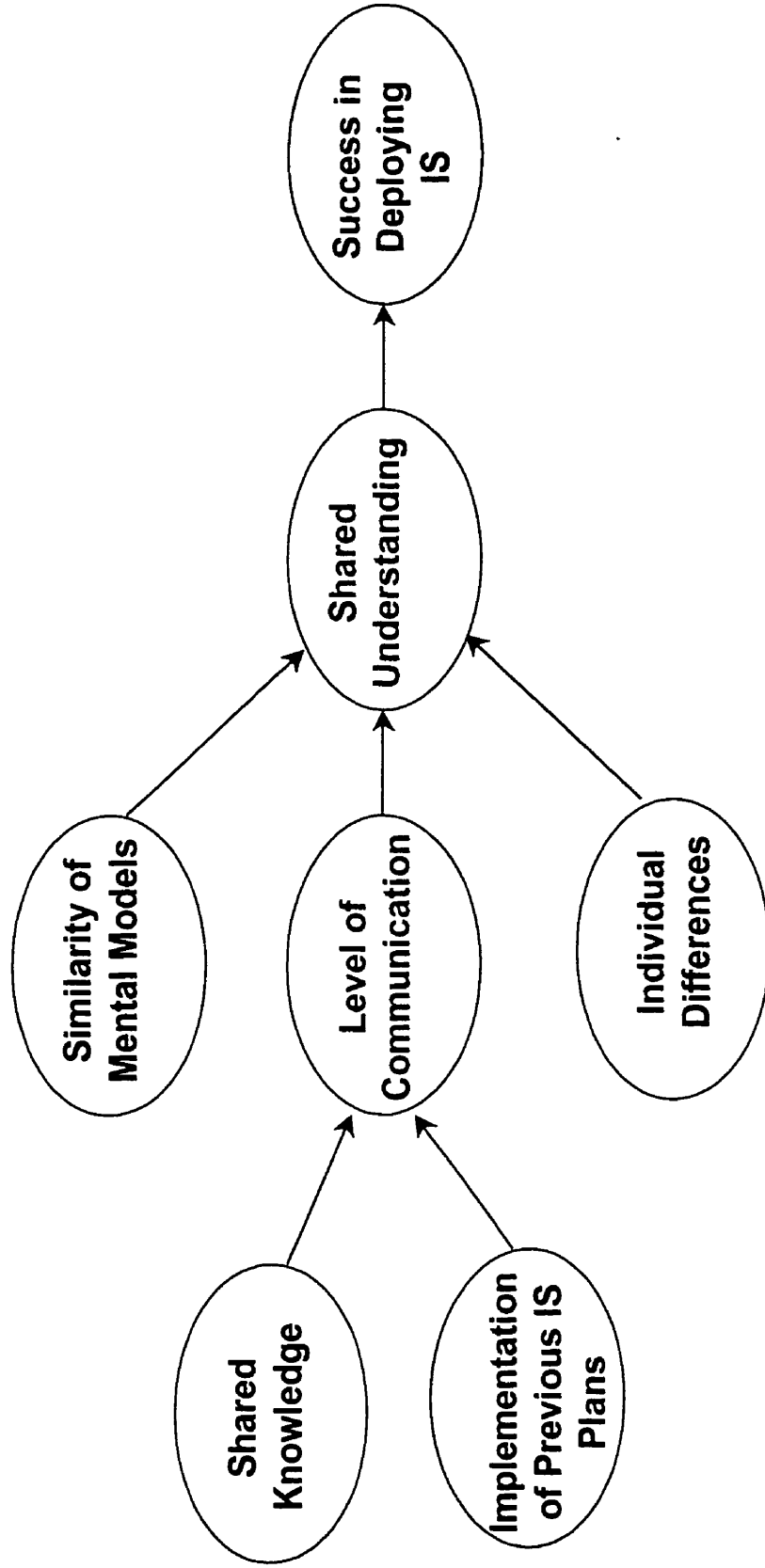


Figure 2.3 – Initial Research Model

The model is preliminary in nature and serves as both a guide for inquiry during Phase 1 of the research design and as a set of testable propositions. The relationships proposed in the conceptual model have been deliberately expressed as propositions rather than hypotheses to reflect the exploratory nature of the research and also the concomitant challenges that will be encountered in trying to detect these relationships.

CHAPTER 3 - PHASE 1 CASE STUDIES

This section describes the Phase 1 research approach and findings. This research project is undertaken as an initial step towards answering the following four broad research questions:

1. What are the key issues to have shared understanding about?
2. How can shared understanding be assessed reliably and validly?
3. What factors result in shared understanding?
4. Is there a relationship between shared understanding and success in deploying information systems?

3.1 – Research Design

A review of the literature indicates that research into shared understanding in this particular research context, and indeed in other management research domains, is at the initial stages (see for example, Dougherty 1992, Huber 1991, Reich 1992). As such, a two-phase empirical approach is employed to address the aforementioned research questions.

Prior to the initial phase, and based on an extensive literature review, an initial research model and propositions were developed and described in Chapter 2. From the Business Policy literature, research on top management's effects on organizations provided the backdrop for examining shared understanding at the senior executive level (e.g., Hambrick and Mason, 1984). It also provided insight

as to why senior executives make the decisions they do. The organizational learning literature illuminated the antecedents of shared understanding (e.g., Huber, 1991). Research on product innovation, and specifically the relationship between R&D and marketing, was useful for understanding the dimensions of shared understanding (e.g., Dougherty, 1992). And lastly, the Strategic IS Planning (e.g. Earl, 1993), IS Expectations (e.g. Lyytinen, 1988; Marcolin, 1994) and Senior IS Executive (e.g. Reich, 1992) research literatures discussed shared understanding specifically in the context of information systems.

In the first empirical phase, eight in-depth case studies were conducted in order to refine the research model developed from the initial literature review. The primary purpose of this phase was to further refine the shared understanding construct, explore the relationships proposed by the preliminary research model developed from the literature, probe the relationship between shared understanding and IS performance, and clarify operationalization of the constructs, most importantly shared understanding. According to Bonoma (1985), case based research methods are “useful when a phenomenon is broad and complex, where the existing body of knowledge is insufficient to permit the posing of causal questions and when a phenomenon cannot be studied outside the context in which it occurs” (p. 207). All three qualifications hold for initial examination of shared understanding, thus a case based research approach was chosen as the best approach to adopt for Phase 1 of this dissertation.

Given that the primary goal of the dissertation research was to develop the concept of shared understanding more fully, to the point where an initial research instrument can be tested, the recommendations made by Churchill (1979) regarding instrument development serve as a useful framework for the detailed research design.

Churchill (1979) recommends a six step process for developing constructs and measures:

1. Specify Domain of the Construct
2. Generate Sample of Items
3. Collect Data
4. Purify Measures
5. Collect Data
6. Assess Reliability and Validity

Consistent with Churchill's (1979) recommendations, data were collected in two phases in this dissertation. Phase 1, is a case-based research approach designed to address steps 1 through 4 as outlined above. Phase 2 is a survey-based research approach, designed to satisfy the requirements for steps 5 and 6, as well as test the research model as modified in Phase 1.

The following sections describe the Phase 1 research approach. First the unit of analysis is discussed. This is followed by a section outlining the Phase 1 case selection in detail - the case studies in the sample and how they were chosen. Section Three details the actual research methodology. Section Four describes additional Phase 1 data collection.

3.1.1 - Unit of Analysis

Shared understanding is created first and foremost between or among individuals. In some organizations, where decisions regarding IT investments are made by a steering committee, senior executive team or some other such group, the relevant unit of analysis would be the group. In other organizations, however, strategic IT decisions are not made by a group, (although there may be guidelines provided by a senior management group), but are rather made between individuals - e.g. the Senior Vice President for IS and the Senior Vice President for Distribution and Logistics. In these types of organizations, the unit of analysis would not be a senior management group, but rather a pair of individuals or dyad. The pilot study and subsequent initial discussions with other retailers indicated that the latter description is more typical of many retail organizations these days. Thus the unit of analysis for this research study is a dyad, one half of which is the senior IS executive, and the other half of which is an equivalent senior line manager (e.g.

Senior Vice President Marketing & Sales, Senior Vice President Logistics & Distribution, Senior Vice President Finance, etc.)

3.1.2 - Case Selection

Eisenhardt (1989) suggests that two activities are critical for selecting cases where the goal is to develop theory. The first activity is to specify a population that "constrains extraneous variation and sharpens external validity" (p. 533). The second activity is to select cases from the population based on theoretical, not random, sampling. The reason for this is that it "focuses efforts on theoretically useful cases - i.e. those that replicate or extend theory by filling in conceptual categories" (p. 533)

To satisfy the first requirement, the sample population was North American Retailers in the grocery, department store, discount/mass merchant and hardware/home centre/auto segments only. The selection of one industry controlled for environmental variation. The retail industry offered an excellent opportunity to study an industry in which IT is critical to business success, yet in terms of value added in the final product, it is relatively low. Put another way, IT is not *the* product in the same way it is for the banking industry, yet it is crucial to the business. Thus the retail industry may be more typical of the majority of industries whose livelihood

still relies on the movement of atoms as opposed to the movement of bits (Negroponte, 1995).

Within the retail industry, there are eight categories of merchant types:

1. Apparel Specialty
2. Convenience
3. Grocery
4. Department Stores
5. Discount/Mass Merchants
6. Drug Stores
7. Hardware/Home Centre/Auto
8. Other Specialty

Each of these eight merchant types operates under slightly different market pressures and the uses of information systems reflect these differences. For example, the Apparel Specialty segment of the industry is focused on fashion trends and moving goods periodically in alignment with the changes in season. The number of stock keeping units (SKUs) can be relatively small and ordering and shipment of goods takes place on a periodic basis. Thus distribution systems are not as critical, even though they are still important, as they are for example, to the Discount/Mass merchants. These retailers stock a large number of SKUs and

typically large quantities of each. Ordering and shipping are done on a continual basis and distribution systems are absolutely critical. This is but one example of the different foci for information systems, although it is indicative of other fundamental differences separating the different types of retailers.

In this study it was considered to be important to examine shared understanding in retail organizations that operate under roughly the same market pressures and thus have essentially the same requirements and foci for information systems. By narrowing the target group to include retailers in the grocery, department store, discount/mass merchant and hardware/home centre/auto segments only, there was a control for unwanted variation. In this last category, for those merchants that have an auto centre component to the business, that portion of the business was not examined as it is typically operated as a separate business anyway and does not fit the criteria for selection. Unwanted variation due to business strategy was controlled by specifying that retailers must have a volume and breadth of selection approach to business strategy.

Within the **grocery segment**, examples of retailers that were of interest are: National Grocers, A&P and Provigo. Within the **department store** segment, firms of interest include: Sears, JC Penney, Eaton, Mervyns, and Hudson Bay. The upscale/high end department stores such as Saks Fifth Avenue, Burdines, Neiman Marcus are not included, because they do not fit the sample criteria as they are primarily focused on fashion goods. Within the **discount/mass merchant** segment,

retailers such as Walmart, Zellers, and Kmart are examples of organizations of interest. And finally, within the **hardware/home centre/auto segment**, the following are examples of target retailers: Canadian Tire , Beaver Lumber, Home Depot, Target, and Eagle.

The second selection criteria relates to a theoretical justification for sample selection. In an attempt to specify organizations that should theoretically exhibit shared understanding, the target sites were carefully selected. Since success in deploying information systems is posited to result from shared understanding, organizations that exhibit success in deploying IS were targeted. In order to do this, contacts in the industry were used to assist in identifying potential case sites based on this subjective assessment of success with IS. These industry contacts included a Vice-President of Information Systems who has operated in the hardware/automotive segment for over 20 years, as well as a Marketing Representative for Hewlett-Packard who has over 16 years of experience in the retail sector. Based on their assessments, and in conjunction with more objective information sources (e.g. annual reports and industry surveys - e.g. Information Week Top 100), potential case sites were identified. In order to ensure that there was enough variation in the sample, it was also important to include some organizations that most likely did not exhibit high levels of shared understanding. The same contacts were used to determine which organizations might exhibit this phenomenon.

3.1.3 - Research Methodology

Firms were initially contacted by phone, usually via the Vice-President of IS (or person with similar job description or title such as CIO). During this initial phone call, the research study was briefly described and their initial interest gauged. Interested executives were also faxed a more detailed two page description explaining in more detail the research study, their required commitments and the proposed outputs of the study (see Appendix A for sample). Prior to widespread use, feedback on this brief description was elicited from several CIO's in order to assess its appropriateness and usefulness. Several suggestions were made and the document modified accordingly. The brief description has also proven to be a very useful tool for marketing the research study internally within organizations. A total of 12 organizations were contacted, and eight agreed to participate (see Appendix B)

Once an organization agreed to participate, a preliminary interview was held with the senior information systems executive to verify the suitability of the site, validate their willingness to participate, and to collect any initial written documentation. At this initial interview, the other individuals in the organization that were of interest to interview were discussed. In all eight sites, the senior IS executive's assistant set up the interviews, and ensured that all interviewees were sent a copy of the two-page description of the research project. Thirty-three

individuals were interviewed (see Table 3.1 for a summary of interviewees by company) for a total of 25 dyads.

Interviewee	Title
A1	IS Executive
A2	Chief Financial Officer
B1	IS Executive
B2	VP – Logistics & Distribution
B3	SVP – Procurement
C1	IS Executive
C2	Chief Financial Officer
C3	SVP – Marketing
C4	SVP – Franchisee Relations
C5	SVP – Logistics & Distribution
C6	SVP – Diversified Businesses
D1	IS Executive
D2	SVP – Logistics & Systems
D3	EVP
D4	SVP – Finance
D5	SVP – Franchise Division
D6	EVP – Wholesale Services
E1	IS Executive
E2	VP – Retail
E3	VP – Merchandising
E4	EVP
E5	VP – Human Resources
E6	VP – Finance & Admin.
F1	IS Executive
F2	Managing Director
F3	VP – Store Operations
G1	IS Executive
G2	General Manager, Store Operations
G3	VP – Human Resources
H1	IS Executive
H2	VP – Supply Chain Management
H3	VP – Finance
H4	VP – Human Resources

Table 3.1 – Summary of Interviewees

Data Collection

As Jick (1979) suggested with respect to qualitative research, it is imperative to collect different types of data in order to triangulate perceptions and significance, and generally verify any finding. In this phase, data were collected from two sources: semi-structured interviews and written documentation. See Appendix E for interview guide.

Semi-structured interviews were used to collect information from all informants. Interviews lasted between 45 minutes and three hours. Most were conducted face-to-face, with seven conducted by phone.

Written documentation was used in several ways in this study. First, during the initial interview with the CIO, he/she was asked for any documentation that might be relevant to the study. This documentation typically included strategy documents, organization charts, minutes from meetings, consultants reports, memos and annual reports. These documents were used to both customize and augment the generic interview guides prior to the full-round of interviews. In this way, a richer understanding of the organization was developed by the researcher prior to the actual interviews. Written documentation was also used, where possible, to triangulate with the interview results.

In terms of the actual data gathering protocol, the author was in all cases the primary researcher and interviewer. A research assistant was hired to act in the capacity of secondary researcher, and a tertiary researcher was also employed in several of the key data analysis steps.

The following data gathering protocol was followed:

1. A preliminary interview with the senior IS executive was conducted to assess the suitability of the site and the overall willingness to participate, as well as to collect initial written documentation.
2. Initial interviews were then set-up. This was in all cases co-ordinated by an "inside" administrative person attached to senior IS executive.
3. Interviews were conducted. Audio tapes were created where possible and other relevant documentation gathered in order to verify interview data. In several cases where interviewees did not want the interview taped detailed notes were taken and transcribed immediately following the interview.
4. A follow-up interview/phone call was made, if necessary, to address points requiring clarification.

Validity and Reliability

Internal Validity

Of the various forms of internal validity, content validity was of prime interest in this phase of the study. That is to say, the newness of the shared understanding construct necessitated a focus on addressing content validity. To do this, initially a wide survey of relevant literature (IT, business policy, and product innovation) was conducted and the broad range of work experiences of the primary and secondary researcher were drawn upon.

The exploratory nature of the research also limits the extent to which construct validity can be demonstrated initially. Yin (1984) suggests that several tactics in case-based research are useful for ensuring construct validity: use of multiple sources of evidence, establishment of a chain of evidence and to have key informants review the draft case study report. Every attempt was made to use multiple sources of evidence; however, by its very nature measurement of shared understanding is heavily dependent on the informant interviews. A clear chain-of-evidence is presented in the case reports and these reports were reviewed by key informants.

External Validity

In most research, there is a trade-off between internal and external validity. In this research design, given the stage of development of the shared understanding construct, the focus was on demonstrating internal validity and to a lesser extent at this point, on external validity. As such, the chosen sample was narrow. Although the sample is believed to be representative of a large number of organizations, the generalizability of the results is nevertheless reduced.

Reliability

In this exploratory phase, the issue is not so much one of validity as one of reliability. In particular, of prime concern, is "demonstrating that the operations of a study such as the data collection procedures can be repeated, with the same results" (Yin 1984, p. 36). Yin further suggests that reliability can be demonstrated by developing and using a case study protocol, such as the one currently being described. Further to this, reliability is improved by collecting data from multiple sources, having a secondary and tertiary researcher review the findings, and using a structured case write-up approach for analysis and interpretation. Finally, the primary researcher's experience in the retail industry, both in a line and IT capacity, should allow for reliable interpretation of the data.

3.1.4 - Additional Phase 1 Data Collection

Given that one of the primary purposes of Phase 1 of the research project was to define shared understanding, several other data collection approaches were employed to enhance understanding of the shared understanding construct.

First, the researcher had the opportunity to discuss the conceptualization of shared understanding presented here, and its link to information systems success, with senior line and IT executives from across Canada through her involvement with the Queen's Executive Program (QEP). This program runs for three weeks, for three different sessions, during the summer months, is the largest executive development program of its kind in Canada, and is one of the largest in North America. As part of its curriculum, there is a briefing on selected information systems related topics. During each of the three IT briefing sessions held in 1996, participants were asked to 1) comment on the relevancy of the shared understanding concept, and 2) to identify the top three issues they believed the shared understanding construct to be comprised of. The group then discussed their responses for 45 minutes. The data collected from these informal focus groups was used to further specify the domain of the shared understanding construct and also to establish the face validity and content validity of the construct, as developed through the literature review. See Appendix C for a summary of these issues.

3.1.5 – Data Analysis

As Yin (1984) states, in case-based research such as the current study, there are no established guidelines for linking the data collected to the propositions, or for developing the criteria for interpreting the findings. Eisenhardt (1989) advocates using within-case analysis to gain familiarity with the data and the preliminary theory generation, and cross-case pattern searching using divergent techniques to "force investigators to look beyond initial impressions and see evidence through multiple lenses" (p. 533). This data analysis protocol is consistent with the approach employed by Reich and Benbasat (1990), in which a four step process included: assimilation, interpretation, ranking and comparison. In Phase 1, data were analyzed in four steps following the Reich and Benbasat (1990) methodology.

Assimilation - Individual Level Analysis

In this first step, the interview tapes were transcribed, and a report was created for each interview. Using the key concepts from the research model as headings, data from each interview was transcribed onto worksheets by the primary researcher. Each comment was examined to determine its relevance to the constructs of interest. Relevant comments were slotted under a heading for which

there was one for each of the constructs proposed in the Phase 1 research model. A second researcher reviewed the transcripts and worksheets to validate the coding by the primary researcher.

Interpretation

This second step in the data analysis was concerned with determining the presence or absence of intermediate and dependent constructs, in this case shared understanding, and the values of independent constructs. With respect to the shared understanding concept, one of the goals of this first phase was to determine the issues senior executives felt were important to have shared understanding about. Thus an important part of this step was to, for each comment, assign it to an issue. These issues emerged over the course of the interviews and an important step in this interpretation stage was to review all interview transcripts once the final interview was complete. As evidence of the thoroughness of the issues identification process, the final 7 interviews resulted in no new issues being identified.

As an example of how the interpretation process worked, one interviewee talked about the importance (for the organization) of understanding that you need to “build a Cadillac frame so that you can not only initially put a Chevrolet on, but also a Cadillac on in the future if you need or want to”. Clearly there is no shared

understanding issue associated with car frames, but this comment was representative of the interviewee's belief in the importance of understanding infrastructure issues. As such, the comment was interpreted as one person's support for infrastructure issues in the shared understanding construct.

In order to control for the subjectivity inherent in this process and thereby ensure the integrity of this step (i.e. the validity of the interpretation), two additional researchers undertook the same process. The assignment of a comment to an "issue" was compared across the three researchers, and discrepancies resolved through in-depth discussion on each point. Although a time consuming and laborious exercise, this step was critical in the entire data analysis process, because the "issues" were used for two purposes. First, as inputs into the ranking step, and second, as inputs into the process for creating a measure for shared understanding, to be used in the survey phase of the research.

Ranking - Within-Dyad Data Analysis

Once the issues were identified for each individual, these and the values assigned to independent constructs, were used as inputs into the ranking for each dyad. For each dyad, a table was constructed summarizing the individual analyses for both people in the dyad. Each table contains the IS Executive's summary on the

left, and the business executive's summary on the right. The issues that were created in the interpretation step are in **bold** in the tables. The raw comments are also provided under the bold issues to provide added context, and as a final check on the validity of the interpretation process. A summary of this analysis is included in Appendix D.

The next step after the tables were constructed, was to assess the level of congruence for the constructs of interest. The process for assessing this level of congruence was relatively straightforward and well tested for all constructs except for the one of prime importance in this research, shared understanding.

Given the exploratory nature of this phase of the research, it seemed prudent to employ a simple ordinal scale to represent the level of shared understanding. In short, using the issues identified in the interpretation step, an assessment was made as to whether or not for a given dimension of shared understanding, there was a low, moderate or high level of shared understanding based on the amount of overlap in the issues.

Ratings for each subdimension of shared understanding were created on the following basis:

HIGH - an overlap of at least 60% of the issues identified as being critical

MODERATE - an overlap of between 30% and 59% of the issues identified as being critical

LOW - an overlap of less than 30% of the issues identified as being critical

In assessing the degree of overlap, the IS executive was chosen as the anchor. Since this research is focused on the information systems issues it is important to have a shared understanding about these issues, *not* about specific business issues.

The next step in the ranking process, was to integrate the assessments on the dimensions of shared understanding into an overall assessment for the construct as a whole. During the interviews, each respondent was asked to identify the one dimension of shared understanding he/she thought it was most critical to have shared understanding about. Where there was agreement on this most critical dimension in each dyad, the rating for that dimension was used as the overall rating for the level of shared understanding. Where there was disagreement on this most critical dimension, the overall rating assigned for the level of shared understanding was more difficult to determine, and thus was based on a review of the overlap on all four dimensions.

Comparison - Across-Dyad Data Analysis

Once the analysis was completed for each dyad, comparisons were made across dyads to determine which independent constructs had an impact on the dependent constructs. The small sample precluded the use of parametric statistics; therefore, non-parametric statistics were used.

The Kruskal-Wallis One-way Anova by Ranks (K-W test - Siegel & Castellan 1988) was used to understand the relationship among the model's independent constructs and the shared understanding construct. The K-W test is useful for determining whether or not the values for the independent constructs are significantly different for those dyads which exhibit a certain level of shared understanding than for those dyads that do not (e.g. is similarity in age a differentiating factor between those who have a high level of shared understanding versus those who don't?). The test is 95.5.% as powerful as the *F* test for parametric samples.

In addition to the statistical analyses, the interview data was used to corroborate the findings. The secondary and tertiary researchers were again used to validate the conclusions reached.

3.2 – Phase 1 Research Findings

The findings from this case study phase are divided into three sections. The first section briefly describes each company and its organizational context, and provides a summary of the dyad findings for each company. The second section presents the results of the cross-dyad comparisons. The third section discusses the findings as they relate to the development of the measure for shared understanding to be used in the survey phase of the research.

3.2.1 - Dyad Findings

3.2.1.1 - Company A

Company A is one of the largest grocery retailers in the United States. It operates under five different banners and has over 200,000 employees. At the time of the interviews, the company was just emerging from a period of extreme financial crisis where it took on a significant amount of debt to fend off a leveraged buyout. As such, it had just begun to spend money again on capital projects, including information systems.

The information systems group is organized centrally, with each of the

divisions having a dedicated IS liaison person. Information systems projects are funded by the divisions through a levy system, but prioritization of the projects is controlled centrally, as is development.

Only one dyad was studied in this organization, IS-CFO. The SVP Logistics agreed to participate, but was ill during the time of the interviews. Although he assigned one of his direct reports, and she was in fact interviewed, it became clear during the interview that she was not privy to executive level discussions around information systems issues. Table 3.2 contains a summary of information collected for each of the respondents in Company A. Table 3.3 contains the summary of the dyad shared understanding scores.

What follows is a discussion of the findings related to the dyad studied in this organization.

Measure	Functional Background	Tenure – Retail	Tenure – Company	Educational Background	IS Knowledge	Implementation Of Previous IS Plans	Level of Communication
IS Executive	Information Systems	3 years	3 years	University Undergraduate Degree: Math, Physical Sciences	High	5/7	Frequent Diverse
CFO	Finance	12 years	12 years	University Undergraduate Degree: Business	Low	3/7	Frequent Diverse

Table 3.2 – Profile of Individual Respondents for Company A

Dyad	SU – General Beliefs about IT	SU – Senior Management Responsibilities	SU – Project Execution	SU – Success Measures	SU – Key Dimension	SU – Overall	IS Performance
A1– IS Exec & CFO	High	Moderate	High	High	Execution	High	10/10

Table 3.3 – Company A: Shared Understanding Scores

Shared Understanding

Importance of the Concept - The VP IS and CFO both commented on the relevance of the shared understanding concept. The VP IS in particular noted that

Here is what you've got. You've got the business side and you have the technology side. You have the GM here and you have the CIO here. Under that GM you have some kind of business manager, and under here you have an analyst. All of the communication is typically going on here (between the business manager and the analyst), on this tactical execution stuff and if the decisions have to be made here (between the GM and CIO), you're going to have a guaranteed disconnect here (between the GM-CIO) and here (between the Business Manager-Analyst) and you're probably going to end up with one between here (GM and Business Manager) and here (CIO-analyst). What is the hope for this? Zero. Why look at the executive level? Because accountability for results falls right here (GM and CIO). It's that simple.

Overall Dimensionality - The VP IS and CFO both identified shared understanding as a four dimensional concept at the executive level. This identification was achieved both explicitly and implicitly. Implicitly, if respondents identified issues that could be categorized into all four dimensions, this was taken as an indication support for the proposed dimensionality. In addition, at the very end of the interview, respondents were presented with the proposed dimensionality and invited to comment on its validity. In the case of the respondents in Company A, both provided implicit and explicit support for the proposed dimensionality.

Key Dimension - The VP IS and CFO both felt that shared understanding around project execution issues was the most important one. Implicitly, they both spent the majority of time talking about issues related to this dimension. Explicitly, the VP IS stated that

Right in the execution expectation stage, that is where things can fall apart, but it takes somebody's willingness on the business side to dig down in the low level details

All aspects of project management seem to be the biggest misunderstanding of shared understanding because a lot of people don't think in terms of projects. They think in terms of events. They think about the result but they don't think about what it takes to get to that result.

Vision and General Views on IT - The level of shared understanding on this dimension was rated as HIGH. Both members of the dyad commented that "... (the) pace of change of technology is now actually driving business changes" and that "technology changes lead to a fundamental shift in store and office processes". In addition, both articulated the need to have a vision for the organization that includes IT.

General Responsibilities - The level of shared understanding for this dimension was rated as MODERATE. The VP IS identified a number of critical issues under this dimension, while the CFO named only the importance of

architecture and infrastructure as being key senior management investment considerations.

Interestingly enough, the CFO, unlike the VP IS, did not mention funding mechanisms explicitly. Perhaps this is because his position is a corporate staff one and funding is set, and thus is not an issue. This is in direct contrast to IS funding elsewhere in the company, which is obtained via divisional levies and is thus likely of more concern.

Project Specific Responsibilities - The level of shared understanding on this dimension was rated at HIGH. Both the VP IS and CFO spent considerable time discussing the importance of managing the details - from project management specifics such as the importance of having a sponsor from the business, to "being able to clearly articulate the vision so that we can say here is what our needs are, here is what our wish list is".

Measures of Success - The VP IS and CFO had a divergence of opinions on this dimension, and thus the level of shared understanding was rated as LOW. The VP IS adopted a fairly insular and IS specific view of success - cost and date of delivery, while the CFO measured success by "a positive change in KPI's, whatever they may be".

The comments of the VP IS on this dimension may reflect the lack of integration of IT with the rest of the business, as noted in the introductory section.

It may also reflect his organizational reality of dealing on a strict cost/benefit basis with most of the company, as captured in his comment on the lack of shared understanding in much of the organization

The CEO, COO, senior VPs, and divisional presidents – half of them are at the possibilities level, none are at the delivery level and most are focused on the cost/benefit level in terms of real dollars, not in terms of intangible possible benefits

IS Performance

For this dyad, the CFO gave IS performance a 10/10. His new finance system development was going very smoothly and he was generally quite pleased.

3.2.1.2 – Company B

Company B is one of the largest grocery retailers in the United States. Prior to 1992 it operated essentially as a holding company for a number of different grocery chains. In 1992, the CEO made a decision to shift from a holding company to an operating company and the firm has been making that rather dramatic transition ever since. As part of a shift towards an operating company organization, there has been a great deal of centralization of previously distributed functions, one

of which is Information Systems.

The information systems function is not centrally controlled at the corporate level. The Senior Vice President of Information Systems controls all the funding. Once per year, the five operating divisions pay for everything based on a fixed fee that is related to sales. The SVP IS is responsible for prioritizing all information systems investments in consultation with functional and divisional VPs. There is heavy investment in information systems at this point in time as part of this shift towards an operating company.

The major changes underway in the company that have significant information systems implications are the rationalization of the logistics and distribution function and the centralization of the procurement function. All functions except procurement had been centralized at the time of study and the procurement changes were well underway. Two dyads were studied in this organization: Dyad 1: SVP IS – SVP Logistics, and Dyad 2: SVP IS – SVP Procurement. Tables 3.4 and 3.5 summarize the findings related to these two dyads.

Measure	Functional Background	Tenure – Retail	Tenure – Company	Educational Background	IS Knowledge	Implementation Of Previous IS Plans	Level of Communication
IS Executive	Information Systems	High	High	University Undergraduate Degree: Math MBA	High	Historically we've had a pretty positive atmosphere re. IT out there	Frequent Diverse
VP – Logistics & Distribution	Logistics	High	High	University Undergraduate Degree: Biology	High		Frequent Diverse
EVP – Merchandising	Varied (operations, logistics)	>10 years High	>5 years High	University Undergraduate Degree: Business and Accounting	Moderate		Frequent Diverse

Table 3.4 – Profile of Individual Respondents for Company B

Dyad	SU – General Beliefs about IT	SU – Senior Management Responsibilities	SU – Project Execution	SU – Success Measures	SU – Key Dimensions	SU – Overall	IS Performance
1 – IS Exec & VP Logistics & Distribution	High	High	Moderate	Low	Senior Management	High	3/10
2 – IS Exec & EVP – Merchandising	High	Moderate	Moderate	Low	Senior Management	Moderate	3/10

Table 3.5– Company B: Shared Understanding Scores

Shared Understanding

Importance of the concept - All three interviewees, when approached originally about participation in the research, indicated their positive views on the importance of the shared understanding concept. During the course of the interviews, a number of interesting views regarding the basic concept, came to light, an example of which is the SVP Logistics statement that

There are some people who love to beat up on the CIO. They refer to him as the "head of the department of profit prevention". Then there are departments like mine where the CIO says, "I love coming over here to talk to cerebral people who get it".

Overall Dimensionality – All three interviewees identified shared understanding as a four dimensional concept at the executive level. Implicitly, when asked to identify those information systems issues they felt it was important to have a shared understanding of, each mentioned items falling into the four different categories.

Interviewees were not probed with the dimensionality explicitly.

Key Dimension – All three interviewees identified the Senior Management Responsibilities as being the key dimension, specifically the ability to plan effectively. The SVP IS commented that

...we are not very good at making decisions of any strategic importance, this is our culture anyway. We argue, debate and hem and haw. Anytime we can turn a program into something we can execute, great! We're great on the day-to-day stuff, but not great on the L/T strategically important stuff.

The SVP Logistics similarly commented that

The Japanese spend 90% of their time planning and 10% executing. In the US we spend 10% planning and 90% executing, thus the plan keeps changing. There is no stake in the ground and the effect on morale is very negative BUT we need to recognize that what we come up with today may change and that people must understand the dynamic nature of the plan. We can get too dogmatic and want things to be cast in stone when they shouldn't be.

Lots happens between a good idea and execution – it dies under the bureaucracy of the business, the complexity, the politics.

The SVP Procurement noted also that

...the vision part is well understood and there is no loss of purpose or commitment, this is just a huge thing to realize.

Vision and General Views on IT - The rating for this dimension of shared understanding was HIGH for both dyads. All three interviewees clearly articulated the vision for IT as being "common systems and common data".

General Responsibilities - For Dyad 1, the SVP IS – SVP Logistics, the level of shared understanding on this dimension was rated as HIGH. Both individuals talked

at great length about the importance of signaling senior management commitment to investments in IT and the critical part planning plays in eventual success in deploying IT, specifically, the planning process and its timing and the prioritization mechanism in place for deciding among potential investments. The SVP IS commented that

The CEO is the big cannon in the corner office – a strong and vocal advocate for common systems, common data and common business processes. He has been very consistent and never once wavered.

Similarly, the SVP Logistics noted that “Everything starts at the top with demonstrated commitment”.

For Dyad 2, the SVP IS – SVP Procurement, the level of shared understanding was rated as MODERATE. Both individuals discussed the planning process and the prioritization mechanism; however, the SVP Procurement failed to mention the importance of setting the right organizational context, and the SVP Procurement spent a great deal of time talking about the importance of conducting thorough risk assessments as part of the decision process for investments.

For those immature products for which there was no track record, risk assessment was not a disciplined part of the process and the results were disastrous. Most of the complete blowups happened with unknown systems where risk assessment was an important factor.

Given the length of time the SVP IS spent discussing the importance of organizational context and likewise the SVP Procurement's concerns regarding risk assessment, the overall rating was determined to be MODERATE.

Project Specific Responsibilities - For both Dyad 1 and Dyad 2, the level of shared understanding on this dimension was rated as HIGH. This was difficult to rate and it was hard to choose between assigning a rating of MODERATE or HIGH. The challenge in this dimension was that the SVP IS commented very little on the importance of this dimension, other than to state that

It's hard for some people to start with a blank sheet of paper. Some say 'I want something, but I'm not sure what it is'. Other say, 'I want to be able to do this, and you tell me how to do it'. Still others say, 'I want to do this, and this is exactly what I need'. You use different approaches with each of these groups. All approaches can work, but you have to match them with the appropriate target audience and type of project.

In a follow up conversation with the SVP IS, however, he was asked why he hadn't mentioned the details around projects as being important issues for line executives. He commented that because they are "great on the day-to-day execution stuff" he hadn't explicitly thought about mentioning it during our interview, but that it was key and they just happened to do it well. It was the planning process that they needed to work on.

On the other hand, both the SVP Logistics and SVP Procurement, spent a great deal of time commenting on the importance of understanding the details around project planning and execution. Their apparent knowledge of best practice project management (as evidenced by their comments) is consistent with the SVP IS' comments regarding the organization as being great at the execution part. As such, the overall level of shared understanding on this dimension was HIGH.

Measures of Success – The rating on this dimension, for both Dyad 1 and Dyad 2, was LOW. The SVP – IS measures success by “delivery of what is best for the company” (best in his view). The SVP Logistics noted that “there is no shared understanding of the measurement of ‘success’”. The SVP Procurement, on the other hand, defines success by the “functionality delivered as the user perceives it” and if “both IT and the user are willing to celebrate the completion”. Both the SVP Logistics and SVP Procurement talked about the difficulty in measuring success against a cost benefit analysis due primarily to the fact that the organization does not use activity based costing.

IS Performance

The SVP IS rated overall IS Performance for the company as 6/10, moving towards 7/10. He noted that the score from the SVP Logistics would likely be higher than

that for the SVP Procurement, given the recent experience in Procurement with new systems introduction. He commented that

No one is 100% satisfied, but we've delivered some big hitters – each division has had at least one major thing

Both the SVP Logistics and SVP Procurement rated overall performance at 3/10. The SVP Logistics, noted however, that “things are late, not delivered on time, except to my group”. The SVP Procurement commented similarly that “it will never be done on time, that’s a given”.

It is likely that this apparent lack of agreement on IS performance stems directly from the lack of agreement of how to measure success. Both the SVP Logistics and SVP Procurement appear to be defining performance as timeliness of delivery, while the SVP IS is defining success in terms of what is good for the company as a whole.

3.2.1.3 – Company C

Company C is one of Canada's largest retail enterprises. Generally speaking, it has been very successful since its inception in the early 1920's. It's success faltered somewhat in the mid to late 1980's when there was a lack of direction from the top

and the company was recovering from several disastrous investments internationally. As a result, the company has been playing catch up in a number of areas, including information systems, since the early 1990's.

There is a new CEO at the helm who is driving fundamental changes in the organization and in the words of one interviewee, returning it to "its former glory" while coping with the entrance of several large US chains onto the Canadian retail scene.

A total of 5 dyads were studied in this organization:

Dyad C1: VP IS and VP Finance

Dyad C2: VP IS and SVP Marketing

Dyad C3: VP IS and SVP Franchisee Relations

Dyad C4: VP IS and SVP Logistics and Distribution

Dyad C5: VP IS and SVP Diversified Businesses

Findings related to these dyads are summarized in Tables 3.6 and 3.7.

Measure	Functional Background	Tenure – Retail	Tenure – Company	Educational Background	IS Knowledge	Implementation Of Previous IS Plans	Level of Communication
IS Executive	Information Systems	Low	Low	University Undergraduate Degree: Math & Computer Science	High	"bad news, systems were complex, became outdated ... IS needed to re-earn its respectful place"	Frequent Diverse
VP & Controller	Finance	Moderate – 8 years	High – 8 years	University Undergraduate Degree: Commerce, MBA	Moderate	"fine"	Frequent Diverse
SVP – Marketing	Store Mgmt & Marketing	High – 28 years	Moderate – 4 years	2 years post-secondary, management and leadership courses	Low	"even today, I can't get yesterday's sales, I'm not happy with what they've done in the past"	Frequent Diverse
SVP – Franchise Relations	Varied	High	High – 10 years	University Undergraduate Degree: Computer Science MBA	High	"what IT has done in the past..."	Frequent Diverse
SVP – Logistics and Distribution		High	High	University Undergraduate Degree: Business MBA	High	"my personal experience has been very positive w.r.t. IT -- the trick is for it to be led by the business"	Frequent Diverse
SVP – Diversified Businesses	Marketing	Low	Low	University Undergraduate Degree: Law MBA	Moderate	"great success at CTAL"	Frequent Diverse

Table 3.6 – Profile of Individual Respondents for Company C

Dyad	SU – General Beliefs about IT	SU – Senior Management Responsibilities	SU – Project Execution	SU – Success Measures	SU – Key Dimension	SU – Overall	IS Performance
1 – IS Exec & VP/Controller	High	Moderate	High	Low	Execution	High	Good
2 – IS Exec & SVP – Marketing	High	Low	Low	High	Execution Vision	Low	Very Poor
3 – IS Exec & Head of Dealer Relationships	Moderate	High	Moderate	High	Execution Senior Management	Moderate	Satisfactory
4 – IS Exec & Logistics & Distribution	High	Moderate	High	High	Execution	High	Good
5 – IS Exec & SVP – Diversified Businesses	High	High	Moderate	High	Execution Senior Management	High	** too early to tell

Table 3.7 – Company C: Shared Understanding Scores

Shared Understanding

Importance of the concept - All six interviewees noted that shared understanding is a very important concept. The SVP Diversified Businesses was especially adamant about its importance

Need to put feet to the fire of line executives so that they understand their own businesses and can tell the IT folks what they need to know to support the business.... you have to understand IT

Overall Dimensionality – Interviewees were not questioned explicitly about the dimensionality of the concept. All six interviewees, however, implicitly identified the four proposed dimensions.

Key Dimension – There was some disagreement on the most critical area to have a shared understanding in. The VP IS, VP Finance, and VP Logistics and Distribution all felt that, in the words of the VP IS, “execution is key ... implementation is key”. In contrast, the SVP Marketing commented that the only thing he needed to know was that “IT could provide competitive advantage”. He also noted that he “could hire others to do the rest...surround (himself) with good people”. In short he felt that if you “shared the vision”, that was good enough.

The SVP Franchisee Relations and the SVP Diversified Businesses both identified general senior management responsibilities as being the most critical dimension.

Vision and General Views on IT – For Dyads C1 and C3, the level of shared understanding on this dimension, was MODERATE. For all other dyads, the level of shared understanding was HIGH.

The VP IS talked generally about information systems as being

Everywhere in this industry. We must be aggressive in our use...It is fundamental to our business and our success...We can secure competitive advantage through information systems

The SVP Marketing, SVP Logistics and Distribution and the SVP Diversified Business all concurred with the views of the VP IS that information systems are fundamental to enabling the business, but that they can also be a source of competitive advantage in and of themselves.

The SVP Franchisee Relations and the VP Finance, however, both had narrower views of the potential of information technology. They both viewed information systems in terms of its ability to support and enable the business only.

General Responsibilities – There was more variation in the level of shared understanding on this dimension. The VP IS and the SVP's of Franchisee Relations and Logistics and Distribution shared very common views of what it was important for senior executives to understand on this dimension. All three talked of the importance of understanding the nature of the planning processes, the importance of infrastructure, the impact of architecture, and the key trends in technology. As such the level of shared understanding for Dyad C3 and Dyad C5 was HIGH.

The level of shared understanding for Dyads C1 and C4 was MODERATE.

Although the SVP Logistics and Distribution and the VP Finance talked about shared understanding around planning issues, technology trends and the like, neither talked about infrastructure or architecture issues, both of which the VP IS had mentioned as being critical to have understanding about.

The SVP Marketing had a LOW level of shared understanding with the VP IS on this dimension. His view was that

The IS group takes on too much 'majoring in the minors'...the IS steering committee is ineffective – here it is a forum for providing information, not prioritization or decision making

When questioned again, he commented that if you make the right decisions and have the right priorities (i.e. that you know what an IS Steering committee should do) that's all you need to understand.

Project Specific Responsibilities - There was again considerable variation in the level of shared understanding on this dimension. As one might expect, for those individuals who identified execution as being a key dimension – the SVP Logistics and Distribution and the VP Finance – there was a HIGH level of shared understanding.

The level of understanding with the VP IS was MODERATE for both the SVP Franchisee Relations and the SVP Diversified Businesses. The SVP Franchisee Relations, like the VP IS, felt that understanding the role of the user was key. He also identified scope-dollar-time tradeoffs as a major item to have some shared views on. This was something that the VP IS did not explicitly address. The SVP Diversified Businesses, talked about having an understanding of the project team makeup and the project management approach. He didn't, however, address two other issues the VP IS highlighted – the specific role of the user and specifics of project management.

The level of shared understanding between the VP IS and the SVP Marketing was LOW. The SVP Marketing, having noted that execution was not his concern, went on to list the various failings of the information systems organization in terms of execution

...we have a tendency to overbuild...I asked for a car that could get me to London. I ended up with a car that could take me to Mars, but I only wanted to go to London...need IS folks with a retail background...IS folks need better negotiating skills...they need to swing better deals with vendors...

He placed the blame for execution issues firmly on the shoulders of the IS department.

Measures of Success – Unlike these last two dimensions of shared understanding, with the exception of the VP Finance, there was a HIGH level of shared understanding in the dyads. The VP IS defined success in terms of “where’s the value to the business”. The VP Finance, most probably as an occupational bias/hazard, defined success in terms of “are you on budget? Are you spending to plan? Are your deliverables on time?”. In line with the VP IS, the SVP Franchisee Relations viewed success in terms of “providing benefit to the organization”. The SVP Marketing looked at success in light of the “advantage creation for the organization”. The SVP Logistics and Distribution got more specific and defined success in terms of “lower operating costs, increased flexibility, increased service

levels from vendors". In other words, success in his view was the creation of some value for the organization. He also made an interesting comment, however, that

There are no real project measures or audits....we fight for resources initially and then just go and do it.

The SVP Diversified Businesses also defined success in terms of "value to the business"

IS Performance

There was fairly uniform assessment of the performance of IS to date – poor. The SVP Marketing was particularly critical when he stated that "I am not happy with what they've delivered in the past. Even today I can't get yesterday's sales. Every other retailer in the world can get yesterday's sales!"

The SVP Franchisee Relations commented that (the IS department)

...has got too many architects on the job. You don't need a lot of architects, you need one skilled architect per business thing and you need more programmers. We have too many chefs and not enough workers....they (the IS department) haven't delivered anything for three years

3.2.1.4– Company D

Company D is one of Canada's leading grocery chains. It has grown dramatically over the last few years and has quickly become known as one of the most innovative grocery chains in North America. With annual revenues of over \$6B, it is one of the largest retail enterprises based in Canada. A total of 5 dyads were studied in this organization:

Dyad D1: VP IS and SVP Logistics and Systems

Dyad D2: VP IS and Executive Vice President (EVP)

Dyad D3: VP IS and SVP Finance

Dyad D4: VP IS and SVP Franchise Division

Dyad D5: VP IS and EVP Wholesale Services

Tables 3.8 and 3.9 summarize the findings related to these dyads.

Measure	Functional Background	Tenure – Retail	Tenure – Company	Educational Background	IS Knowledge	Implementation Of Previous IS Plans	Level of Communication
IS Executive	Information Systems "has always done IT work but not always in the IT area"	High – 12 years	High – 12 years	University Undergraduate Degree: Chemistry MBA	High		Frequent Diverse
SVP – Logistics and Systems	Logistics "has worked in a variety of functions including leading Info/Svcs"	High	High	University Undergraduate Degree: Industrial Engineer	High	"5 years ago, ISD had no confidence from the rest of the organization, missed everything from deadlines, budget, etc. –"	Frequent Diverse
EVP	Retail	High	High	University Undergraduate Degree: Economics	Low	*not mentioned	Frequent Diverse
SVP – Finance	Finance	High	High	University Undergraduate Degree: Commerce	Moderate	*not mentioned	Frequent Diverse
SVP – Franchise Division	Finance, Manufacturing	High	High	University Undergraduate Degree: Commerce CMA	Low	"there have been lots of failures" "new VP-IS is overcoming some baggage – they have gotten better"	Frequent Diverse
EVP – Wholesale Services	Labour Relations originally, then a variety	High	High	University Undergraduate Degree	Low		Frequent Diverse

Table 3.8 – Profile of Individual Respondents for Company D

Dyad	SU – General Beliefs about IT	SU – Senior Management Responsibilities	SU – Project Execution	SU – Success Measures	SU – Key Dimension	SU – Overall	IS Performance
1 – IS Exec & SVP Logistics & Systems	High	High	High	High	Senior Management	High	Yes
2 – IS Exec &	Low	Low	Low	Low	Senior Management	Low	Yes
3 – IS Exec & SVP Finance	High	High	Moderate	High	Senior Management	High	Yes
4 – IS Exec & SVP Franchise Division	High	Moderate	Moderate	High	Senior Management	Moderate	Yes
5 – IS Exec & EVP Wholesale Services	High	High	Low	High	Senior Management	High	Yes

Table 3.9 – Company D: Shared Understanding Scores

Shared Understanding

Importance of the concept – All six interviewees commented on the importance of having a good shared understanding of the issues associated with deploying information systems successfully. The SVP Logistics and Systems summed up many of the comments made by the senior executives in Company D when he said

We have to have the same gut feel or intuitive feeling about how difficult it will be to do something involving information systems. The vision is a no brainer. The real question is how many resources are required to build capability in the organization to accept and fully utilize the technology. If the change in culture, the change in people and the change in business processes is too great, then maybe it is all too high a price to pay. We have to have same understanding of these issues.

Along a similar vein, the EVP commented that

Managers today cannot afford not to know a helluva lot more. You cannot be a victor of style over substance. You must be able to engage in a conversation and 'read off the same page'.

Overall Dimensionality – All six interviewees were questioned explicitly, at the end of the interviews, about the dimensionality of the concept. All six interviewees indicated their total agreement with the dimensionality as proposed.

In addition, all six interviewees implicitly identified the construct as four dimensional.

Key Dimension – Five of the six interviewees, including the VP IS, identified general senior management responsibilities as the key dimension. Only the SVP Logistics and Systems identified execution issues as being the critical dimension. He spent a great deal of time talking about the importance of understanding specific implementation issues. Interestingly enough, the VP IS spent relatively little time talking about implementation issues and stated very clearly that a shared understanding of “links to strategy – because everything else falls out”.

The VP IS noted that she felt she had the highest level of shared understanding with the VP Logistics and Systems, which appeared to be inconsistent with the apparent difference in their views on which dimension was most important. In a follow-up conversation with the VP IS, she was asked to expand on her original comments. She noted that in her view, if senior executives clearly understood the links between IT investments and strategy and the concomitant links to their careers, they would necessarily “figure out and pay attention to the implementation issues”. In other words, implementation issues were critical and that a shared understanding of the links to strategy drive awareness of the best way to execute.

Vision and General Views on IT – For Dyads D1, D3, D4 and D5, there was agreement that technology was both an enabler and a driver for the business. All members of these dyads also indicated that IT had to date been mostly viewed as in an enabling role but that there was potential for it to be a significant driver for the business. As such, the level of shared understanding on this dimension for these dyads was HIGH.

For Dyad D2, on the other hand, the level of shared understanding was LOW. The EVP's perception of technology was essentially that it was a necessary evil. His comment that

...thus far I have successfully avoided having any knowledge about IT. I can't afford to do that anymore, because in my position, you can quickly spend your way to oblivion if you don't watch it

basically sums it all up.

General Responsibilities – Dyads D1, D3 and D5 exhibited HIGH levels of shared understanding on this dimension. Specific issues identified as important to have shared understanding about include technology positioning (i.e. not bleeding edge but fast follower), technology architecture, and investment prioritization criteria. Dyad D2, with the EVP, exhibited a LOW level of shared understanding. He felt that "I need to know what I want, how I think I might get it, and then hand it over to

execute". When pressed, he recanted somewhat on this statement and fell back to talk about having a shared understanding of "what I want" and that's good enough.

In Dyad D4, with the SVP Franchise Division, the level of shared understanding was MODERATE. Although the SVP Franchise Division discussed understanding of architecture issues and investment prioritization issues, that was about it. He failed to mention much else that the VP IS had identified as being important to have shared understanding about.

Project Specific Responsibilities - Dyad D1 was the only dyad which exhibited a high level of shared understanding on execution issues. In this dyad, the VP IS and VP Logistics and Systems identified many of the same issues as being important to have shared understanding of. In fact the VP Logistics and Systems, perhaps because so many of the major projects underway were related to his area, was particularly detailed in his views on execution issues.

Dyads D3 and D4 exhibited MODERATE levels of shared understanding on this dimension. In both dyads, although the SVP Finance and SVP Franchise Division identified some of the same issues as the VP IS had, there was only a moderate amount of overlap.

Dyads D2 and D6 exhibited LOW levels of shared understanding on this dimension. The EVP (D2) stated quite clearly that execution issues were not his concern and he needed to have no shared understanding around these. Similarly the EVP Wholesale Services (D5), after exhibiting high levels of shared understanding on the other two dimensions, failed to mention a specific issue related to execution. It was clear from the conversation, that execution issues were not his concern.

Measures of Success – With the exception of Dyad D2, there were HIGH levels of shared understanding on this dimension for all other dyads. In these dyads, there was an understanding that success was equated with the value delivered to the business. On time, on budget, on scope were expected and that success was truly achieved if some substantive value to the business resulted. In Dyad D2, the EVP went further to state that success, in his books, was related to the “bottom line over a sustainable period”. This is a tall order and while not inconsistent with the views held by other executives interviewed, he was quite specific in his use of the word “sustainable”. As such, the level of shared understanding on this dimension was MODERATE for Dyad D2.

IS Performance

There was a high degree of agreement on the performance of information systems within Company D – historically poor performance, but the situation was improving. In the words of the SVP Franchise Division, “things have gotten a lot better but there is still a lot of baggage. The VP IS wears it and the group wears it”.

3.2.1.5 – Company E

Company E is a Provincial Crown Corporation operating as a specialty retailer. They have recently been under threat of privatization. As such, they have undertaken, over the last decade, to drastically improve their operations and customer service. Information systems have played a major role in this transformation. It operates exclusively in one province in Canada and enjoys near monopoly status.

Measure	Functional Background	Tenure – Retail	Tenure – Company	Educational Background	IS Knowledge	Implementation Of Previous IS Plans	Level of Communication
IS Executive	Information Systems	Low	Medium	High School, 2 years of University	High	"not great historically, but better now"	Frequent Diverse
VP Retail	Retail – Store Management	High (40 years)	High	High School	Low	"getting much better"	Frequent Diverse
VP Merchandising	Information Systems Distribution	High – 14 years	High – 14 years	University Undergraduate Degree: Business Systems	High	"improving quickly"	Frequent Diverse
EVP	Store Management	High	High – 9 years	College Degree	Low	**no comment	Frequent Diverse
VP Distribution	Distribution	High	High	University Degree	Moderate	"fairly good"	Frequent Diverse
VP Human Resources	Human Resources	High	High – 9 years	University Undergraduate Degree: Education	Low	"not much experience to go on"	Frequent Diverse
VP Finance & Admin	Finance	High	High	University Undergraduate Degree: Administration CMA	High	"fairly good success to date"	Frequent Diverse

Table 3.10 – Profile of Individual Respondents for Company E

Dyad	SU – General Beliefs about IT	SU – Senior Management Responsibilities	SU – Project Execution	SU – Success Measures	SU – Key Dimension	SU – Overall	IS Performance
1 – IS Exec & VP Retail	High	Low	Low	High	Senior Management	Low	Better the last 5 years
2 – IS Exec & VP Merchandising	High	High	High	High	Senior Management	High	Up & down
3 – IS Exec & EVP	High	Low	Low	Low	Senior Management	Low	**no comment
4 – IS Exec & VP Distribution	High	Moderate	Moderate	High	Senior Management	Med	**no comment
5 – IS Exec & VP Human Resources	Low	Low	Low	High	Senior Management "specifically, I'm not sure"	Low	Things have improved
6 – IS Exec & VP Finance & Admin	High	High	High	High	Senior Management	High	Gone well – Arthur system a success

Table 3.11 – Company E: Shared Understanding Scores

A total of seven executives were interviewed in this organization, for a total of 6 dyads:

Dyad E1: VP IS and VP Retail

Dyad E2: VP IS and VP Merchandising

Dyad E3: VP IS and Executive Vice President (EVP)

Dyad E4: VP IS and VP Distribution

Dyad E5: VP IS and VP Human Resources

Dyad E6: VP IS and VP Finance & Administration

The results of the dyad findings are summarized in Tables 3.10 and 3.11.

Shared Understanding

Importance of the concept - All seven interviewees explicitly indicated their support for the shared understanding concept.

Overall Dimensionality

Vision and General Views on IT – With the exception of Dyad E5, there was a high level of shared understanding on this dimension, with the executives in this dyad firm in their beliefs about technology as a key enabler for the business, but not as a driver. This is not surprising, given the lack of competition for the organization.

There would be no need whatsoever to consider information technology as a driver of competitive advantage since competitive advantage doesn't matter. The VP IS summarized the situation quite nicely with the following comment

I keep getting into this debate on whether or not IT is strategic within (our organization), and everybody keeps saying it is because they think that will make me feel better. While it is not. We are tactical at best. I don't think it matters whether you are strategic or not. It matters that you know whether you are or not and that you are not creating this expectation management problem for yourself.

General Responsibilities – There was significant diversity in the levels of shared understanding on this dimension. The VP IS had a HIGH level of shared understanding with the VP Merchandising (E2) and the VP Finance and Administration (E6). Both these business VPs shared similar views to those of the VP IS regarding their general responsibilities around deploying information systems, especially those around the role of senior executives in signaling the importance of information systems in their organizations.

In Dyad E4, there was a MODERATE level of shared understanding. Although the VP Distribution seemed to be identifying some of the same issues as the VP IS had, it became apparent during the conversation that there was little depth associated with that understanding. This is also consistent with the VP IS's subjective rating of shared understanding for this dyad.

In Dyad E1, E3 and E5, there was a LOW level of shared understanding. The VP Retail, in particular, exhibited extremely low levels of shared understanding. In a follow up interview with the VP IS, he concurred with this finding by noting that

The VP Retail doesn't even know how to turn on the PC on his desk. That doesn't matter in terms of a lot of things, but it sends a very clear signal out to his organization that he doesn't understand. The sell to him is impossible. Then you are forced to say, 'I tried to get you on board, but to hell with you, we are doing this'. He doesn't like that and he sends that message out through his organization. When we arrive, we get 'Here come the IT boneheads and we're going to make it hard for them'

Project Specific Responsibilities – The same levels of shared understanding as those exhibited for the 'general management responsibilities' dimension were exhibited for this dimension. Dyads E2 and E6 had HIGH levels of shared understanding. Dyad E4 had a MODERATE level of shared understanding. Dyads E1, E3 and E5 exhibited LOW Levels of shared understanding. The business executives in these latter three dyads failed to demonstrate any shared understanding with the IS executive on this dimension.

Measures of Success - The shared understanding around measures of success was HIGH for all dyads. The VP IS had much to say when asked how he measured success

It should be the classic on time, on budget, and did we deliver what we said we would and did we realize the benefits? And we do that, we measure that on very large projects. But on ongoing stuff, I guess we are almost managing by noise level. So success is little or no bitching and complaining. We don't get thank you letters anyway, so the absence of complaining really is the measurement of success....and then some form of measurement of what you did and some form of comparison back to the original requirement – did we come close to delivering what we said we would.

The VP Finance and Admin (E6) talked about success in terms of 'quality product that works well'. The EVP was clear in his views on success - 'value to the business'. The VP Retail noted that success is

if it is installed in a timely fashion. Timing is critical. You can't take forever to do it, and we always take forever to do things. The very simple thing is, does it deliver what I want it to do for my vision in the first place. So the deliverables are is it on time, does it do what you want it to do and can you plop something into it so that you can change that bottom line.

The VP Merchandising, believed success is when "a system delivered its planned for functionality". Similarly, the VP Distribution noted that success is related to "some improvement in the bottom line". The VP H/R made a very interesting comment related to measures of success

I could say traditional things, you have milestones and if everything was completed, sure that is the bottom line, that is the measure. But I guess having gone through this other one (a project), I think I could just feel, attending meetings and just the feedback of the people on

the team, whether it was successful or not just by the enthusiasm of doing the various stages. Whether problems are being looked at as to how we can fix them rather than, we have a little problem or disagreement so lets bring it up to the steering committee for the VP's to decide every little thing....so if the roles were properly defined and it was clear that people were sticking to what the roles were intended to be, that would be a measure of success too!

IS Performance

There was general agreement that in terms of success in deploying information systems, things were improving but they weren't there yet. Comments such as "better in the last five years", "up and down", "things have improved" and "we don't yet deal with information technology effectively enough" were made by the interviewees. A couple of interviewees commented that there were significant budget constraints and that this was confounding their assessment. In short, they couldn't develop all of the systems they wanted to; therefore, the performance necessarily couldn't be high.

3.2.1.6– Company F

Company F is the Canadian subsidiary of a large global retailer based in Europe. The parent organization is a very successful retailer operating stores in many countries around the world. The Canadian subsidiary, however, has been struggling to make the stores work in Canada. As the Canadian President noted,

“we have been spending capital (on information systems) that we haven’t earned”.

The Canadian operation is treated as a separate profit centre.

Information Systems are managed locally, and there is a Director of Information Systems in Canada who reports to the President of the Canadian subsidiary. Major investments in information systems have to be approved by the Head Office in Europe. Although the Canadian subsidiary has not been making money for several years, there has been a willingness on the part of Head Office to fund information systems investments.

The major information systems project underway at the moment is the introduction of a new Point of Sale system. Other projects underway include the mandated implementation of a common Finance system globally, and a Local Allocation system. Information systems operations are currently outsourced, with only the planning and overall IS management functions remaining in house.

Two dyads were studied in this organization:

Dyad 1: MIS Manager – President

Dyad 2: MIS Manager – General Manager Store Operations.

Tables 3.12 and 3.13 summarize the dyad findings.

Measure	Functional Background	Tenure – Retail	Tenure – Company	Educational Background	IS Knowledge	Implementation Of Previous IS Plans	Level of Communication
IS Executive	Information Systems	High	High	University Undergraduate Degree: Town and Country Planning	High "I ran the user side before, now I am running the IT side"	"we've moved from the 'I hate those IT people and they don't do anything for us' to 'they are actively helping us manage the business'"	Frequent Diverse
President	Store Management/ General Mgmt	High	High (25 yrs)	A levels in the UK = High School	Low		Frequent Diverse
VP of Store Operations	Store Management	High	High (15 years)	High School	Low – Moderate	"whatever the time or the cost, multiply by 2"	Frequent Diverse

Table 3.12 – Profile of Individual Respondents for Company F

Dyad	SU – General Beliefs about IT	SU – Senior Management Responsibilities	SU – Project Execution	SU – Success Measures	SU – Key Dimension	SU – Overall	IS Performance
1 – IS Exec & President	Low	Low	Low	High	Execution Senior Management	Low	Improving
2 – IS Exec & VP of Store Operations	High	Moderate	Low	Low	Execution Senior Management	Low	Improving

Table 3.13 – Company F: Shared Understanding Scores

Shared Understanding

Importance of the concept - All three interviewees explicitly commented on the importance of the shared understanding concept. The President noted also that

my biggest strides in 'understanding' have come in the last 20 months (since he arrived in Canada)...Coming here, everybody is on to it so you have to get on to it. It is a bit of fun as well.

Overall Dimensionality – All three interviewees identified shared understanding as a four dimensional construct. The MIS Manager described it best, when she said that

You have got to have a vision for discussion. So you have got to have this idea. And you have got to have all these things. You have to be able to market it, and talk about it, and to communicate about it and buy some support – get everybody interested and understanding it. Then obviously you have to have the people who are going to work with details so you can determine the way to get this wonderful idea to work. Because sometimes you get these people with great ideas, and none of the answers. So the attention to detail is critical. Then you have got to measure the quality of it, checking to make sure that the quality is successful. All of the different stages down the line.

Key Dimension – Of the three interviewees, only the MIS Manager explicitly talked about the most important dimension. She was very clear in her views by stating that “it is really the how, how are you going to do it” that is most important to have shared understanding about. The President, however, appeared to implicitly

confirm his belief that it was most important to understand ‘the how’ when he stated that

Being through the what we need to do and why do we need it, I need to know how much it will be...I would need to know which is the first store. Are they going to pilot more than two. At what stage are they going to review it. When does it go through the biggest chunk and what are they doing to complete it. Do they have a team in to do it? What did they do in the end? Did I agree with it – e.g. did they in bring in someone from one of the stores for a year?

The General Manager Store Operations, however, stated quite clearly that he “didn’t need to know the how, just the what”.

Vision and General Views on IT – *The rating for this dimension of shared understanding was LOW for Dyad F1 and HIGH for Dyad F2. The MIS Manager clearly stated that*

MIS is key in terms of running the business but we are not yet key in terms of managing the business (and we could be).

She went on to talk about the fact that information systems are not considered to be key at this point in time. They are support tools. The rating Dyad F1 was LOW primarily because the President failed to articulate any sort of general beliefs about information technology or any beliefs specific to the company. When pressed, he talked about information systems as tools to “modernize the operation” but went no

further. For Dyad F2, a rating of HIGH was assigned. The General Manager Store Operations, like the MIS Manager, felt that

We have got to understand the possibilities, we need to dream a bit. For example, data base marketing. What are the other possibilities related to buying? Managing inventory better?

General Responsibilities – For Dyad F1, the level of shared understanding on this dimension was rated as LOW. Both members of the dyad believed it was important to understand the business needs being met and the cost/benefit analysis. The MIS Manager, however, also believed it was important to understand the investment priorities, the implications of these investments on how the business works, the risks involved to the business, and finally to understand information technology basics. The President, on the other hand, noted that it was important for senior management to understand the culture of the organization and its impact on information systems.

For Dyad 2, the rating on this dimension was HIGH. The MIS Manager and General Manager Store Operations identified almost all the same issues from technology basics to prioritization criteria to cost/benefit analysis. In short, both members of this dyad had a strong shared view of the general responsibilities of senior management related to managing information technology.

Project Specific Responsibilities – The rating for shared understanding on this dimension was LOW for both dyads. What was very interesting in this case was that the MIS Manager, having repeatedly talked about the importance of understanding the 'how', failed to articulate specifics about information systems projects. She talked "training" issues as being critical to understand, but not much else.

The President talked about understanding the "rollout plan" as being the only key item in this area. The General Manager Store Operations, having stated that you "don't need to know how, just the what", spent a great deal of time discussing the "how" – everything from integrated (IT and business) project teams to the specifics around user roles.

Measures of Success – Both Dyads received a LOW rating on this dimension. The MIS Manager noted that "a lot of times we don't measure the success, we just comment that it is in". The General Manager Store Operations viewed success in terms of "cost benefit analysis" and the President viewed success in terms of

Lots of factors – like cash payback, like number of people, it might even be customer relationships...It is more important to have it right than to have it on time. And it is probably more important to have it right than to have it on budget

In short, there was a LOW level of shared understanding on this dimension.

Subjective Assessment – The MIS Manager, when asked about the overall level of shared understanding with the two other individuals in the dyads commented

We haven't got there yet....they made a couple of decisions last week which were entirely wrong because they hadn't got all the facts. They didn't know the best way of doing something. It looked good on paper and it looked sensible on paper, but they hadn't really looked at what it meant

This subjective assessment corresponds to the overall assessment of the level of shared understanding for both Dyads F1 and F2 as LOW.

IS Performance

The MIS Manager commented that

We've moved from the 'I hate those IT people and they don't do anything for us' to 'they are actively helping us manage the business'

The General Manager Store Operations commented that

IT used to have two words for everything – no and no. The relationship was terrible. Our new IT person has been instrumental in changing our perception of IT. IT now actually delivers

In short, IS performance is getting better.

3.2.1.7 – Company G

Company G is a brand new retail concept in Canada that is just getting started. In fact at the time of interviewing, the first store was in the planning stages. However, the introduction of information systems for both the company and the stores was well underway. Of the three interviewees, two had worked together previously at another Canadian retailer.

Two dyads were studied in this organization:

Dyad G1: VP IS – VP Marketing

Dyad G2: VP IS – General Manager Store Operations.

Tables 3.14 and 3.15 summarize the dyad findings.

Measure	Functional Background	Tenure – Retail	Tenure – Company	Educational Background	IS Knowledge	Implementation Of Previous IS Plans	Level of Communication
IS Executive	Information Systems	High	Low	University Undergraduate Degree: Marketing and Business Systems	High		Frequent Diverse
General Manager, Store Operations	General Management – Store Management	High	Low	Community College: Business Admin.	Low	“Really good, really positive. Positive in terms of the IT guys really trying to understand what the needs of the store were”	Frequent Diverse
VP – Marketing	Marketing and Human Resources	Moderate	Low	University Undergraduate Degree: BA in Economics	Moderate	“an underwhelming experience with the Internet” “generally a positive experience.”	Frequent Diverse

Table 3.14 – Profile of Individual Respondents for Company G

Dyad	SU – General Beliefs about IT	SU – Senior Management Responsibilities	SU – Project Execution	SU – Success Measures	SU – Key Dimension	SU – Overall	IS Performance
1 – IS Exec & General Manager, Store Ops.	High	Low	Low	Low	Execution Senior Management	Low	N/A
2 – IS Exec & VP Marketing	High	Moderate	Moderate	Moderate	Execution	Moderate	8/10 – very happy

Table 3.15 – Company G: Shared Understanding Scores

Shared Understanding

Importance of the concept – All three interviewees, when asked explicitly about the importance of the concept of shared understanding, noted that it was “very important”. The General Manager Store Operations also made an interesting comment about shared understanding at different levels in the organization

I would find it absolutely fascinating to see when you go into different organizations and I am sure that the vice presidents would all have a shared vision, but that when you get down in the organization, you get completely different views.

Overall Dimensionality - All three interviewees implicitly discussed shared understanding as a four dimensional construct. When probed with the proposed dimensionality, all three agreed with that conceptualization.

Key Dimension - The VP IS made a couple of interesting comments regarding the key dimension. He noted during the course of the interview (unprompted) that

All levels are important because having only a little bit makes it more difficult.

When questioned further on this comment, he used the analogy that “a little bit of knowledge is a dangerous thing”.

Vision and General Views on IT - The level of shared understanding on this dimension was rated as HIGH for both dyads. All three interviewees view technology as a key enabler of the business but not as a driver or source of competitive advantage in and of itself. The General Manager Store Operations discussed the provision of information as the key use for the technology, and talked about it as “being a great marketing tool....they (the customers) say you are a sophisticated, on the ball organization and you run a good ship and you know where things are”. Both the VP Marketing and GM Store Operations commented that “their (the IT group) whole lives are to support us” and “information technology is my responsibility and the IS executive is there to support me”. The VP IS, in turn, talked very much in terms of his role being one of providing “support to the business”

For Dyad G1, there was a LOW level of shared understanding around the general responsibilities for managing information technology. While the VP IS talked about senior executives' need to understand the importance of managing change, of key technology trends and what the competition is doing, the GM Store Operations said that

There is really only one thing and that is an understanding of how you want the system to work

For Dyad G2, the level of shared understanding on this dimension was MODERATE, not because the VP Marketing was not up to speed on understanding her responsibilities, but because she talked much more comprehensively about the issues than the VP IS. For example, she talked about understanding how the planning processes must fit, understanding the culture of the organization and its impact on information technology success, and linking IT to key performance indicators. In short, there was overlap but the VP Marketing appeared to have a fuller understanding of the issues in this dimension than the VP IS.

Project Specific Responsibilities - The level of shared understanding on this dimension was LOW for Dyad G1 and MODERATE for Dyad G2. The VP IS spent a great deal of time discussing issues related to execution. Neither the VP Marketing or GM Store Operations highlighted execution issues as being particularly critical to have shared understanding about. The GM Store Operations identified training issues – type and amount – as being important to have an understanding of. Thus the level of shared understanding on this dimension for Dyad 1 was LOW.

The VP Marketing was somewhat more focused on execution issues as being important. She identified many specific aspects of project management, as well as training and communication issues, as being key. As such, there was more overlap with the VP IS, but still some key issues not mentioned. Therefore, the

overall rating on this dimension was MODERATE.

Measures of Success – There was a LOW level of shared understanding for Dyad G1 and a MODERATE level of shared understanding for Dyad G2. The VP IS talked about success in terms of being on time and delivering functionality levels that were appropriate for the organization's needs and capabilities. For Dyad G1, the GM Store Operations talked about success as being measured in terms of the impact on profitability. For Dyad G2, the VP Marketing was more closely aligned with the VP IS, for she talked about success in terms of usability (and specifically whether or not people were using it to do their jobs better), delivering planned functionality and that on time and on budget were secondary concerns. Therefore the level of shared understanding was MODERATE.

IS Performance

The VP Marketing rated performance as eight out of ten "primarily because of usability".

The GM Store Operations declined to make such an assessment because no stores had been built yet, and she had nothing to base this on.

The VP IS noted that they were two weeks late on delivery for a large data warehouse. He commented that he felt they were pushing the limits in terms of the technology (i.e. downloading tools off the internet to use with Visual Basic), and that he had no tolerance for "failure" but that he was having to manage the uncertainty inherent in using some of these new tools.

3.2.1.8 – Company H

Company H is a large specialty retailer based in the United States but with many outlets in Canada. They have been expanding rapidly over the last few years and have created a new retail concept. They have been making the transition from an entrepreneurial organization to a more mature organization. In this transition they have been introducing more formal management processes and systems. A major part of this shift has been the introduction of new information systems.

Three dyads were studied in this organization:

Dyad H1: VP IS – VP Supply Chain Management

Dyad H2: VP IS – VP Finance

Dyad H3: VP IS – VP Human Resources

Tables 3.16 and 3.17 summarize the dyad findings.

Measure	Functional Background	Tenure -- Retail	Tenure -- Company	Educational Background	IS Knowledge	Implementation Of Previous IS Plans	Level of Communication
IS Executive	Information Systems	Low – 1 year	Low – 1 year	University Undergraduate Degree: Economics and History Masters in Acct.	High	N/A	Frequent Diverse
VP Supply Chain Management	Supply Chain Management	Moderate	Moderate – 4 years	University Undergraduate Degree: Marketing Research MBA	High	"our new VP has been a blessing. She has a totally different approach. The previous one was from the old school where MIS did everything and they tried to push systems to the business...it didn't work very well"	Frequent Diverse
VP Finance	Finance	High	Moderate – 4 years	University Undergraduate Degree: Finance	High	**no comment	Frequent Diverse
VP Human Resources	Human Resources	High	High – 8 years	University Undergraduate Degree: Business	High	"we have had some problems in the past"	Frequent Diverse

Table 3.16 – Profile of Individual Respondents for Company H

Dyad	SU – General Beliefs about IT	SU – Senior Management Responsibilities	SU – Project Execution	SU – Success Measures	SU – Key Dimension	SU – Overall	IS Performance
1 – IS Exec & VP Supply Chain Management	High	High	High	Moderate	Execution	High	10/10
2 – IS Exec & VP Finance	High	Low	Moderate	High	Execution	Moderate	C+
3 – IS Exec & VP Human Resources	High	High	High	High	Execution	High	C, but rapidly moving to a B+, can see the day for an A

Table 3.17 – Company H: Shared Understanding Scores

Shared Understanding

Importance of the concept – Three dyads were studied, for a total of four interviewees. All four interviewees felt the concept of shared understanding was a very important one. The VP Finance commented that “if all execs understood IS, then wouldn’t it all be wonderful”. The VP Human Resources similarly noted that

In my experience, the more I can talk their language and vice versa, the better. In one bad project I was involved in there were different sets of expectations right off; they (IS and HR folks) didn’t really understand one another – the wrong language, the wrong priorities

Overall Dimensionality – On the overall dimensionality of the concept, all four interviewees implicitly identified issues in all four dimensions. When explicitly probed, all four felt that the four dimensional conceptualization was valid.

Key Dimension – All four interviewees identified Project Execution as the key dimension of shared understanding. The VP Supply Chain Management went so far as to say that

Our one big disaster occurred because we didn’t have a dedicated user resource – it should have taken three months, and instead it took ten. We’ve learned from this and now have our dedicated functional teams

The VP Finance, in a similar vein, noted that

We fall down on the deployment because we don't fully understand all the parties who will be affected and we don't provide enough training and we don't communicate enough with them

The VP Human Resources, went even further, and thought it important

How the MIS group gets its work done. For example, the steps they go through, JAD sessions, project review meetings etc. I need to know these things so that I can work with them

The VP IS agreed completely with these sentiments and the importance of understanding details around execution. She stated that

Senior executives need to be close enough to the project, not to get mired in all the detail, but to understand the details of the project approach, the organization of the project, the key milestones and the budget tracking for example

Vision and General Views on IT – There was HIGH level of shared understanding for all three dyads on this dimension. The VP IS viewed information systems as tools and enablers. The VP Supply Chain Management commented that “information systems are tools only, the process is first in importance and then tools come in to support”. Both the VP Finance and VP Human Resources talked about information systems as enablers and support tools.

General Responsibilities – Shared understanding on this dimension was HIGH for Dyads H1 and H3, and LOW for Dyad H2. In Dyads H1 and H3, both members of the dyad talked about the importance of understanding technology basics, the prioritization mechanism for funding investments in information systems, and the business case for investments. In Dyad H2, the VP Finance felt that it was only important to understand the business case for investments. There was little overlap with the VP IS' views on this dimension, thus the rating was LOW.

Project Specific Responsibilities – In all three dyads, the level of shared understanding on this dimension was HIGH. All the VPs talked at great length about the same execution issues: scope-time-dollar tradeoffs, the role of the user (who, what, how much time), the importance of an integrated project team, basic project management disciplines and training. Although the interviews were conducted separately, the similarity in the discussions was quite striking. In any case, the level of shared understanding on this dimension is most definitely HIGH for all three dyads.

Measures of Success – The level of shared understanding around measures of success was MODERATE for Dyads H1 and H3, and HIGH for Dyad H2. The VP IS talked about

Success is when user needs are met. Not necessarily on budget or on time, although there is a balance or tolerance here.

The VP Finance (Dyad H2) was very consistent in his views with the VP IS:

When a system is deployed, if the project deliverables are met and there is demonstrated commitment from the people in the field, then it is successful.....but we don't define our metrics of success up front although we are doing more of this in the last 6 months

The VP Human Resources, in Dyad H3 was more focused on the on-time and on-budget aspect of success as well as the on-objective aspect. As such, she had a MODERATE level of shared understanding with the VP IS.

The VP Supply Chain Management also had a MODERATE level of shared understanding on success measures with the VP IS as she determined success when

ROI and payback as per the cost benefit analysis are delivered. On time and on budget are important, but ROI and payback come first

A rating of MODERATE was assigned in this case because the VP Supply Chain Management, when questioned a bit further, did not take the success measure down to the user needs level as the VP IS clearly had. It wasn't so much whether user needs were met, but that there was some demonstrable benefit to the company in having undertaken the project in the first place.

IS Performance

The VP Supply Chain Management rated the performance of IS at 10/10. She noted that in addition to the relationship with IS "being a great partnership now", that they have been "very successful so far, just witness the payback on...".

The VP Finance was not so complimentary and gave IS performance a grade of C+ because "we fall down on the deployment because we don't fully understand all the parties who will be affected and we don't provide enough training and we don't communicate enough with them".

The VP Human Resources rated IS performance as a "C, but rapidly moving towards a B and can see the day for an A".

3.2.2. - Cross-Dyad Findings

In Chapter 3, seven research propositions were formulated, to be tested in this first phase of the project. They are summarized below.

Proposition 1: **Shared understanding is a four dimensional construct.**

Proposition 1a: One dimension of shared understanding is related to having a shared future view (i.e. a vision) for IS in the organization

- Proposition 1b:** One dimension of shared understanding is related to having a shared view of the critical investments necessary for achieving that vision (i.e. "doing the right things")
- Proposition 1c:** One dimension of shared understanding is related to having a shared view of the keys to success in the overall management of IS investment activities (e.g. systems development task) (i.e. "doing things right")
- Proposition 1d:** One dimension of shared understanding is related to having a shared view of the criteria for evaluating successful deployment.
- Proposition 2:** **Shared understanding (SU) is directly related to success in deploying IT**
- Proposition 3:** **Similarity of cognitive styles is directly related to shared understanding**
- Proposition 4:** **Level of communication between IS and line executives is directly related to share understanding**
- Proposition 5:** **Shared knowledge between IS and business executives is directly related to level of communication**
- Proposition 6:** **Success in Implementation of previous IS plans is directly related to level of communication**
- Proposition 7:** **Individual differences are directly related to shared understanding**

The following sections discuss the findings specific to each of these propositions.

3.2.2.1 - Shared Understanding

Proposition 1: Shared understanding is a four dimensional construct.

The data from this phase of the research indicates strong support for this proposition. With the exception of one individual, all respondents indicated either explicitly and/or implicitly that shared understanding was a four dimensional construct.

In addition to confirming the dimensionality of the shared understanding construct, this phase of the research was designed to also confirm the proposed conceptualizations of these four dimensions. There is strong evidence to support the basic conceptualizations of the dimensions as proposed in Chapter 2. During the course of the interviews, however, when presented with the proposed dimensions, interviewees proposed a number of comments and suggestions to essentially broaden the basic conceptualizations, and to rename the dimensions to better reflect the revised conceptualizations.

Specifically, a number of interviewees suggested that the “vision” dimension was related not only to having one in the first place, but also to general beliefs about technology. Numerous comments were made about the “critical investments” dimension, again with a view to broadening this somewhat narrow

conceptualization. It emerged that the dimension was concerned more broadly with executive level information systems issues and decisions, one of which could be associated with critical investments in infrastructure for example.

The “key success factors” dimension was originally conceptualized as being concerned with execution of projects and senior management’s responsibilities in this area. The original conceptualization was supported. A number of respondents suggested that the name of the dimension be changed to “project execution”, again to better reflect the actual concept. As will be discussed in detail in Chapter 4, the renaming of the dimensions was subsequently supported through a QSORT procedure that was utilized to further verify the dimensionality and associated measures.

The fourth dimension of shared understanding that was proposed was “the value of IS investments”. It emerged through the interviews that the term “value” was problematic and that the intent or underlying issue related to this dimension was essentially that of having a shared understanding of “how we would know we’d been successful”. In other words, it was suggested that a more useful title for the dimension was “success measures”.

In sum, the revised shared understanding construct, remains composed of four distinct dimensions, all of which are consistent with the originally proposed conceptualizations, but which differ slightly in the names associated with each. These revised dimensions titles are: "general views on technology", "general senior management responsibilities", "project execution responsibilities", and "success measures".

In addition to confirming the dimensionality of the shared understanding construct, another key goal of this phase was to identify the key issues that form the basis for these dimensions. As discussed in Section 3.1.5, this identification process was accomplished in several steps.

First, all of the raw interview data was sorted into tables with the key dimensions as headings.

Second, for each dimension, the raw comments were further sorted into "like" piles or issues. For example, a comment related to the importance of understanding infrastructure issues, was assigned to the "infrastructure" issue.

Third, for each dimension, these issues were pooled across respondents. The purpose of this step was to identify the range of issues for each dimension. The details of this step are provided in Appendix F.

Fourth, for each issue, the number of respondents identifying this issue as critical was calculated. This summary appears in Table 3.18. The purpose of this step was to identify the most commonly discussed issues.

Fifth, for those dyads that were deemed to be high performing (i.e. subjective assessment of IS performance), additional issues discussed as being critical, were identified. The purpose of this final step was to ensure that the full range of issues that were identified as being critical (i.e. critical to high IS performance) to have shared understanding about were captured. This list was used as input into the actual scale development process, which is described in more detail in the next chapter.

Dimension	Category	# OF MENTIONS								
		IS Execs	Line Executives							Total
			Finance	Mktg.	Logi/Dist	Store	Other	EVP	H.R.	
General Views on IT	Importance of IT	5	2	2	2	2	1	2	0	16
	Vision	4	3	3	3	2	1	2	0	18
	Technology Life Cycle	3	0	2	1	1	0	1	1	9
	Potential of IT	4	1	0	2	2	0	2	1	12
	Technology as an Investment	1	0	0	0	0	0	1	0	2
	Technology Positioning	1	0	0	1	1	1	1	0	5
	Technology Basics	2	2	0	0	1	0	0	2	7
	Technology Trends	0	1	0	0	0	0	2	0	3
	Key Technologies	0	0	0	0	0	0	0	1	1
General Management Responsibilities	Competition's Use of IT	2	1	0	1	2	0	0	0	6
	Investment in IT	1	0	0	0	0	0	0	0	1
	Architecture	3	3	1	0	0	1	2	1	11
	Importance of Infrastructure	3	2	0	0	0	1	1	0	7
	Funding Mechanisms	4	2	0	1	0	0	1	1	9
	Business Processes	3	1	1	2	1	1	1	0	10
	Role of CEO	5	1	0	2	0	0	3	1	12
	IS Projects Driven by business	0	1	0	0	0	0	0	0	1
	Steering Committees	5	4	2	1	0	0	3	3	18
	Planning Process	3	2	1	3	1	0	3	0	13
	Prioritisation Process	5	2	2	4	2	1	1	3	20
	Signalling	0	2	0	1	0	0	0	0	3
	Risk	2	0	1	0	1	0	0	0	4
	Sources of Ideas	3	2	1	2	2	1	1	2	14
	Data	2	0	0	0	0	0	0	0	2
Staff Retention	2	0	2	0	1	0	0	0	5	
Absorptive Capacity	0	1	0	2	0	0	1	0	4	

Table 3.18 – Summary of Key Shared Understanding Issues

Dimension	Category	# OF MENTIONS								
		IS Execs	Line Executives							Total
			Finance	Mktg.	Logistics & Dist'n	Store Ops	Other	EVP	H.R.	
General Management Responsibilities	Complexity	1	1	0	2	1	1	1	0	7
	Flexibility	1	0	0	0	0	1	1	0	3
	Accountability	1	1	1	0	0	0	4	0	7
	Management Control	1	0	0	0	0	0	0	0	1
Project Specific Responsibilities	Executive Sponsor	5	2	1	2	1	0	3	1	15
	Systems Development	4	3	2	2	2	0	2	1	16
	Scope-Time-Dollars Tradeoffs	4	4	1	0	1	0	0	1	11
	Project Management	4	1	1	3	1	0	1	2	13
	Project Team	4	4	1	3	2	0	1	2	17
	Defining Requirements	1	2	2	0	0	0	2	1	8
	Training	2	1	0	2	2	0	0	1	8
	Change Management	2	0	1	1	0	0	0	0	4
	IS Group Functioning	1	1	1	1	0	0	0	1	5
	Vendor Relationship	0	0	1	0	0	0	0	0	1
	Testing	0	1	0	0	0	0	0	0	1
Project Governance	1	0	0	0	0	0	0	0	1	

Table 3.18 – Summary of Key Shared Understanding Issues (Continued)

3.2.2.2 – The relationship between shared understanding and performance

Proposition 2: Shared understanding (SU) is directly related to Success in deploying IT

This first research phase was not designed to definitely test the relationship between shared understanding and success in deploying information systems (i.e. performance). Rather it was designed to gather more information on how shared understanding might be related to success in deploying information systems.

While there is evidence from the interviews to suggest a relationship between shared understanding and performance, it remains problematic to measure this relationship. As Barki *et al.* (1994) note, there are numerous issues related to measuring IS performance. In addition, the relative immaturity of the shared understanding construct compounds this difficulty in assessing the success of information systems deployment as the relationship has not yet been extensively examined.

Despite these concerns, a simple assessment of performance was employed in this phase of the research. Respondents were asked to rate the success to date in deploying information systems in their particular functions or organizations. The use of this simple perceptual measure highlighted a further issue in assessing the

relationship between shared understanding and measures of success, and that is the lag effect.

One comment in particular, that from the VP Human Resources in Company H, served to illustrate the lag effect. The VP H/R and VP IS had a high level of shared understanding. Yet when asked to comment on the success in deploying information systems in her organization, the VP H/R noted that she would "assign a grade of C, but rapidly moving to a B+, and can see the day for an A". When I asked the VP Human Resources to elaborate on her assessment, she went on to explain that under the *previous* VP IS, there had been some problems in deploying information systems. The problems ranged from not undertaking the right projects in the first place, to not working effectively with the H/R organization during implementation. She was very optimistic about the current VP IS's ability to ensure that the right systems were delivered, and that implementation went smoothly. There was no evidence of success yet, just a perception that things were improving and would be very good at some time in the future. This situation is no different from all other forms of research into performance related outcomes, and that is how to account for this lag effect in a cross sectional research design. Once again, the exploratory nature of the research precludes a detailed examination of this lag effect on measures of performance; however, it is an important issue worthy of further examination in the future.

The second major issue in measuring success in deploying information systems, is that there are numerous measures of success, as the interview data indicates. Thus one key concern in measuring success is that both members of the dyad view this activity in the same way. The second related concern is that, if success is measured in terms of the same criteria, that the actual ratings on these criteria are positive. So for example, if both members of the dyad measure success in terms of on-time delivery, this is a good start. However, only if information systems are then delivered on time, does success exist.

In short, there are two difficulties related to measuring performance in this research context. The first is the lag between the existence of shared understanding and evidence of its effect on success in deploying information systems. A detailed examination of this is beyond the scope of this research project. The second is the lack of consensus on just how best to measure this success. As a result, the findings related to the relationship between shared understanding and success in deploying information systems are tentative at best, and remain problematic to confirm.

3.2.2.3 – Factors Affecting Shared Understanding (Propositions 3-7)

A number of different factors were proposed as having an effect on the creation of shared understanding. One of the key goals in Phase 1 was to better understand which factors were most important and how they related to shared understanding. What follows is a discussion of each of the proposed factors and how they related or did not to the creation and existence of shared understanding.

Proposition 3: Similarity of cognitive styles between IS and line executives is directly related to shared understanding

Proposition 4: Level of communication between IS and line executives is directly related to shared understanding

The findings related to this factor were somewhat disappointing in the sense that in every dyad, the level of communication between members of a dyad was assessed to be of a frequent and diverse nature. As such, *communication* was found not to be a differentiating factor between dyads exhibiting different levels of shared understanding. In retrospect, this should not have been surprising, given the nature of the interviewees – the senior executives of the company who, it turns out, all sit on the same operating committees, steering committees and other senior committees that meet on a regular basis. In short, in terms of frequency, as the data indicates, communication was frequent.

In terms of the opportunity to discuss information systems related items, it became apparent during the course of the interviews, that because information systems form, in the words of one executive, “the nervous system of the organization,” discussions around information systems issues are pervasive. Information systems issues crop up constantly because the “business and information systems are inextricably linked in retail.” In short, while communication is key to the development of shared understanding, the nature of the sample precluded any further investigation of its specific effect.

When it became clear that frequent and diverse communication was occurring, it was necessary to probe deeper into just what other factors were at work in terms of differentiating between those dyads that developed a high level of shared understanding, versus those that didn't. A number of interviewees commented on the “lack of intellectual engagement” on the part of some senior executives when discussions involving information systems were occurring. As this comment, and others like it, were discussed in more detail, a number of interviewees felt that this lack of “intellectual engagement” was due in some cases to a lack of natural ability, or “smarts” to grasp some of the complexity surrounding information systems issues. Others felt that there was also an unwillingness on the part of some individuals, who had the natural ability, to engage in developing a shared understanding.

One of the most interesting outcomes of the interview process was the compilation of the interesting analogies interviewees used to describe their views of the world, such as the ones just described. The VP for Logistics and Distribution for Company B had one of the best ones for describing his views on the development of shared understanding:

There are two types of people in retail. I call them the 'learned skill sets' and the 'natural learning ability'. The 'learned skill set' folks just don't naturally understand complex interrelationships, are not usually total systems thinkers. Their sphere of understanding grows by learning new skills. The 'natural learning ability' people can understand complexity. I like the basketball hoop analogy. Some people's hoops are just naturally bigger to start with and the rim is also made of flexible material – you can throw a ball through easily and you don't miss too many shots. Some people's hoops are smaller and made of steel and you don't often get the ball through – it's like trying to shove a beachball through a nerf ball hoop. It just ain't going to happen. This is the problem with many of the marketing folks who've come up through the stores.

The VP IS for Company A pointed out that

Most of them (the presidents of the different grocery divisions) came out of Marketing or Merchandising and they don't want anything to do with technology, just somebody else make it that way (i.e. don't bother me with the details).

The SVP Diversified Businesses for Company C similarly commented that

There seems to be a problem engaging certain parts of the organization (as a whole). The engagement of Logistics and Distribution with IS is okay, but the engagement of IS with Marketing and Sales is definitely not okay. There is a very short term focus there (in Marketing) that is causing problems, and I'm not sure what else, but there's more.

In sum, there appear to be two separate considerations at work in the development of shared understanding. The first is a willingness to engage in a discussion of the issues so that understanding can be created. The second, is the fundamental cognitive ability to understand or grasp the issues in a sufficient amount of detail. It appears from the comments, and consistent with Proposition 3, that cognitive ability is a fundamental prerequisite for the development of shared understanding in this particular context. In the words of one interviewee, "either you have it or you don't and all the willingness and communication in the world isn't going to make any difference if you don't have that". One of the interesting questions, however, is what happens when you have line executives with cognitive ability, as in the case of the VP Franchisee Relations in Company C, who do not develop shared understanding?

The VP Franchisee Relations in Company C had a very extensive background in Information Systems. As he pointed out during the interview, he had

made a great deal of money personally by developing the software for the very first Automated Teller Machines. He eventually sold the technology to a number of the major banks. Given his background and education, he should have been one of the line executives who had a high level of shared understanding with the VP IS, but he did not. In fact he and the VP IS had only a MODERATE level of shared understanding. There are two possible explanations for this finding. The first is that the scale for measuring shared understanding is flawed. The second is that there is something else at work in the development of shared understanding.

With respect to the first possible explanation (i.e. that the measure is flawed), this finding was discussed with the VP IS during a follow-up interview. The VP IS was not surprised. She indicated that because of the VP Franchisee Relations' experience *in the past*,, he had some very fixed and definite ideas about a number of things – how he thought the Information Systems Organization should be run, how information systems should be used within the company, and how the VP IS should operate within the company. The VP IS also discussed that in her opinion “many of his views were outdated”. Her assessment of the level of shared understanding with the VP Franchisee Relations was MODERATE as well. In short, it appears that the scale employed was not flawed. This begs the question then, what else is at work here?

On further discussion with the VP IS, she mentioned the VP Franchisee Relations' "unwillingness" to see her points of view on the aforementioned issues. Thus it would appear that 'cognitive ability' needs to be considered separately from willingness, in that 'cognitive ability' does not automatically lead to willingness. All indications were that he had the 'cognitive ability' to fundamentally understand the issues. It was his experience, in this case direct work experience with information systems, that created a fixed view of the world that was inconsistent in certain respects, with that of the VP IS. In Hedberg's (1981) language, the VP Franchisee Relations may have had difficulty in "unlearning".

The net effect was an unwillingness to develop a shared understanding with the VP IS. He fundamentally didn't think she was right in much of what she was doing, and thus was "unwilling" to share her views of the world of information systems at Company C. In short, underlying cognitive ability and willingness to engage in the development of shared understanding need to be considered separately.

In sum, it emerged that while communication was important, in the sample of firms for this phase, there was no variation in this construct. All the senior executives communicated frequently, and in a diverse and media rich way. As

the literature review in Chapter 2 revealed, beyond these facets of communication, there are several other more complex components such as information overload and unlearning. The concept of unlearning is not yet even well developed in the organizational learning literature and it was deemed to be infeasible to study it in the second phase of this research project. Similarly, although information overload is an interesting concept worthy of further exploration as it relates to the development of shared understanding, it was again not considered for further exploration in this research project. Instead, the second phase of the research was focused on confirming the communication related findings of Phase 1, that Level of Communication is an insufficient measure of the communication issues related to the development of shared understanding.

Proposition 5: Shared knowledge between IS and business executives is directly related to level of communication

There was no evidence of a relationship between the level of shared knowledge and the level of communication. As discussed previously, regardless of the level of shared knowledge, there was a high level of communication. At the same time, however, it seems intuitive that shared knowledge has an important role to play in the development of shared understanding. The original rationale for including the shared knowledge construct in the research model, is that individuals who have a shared vocabulary and some similar experiences in managing

information systems are more likely to be able to form a shared understanding, specifically by communicating better. As the previous discussion posited, “communicating better” appears to be a function of three things: opportunity, ability and willingness. As such, shared knowledge might be better considered as an indicator of one’s willingness to develop shared understanding, rather than as a direct antecedent on its own.

Proposition 6: Success in Implementation of Previous IS plans is directly related to level of communication

One of the other factors posited to affect shared understanding is the success the organisation has had with respect to implementing previous IS plans. This construct was included in the Phase 1 research model following a review of relevant literature, and in particular because of the work Reich (1992) had done on the “linkage” construct. Reich concluded “that IT implementation history appeared to influence both communication and connections in planning” (p. 352). As Reich also noted in support of this conclusion, “Not only did late IT implementations cause problems, executives **could not understand** (emphasis added) the reasons for delays, and therefore could not create plans to avoid them in the future. Executives in this situation expressed frustration and exhibited dysfunctional behaviour (for example, avoiding communication with the IS executive)”(p. 352).

As noted, in the sample for this phase of the study, the business executives could not and did not avoid communication with the IS executive, regardless of the success in the implementation of previous IS plans. As such, it would appear again that the opportunity for communication is not the only issue, rather that the quality of communication, or more specifically, the intellectual engagement in the discussion, is the issue. In other words, a poor history of success results not in a lack of communication, but rather an unwillingness to engage intellectually in the discussion, and, for example, “want to understand the reasons for delays”. The analogy that best applies here is that “you can lead a horse to water, but you can’t make him drink, especially if the water has tasted bad in the past”. Thus, in further support of the previously discussed distinctions between opportunity, willingness and ability, it would appear that a poor or negative experience with information systems in the past likely affects the willingness to engage intellectually in the development of shared understanding, and not directly in the actual forum or opportunity to communicate.

Proposition 7: Individual differences are directly related to Shared Understanding

Five individual differences were proposed as antecedents of shared understanding – three of which were demographic factors and two of which were other personality factors.

The K-W test was used to test the demographic factors propositions. To accomplish this, dyads were grouped into those that exhibited high, moderate and low levels of shared understanding. Then each individual difference was tested to determine if there was a significant difference in the scores of those who exhibited a certain level and those who did not. Table 3.19 summarizes the results of these tests. As expected from the qualitative review of the data, functional orientation, organization tenure and age are key differences that will be explored in Phase 2.

Individual Difference	Existence of Relationship to Shared Understanding
Functional Orientation	Yes
Organizational Tenure	Yes
Age	Yes

Table 3.19 – Demographic Factors Results

The other two personality factors were not tested in this phase of the research, rather the purpose of this phase, was to assess their usefulness and relevance in this particular research context. With respect to the relevance of particular personality traits, there are numerous personality traits that have been linked to executive decision making (see Section 2.1.1 for discussion). This initial review of the literature identified Tolerance for Ambiguity and Tolerance for Risk as two important potential antecedents of shared understanding. In the course of the

interviews in this first phase, several findings related to these personality characteristics were uncovered, a discussion of which follows.

A number of interviewees discussed the importance of “having a bit of risk taking in your blood”. A number of others talked about the importance of “being innovative in general”. Others talked about the importance of being able to deal with uncertainty and ambiguity. In short, in terms of relevance to this research project, this first phase indicated support for the further exploration of the relationship between shared understanding and risk tolerance, ability to deal with ambiguity and innovativeness.

An important secondary goal of this first phase, was to assess the appropriateness of the various scales which currently exist to assess these personality characteristics. While it would be interesting to explore each of them. In reality, as it turns out, it is not practical to attempt to do so in this particular research context. Pilot tests were conducted on several of the instruments for measuring innovativeness, tolerance for ambiguity, tolerance for risk with Company A, Company E and Company G interviewees. The purpose of this pilot test was to gauge their reactions to answering the questions on each of these scales. The results of the pilot test indicated that measurement of all three characteristics was not practical. Specific comments on the instruments included: too much time

required, too many 'academic' questions, too difficult to answer. One respondent even went so far as to write the following note

I found the flow and type of questions to be confusing and difficult to answer. I would not be interested in participating in any future research of this type, as it is too time consuming. Sorry!

Given the disappointing results of the pilot test, another review of relevant literature was conducted to determine if there were additional scales which could be employed to overcome some of the challenges with those used in the pilot test, and/or if there was another way to assess the relationship between these personality characteristics and shared understanding.

During this subsequent literature review, Locus of Control was identified as a potentially useful personality characteristic worthy and useful to explore in this research context. As Miller, Kets de Vries, and Toulouse (1982) note

It seems reasonable to believe that confident, aggressive, and active chief executives will tend to undertake more innovative, risky and proactive strategies. In contrast, executives who are more given to feelings of helplessness and passivity will be more conservative, reactionary, and less risk averse (p. 238)

Miller, Kets de Vries, and Toulouse (1982) used Rotter's (1966) locus of control characteristic to study the above assertion. Rotter (1966) developed a

scale to measure an individual's perception of how much control he or she is exerting over the events in his or her life. An internal person believes the outcomes of his or her behaviour result directly from his or her own efforts. External people, on the other hand, believe that events in life are beyond their control and are a result of fate or some other external influence. Rotter (1966) believed that there would be significant differences in behaviour between these two groups. Numerous research studies since Rotter's work have indeed found this to be the case (see for example, Rice, 1978).

Related to this particular research context, several studies (Brockhaus, 1975; Durand & Shea, 1974; Shapero, 1975) suggest that internals exhibit more entrepreneurial behaviour than externals. As such, individuals who have an internal locus of control, are expected to engage in more innovative activities. As Miller, Kets de Vries, and Toulouse (1982) note,

Because internal executives are more convinced of their abilities to influence their environments, they proceed to do so. Confidence in one's potential impact breeds action. In contrast, external executives are likely to be more passive because they believe events to be beyond their control (p. 239).

In their study of 24 senior executives, they found a very strong and significant relationship between locus of control and innovativeness, as well as locus of

control and a number of other variables particularly relevant in this research. Their findings relevant to this research project are summarized below:

1. Firms run by internal executives performed more innovations in production and/or service methods than did firms run by external executives.
2. Internal executives also tended to place greater emphasis on product design innovations through R&D and high technology use.
3. Internal executives undertook more risky projects.
4. Internal executives had longer planning horizons.

In short, locus of control appears to be an excellent personality characteristic to measure because it is related to so many of the factors mentioned by interviewees (e.g. risk taking, innovation, long term focus). In terms of its specific relationship to the development of shared understanding, as a personality characteristic, it appears to be an indication of one's inherent ability to develop a shared understanding around information systems issues that are often risky, innovative and long term in focus. As a practical consideration, the instrument is fairly short and should address some of the concerns raised by executives who participated in the pilot test. The other personality characteristic to be explored, tolerance for ambiguity, has not been linked to locus of control. It therefore should be considered as a separate indicator of ability to develop shared understanding.

In summary, this phase of the research refined the relationship between individual differences and shared understanding. Specifically:

1. Support was found for the inclusion of organizational tenure, functional orientation and age as key individual differences related to shared understanding
2. These individual differences were linked more closely with the key concepts of ability, willingness and opportunity that were developed earlier in this findings section
3. Rationale was put forth for the inclusion of locus of control and tolerance for ambiguity as two important personality characteristics to explore

3.3 – Discussion of Phase 1 Results

The goals of this phase were threefold:

1. To define the shared understanding construct – its dimensionality, its content.
2. To better understand the factors that facilitate the creation of shared understanding.
3. To probe the relationship between shared understanding at the senior executive level and success in deploying information systems.

The most important goal of this phase of the research was to more fully define the shared understanding construct - confirm its dimensionality and identify the individual elements of each of the dimensions. The results of the case studies confirmed that shared understanding in this research is indeed a four dimensional construct, with the dimensions as noted previously. The key issues that form the dimensions were identified.

This phase of the research also clarified the nature of the factors that contribute to the development of shared understanding. In particular, the data obtained substantially clarified the relationships among these factors and how they relate to the shared understanding construct. The data from this phase of the research, indicate that three separate factors are critical to the development of shared understanding. There must be a 'natural ability' or cognitive ability on the part of individuals so that they are able to understand the often complex issues surrounding information systems. But cognitive ability in and of itself is not enough. There must also be a willingness to engage intellectually in creating shared understanding.

But again, both ability and willingness are not enough, for there must also be an opportunity to communicate in order to convert ability and willingness into the final product, shared understanding. All three conditions must be present in order for shared understanding to exist. Although elements of all three were present in the model presented for exploration in this phase of the research, the data collected and analysed served to sharpen our understanding of their relationship to the shared understanding construct. As such, the conceptual model proposed prior to this phase of the research was revised to more accurately reflect the key findings. The revised conceptual model is presented in Figure 3.1.

Key points to note with respect to the differences between the Phase 1 research model and the revised research model are as follows:

1. Cognitive ability remains an important antecedent to the development of shared understanding
2. Communication remains as a critical factor to consider in the development of shared understanding
3. Willingness to engage intellectually is a new factor that emerged from the findings in this first phase of the research
4. Individual differences remain as key factors to consider in the development of shared understanding but not as concepts on their own, rather as indicators of one of the three factors described above
5. Shared knowledge is an important factor to consider, but not as a precursor to communication, but as an indicator of one's willingness to engage intellectually
6. Implementation of previous IS plans is an important factor to consider, but not as a precursor to communication, but as an indicator of one's willingness to engage intellectually

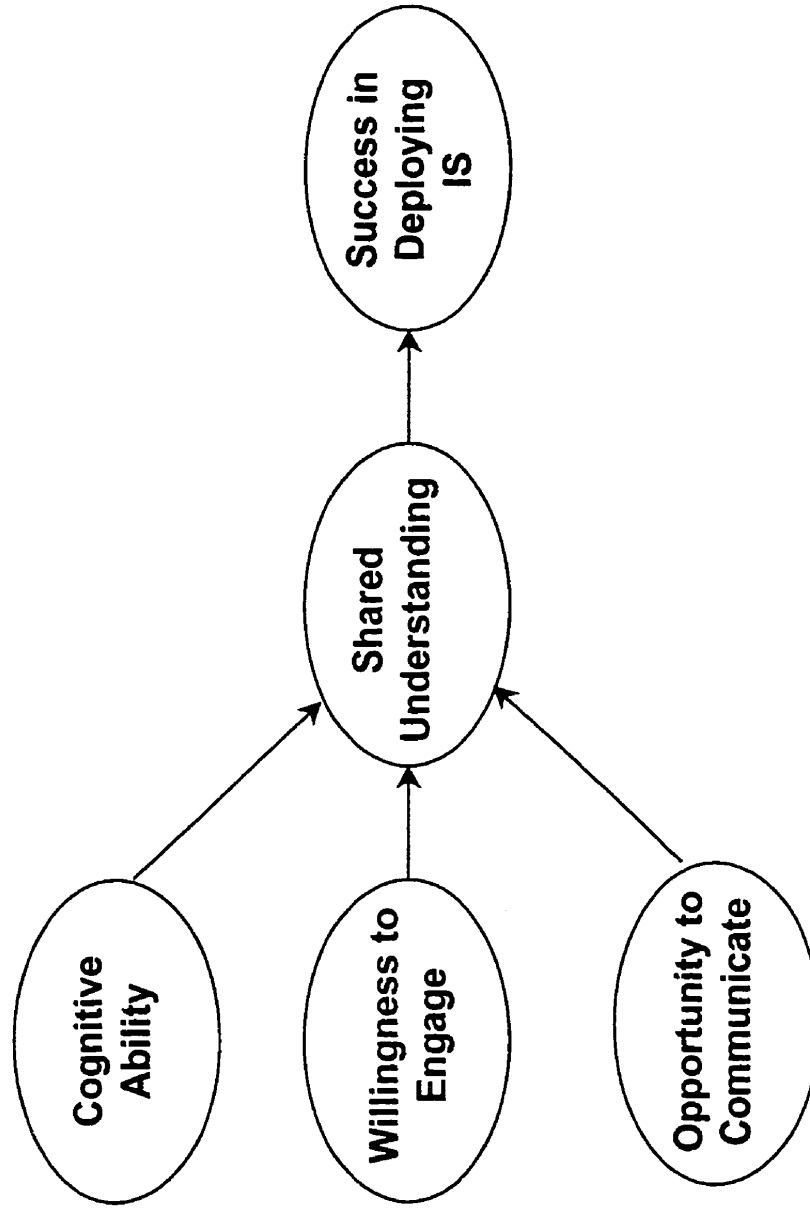


Figure 3.1 – Revised Research Model

The link between shared understanding and success in deploying information systems was also probed in this phase of the research. Although there appears to be a positive relationship between shared understanding and performance, it remains problematic to measure.

In conclusion, this phase of the research confirmed the shared understanding construct as being four dimensional, provided the key elements of each of the dimensions, clarified the antecedents of shared understanding, and indicated that a high level of shared understanding was substantively related to success in deploying information systems. These findings were used as inputs into Phase 2 of the research, the primary goals of which were to:

1. Create a valid and reliable measure for shared understanding
2. Pilot test the new measure for shared understanding
3. Conduct a preliminary test of the revised research model

3.4 - Contributions and Limitations of Phase 1

This first phase provided numerous important insights into the nature and importance of shared understanding around information systems issues at the senior executive level. In addition to confirming a number of the research propositions, it provided information vital to the creation of a measure of shared

understanding in this particular information systems context.

The insights and information gleaned from the interviews, in addition to providing a very rich and entertaining source of metaphors and anecdotes, provided an invaluable source of context for the development of shared understanding at the senior executive level. The comprehension of the concept of shared understanding and its related factors was substantially enhanced by the series of interviews with senior executives who are intimately involved in managing the expensive and competitively important issues around information systems deployment.

In any research design, however, there are limitations. This exploratory research phase is no exception to this rule and there are several shortcomings that must be noted. Foremost, is that the shared understanding construct has been developed exclusively in one industry, retail. Although there is evidence from other Phase 1 data collection initiatives (i.e. the Executive Program participants) that the conclusions reached in this phase are generalizable to other industries, the results are far from conclusive. Thus the major shortcoming in this phase is the lack of generalizability to other industries. Related to this, is that shared understanding has been examined at only the senior executive level. In short, another limitation to the generalizability of the findings, is that they remain solely focused at the senior executive level.

The second limitation of this phase is related to the small sample size. Although eight organizations were studied, for a total of 24 dyads, the sample size again limits the statistical generalizability of the findings. The second phase of the research, however, was designed to provide some stronger statistical support for the findings from this phase.

The third limitation is related to the subjectivity inherent in the assessment of the level of shared understanding. Although three different researchers were involved in coding the data, there still remains the possibility that researcher biases are reflected in these assessments.

Finally, concerns about research of the type in this first phase, are often raised around issues of data integrity (Bonoma, 1985). At the end of the day, despite the best attempts to ensure objectivity in the collection and analysis of the data, both can be limited by the abilities and inherent biases of the researcher.

CHAPTER 4 – PHASE 2 CONFIRMATORY SURVEY

This second phase of the dissertation research was undertaken in order to:

1. Create a valid and reliable measure for shared understanding
2. Conduct a preliminary test of the new measure for shared understanding
3. Conduct a preliminary test of the revised research model

This chapter describes the activities undertaken during this final phase to achieve the research goals, and discusses the findings from these activities. To this end, this chapter is divided into seven sections. Section 1 describes the research design and the rationale for its choice. Section 2 outlines the specific hypotheses tested in this second phase. The third section describes the scales used to measure the constructs. The fourth section details the development of the shared understanding measure. The fifth section describes the overall Phase 2 research methodology employed, as well as the companies and individuals that were targeted. Section 6 presents the Phase 2 research findings. This is followed by a seventh section which discusses and summarizes the key findings. In the eighth and last section of the chapter, the contributions and limitations of this second phase are noted.

4.1 – Research Design

A cross sectional survey was utilized to further refine the shared understanding construct and conduct a preliminary test of the Phase 2 research model. A cross sectional survey was chosen as the best approach for addressing the limitations of the first phase of the research. Most notable among these were the qualitative nature of the data analysis and the small sample size. A survey provides more quantitative data with which to verify the Phase 1 findings. The quantitative findings can then be triangulated with the more qualitative findings from Phase 2, to provide a richer and statistically sound picture of the nature of shared understanding in this research context.

4.2 – Research Hypotheses

The research model that was tested in this phase of the research is illustrated in Figure 3.1. It is worth repeating here, prior to a discussion of the research hypotheses, that the unit of analysis is the dyad. As such, there are two different effects to be tested with respect to this model – the trait effects and the dyad alignment effects. It is possible to have a high level of shared understanding around the right issues (the alignment effect) but in the wrong direction (the trait effect). For example, both members of the dyad may view

information systems as useful only in a support capacity (the alignment effect), while industry leaders view information systems as a key source of competitive advantage (the trait effect). In other words, there would be strong shared understanding, but the quality of the understanding itself is poor (i.e. "old" or even incorrect thinking), which in turn would lead to poor success in deploying information systems.

In order to capture both the trait and alignment effects, for a number of the antecedent factors in the model, there are two related hypotheses. The hypotheses tested in this phase are as presented below.

H1: Cognitive ability is positively related to shared understanding.

H1A: The higher the tolerance for ambiguity, the higher the level of shared understanding.

H1B: The more internal the business executive, the higher the level of shared understanding.

H2: Willingness of the business executive to intellectually engage is positively related to shared understanding.

H2A: The longer the dyad individuals have worked together, the higher the level of shared understanding.

H2B: Positive prior experiences with information systems will be positively related to shared understanding.

H3: The greater the opportunity to communicate, the higher the level of shared understanding.

H4: The higher the level of shared understanding, the greater the success in deploying information systems.

4.3 – Scale Usage and Development

This section discusses the measurement scales used to assess the constructs in the research model. With the exception of the shared understanding construct, all constructs were measured with existing scales. The following subsections describe the scales employed and the justification for their use.

Cognitive Ability

As discussed at length in the literature review, the assessment of cognitive ability is a source of great debate (see Section 2.1.1 for discussion). At one end of the continuum are the psychologists who employ sophisticated techniques such as the Bieri Grid (Bieri et al., 1966) to assess underlying cognitive complexity. At the other end of the spectrum, are the strategy researchers (e.g. Hambrick and Mason, 1984) and organizational behaviour researchers, who have built a considerable evidentiary base supporting the use of demographic variables as indicators of underlying cognitive ability.

Although potentially very interesting to use, the results of the pilot test indicated that the use of the sophisticated measurement techniques such as the Bieri Grid technique, in this research context and design, would be very difficult to execute in practice. As such, it was necessary and preferable to rely on other

measures as indicators of underlying cognitive ability. In this respect, as discussed earlier, Tolerance for Ambiguity and Locus of Control, two important personality characteristics, were used as indicators of cognitive ability, and specifically of cognitive style. Tolerance for ambiguity was measured using the instrument developed by Rydell & Rosen (1966). Locus of control was measured using Levensen's (1974) scale. Both scales come directly from the psychology literature and have been subjected to numerous empirical tests (Gallupe, 1989).

The executive characteristics research was also useful. A number of researchers (see for example Hitt & Tyler 1991; Wally & Baum 1994) have used and found evidence for the use of formal educational attainment as an indicator of underlying cognitive ability. The specific measurement employed was to count the number of years of formal education beyond high school, and this was the measure adopted in this research.

Willingness to Intellectually Engage

As the discussion in Chapter 3 indicated, there are a number of interesting factors related to willingness to engage intellectually that are hypothesized to affect the development of shared understanding. These factors were measured as follows.

Functional orientation was coded using the approach employed by Thomas, Litschert & Ramaswamy (1991) in their study of strategy-manager coalignment.

Functions were coded as a categorical variable to reflect output, throughput or peripheral orientation. Output functions included marketing, general management and product research and development. Throughput functions included engineering, manufacturing and information systems. Peripheral functions include finance, legal and accounting.

Organizational tenure was operationalized by counting the number of years the executive had served in the organization and position. The number of years working together was calculated by taking the difference in this number for the individuals in the dyad.

There was no previously tested scale for operationalizing "positive prior experiences with information systems". Based on the Phase 1 findings, however, this general attitude towards information systems was operationalized using two questionnaire items. The first item, "Generally speaking, do you feel your company gets value for the money invested in information systems?" was coded as a simple categorical variable, yes/no. The second item, "Do you know the status (e.g. on track, delayed) of the major information systems projects underway in your company?...if so, please list top three and their status." For this second question,

the status portion was coded as a categorical variable delayed/on track.

Opportunity to Communicate

There are numerous scales available to measure various facets of communication, such as richness (see Daft & Lengel, 1986), frequency and diversity. In this particular research context, as discussed in Chapter 3, there was no variation in the frequency or diversity of communication. This findings was expected to carry over in to this phase of the research. However, in order to confirm this, a single item was included which asked respondents "On average, how frequently do you communicate with your counterpart (i.e. the other person in the dyad)? Answers were coded on a five item scale ranging from 'less than quarterly' to 'several times a week'"

Success in Deploying Information Systems

This was the most difficult construct to operationalise, in part because of the plethora of possible approaches and the lack of dominance of any one, but also because of the 'at best' tenuous link established in the first phase of the research, between shared understanding and any measure of performance. In the end, IS performance was operationalised using the scale developed and tested by

Vandenbosch (1993). There were two reasons for using this scale. First, the scale measures two possible outcomes of successful information systems deployment – impact on organisational efficiency and impact on organisational effectiveness. Successful deployment of information systems can lead to either or both of these impacts. Second, the scale was short, straightforward and previously tested.

Shared Understanding

The main purpose of this second phase of the research project was to create and test an instrument capable of reliably and validly measuring shared understanding at the senior executive level via a survey instrument. After exploring a number of possible methods of doing so, a case-scenario methodology (Fredrickson, 1986; Thomas, Clark & Gioia, 1993) embedded within the survey was chosen. The following sections describe the rationale for using this approach, and details the development of the case-scenario and associated questionnaires.

4.4 – Case-scenario Research Methodology

In essence, a case-scenario methodology (Fredrickson, 1986; Thomas, Clark, and Gioia, 1993) asks informants to read a case scenario and then answer a series of questions related to the scenario. This research design, while not widely

used to-date in the information systems literature, has been used effectively in strategic management research. Fredrickson (1984) and Fredrickson and Mitchell (1984) pioneered the methodology and summarized their experiences in a research note published in the *Strategic Management Journal* in 1986 (Fredrickson, 1986).

The approach employed in this research to execute the case-scenario methodology is based in large part on Fredrickson's experiences with the approach and suggested improvements.

The critical assumption which underlies the use of this methodology, is that strategic decision processes are *patterns of behavior* that develop in organizations (Weick, 1979). Fredrickson (1986) expands on Weick's comment and further notes that "As such a pattern of behavior, it is also suggested that a firm's strategic decision process is apparent to its executive-level members, and that the characteristics of that process are consistent across decisions that are perceived as being clearly strategic. Because of this consistency, it becomes possible to investigate strategic process issues without studying numerous decisions at a particular point in time" (p. 474). In this research context, the direct analogy, and thus assumption, is that the characteristics of executive level decisions around information systems are consistent across decisions, regardless of the particular situation. As such, it is possible to use the case-scenario approach to assess the characteristics of these decisions.

Figure 4.1 summarizes the key elements and stages of Fredrickson's methodology. As can be seen from the figure, there are essentially two phases to his approach: information gathering and instrument development. Using Fredrickson's terminology, Phase 1 of this particular research project is equivalent to the "information gathering" phase. During this phase, an organizing structure (i.e. shared understanding and its subdimensions) was developed, industry sources were consulted and structured interviews conducted. All of the information gleaned from this phase was then used as input into the "instrument development" phase. This section is focused on describing the development of the scenario instrument. Section 5 will expand on its administration as part of the overall cross sectional survey execution.

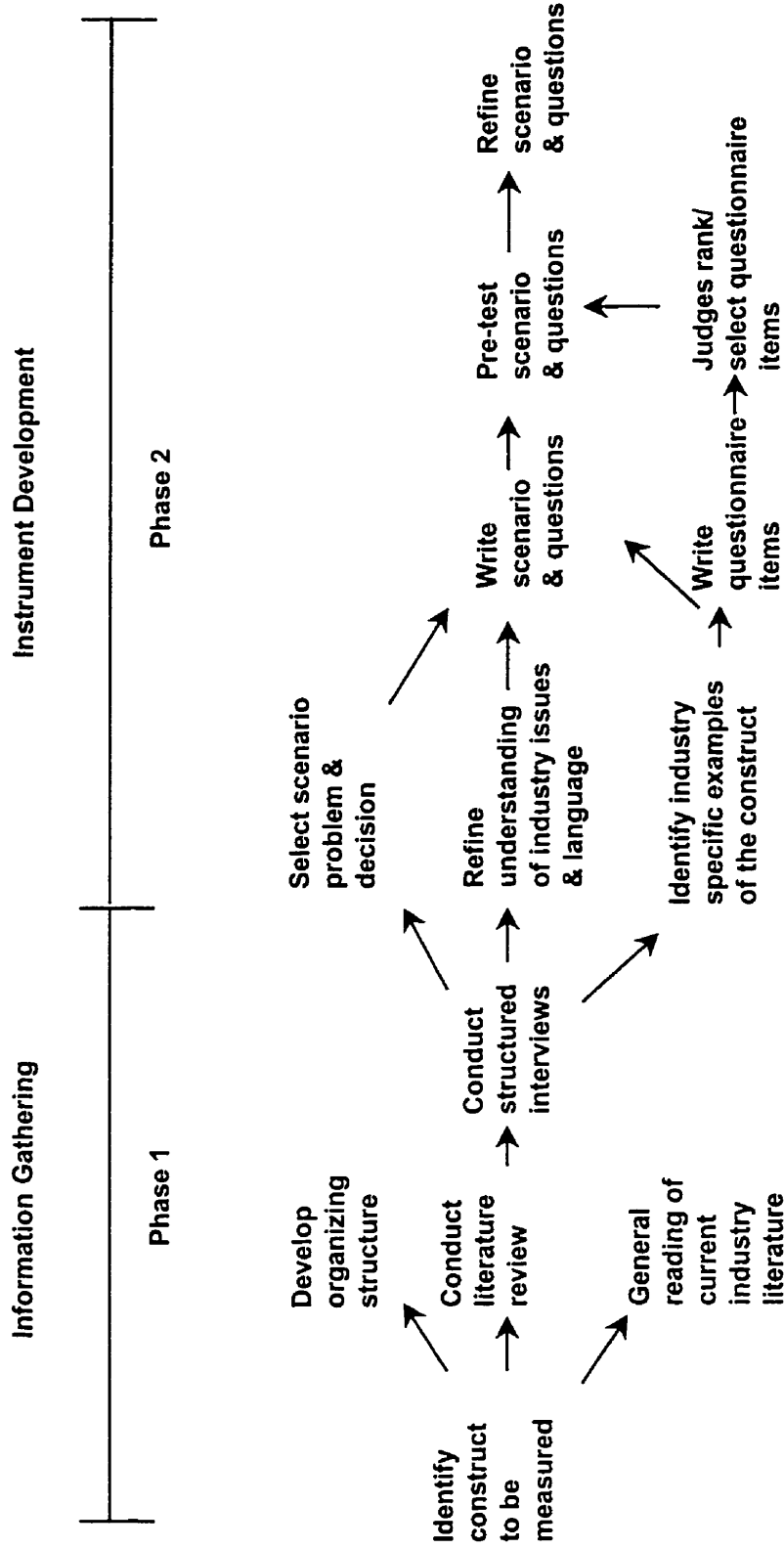


Figure 4.1 – Steps in the Case Scenario Method

4.4.1 - Scenario Development

In order to construct the scenario, data were gathered from several sources. The primary source of data was the interviews conducted during the first phase of this research. The interviews were particularly useful for identifying common issues faced by a majority of retailers. The interview data were augmented with information from retail trade magazines, articles in leading journals in the area, cases that had been written for courses in business administration programs, general IT trade literature, and the popular press. There were a number of possible topics around which to write the scenario, but the investment issue that appeared to be the best choice was that of data warehouses related to customer loyalty programs. The other potential topic was around supply chain management systems, but in the end there were too many variations and possible subtopics within this complex area and it was felt that it would be difficult to choose one subtopic that would appeal to many retailers.

Once the topic area was chosen, it was necessary to construct the scenario around the information elements identified in Phase 1 as being critical to have a shared understanding of. In Fredrickson's terminology, the organising structure for the scenario was the shared understanding construct that was developed from the literature and then refined during the structured interview process in the first phase of the research.

Frederickson (1986) recommends breaking the scenario into separate sections, each related to an element of the organising structure. His reasoning behind this is that

Although the same structure may have resulted in the decision process being portrayed more simplistically than it actually is in an organisational setting, that simplicity provided the respondents with a tangible situation. In the absence of some organising structure, respondents face a more nebulous, and potentially confusing, situation. In addition, by developing questions that related to specific parts of the scenario, it was possible to simplify the respondents' task while also obtaining information regarding actions that were unique to specific phases of the strategic process. (p. 477)

In this research, the sections would be related to the subdimensions of shared understanding as identified and refined in Phase 1 of the research.

To confirm the choice of data warehouses as a focus for the scenario, and ensure a well-rounded perspective was embedded in the scenario, an expert panel was constructed, consisting of the VP-IS for a large Canadian Grocery retailer, a university faculty member with expertise in data warehouses, and a VP-Marketing for a large international speciality retailer. The purpose of the panel was to review the scenario for relevance, realism, accuracy and completeness. A number of changes to the first draft of the scenario were suggested and incorporated into the final version.

4.4.2 - Questionnaire Development

Once the scenario was created and refined, it was necessary to construct the questions to be answered based on the information in the scenario. In reality, the process of scenario construction and scale development was not a linear one, but rather of a parallel and iterative nature. As drafts of the scenario were completed, individual questions were constructed and tested against information elements contained in the scenario. The focus of the questions was on eliciting responses useful for assessing the level of congruence, in a dyad, of the understanding or interpretation of the facts as presented in the scenario.

A total of 48 potential questionnaire items was identified through this process. A list of these appears in Appendix G. The next step in the process was to determine if the items had face and discriminant validity. To this end a QSORT procedure was employed. Two separate sorting exercises were conducted. In each exercise, four academic colleagues were asked to assist. In the first exercise, colleagues were provided with a stack of cards, randomly shuffled, with each card containing one item. They were asked to sort these cards into piles that "made sense". The second set of colleagues were provided with the same stack of randomly shuffled cards. These colleagues, however, were told that the items related to four, as yet unnamed subdimensions of the shared understanding

construct. They were then asked to sort the items into four piles. They were also asked to suggest names for the subdimensions. In both rounds of sorting, colleagues were asked to put aside confusing or poor fitting items. There were no major differences in the results of the two sorting exercises.

To be included in the eventual scale to be employed in the scenario, items from the sorting exercise had to pass the following tests:

- Be included in the correct dimension at least seventy percent of the time
- Not be included in the wrong dimension more than once
- End up in the same dimension as predicted by the researcher

The scenario and associated questionnaire items that fit the above noted criteria, were pilot tested with Phase 1 participants. This procedure served several purposes. First, these participants were willing to participate and provide feedback on a preliminary research instrument. Second, the data collected from the pilot survey could be triangulated with the Phase 1 results. This was particularly important given the relative novelty of the case-scenario methodology.

4.4.3 - Overcoming Challenges with the Scenario Approach

Normative Responses

Frederickson (1986) identified a number of potential problems with using the scenario approach. The first is that in using a scenario as a stimulus, respondents might feel compelled to answer the questions in a normative fashion. As Fredrickson notes, "in addition to being inaccurate, such normative responses would yield no variance across firms". To overcome this problem, Fredrickson recommends an explicit warning within the instrument against providing a normative response. He further recommends including selected comments attributed to scenario characters to reinforce the fact that respondents should provide an accurate response. For example, in the scenario the comment made by the VP-IS to the effect that "the dollars invested in the project should be viewed as a depreciable asset..." was designed not only to elicit a response regarding respondents' views on capitalization of IT investments, but also to discourage normative responses.

Bias

Another potential problem in using scenarios is that the very nature of the

description of the issue may generate bias. For example, if the scenario depicts the data warehouse situation at ACME in either an exceptionally good or bad way, the potential for bias is greater than if the same situation is depicted in an *intermediate* way (Fredrickson, 1986). Thus to further prevent bias and allow variance to emerge, the scenario was written in an intermediate way.

Construct Validity

The various review panels, and indeed the entire first phase of this research, were primarily concerned with ensuring content validity for the shared understanding construct. Of equal concern in using this methodology, is to demonstrate construct validity for the shared understanding construct.

Success in deploying information systems in organisations results from many decisions. Thus it would be ideal to utilise several scenarios in order to provide convincing conclusions. In reality, reading one scenario and responding to associated questions requires respondents to spend approximately 30 minutes.

Given this already onerous time commitment, it was not practical to use multiple scenarios. Nonetheless, it is crucial to demonstrate validity of the construct itself.

In order to do so, several approaches were incorporated in the methodology. Following Fredrickson's (1986) advice, four 'construct validity' questions asked

respondents to indicate the 'extent to which you share common views with your counterpart (in the business or in IS) on the following statements". Each statement described a dimension of understanding between executives. Respondents were asked to characterise the extent of shared understanding with their counterpart on an anchored scale ranging from 'not at all' (1) to 'to a great extent' (5).

Although Frederickson (1986) relied on the aforementioned steps to ensure construct validity, the exploratory nature of the shared understanding construct necessitated a more rigorous testing and demonstration of construct validity. Thus the data from the pilot test was compared with data obtained from the first phase of the research. A high level of congruence between the findings from the two phases suggests construct validity. More will be discussed on this point in the findings section of this chapter.

A baseline reading from respondents who should, using this scenario instrument, demonstrate no shared understanding was also created. The baseline reading was created by administering the instrument to academic colleagues with no specific knowledge of the subject area, either retail or IT. The baseline reading is useful as a comparison to ensure that respondents, who might simply be skilled at reading scenarios and cases and deducing or guessing at the "right" answer regardless of the subject matter, could not contaminate the results.

Importance of the Scenario Issue

Another potentially critical problem with the scenario approach is that the issue described may not be considered equally important across firms. Thus, a comparative analysis of the results would be misleading. To overcome this potential problem, a five point scaled question was included immediately following the scenario, asking respondents to indicate how relevant the scenario issue was for their firm.

4.4.4 - Benefits of the Scenario Approach

The most obvious benefit of using the scenario approach is that it provides respondents with a standardized stimulus. As Fredrickson (1986) notes, "this benefit is particularly important because a major shortcoming of all questionnaires is that (the questions) are subject to respondents' varying interpretations and cognitive orientations; each is a potential source of error." (p. 481). Fredrickson's experience indicates that without the scenarios used in his initial pretests, respondents sometimes had difficulty interpreting what was being asked. He reports that they had no trouble understanding a particular phenomenon and providing a response once it had been *illustrated* via a scenario. In short, the scenario creates a "common field of vision".

A second and related benefit of this approach is that it is possible to create a shared strategic context. As Mintzberg (1979) has pointed out, "no type of decision is inherently strategic; decisions are strategic only in context. The introduction of a new product is a major event in a brewery, but hardly worth mentioning in a toy company." (p. 60). In this research, the information in the scenario is valuable in that it not only establishes a consistent frame of reference for respondents, but establishes the situation as being clearly strategic for ACME retailer.

A final benefit of the scenario approach is that it typically results in a high level of intellectual involvement by respondents. High "involvement" by respondents helps them provide a more accurate description of the concepts under study. If written effectively, around a realistic decision, using industry jargon and describing specific details that generate interest, a scenario approach will generate a high level of respondent involvement. This assertion is supported by Frederickson's (1986) study having a response rate of 90%, and the fact that the response rate was very high despite executives having to take an average of 45 minutes to read the scenario and answer questions.

To briefly summarise to this point, the scenario was developed by: a) choosing an issue that was important to all firms in the retail industry; and b) writing

the content of the scenario so that it included information elements for each dimension of the organizing structure (in this case the shared understanding construct), and used industry-specific terminology. The scenario was pilot tested to ensure that the scenario and questions are understandable, accurate and relevant.

4.5 – Research Methodology

4.5.1 – Sample Description

As with the first phase of the research, the firms of interest were large retail organizations operating in selected segments. A list of potential firms was generated using several sources. For each of these firms, the senior information systems executives was contacted by telephone a) to explain the research, and b) to solicit cooperation. Of the 78 firms contacted, 23 agreed to participate. Participating organizations had an average of \$1.8 Billion in annual sales and an average of 22,600 employees.

4.5.2 - Data Collection

Once an organization had agreed to participate, a package of materials was immediately sent via courier. Each package contained the following:

- A cover letter addressed to the contact person (Appendix H)
- A one page Instruction Sheet (Appendix I)
- One copy of Questionnaire A (Appendix J) with a prepaid return courier envelope
- Three copies of Questionnaire B (Appendix K), each with a prepaid return courier envelope

Follow-up phone calls were made to participating organizations to ensure that courier packages were received, and that instructions for distribution were understood. In three instances, packages did not arrive. New packages were sent by courier and follow up procedures initiated with the courier firm. Reminder phone calls were also made, where appropriate, four weeks, six weeks, eight weeks, ten weeks and if necessary, 12 weeks after the packages had been sent out. The summer vacation schedules interfered somewhat with timely return of the questionnaires.

Of the 23 firms that initially agreed to participate, two declined to fill out the surveys. In one case, the organization was too busy. In total, 21 firms participated for a total of 51 usable dyads. Surveys were received for a total possible number

of 53 dyads; however, two of the surveys had portions of the case-scenario not completed and as such were not usable. Given the length of the survey instruments, the fact that organization executive level dyads were required, the complexity of the case-scenario questions, and the unfortunate but unavoidable collection of data prior to and during the summer months, achievement of 51 usable dyads is considered to be satisfactory. Given these factors, the existence of non-response bias was problematic to determine. However, it was tested by comparing the means of those people who returned the questionnaire in a timely fashion (i.e. within eight weeks of receiving the package) with those who returned the questionnaire after eight weeks time had elapsed and several reminder phone calls had been made. No significant differences were found between these two groups.

4.5.3 - Data Analysis

As previously stated, the goals of this final phase of the research were to:

1. Create a valid and reliable measure for shared understanding
2. Conduct a preliminary test of the new measure for shared understanding
3. Conduct a preliminary test of the revised research model

As such, a number of different analyses were carried out to achieve these goals.

To assess the validity of the case-scenario approach to measuring shared understanding, the values obtained from the case-scenario instrument were compared to those obtained from four construct validity questions. This comparison was achieved by examining the correlation between the two. In addition to this check, data obtained from the case-scenario instrument administered during the pilot test was compared to the qualitative results obtained for those same individuals in the first phase of the research. A third test was conducted which compared results of the case scenario instrument with those from a sample of individuals for which no shared understanding was expected. This third test was conducted to ensure that respondents, who might simply be skilled at reading scenarios and cases and deducing or guessing at the "right" answer regardless of the subject matter, could not contaminate the results. Reliability was assessed via PLS, to be discussed more fully later.

The preliminary test of the shared understanding construct itself, was concerned with two issues: confirming the dimensionality of the construct as developed in phase 1, and assessing the *level* or degree of shared understanding. Factor analysis was conducted to further explore the dimensionality of the construct. There are several different approaches to calculating the level of shared understanding, and each of these was explored.

The preliminary test of the research model was conducted using Partial Least Squares analysis. PLS is a causal modeling technique. The technique allows simultaneous estimation of the relationships between constructs (latent variables) and the relationships between constructs and their measures (manifest variables). The objective of PLS is to explain variance, as in the R^2 regression sense. For this reason, and in contrast to LISREL, it is useful for analyzing less well developed theories. The assumptions underlying PLS are few. Multivariate normality is not required; however, as in regression, the errors are assumed to be uncorrelated. The advantages of PLS include its ability to work with small samples and its ability to deal with complex models which contain many latent and manifest variables. Some of the disadvantages are that it cannot analyze models containing reciprocal paths, feedback loops, correlated errors, or correlated exogenous latent variables. In addition, there is no "overall" test of a model's fit with the data. The R^2 values are used as proxies for the "quality" of the model. The output of the PLS program consists of R^2 values for endogenous latent variables, path coefficients between latent variables, and loadings/weights for the manifest variables. PLS does not, however, provide significance levels for the path coefficients and item loadings. To get these, a separate procedure, called "jackknifing" is necessary. Given the dimensionality of the shared understanding construct, both first and second order constructs were modeled and tested.

4.6 - Research Findings

The findings from this second phase of the research are organized into four sections. Section 1 discusses the findings related to the validity of the case-scenario instrument as a measurement vehicle for the shared understanding construct. Section 2 describes the factor analysis results as they relate to the dimensionality of the construct. Section 3 compares the results obtained from the various approaches to assessing the degree of sharedness. Section 4 describes the results of the PLS analysis, both of the measurement model and the structural model.

4.6.1 – Validity of the Case-Scenario Approach

Four approaches were undertaken in order to confirm the validity of the case-scenario approach as a measure of shared understanding. The first involved comparing the results from four construct validity questions (see Section 1, Question 10 of the survey questionnaire) to those obtained from the case-scenario results. To this end, the correlation between the construct validity question and case-scenario results for each dimension of shared understanding were examined.

Table 4.1 summarizes the results.

Overall, the results of the correlation tests provide strong evidence of the validity of this particular case-scenario approach. With the exception of the *General Views on Technology* dimension, there was a strong correlation between the construct validity questions and the actual case-scenario results. The non-significant correlation between the construct validity question and the case-scenario results for this particular dimension may be more a function of a poorly worded construct validity question, rather than the nature of the dimension

<i>Construct Validity Question:</i> “To what extent do you share common views on...”	<i>Corresponding Case-scenario Questions</i>	<i>Correlation</i> ** significant at 0.01 level
Section 1, Q10A: “The potential uses of information technology within the company”	Section 4, Q1-4: General Views of Information Technology Dimension	Not significant
Section 2, Q10B: “Your responsibilities as a senior manager, for managing information technology effectively and efficiently”	Section 4, Q5-11: General Senior Management Responsibilities for Managing Information Technology Dimension	.467**
Section 3, Q10C “The actual development and implementation processes for information systems”	Section 4, Q12-21: Project Responsibilities for Managing Information Technology Dimension	.555**
Section 4, Q10D “The appropriate way to evaluate information technology investments”	Section 4, Q22: Project Responsibilities for Managing Information Technology Dimension	.454**

Table 4.1 – Results of Construct Validity Tests

itself. The results of the principal components analysis (to be discussed in the next section) indicate that indeed the four questions for this dimension “hang together” very well.

The second approach to assessing the validity of the case-scenario approach was to compare the results of the pilot test of the instrument with those obtained from the phase 1 interviews. A total of six dyad results were compared. In all cases, the results of the case-scenario assessment of the level of shared understanding were consistent with those obtained through the phase 1 interviews. These findings further confirmed the validity of the case-scenario approach.

The third approach to ensuring that the case-scenario approach was indeed capable of assessing shared understanding, was to compare the scenario results obtained from a group of academic colleagues, who a) had no specific knowledge of the subject area and b) had no specific knowledge of IT, with those obtained from the research sample. The comparison revealed no significant relationship between the two; therefore, further evidence suggests the case-scenario approach is a valid one for measuring shared understanding.

The final step in assessing the validity of the case-scenario approach was to ensure that the subject matter was relevant to the organizations and people answering the questions. To do this, a separate question (Section 4, Question 23)

asked respondents to rate, on a scale of 1 to 5, "How relevant to your firm, is the situation depicted in the ACME Retailer Scenario?" The mean answer was 4.3, only 1 respondent considered the scenario to be "unimportant" and only two respondents categorized the scenario as "neither important nor unimportant". In short, for the vast majority of respondents, the scenario was either important or very important to their organizations, further indicating the validity of the actual scenario itself.

In summary, four approaches were utilized to assess the validity of the case-scenario approach. The results of these tests strongly support the use of the case-scenario approach for measuring shared understanding.

4.6.2 – Dimensionality of the Shared Understanding Construct

Principal components analysis, also referred to as factor analysis, was conducted to further refine the shared understanding construct. This analysis was not used to guide the development of the questionnaire items, as the questionnaire had already been sent and the data collected. The QSORT procedure employed in Phase 1 was useful as a first step in confirming the dimensionality of the construct as developed in a review of the literature. It was also a valuable method of refining the wording of the individual questionnaire items. The principal components analysis was intended as a second step in the refinement process.

The Kaiser-Meyer-Olkin (KMO) test of sampling adequacy (test result should be greater than .5) and the Bartlett test of sphericity were conducted to ensure that enough inter-correlation existed between variables in order for factor analysis to be conducted. The KMO test = .595, and the Bartlett test yielded a $p=.000$; therefore, enough inter-correlation existed. Using the eigenvalue > 1 guideline and after examining the scree plot, the initial statistics produced 7 factors, which accounted for 73% of the variation in the data. Table 4.3 summarizes the initial factor matrix.

Factor	Eigenvalue	Pct of Var	Cum Pct
1	2.860	12.999	12.999
2	2.839	12.904	25.903
3	2.519	11.451	37.353
4	2.382	10.826	48.179
5	2.130	9.681	57.861
6	1.633	7.421	65.281
7	1.572	7.147	72.428

Table 4.2 – Initial Factor Matrix

The initial factor matrix was not a simple structure and therefore uninterpretable. Both varimax and quartimax rotations were carried out to determine the factor structures underlying the questionnaire items. Both rotations revealed similar results, and only the varimax results will be reported.

The rotated factor matrix was easily interpretable and is summarized in Table 4.3. Item loadings in the rotated factor matrices were used to interpret and label these factors.

Var	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Q17	.803						
Q10	.767						
Q16	.675						
Q9	.668						
Q8	.621						
Q13		.840					
Q19		.734					
Q22		.578					
Q21		.576					
Q18		.492					
Q4			.788				
Q2			.776				
Q3			.751				
Q1			.637				
Q7				.818			
Q6				.777			
Q5					.751		
Q12					.634		
Q14					.634		
Q20					.551		
Q11						.910	
Q15							.789

Table 4.3 – Rotated Factor Matrix

Overall, the results of the factor analysis were satisfactory. Although seven factors emerged, three of these consisted of either one or two items, which appear

to be problematic. Question 11 and Question 15 emerged as factors in their own rights. As well, Questions 6 and 7 emerged as one factor. All four questions share a common sentence structure.

- Question 11, "The VP-Marketing should be solely accountable for delivering the benefits outlined in the business case for the data warehouse"
- Question 15, "The scope of the data warehouse project should be enlarged to include the supply-chain applications"
- Question 6, "The VP-IS should initiate most information systems projects at ACME"
- Question 7, "The VP-IS should prioritise the information systems investments at ACME"

The consistent use of the word "should" as well as the associated implications, has likely caused the anomalous results to occur. Future use of the instrument should include a modification of these items.

The remaining four factors were essentially as expected. Questions 1-4 emerged as one factor, as predicted, and were labeled as initially proposed, *General Views on Information Technology*. Questions 8, 9, 10, 16 and 17 emerged as one factor. Questions 8, 9 and 10 were proposed as items belonging to the *General Management Responsibilities* dimension. Questions 16 and 17, "The data warehouse project is complex" and "The data warehouse project is large"

respectively, were proposed as items belonging to the *Project Specific Responsibilities* dimension. Their inclusion with Questions 8, 9 and 10 is suspect and may again be the result of poor wording. Question 18, "The data warehouse project is well defined", loaded appropriately; however, it had the lowest loading on the factor at .49. It is possible that the statement format of the items was more consistent with that employed for the other items in the *General Responsibilities* dimension. Future use of the instrument should reflect changes to these items.

Questions 18, 19, 21, 22 and 13 emerged as the third factor. Question 22, "The best measures of success for ACME's data warehouse project are if the project is delivered on time and on budget", the only item included to measure the fourth proposed dimension of *Measures of Success*, likely loaded with this factor, labeled *Project Specific Responsibilities*, again as a result of wording (i.e. inclusion of the word "project").

The fourth factor that emerged consisted of Questions 5, 12, 14 and 20. Question 5, "The portfolio of major information systems projects underway at ACME is reasonable" is the only outlier in this factor, as the other questions all pertain to the *Project Specific Responsibilities* factor. Unfortunately, it appears that poor wording of the questions may have contributed to this split of *Project Specific Responsibilities* into two factors. Questions 5, 12 and 14 all share value

judgements related to actions, such as “..is the best solution”, “...is justified”, and “...is reasonable”. Perhaps they are loading together because of these. They are in no other way connected. Similarly, Question 20, “The amount of training planned for the data warehouse and application software is about right”, may be suffering from the same things.

In summary, the results of the principal components analysis indicate that further refinement is required for some of the questionnaire items and for the instrument itself. At the same time, the results indicate support for the proposed dimensionality of the construct as outlined in Chapter 3 and as explored in Phase 1. As such, the results provide a good basis for future work on the construct.

4.6.3 – Assessment of the Level of Shared Understanding

A review of the literature on congruence assessment approaches indicates that there are numerous different methods for measuring congruence. One researcher in particular (Edwards, 1994) has conducted a thorough review of these approaches, their strengths and weaknesses and applicability in various research contexts. The highlights of this review and their applicability to this research project will be discussed in the following paragraphs.

In his review of the state of congruence assessment approaches, Edwards' (1994) divides the approaches to assessing congruence into two sets. The first set of approaches, Bivariate Congruence Indices, collapses a pair of corresponding measures into one. For example, in this research project, for a given dyad, each member of the dyad is asked to answer the same question. In the Bivariate approaches to assessing congruence, the two answers to the same question are compared in some way, most often via difference, absolute difference or squared difference calculations.

The second set of approaches, Profile Similarity Indices, combine a series of paired component measures into one. In these approaches, in addition to combining the dyad answers on an item by item basis, the calculated comparison scores are further combined, in some way, into one index. There are a number of different approaches to combining these items – sum of absolute differences (commonly represented as $|D|$), sum of squared differences (commonly represented as D^2), square root of sum of squared differences (commonly represented as D), correlation between sets of component measures (commonly represented as Q), and others such as the average of the product of the component measures.

Despite their wide use in many research contexts, Edwards (1994) points out that the above approaches to modeling congruence are not without considerable

shortcomings. As Edwards (1994) succinctly points out,

The vast majority of these studies have operationalized congruence by collapsing two or more measures into a single index, such as an algebraic, absolute or squared difference, or an index of profile similarity. Unfortunately, these indices present numerous substantive and methodological problems that severely threaten the interpretability and conclusiveness of the obtained results.

Edward's (1994) review of previous congruence studies indicates that there are several fundamental problems with the bivariate and profile similarity approaches described above.

First, when the original component measures (i.e. the measures for the VP IS and those for a peer VP) are collapsed into one measure, the ultimate interpretability is limited, because information about the relative contributions of the two parties is lost.

Second, in collapsing the component measures into one congruence index, the ability to assess the separate relationships between these component measures and the outcome is lost. As an example of this, assume that the absolute difference approach is used. In this approach, if both members of the dyad scored an item at five or if both scored the same item at one, the difference would be the same – zero. In short although the alignment effect is captured (i.e. zero difference implies excellent alignment), the trait effect (i.e. a score of five versus a score of one) is lost. Both are critical pieces in this research context.

Third, in relying solely on the congruence index to examine its relationship to the outcome, it is possible only to assess the overall magnitude of the relationship. It is not possible to assess the significance of individual effects of the component measures, the effect of constraints implied by the calculation of the index, or the significance of higher order terms, all of which may yield additional insights into the interpretation of the data.

Fourth, many of the techniques lead to an understatement of the actual variance explained by the model by imposing unnecessary implied constraints on the data.

In order to overcome some of these issues, there is another approach to modeling congruence, that of interaction (i.e. the product). While Chan (1992) found no support for modeling "fit" (i.e. congruence) between IS strategy and Business Strategy using either bivariate fit or profile similarity approaches, she did find support for modeling fit as interaction.

It should be noted that congruence modeled as interaction is conceptually very different than that modeled using difference scores, and proposes that congruence is based not on the degree of parallelism between individuals, but rather on the interaction or synergy between them. Chan (1992) and Sethi (1988)

have both found support for the use of the interaction model of fit in similar research contexts, and *a priori*, it was thought that this model of congruence would be most appropriate in this research context also.

However, in order to ensure that the *a priori* view of the most appropriate congruence assessment method was valid, three other approaches were tested using PLS – algebraic differences, absolute differences, and squared differences - and compared to the interaction (i.e. product) approach. The results of these tests were very similar to those obtained by Chan (1992). In the interest of parsimony, the details of these tests are not reproduced here. In summary, however, while the interaction approach produced results which were expected, the other three approaches produced results that were difficult to interpret, that revealed few significant or substantive paths, and that resulted in low R-square values.

These findings were not unexpected and are consistent with the shortcomings in these approaches outlined by Edwards (1994), specifically those associated with the consistent understatement of the true level of congruence when these approaches are employed. In contrast to the other approaches as well, when congruence was modeled as interaction, the number of iterations required for convergence in the PLS program was low, indicating a good fit between the

proposed model and the underlying data. As a result, only the interaction model of congruence was used in the test of the research model.

4.6.4 – Assessment of the Research Model

The research model, as depicted in Figure 3.1, was tested using both first and second order versions of the interaction approach to modeling congruence. Given the newness of the shared understanding construct, and the exploratory nature of the research model itself, two relatively simple and straightforward assessments of the model were conducted. Both first and second order versions of the shared understanding construct were tested to ensure that, in addition to being able to make statements about the overall relationship between shared understanding and the other constructs of interest, that the relative contributions of the dimensions of shared understanding could be discussed.

In the first order model, the interaction approach to assessing congruence results in a single score for each dimension of shared understanding. In other words, the product of the individual items was calculated on an item-by-item basis for each dyad. These product terms were then summed within each dimension, to result in one congruence measure for each dimension. The four scores were used as single indicators of congruence for each of the four dimensions.

The sum was used rather than some other method of combination (e.g. average) as each item tapped into a specific aspect of shared understanding, and although related, are distinct. For example, items making up the *Project Specific Responsibilities* dimension are related to system training issues, scope issues and other project related issues. Although all clearly associated with information systems at the project level, they each measure a separate aspect of dimension. As such it is more reasonable to consider the individual items in an additive manner (i.e. as opposed to using the average score), so as not to understate the true state of congruence.

The second order model was testing using one indicator of shared understanding. This indicator was calculated by summing the scores for each dimension.

In both models, all of the constructs, with the exception of the shared understanding construct, were modeled as reflective. Shared understanding, however, was arrived at via calculation, and was “formed” by its indicators. As such, it was represented as a formative construct.

Two aspects of each of the models were assessed – the measurement model and the structural model. The measurement models were evaluated on the

basis of the individual item reliability, and convergent and discriminant validity.

Discriminant validity was assessed using two criteria. The first criteria is that a construct should share more variance with its measures than it shares with other constructs. The second criterion is that no item should load more highly on another construct than it does on the construct it purports to measure. To assess the first criterion, the average variance shared between a construct and its measures (Average Variance Extracted or AVE) is normally calculated. Convention dictates reporting the construct correlation matrix with the square root of AVE located on the diagonal. Adequate discriminant validity is achieved if the elements on the diagonal are significantly greater than those in the corresponding rows and columns. Given the simplicity of the measures employed in this research, this calculation was useful only for examining the efficiency and effectiveness IS success measures.

To assess the second criterion, the LV Loading structure matrix produced by PLS is used. Adequate discriminant validity is achieved if no items loads more highly on another construct than the one it is supposed to measure. Again, this assessment is relevant only to the efficiency and effectiveness IS success measures.

The structural models were assessed by examining the path coefficients, the statistical significance of these path coefficients, R^2 values, and the correlations between constructs. Jackknife analysis was used to assess the significance of the path coefficients. In addition to significance, a minimum value of .1 was required in order for a path to be considered substantive. The R^2 value is used as a measure of the predictive power of the model for the endogenous constructs.

Second Order Model

As expected, the results from the Second Order model were very positive. Recall that the Second Order model was assessed in the belief that overall statements regarding the level of shared understanding in total were of some interest. These findings are discussed with respect to both the measurement model and structural model.

The Measurement Model

Assessment of the measurement model was concerned with individual item reliability, convergent validity and discriminant validity. For the research model as tested, this assessment was straightforward. With the exception of the efficiency and effectiveness measures, all other constructs were measured using one indicator per dimension of shared understanding. By definition, therefore, their manifest

variables have a loading of 1.00 and are thus considered reliable. The single item measures ensured that convergent validity was high.

Note that the use of single item measures for the main constructs should not be considered a shortcoming of the measurement model. The nature of the constructs themselves (i.e. Tolerance for Ambiguity, Locus of Control, Level of Education, and Organizational Tenure) and their associated previously tested scales, result in single item scores.

Table 4.4 summarizes the loadings of the efficiency and effectiveness questionnaire items, the only multi-item scales used in the measurement model.

	Efficiency	Effectiveness
Efficiency1	.2671	
Efficiency2	.5590	
Efficiency3	.1783	
Efficiency4	.3277	
Efficiency5	.8878	
Efficiency6	.8206	
Effectiveness1		.4878
Effectiveness2		.2344
Effectiveness3		.6554
Effectiveness4		.5425
Effectiveness5		.8539
Effectiveness6		.7214

Table 4.4 – Second Order Measurement Model Summary

Neither the effectiveness nor efficiency measures performed very well, despite their performance when used by Vandebosch (1993). Given the preliminary nature of this particular test of the model, all items were retained in the final PLS run despite their poor performance. Future tests of the model should consider revising this instrument.

Discriminant validity was assessed by examining the square root of the average variance extracted for each construct as compared to the correlations between it and the other constructs in the model. These results are summarized in Table 4.5.

	AMB	LOC	EDU	TEN	COMM	HIS	SU	EFFIC	EFFEC
AMB	1								
LOC	-.126	1							
EDU	.640	.321	1						
TEN	.042	-.261	-.321	1					
COMM	.133	.058	.242	-.431	1				
HIS	-.086	-.300	-.133	-.067	.117	1			
SU	.283	.373	.530	-.313	.204	.184	1		
EFFIC	.235	.464	-.282	-.165	.133	-.077	.531	1	
EFFEC	.335	.218	-.317	.330	-.028	.102	.667	.524	1

Table 4.5 – Correlations of Second Order Latent Variables

In all cases, the square root of the average variance extracted (AVE) was greater than the correlations between constructs indicating that all the constructs in the model exhibited discriminant validity in this context.

The Structural Model

Tables 4.6 and 4.7 summarize the findings related to the structural model.

	Shared Understanding
AMB	0.347*
LOC	0.376**
EDU	0.421**
TEN	-0.090
HIS	0.382**
COMM	0.049
EFFIC	0.531**
EFFEC	0.667**

* path significant at .05 level, ** path significant at .01 level

Table 4.6 – Path Coefficients, Second Order Model

<i>Construct</i>	<i>Multiple R-Square</i>
Shared Understanding	0.572
IS Success – Efficiency	0.282
IS Success – Effectiveness	0.445

Table 4.7 – Variance Explained in Second Order Dependent Constructs

Overall, the model had high predictive power. It accounted for 57% of the overall variance in shared understanding, 28% of the variation in the efficiency measure of IS success, and 45% of the variance in the effectiveness measure of IS success. The findings related to the shared understanding construct are particularly noteworthy, as this was the central construct of interest in this research program.

A review of the path coefficients indicates strong support for the structural model as proposed. Only two of the paths were not significant and for one of these, this was not unexpected.

As noted, however, the individual dimensions of shared understanding, and their specific relationship to the other constructs in the model, were also of prime interest. It was therefore appropriate to assess the first order model, described in the following sections. An overall discussion of the support for the Phase 2 research hypotheses, follows a description of the first order model results.

First Order Model*The Measurement Model*

The results of the measurement model were virtually identical to those obtained for the second order model. For the sake of parsimony, the loadings for the efficiency and effectiveness are not reproduced. The correlations between latent variables and the calculation of AVE are summarized in Table 4.8.

	AMB	LOC	EDU	TEN	HIS	COMM	SUV	SUG	SUP	SUS	EFFIC	EFFEC
AMB	1											
LOC	-.126	1										
EDU	.067	-.098	1									
TEN	.042	-.442	-.321	1								
HIS	-.086	-.300	-.133	-.067	1							
COMM	.133	.058	.249	-.431	.117	1						
SUV	.239	.265	.418	-.244	.087	.091	1					
SUG	.083	.290	.571	-.576	.304	.381	.355	1				
SUP	.321	.330	.358	-.152	.064	.030	.340	.669	1			
SUS	.228	.066	-.328	.048	-.005	.103	-.132	-.136	.048	1		
EFFIC	.258	.167	.027	.190	-.224	-.155	.200	.116	.563	.177	1	
EFFEC	.583	.418	.088	.340	-.038	-.047	.250	.205	.556	.202	.701	1

Table 4.8 – Correlations of First Order Latent Variables

A review of Table 4.8, indicates that in all cases, the square root of the average variance extracted (AVE) was greater than the correlations between constructs. This indicates that all the constructs in the model exhibited discriminant validity.

Structural Model

Tables 4.9, and 4.10 summarize the findings related to the first order structural model.

	SUV	SUG	SUP	SUS
AMB	.287	.104	.395*	.266*
LOC	.234	.241*	.370**	.252*
EDU	.346	.475*	.274*	.252*
TEN	-.123	-.102	-.034	.034
HIS	.235	.425**	.262	.014
COMM	-.127	.141	-.157	.181
EFFIC	.102	-.478	.886**	.256*
EFFEC	.141	-.314	.761**	.289*

* path significant at .05 level, ** path significant at .01 level

Table 4.9 – Path Coefficients, First Order Model

<i>Construct</i>	<i>Multiple R-Square</i>
Shared Understanding – Views	0.314
Shared Understanding – General Responsibilities	0.573
Shared Understanding – Project Responsibilities	0.364
Shared Understanding – Success Measures	0.248
IS Success – Efficiency	0.509
IS Success – Effectiveness	0.452

Table 4.10– Variance Explained in First Order Dependent Constructs

As with the second order structural model, the first order model results were very encouraging, especially given the preliminary nature of the research model. The model had moderately high predictive power, accounting for between 25% and 58% of the variation in the dimensions of shared understanding. In addition, the model accounted for 51% of the variation in the efficiency measure of success in deploying IS and 45% of the variation in the effectiveness measure.

The most important new information gleaned from this second order model, is that the *General Management Responsibilities* and *Project Specific Responsibilities* are the most important dimensions of shared understanding. Of these, the *Project Specific Responsibilities* dimension is clearly the most influential. The *General Views* and *Measures of Success* are less so.

4.7 – Discussion of Phase 2 Results

In addition to having strong predictive power, the relationships among the constructs in the model were, for the most part as hypothesized - significant and substantive. The findings as they related to each hypothesis will be discussed in turn.

Tolerance for Ambiguity and Shared Understanding

Hypothesis 1A predicted that the higher the tolerance for ambiguity, the higher the overall level of shared understanding. The path between tolerance for ambiguity was positive, significant and substantive, supporting this hypothesis.

A further examination of the paths to the four dimensions of shared understanding, indicates that tolerance for ambiguity is positively related to all dimensions of shared understanding - paths are significant and substantive.

Locus of Control and Shared Understanding

As predicted by Hypothesis 1B, Locus of Control is strongly related to shared understanding. The path is significant and substantive and in a positive direction,

indicating that the more internal the business executive, the higher the level of shared understanding.

A closer look at the relationship between locus of control and the four dimensions of shared understanding reveals that locus of control is most strongly associated with the *Project Specific Responsibilities* dimension, although it is also clearly associated with both the *General Management Responsibilities* and *Success Measure* dimensions, albeit more weakly. It appears not to be specifically related in any significant way to the *General Views* dimension.

Length of Time Working Together and Shared Understanding

Hypothesis 2A predicted that the longer the individuals in a dyad had worked together as executives, the higher the level of shared understanding. No support was found for this relationship.

Prior Experience with Information Systems and Shared Understanding

The path between prior experiences with IS deployment and Shared Understanding was positive, significant and substantive. These findings provide evidence for the relationship put forth in Hypothesis 2B, that positive prior

experiences with information systems deployment are positively associated with shared understanding.

In addition, a finer look at the dimensions of shared understanding, indicates that prior experiences is most strongly related to the *General Management Responsibilities* dimension of shared understanding.

Communication and Shared Understanding

Hypothesis 3 predicted that greater frequency of communication was related to higher levels of shared understanding. Consistent with the findings from the first phase of the research, this was found not to be the case. The path between communication frequency and shared understanding was neither substantive nor significant. The mean of the frequency of communication measure was 4.4 indicating that, similar to the findings in Phase 1, that dyad executives do in fact communicate frequently. It also indicates that frequency of communication in and of itself, is not a sufficient antecedent condition for shared understanding.

The findings in this second phase certainly confirm those from the first. At the same time, they are cause for further consideration of the role communication plays in the development of shared understanding.

Communication in this research project has been considered and measured as formal communication (e.g. meetings). It is possible that given the lack of variation in the frequency of formal communication, informal communication (e.g. lunches, golf games, etc.) plays a significant role in the development of shared understanding. Future work should incorporate in assessment of the relationship between informal communication and shared understanding.

Shared Understanding and Success in Deploying IS

As predicted by Hypothesis 4, shared understanding is positively related to Success in Deploying Information Systems, on both measures of efficiency and effectiveness related IS deployments. The results also indicate that shared understanding is most strongly related to perceptions of effectiveness related IS deployments.

Even more interesting is that the specific dimension of shared understanding that is most influential in this relationship, is the *Project Specific Responsibilities*. With a path coefficient of .886 to the perceptions of effectiveness measure, and .761 to the perceptions of efficiency measure, shared understanding around *Project Specific Responsibilities* is very strongly related to overall success in deploying IS.

Success Measures are also significantly and substantively related to both success considerations. At the same time, however, neither the *General Responsibilities* nor *General Views on Technology* were significantly nor substantively related to both measures.

Summary of Findings

In the main, the results of various statistical tests performed in this phase of the research provide strong, and statistically significant confirmation of the model proposed at the end of the Phase 1. Although no support was found for the relationship of Organizational Tenure or Frequency of Communication to Shared Understanding, the results of the various data analyses provide strong, statistically significant evidence of all other relationships hypothesized in the model.

The *Project Specific Responsibilities* dimension of shared understanding was the most influential of the construct, followed fairly closely by the *General Management Responsibilities* dimension. The *General Views on Technology* and *Success Measures* dimensions were less so, although still related. This indicates that a shared understanding of the lower level details and issues is indeed an important contributor to success in deploying information systems.

With respect to the factors influencing the development of shared understanding, Tolerance for Ambiguity, Locus of Control and Educational Background are key predictors of the existence of shared understanding. As discussed, these are indicators of the cognitive ability to “grasp” often times complex information systems concepts. Executives with a higher tolerance for ambiguity and more internal locus of control are more likely to develop shared understanding around information systems issues. Educational Background, an often used simple proxy for overall cognitive ability, provided the same conclusions.

In addition to finding support for the proposed research model, this second phase of the research confirmed the case-scenario approach as a valid and reliable approach to measuring shared understanding, and provided support for the four dimensional view of the shared understanding construct.

4.8 - Contributions and Limitations of Phase 2

This phase of the research set out to accomplish the following objectives:

1. Create a valid and reliable measure for shared understanding
2. Conduct a preliminary test of the new measure for shared understanding
3. Conduct a preliminary test of the research model as proposed at the end of the case study phase

These objectives were accomplished. There are, however, several issues related to the findings that are worth noting.

The first of these is that the sample of organizations in this phase of the research was not random, thus limiting the external validity of the findings. External validity is also limited due to the focus of the sample on only the retail industry.

A second limitation is the use of perceptual measures for several of the key constructs, most notably the Success of IS Deployment measures - efficiency and effectiveness. Although the use of objective measures is clearly preferable, in this phase of the research and in this particular research context it was not possible. At the same time, however, since perceptions have been found to drive behaviour (Triandis 1979), their use provides a reasonable proxy for more objective measures. It is worth noting that the construct of central importance, shared understanding, did not rely entirely on perceptual measures.

The third potential limitation is the model of congruence utilized in this phase of the research. While there is theoretical support for the use of interaction to model congruence in this particular research context, it is possible that other models of congruence could provide other important clues to existence of shared understanding in organizations.

A fourth limitation, and one that all surveys of this type suffer from, is common method variance - all questions were measured in the same way via survey questions. To a large extent, this limitation was mitigated by the data collection approach employed in Phase 1.

A final limitation is related to construct development. An ideal situation would have seen a third round of measure purification conducted. In reality, the data collection in this second phase was challenging enough (given the nature of the organizations and executive respondents) and a third round not feasible in this particular study.

Despite these limitations, Phase 2 of this research project made some important contributions. First among these, was the creation of a valid and reliable measure for shared understanding. While the case-scenario instrument may be specific to the retail industry, the individual items are easily modified for other industries and other case-scenarios.

The second major contribution was the testing of the research model proposed at the end of Phase 1. While no causality was proven, strong and statistically significant evidence was collected confirming key relationships between shared understanding and important executive level personal and organizational factors.

A third contribution is associated with the survey respondents themselves. The data was collected from the most senior executives in 21 large retail organizations in Canada and the United States, via a relatively complex and lengthy questionnaire. The data collected is very rich and not often collected at the senior executive level across this number of organizations.

Although the findings from this phase of the research are strong in and of themselves, when taken together with those of Phase 1, they provide a rich picture of the concept of shared understanding of information systems issues at the executive level in organizations, and provide an excellent starting point for future research activities. The next chapter synthesises the findings from Phase 1 and Phase 2, and uses this synthesis to provide some insights into future research and practice.

CHAPTER 5 - CONCLUSIONS

The research has shown that shared understanding is a powerful concept, useful for understanding and explaining the executive's role in the outcomes of IS deployment. In this chapter, the overall conclusions of the dissertation are presented, and the implications of the research will be drawn both for practitioners and further academic enquiry. The first section provides a brief overview of the research program, and conclusions are drawn about its outcomes in Section 2. Section 3 presents the research contributions of the dissertation to our understanding of IS strategy deployment and of shared understanding . Section 4 discusses the implications of the research findings for practitioners. In Section 5 the strengths and weaknesses of the research are summarized. Section 6 provides an overview of possible future research directions, and Section 7 presents a few concluding comments.

5.1 – The Research Program

The research program undertaken in this dissertation was comprised of three major elements:

- A comprehensive review of the relevant literatures: strategy, organizational learning, innovation, and information systems.

- A case study phase
- A survey phase, with an embedded case-scenario methodology

Used in combination for this exploratory research, these three elements proved to be a powerful and insightful approach to the examination of shared understanding, the central concept of interest in this dissertation.

The comprehensive literature review contributed the preliminary research model depicted in Figure 5.1. This review also revealed that relatively little empirical research related to the study of executive level shared understanding of IT issues existed. Thus, it became clear that the dissertation would be an exploratory research project. However, in order to develop the concept of shared understanding concept as fully as possible, the adoption of a two phase research approach proved to be an appropriate strategy.

Phase 1, the eight in-depth case studies of large retail organizations fulfilled all three of its goals. The interviews with 33 senior executives provided the researcher with their views on the nature of shared understanding of IT issues at the executive level – the issues, the factors that create it, and its relationship to success in deploying information systems.

While the main purpose of Phase 1 was to identify the key issues, the literature review suggested that shared understanding is comprised of four dimensions. The work undertaken in Phase 1 confirmed this dimensionality. Similarly, the case studies, combined with the literature review met the third goal of this Phase which was to provide insights into the various factors related to shared understanding – antecedents and performance outcomes.

Phase 1, in meeting its goals achieved the following:

1. A refinement of the preliminary research model (Figure 5.2).
2. Definition of a set of key issues executives need to have a shared understanding about.
3. Provided evidence supporting the proposed dimensionality of the shared understanding construct.

Although these Phase 1 outcomes by themselves provided significant new knowledge, the research program was designed to further this knowledge by testing the refined research model depicted in Figure 5.2. The intent of Phase 2 was to test the model using a sample large enough to provide for some statistical verification of the Phase 1 results. As such, a cross-sectional survey methodology was deemed the most appropriate approach to collecting large amounts of data.

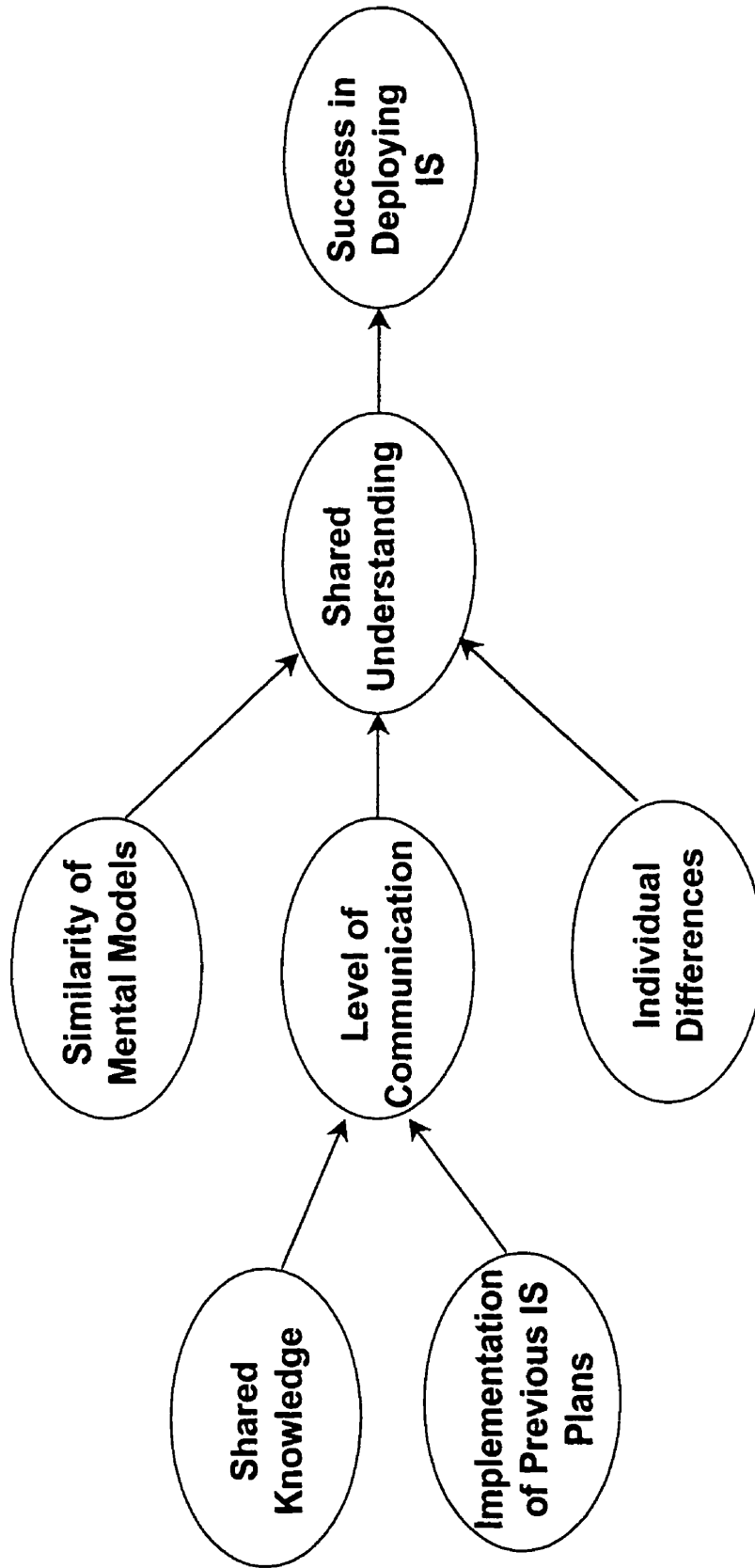


Figure 5.1 – Phase 1 Research Model

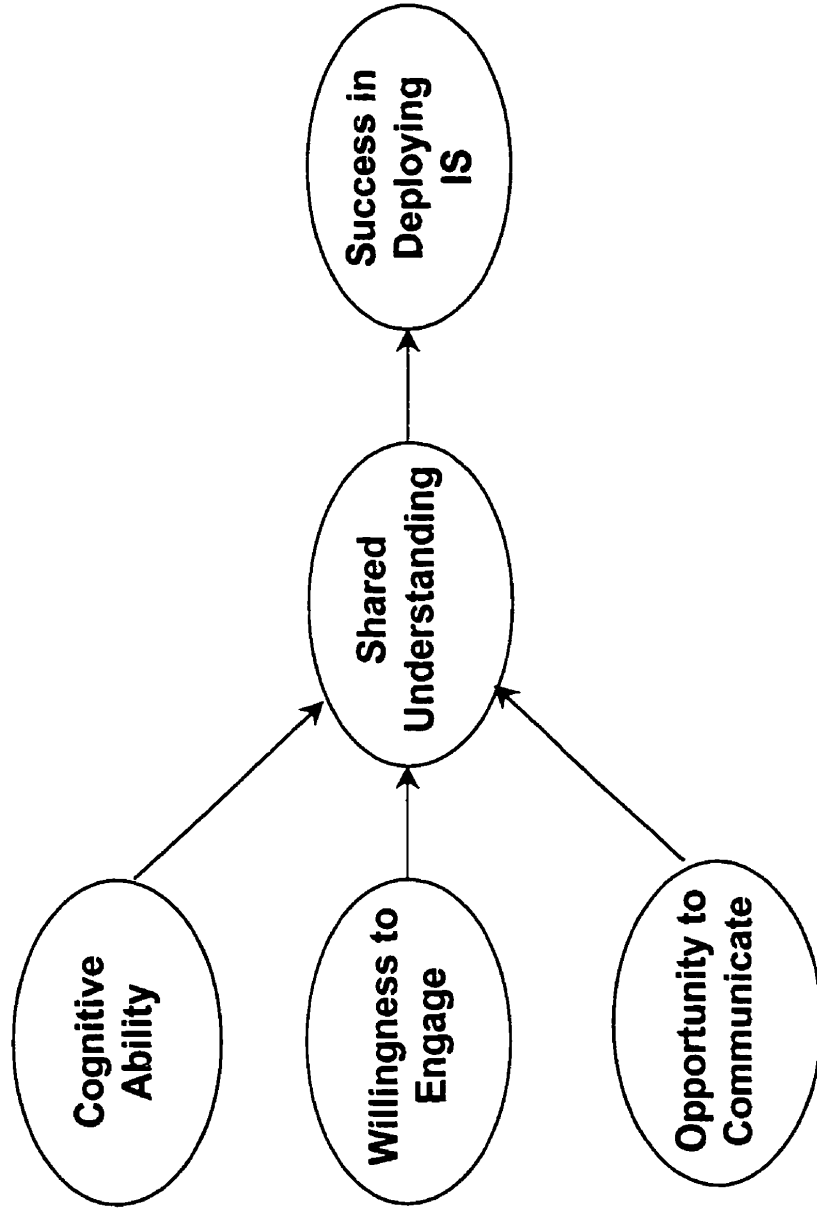


Figure 5.2 – Phase 2 Research Model

It was not possible, however, to employ a survey methodology without first creating an instrument capable of reliably and validly measuring shared understanding through this medium. As a result, the second phase of the research was focused on achieving two related goals: creating a measure for shared understanding, and testing the refined research model. Both of these were achieved, with the following important outcomes:

1. A valid and reliable approach to measuring shared understanding
2. Verification of the findings from Phase 1
3. Support for the research model

The specific details of the outcomes from both phases of the research are discussed in more depth in the following sections.

5.2 - The Research Outcomes

To briefly recap, this dissertation sought to answer the following four questions related to the concept of shared understanding at the executive level:

1. What are the key issues to have shared understanding about?
2. How can shared understanding be assessed reliably and validly?
3. What factors result in shared understanding?

4. Is there a relationship between shared understanding and success in deploying information systems?

A summary of the findings related to each is provided in the following sections.

5.2.1 - Definition of Shared Understanding at the Executive Level

The most important aim of Phase 1 was to define the shared understanding construct – identify the key issues and confirm its dimensionality. Phase 2 was then used to validate these findings. In fact, both phases of the research found support for conceptualizing shared understanding as a four dimensional construct. These four dimensions were comprised of individual issues that related to *General Views on Technology*, *General Management Responsibilities* for managing IT, *Project Specific Responsibilities* for executives, and *Measures of Success*.

Specific issues within the *General Views on Technology* dimension, included key technology trends and views on whether or not IT provides a source of competitive advantage.

Under the dimension of *General Management Responsibilities*, executives in successful organizations were found to have a shared understanding of general

management responsibilities around managing information technology. The executives studied agreed that the key issues in this dimension were:

- The prioritisation process for IT expenditures – driven by the business strategy and supported by sound business cases
- The role of IT steering committee – there needs to be one providing a forum for frank and open discussion, not just a token group with only *rubber stamping* authority
- The nature of core business processes – these must be understood then overlaid with appropriate technology
- The importance of infrastructure – investing in infrastructure is mandatory and it must be perceived as an ongoing investment item
- The importance of architecture – this is not an issue of control or regimentation, it is an issue of more effective and efficient use of resources

A third dimension of shared understanding, which the research demonstrated to be of major importance, is comprised of *Project Specific Issues* related to managing information technology. In organizations that are successful in deploying IT, executives shared a “gut feel” for the true complexity of IT related opportunities. They shared views on such things as a sense for the appropriateness of various funding mechanisms for IT expenditures, an assessment of the organization’s capability to fully absorb any IT related changes, and an understanding that ultimate

accountability for IT success resided with them. The key issues identified in this dimension were:

- Executive sponsorship – there needs to be an executive sponsor for all large projects, and that this role means much more than being on the circulation list for project updates
- Systems development approaches – embedded within the build versus buy decision for new software, there are many different approaches to putting a system in place, and “one size” does not fit all
- Scope-dollar-time tradeoffs – these are the three variables on a project. If one changes (most often scope), the others necessarily change
- The project team – the team must be integrated (IT and business), its members should ideally have full-time responsibilities, and “you get what you’d expect” given the types and skills of the people on the team
- Project management – good basic project management is important, including a disciplined approach, a solid project plan, regular reviews, and real-time management of the critical path

The fourth dimension of shared understanding is concerned with *Measures of Success*. Executives at successful organizations shared the same views on how success was defined. In some cases it was the completion of a project on-time and

on-budget. In others it was the improvement of certain key performance indicators. For this dimension, the issue is not so much how you measure success, but that the executives in a corporation measure success in the same way.

5.2.2 - Measurement of Shared Understanding

A major outcome of the research was the creation of an instrument capable of shared understanding. Initial testing of the measure indicated that it shows promise as a valid and reliable tool for assessing shared understanding but that an additional refinement would be appropriate before wide spread adoption. Although Phase 1 provided an opportunity to qualitatively assess the level of shared understanding, the survey methodology using the case scenario approach developed and employed in Phase 2, allowed for a more rigorous quantitative assessment to be undertaken.

In addition to the measurement tool itself, this research provided further support for the interaction approach to modeling congruence between the IS domain and business domain in organizations, in this case shared understanding between executives. Both Sethi (1988) and Chan (1992) found support for this interaction approach and this research provides further substantiation.

5.2.3 – Preliminary Test of the Research Model

Another important outcome from this research was the support that was found for the research model, in particular the relationship between shared understanding and success in deploying IT. Several of the dyads in Phase 1 exhibited a lag effect for this relationship (i.e. either a new CIO or new business executive). When this was controlled for in the data analyses in both phases of the research, a strong and positive relationship between shared understanding and success in deploying IT was found. The *Project Specific Responsibilities* dimension, and associated issues proved to be the most influential in this relationship.

The test of the research model also clarified the relationship between shared understanding and several antecedent factors. Three factors are key: cognitive ability, willingness to engage intellectually and communication. With respect to cognitive ability, the research found support for Tolerance for Ambiguity and Locus of Control as key predictors of the level of shared understanding. In addition, Education Level, a proxy for cognitive ability, was positively related to shared understanding.

In addition to the cognitive ability to understand the often complex issues related to information technology, the research also indicates that there needs to be willingness on the part of executives to truly engage intellectually in the development of shared understanding. As indicators of willingness, Previous Success in IS Implementation was found to be positively related to shared understanding, while Executive Tenure was not found to be related.

Originally, it was proposed that communication frequency, diversity and richness would be related to the level of shared understanding. This was found not to be the case in either phases of the research. Intuitively, this does not make sense, and indicates that some more fundamental, or perhaps subtle, aspect of communication (i.e. information overload, or unlearning) influences the creation of shared understanding other than that explored in this research project. It is also possible that informal communication (i.e. lunches, golf games), not assessed in this research, has an impact.

5.3 - Contributions to Research

This dissertation sought to develop the concept of shared understanding around information systems issues at the executive level. In doing so, it has made three important contributions to research.

First, it has deepened our understanding of the relationship between information systems executives and their counterparts in organizations. In doing so, it has built upon and extended previous research in this area. This study represents a contribution towards the building of a cumulative tradition, as called for by Keen (1980), in a relatively new area of research. It does so by building on previous work on the relationships between the information systems and business domains at the senior management level (e.g., Jarvenpaa and Ives 1991, Reich 1992, Feeny, Edwards and Simpson 1992).

Second, it extends and deepens our understanding of approaches to measuring complex constructs, like shared understanding, by testing a case-scenario approach to measurement. The case-scenario approach employed to measure shared understanding is relatively new in information systems research, although it has been used successfully in other fields. The methodology has again been proven to be a useful approach to measuring broad concepts such as shared understanding.

In examining the concept of shared understanding, the various approaches available for the measurement of congruence were also further explored. Much work in this area has been conducted in the organizational behaviour field, with relatively few studies conducted in the information systems area (see Chan, 1992

for example). Knowledge and experience in the measurement of congruence has been extended, and further evidence provided to support the interaction approach to congruence assessment in this particular field of IS research.

Third, the dissertation has demonstrated the powerful interplay between case and survey based research approaches when conducting exploratory research. The research program demonstrated the usefulness of employing both case study and survey based approaches to exploratory research. In this dissertation, the case studies provided insight into the nature of the shared understanding construct, but little statistical verification of the conclusions. The survey phase provided statistical support for the research model, but limited insight into some of the relationships. It was the interplay between the two approaches that in the end provided a very rich picture of shared understanding.

And finally, it has added to the small but growing body of literature on the general concept of shared understanding. In particular, this was achieved through integrating knowledge from several fields of management research: executive characteristics; organizational learning; product innovation; IS expectations; strategic IS planning, and research into executive roles in IS issues. The dissertation draws heavily on a number of reference disciplines, something also called for by Keen (1980), to provide a fresh perspective on how the relationship between IS and business domains can be conceptualized.

5.4 - Implications for Practitioners

Senior executives cannot be expected to know the details of all functions within their organizations. At the same time, however, many of them arrive at their senior positions “armed” with important financial, marketing and operating skills and understanding, that are critical to running a successful business. Missing from many executive toolkits is the same level of understanding about information technology issues. It is this understanding about IT at a senior executive level, and just exactly what that means in practical terms, that provided the original impetus for this dissertation research. The dissertation findings provide several important considerations for senior executives in this respect.

The results of the study strongly support the view that senior executives in companies that are successful in their use of IT have a higher level of shared understanding around IT issues with their IS counterparts, than those in organizations that are less successful. In successful organizations, this high level of understanding occurs not just at the “60,000 foot level”, but around project level details.

A shared understanding of higher level issues such as vision and objectives is clearly important and should not be neglected. However, it is necessary but not

sufficient. This research found that it is the shared understanding of these lower level project specifics that is most highly linked with success in deploying IT. In short, a higher level of awareness and understanding of project initiatives on the part of non-IS executives has a positive payoff for the organization.

In addition to demonstrating the importance of shared understanding to success in deploying IT, the research also provides executives with a list of issues that are critical to have shared understanding about. If used appropriately, awareness of these issues can provide direction and focus for management training initiatives and management processes undertaken to sensitize both line and IS executives to the critical issues.

The research also provides some important considerations around executive level recruitment. Executives with a greater ability to deal with ambiguity, and a greater belief in their own abilities to control what goes on in their organizations, will likely be more successful with the deployment of IT.

5.5 - Strengths and Limitations of the Research

Each phase of the dissertation research had its own strengths and weaknesses that have been described and discussed previously. There are,

however, several key strengths on the overall approach that are worth highlighting, as well as a few weaknesses, that should be considered by researchers interested in following along a similar path.

First, the dissertation research employed a multi-method, two phase approach to extending knowledge about shared understanding of information systems issues at the executive level. The first phase provided rich qualitative insights into the shared understanding concept. These insights were further refined and verified by the quantitative methods employed in the second phase. In this way, the methodological concerns associated with employing an either/or approach to research were minimized. The findings from the first phase were statistically verified in the second. The statistical findings from the second phase, were more richly interpreted by referring back to the findings from the first phase. As such, the overall findings from the research are more comprehensively understood and convincing.

Second, while it is challenging to conduct research at the executive level in organizations, it was particularly so in this research program in several respects. Phase 1 required executives to commit at least a couple of hours of time to participate in an interview, and then review the results of that interview. Gaining cooperation for Phase 2 was equally challenging, in that executives were required

to fill out a questionnaire, part of which consisted of reading a two page mini-case and answering associated questions. In addition, the unit of analysis was a dyad. This required pairs of executives within organizations to complete the questionnaires. Despite these quite significant challenges, a total of 50 executive dyads were studied. The executive dyads were made up of the senior most executives in these organizations. Only a handful of studies in the IS field has resulted in a comparable collection of data. Although success in convincing these executives to participate in the study was not easy to achieve, the results of that effort have greatly enriched our knowledge of executive level issues around managing information systems.

The final strength that is worth noting is the use of the case-scenario methodology. Although not widely used to date for research in this area, the experience in deploying the methodology that has been gained in this research, should provide a sound basis upon which to explore further uses.

As with any research, however, this dissertation is not without its limitations. The focus on one industry, while controlling for unwanted variation, limits its external validity. While there is a case to be made for the validity of the findings outside the retail sector, there is no hard evidence to support this. In addition, although the case-scenario methodology was very useful in assessing the level of

shared understanding, its direct use, as developed in this research, is limited outside the retail sector. In each new industry, a new scenario must be developed and associated questions modified accordingly.

A second limitation of the research was its focus at only the executive level. Shared understanding is an important concept at all levels of an organization and also between levels. This research focused on only one of these levels, the executive level, and did not explore shared understanding between executives and other levels in the organization.

A third limitation relates to the relatively small sample sizes in both phases of the research. The small sample size made difficult, the use of sophisticated statistical techniques. In many instances, the minimum amount of acceptable cases were relied upon to make statistical conclusions.

A fourth limitation is one that plagues much cross sectional research, that of proving causality. This research is no different, in that there seems to be evidence of causality, but no definitive proof of its existence.

5.6 - Future Research Directions

Research, by its very nature often raises as many questions as it answers. In this respect, this dissertation is no exception, raising, as it does a number of provocative questions which suggest a number of interesting directions for future research.

First, the concept of shared understanding needs to be studied in other industries. The retail sector was chosen as an industry "typical" of many others. It would be useful to verify this fact by replicating this research in another industry at the executive level.

Second, the concept of shared understanding, while important at the executive level, is likewise probably at least as important at other levels within organizations (i.e. middle management). This concept should be studied at a number of these other levels.

Third, in addition to examining shared understanding between individuals at the same level, the concept between different levels within an organization is likely also related to information systems success. For example, shared understanding could be studied between the CIO and Systems Analyst and between the line VP and lower level manager.

Fourth, this research has focused on the dyad as the unit of analysis. It would be interesting to focus on the organization as the basic unit, and conduct a study of shared understanding at and between all levels of the organization.

Fifth, this dissertation necessarily limited the examination of the relationship between cognitive ability (i.e. focused on cognitive style) and the development of shared understanding. A potentially interesting avenue for future research, would be to delve deeper into the various facets of cognitive ability as they relate to shared understanding.

And finally, this dissertation, again necessarily, provided only a preliminary glimpse into the relationship between shared understanding and information systems success. There are many different ways to measure and conceptualize success, and it would be interesting to explore some of these as they relate to shared understanding.

5.7 - Concluding Comments

This dissertation research was an ambitious undertaking right from its inception. The complexity of the concept of shared understanding, coupled with the relative paucity of research into this phenomenon, meant that a great deal of work needed to be done in order for this dissertation to make a significant contribution to both research and practice. The results demonstrate that through the powerful combination of methodologies employed, and the cooperation of many individuals, this task has been accomplished. In doing so, as the previous Section points out, it has provided a modest, but important stepping stone for future research projects, and in that way enriches this field of knowledge.

Appendix A

Two Page Introduction to the Research Project

Introduction

The purpose of this research project is to examine the linkage between information technology strategy and business strategy from a new perspective. There is ample evidence to suggest that many organizations that have a strong linkage between their information technology and business domains have been able to leapfrog their competitors and gain a dominant position in their respective industries. To date, this linkage has been mostly conceived of as occurring as a result of comprehensive planning activities. Yet many organizations that employ sophisticated planning techniques do not achieve the desired state of linkage. The reasons are many, ranging from a lack of willingness on the part of both line and information technology personnel to embrace each other's domains, to a lack of commitment of the necessary resources and support to see various "agreed to" strategies through to implementation.

I believe that the concept of linkage must be thought of more broadly than just planning methodologies. The planning methodologies are important, but I believe that at a more fundamental level, true linkage is achieved when both line and information technology executives have some shared understanding about a set of issues, both business and information technology related, that are critical to identifying and seeing through to completion information technology investments that ultimately impact the bottom line. In my work as a senior management educator and as a consultant, I regularly hear complaints from senior business executives that information technology executives don't really understand the business. Similarly, information technology executives maintain that business executives don't understand information technology issues. Despite these complaints, no studies have been conducted which examine just what understanding is necessary. While neither group can or should be expected to have a comprehensive understanding of both business and information technology domains, there must be some common ground in order for true linkage to occur. The focus of this research project is to identify what this common ground is and those factors that lead to its achievement.

The Study

In order to uncover what this common ground is, I will be conducting a series of interviews with senior managers from a number of large retail organizations in both Canada and the United States. For a given organization, I will be interviewing members of the senior management team as well as senior information technology personnel. The goal of these interviews is to determine what the business and information technology issues are that comprise this common ground. Interviews will be focused, and will be approximately 1 ½ hours in length, with slightly more time required of the senior information technology people. I will come prepared with a set of questions, but the interviews will typically take the form of an informal discussion. I will also be interested in looking at any documents (e.g. business plans, information technology plans, steering committee minutes, etc.) that you think might be useful in examining this issue of shared understanding (i.e. common ground). All interviews are kept in the strictest confidence, as are any company documents. Individuals and organizations will not be identified explicitly in any way.

The Deliverables

There are several deliverables from this study. Each participating organization will be provided with a document detailing my findings for that organization. In addition, I will be providing each organization with a comprehensive document which summarizes my findings from the entire study. Should you desire a presentation of my findings, I would be more than willing to do so. My hope is that the feedback you receive from the study will be useful to you not only as a means of identifying where there may be room for improvement in your strategic management of information technology but also in assessing how you compare to other similar organizations - a benchmark. With most large organizations spending a substantial portion of their annual capital expenditures on information technology related items, the issue of linking the business and information technology domains is critical. In today's competitive marketplace, those organizations that can create and maintain this linkage better than their competitors stand a better chance of surviving and prospering. My goal in conducting this research is to shed more light on the nature of this linkage for your organization and also provide you with some guidance on how to strengthen it.

The Researcher

My name is Elspeth Murray, and I am currently completing my doctorate at the Richard Ivey School of Business at the University of Western Ontario, Canada's leading business school. I am studying both information technology and business strategy, and this research project is a core part of my doctoral thesis. I will be conducting all of the interviews and preparing all documentation. I have an undergraduate degree in computer science/math and an MBA, both from Queen's University. I returned to academia having worked in several fields for the past 10 years: as a programmer and systems analyst for ISM (a subsidiary of IBM); as a systems engineer and marketing representative at IBM; as an owner/operator with Canadian Tire; and as an independent management consultant. In addition to working on my doctoral studies, I currently teach both business strategy and information technology courses to MBA students and senior executives at both Queen's University and the University of Western Ontario.

To Participate in the Study

The most difficult part of any research of this type is to make initial contact with the retail organizations of interest. Although this research has been undertaken as an independent effort, Hewlett Packard has graciously offered to assist in this initial stage. I will be following up this fax with a phone call. However, if you would be interested in finding out more about the study, you can either contact Ray Kelly at Hewlett Packard or me directly. I can be contacted at: (613) 545-2339. Alternatively, my E-mail is: em@qsilver.queensu.ca and my fax number is: (613) 545-2321.

In Closing

The Richard Ivey School of Business is renowned for its managerially relevant and leading edge research. In particular, the school has a well established and internationally recognized stream of research examining the linkage between information technology and business strategy. This particular research project is typical of this focus, as it seeks to provide managers with a new perspective on how to manage the ever increasing necessity to employ information technology as an integral part of their businesses. I am very excited about this research project, and I believe it has the potential to aid organizations in this endeavour. However, as with any research effort, the ultimate product of that research is largely dependent on the willingness of busy executives like yourself to devote their time. I would like to thank you for taking the time to consider this proposal and I look forward to talking to you.

Appendix B

Phase 1 – Company Profiles

Company	Company A
Sales	\$26.6 billion (US)
Position in Industry (revenues)	1
Industry uncertainty	<ul style="list-style-type: none"> - grocery chain - intense competition - low margin business
Head count	205 000
Corporate context/norms	<ul style="list-style-type: none"> - Coming off of a period of little capital investment on anything - Highly leveraged following a bid to fend off a hostile takeover - Starting to reinvest now in IT

Company	Company B
Sales	\$18.3 billion (US)
Position in Industry (revenues)	2
Industry uncertainty	<ul style="list-style-type: none"> - grocery chain - intense competition - low margin business
Head count	121 000
Corporate context/norms	<ul style="list-style-type: none"> - Massive changes in the company as it moves from a holding company to an operating company mode of operation - CIO has a great deal of authority and autonomy during the transition period - Lots of money available for investment in IT

Company	Company C
Sales	\$3.91 billion (Canadian)
Position in Industry (revenues)	1
Industry uncertainty	<ul style="list-style-type: none"> - highly competitive - slow consumer spending - customer service / availability of inventory to differentiate - no other firm quite like them, i.e. competitors are more specialized, therefore competing in a number of different industries
Head count	34 000
Corporate context/norms	<ul style="list-style-type: none"> - new CEO, making significant changes; spending on IT was insignificant for a number of years, but this has now changed - IT spending focused on strategic forecasting and replenishment systems - e-commerce development (partnering IS with distribution & logistics) - very aware of the benefits of IS, and not afraid to use it

Company	Company D
Sales	\$6.86 billion (Canadian)
Position in Industry (revenues)	1
Industry uncertainty	<ul style="list-style-type: none"> - grocery chain - intense competition - low margin business
Head count	17 000
Corporate context/norms	<ul style="list-style-type: none"> - Highly entrepreneurial strategy - Regarded as highly innovative within the industry - Some senior management uneasiness with respect to dollars being invested in IT (i.e. too many)

Company	Company E
Sales	\$1.97 billion (Canadian)
Position in Industry (revenues)	1
Industry uncertainty	<ul style="list-style-type: none"> - Operates in near monopoly position - Threat of losing this position in the future is very real
Head count	4 500
Corporate context/norms	<ul style="list-style-type: none"> - Company is just coming off a period of massive investment in IT - Some slowdown in spending predicted over the next few years

Company	Company F
Sales	\$160 million (Canadian)
Position in Industry (revenues)	Not tracked
Industry uncertainty	<ul style="list-style-type: none"> - highly competitive department store category
Head count	500
Corporate context/norms	<ul style="list-style-type: none"> - Canadian subsidiary of large European parent - never been very successful in Canadian market - new IS executive on the scene is trying to drive fundamental changes to the use of IT

Company	Company G
Sales	N/A
Position in Industry	New entrant
Industry uncertainty	<ul style="list-style-type: none"> - highly competitive - chains and independents - rationalization of Canadian book industry
Head count	100
Corporate context/norms	<ul style="list-style-type: none"> - CEO is a driver with use of technology - is to be used in all facets of the business; want to be perceived as leading edge/state of the art users

Company	Company H
Sales	\$967 million (US)
Position in Industry	1
Industry uncertainty	<ul style="list-style-type: none"> - highly competitive - many new entrants from retail chains and independents - brand loyalty important - broad range of products
Head count	25 000
Corporate context/norms	<ul style="list-style-type: none"> - very aggressive, entrepreneurial company making the shift to more professional management approach - New CIO on the scene who is making changes - Historically not many IS but this is starting to changes

Appendix C

**Summary of Queen's Executive Program
Participant Comments**

Summary of Executive Program Participants' Comments

- Emerging technologies, how they impact our business and our plan to take advantage of these developments
- Annual cost of IT budget split into relevant cost types i.e. Capital, Software, Employees, Development and Maintenance
- Project List – Priority, start date, expected end date, cost and budget
- New IT Projects, justifications
- Customer satisfaction survey results
- Are the systems user-friendly?
- Who owns and maintains the system?
- What is the implementation and ongoing support cost?
- How do these new systems integrate with our existing system?
- What are the users' needs and how will the technology deliver them?
- IT – How long will this technology support our applications until it is outdated?
- How does it address the needs of the user?
- Are the systems integrated whenever possible?
- Are the systems and hardware flexible – capable of expanding, adapting?
- How does hardware and systems architecture compare with competition – how up-to-date is the technology?
- Are the staff top class, well-trained and managed effectively?
- What is IT doing to provide decision support as opposed to automation of functions?
- Costs, benefits are a given
- Purpose, requirement for the system
- Benefits of the system resulting in payback – both tangible and intangible
- Costs – hardware, software, education, cons and support
- Organisation standards – does the system fit them?
- Life expectancy/upgradeability of the system. Will it be able to grow with my needs?
- Day-to-day business information (what, where, how) – history, sales, budget, market shares
- Market developments (tools available to access)
- IT Strategy
- Access to competitive information
- What is the value-added of each major system development activity (the objective) and expected ongoing system cost?
- What are the new business processes for each and the change strategy and communication plan? (training, etc.)
- What are competitors, suppliers and other industries doing in each of the areas that we are “building” systems? Are we innovators, followers?
- Who is responsible to deliver?
- Ongoing production system cost by business area and product: allocated to product costs?
- Ability to identify expressed needs
- Ability to address expressed needs (full support)
- Capabilities to exploit services – over and beyond basic capabilities – increase competitiveness
- Life cycle cost (cost of ownership)
- Success factor i.e. what is the likelihood of implementation and how is the investment protected?
- What are the other divisions doing?
- Core competency
- Does somebody have a package we can use?
- Do we have the resources/support?
- Cost & time
- What are the key characteristics I would need to look at, when reviewing information systems

- proposals?
- What should I be looking for from information systems suppliers in choosing a vendor? i.e. expertise, reliability, etc.
 - How does one go about putting together a functional team in developing an information system?
 - How do you plan (process) in developing a management process for such a program development?
 - Emerging trends
 - of the application
 - IT & Communication
 - Intranet, Client/server, etc.
 - Culture
 - management view as to role of IT systems
 - commonality
 - centralization/decentralisation
 - Goals and priorities for system development
 - Near and long term
 - Cost/benefit
 - Design and maintenance split of resources
 - Need to understand design approach
 - When rapid application design appropriate, etc.
 - Strength of Internet IT
 - Level of standards
 - In-house talent or consultants
 - What do senior managers need to know to get the most out of a system? (i.e. depth and breadth)
 - Technology changes fast – when do you invest without the system becoming obsolete next month?
 - How do you get managers on-side to use the technology once installed?
 - How do you check for reasonableness of budget and time line?
 - What system does my industry use? Does it work?
 - How much will it cost me to get what I need? And how long will it take?
 - How will it bring my company together? (from different locations, etc.)
 - Will I have to expand it one day and at what point?
 - What kind of support will I get after sale – ongoing, will I need it?
 - Need to know inventory by location and movements in/out/7day
 - Need to know value of jobs in progress by product line
 - Need to know margin by product line by region
 - Need to know status of A.R. by customer by region
 - Need to know status of tools/assets available by product line by region
 - Benefits to be delivered, by whom, when
 - Cost/benefit analysis using NPV
 - How will it add value for the customers? Will they pay for it?
 - Timetable of implementation including training
 - Contractual construct of the vendor duties and responsibilities
 - Competitor information
 - Do not need to know “tech” information
 - Benefits analysis on projects
 - Make vs. buy, relations to cost and DCF and NPV
 - Real Time information on manufacturing
 - Why continuous changes in system? It seems that one version is barely installed and an upgrade is required
 - Is there an effective way to train organization wide on information technology?

- Is an integrated process control, accounting and other support systems the way to go or is it more effective to have 3 less complex systems?
- Is a Novell network the best way to handle 300 linked P.C.'s?
- How can the Internet be interfaced with workstations and maintain security?
- Expected changes in technology in near future
- Benefits to be derived
- Cost and time commitment to educate staff
- How do we know the proposed system isn't just something the "techies" want to do?
- How long before new system will become obsolete?
- What the system is supposed to do
- What development projects are ongoing – future direction?
- Is the system meeting user expectations?
- Total cost of MIS – adding value?
- IS the system efficient – could information be obtained alternatively
- Are the systems providing value?
- Is the equipment being utilized?
- Are people adequately trained?
- Are the reports relevant?
- Should we contract our MIS?
- The basic concept – not the technical details
- How will it help us internally (why do we need it?)
- What in our competitive edge if we adopt?
- How much will it cost? \$ and time
- What is your timeline? Is it defensible?
- How to ensure we are maximizing the benefit of existing technology – before we consider new technology?
- How to minimize the changing of software e.g. switching from WordPerfect to Word. Make the best choice up front.
- What is a standard by which we can measure what our annual investment in technology system should be?
- What is a standard for shelf life of software systems – so we can assess risk and return.
- Any hints that would help me get my fellow executives to become more 'literate' would be helpful and appreciated
- Link different production units to provide up-to-date information on shipments
- Provide current accounts receivable information and the status of a customer's individual credit.
- Provide up-to-date order backlogs by product
- Provide order tracking information
- Provide up-to-date inventories of unsold products
- System objectives i.e. what is it to provide?
- Total system costs – installation, maintenance, etc.
- How long will it meet our needs?
- Who is responsible for what e.g. upgrades?
- Are our systems current and competitive?
- What system is in place to collect information?
- Who are the gatekeepers?
- Who are the stakeholders?
- Is the system consistent?
- Who are the users of the information?
- How is the information disseminated?
- What companies have integrated IS into their operations and the benefits it has provided
- What is the flexibility of the system? Does it have a shelf life? If so, is there a way to predict the investment dollar required per year?

- Are there situations where MIS is a detriment rather than a benefit?
- What does management want to see reported? User needs assessment
- How to assess total costs (direct and indirect) of a new system development
- How do you get the straight truth from an MIS professional that is only going to recommend "his/her system"?
- When going for competitive bids, how to identify "vaporware" despite vendors' assurances to the contrary
- How to manage IS techies who are a breed unto themselves
- Competitive framework
- Scope of project (how will it make staff more productive?)
- Interaction with other departments
- How will it help the decision-making process?.
- What, if any, effectiveness (cost/overheads) the project will result in
- Administrative details w.r.t. personnel
- International bid status reports
- Product costs and equipment costs (current)
- Product and service prices
- Product technical specifications
- Cost including warranty, maintenance, support, what's proprietary
- Deliverables and schedule
- Benefits and impact on organization
- Degree of customization required, technical support required within company, documentation
- Objectives and championship
- Competition – where are they going?
- Cost
- How long will it take to change new technology
- Any reduction in the number of employees
- It is good for the next 5 to 10 years
- Areas that require MIS integration
- Base level of hardware/software recommended for current and what's needed to "grow" properly
- Timelines expected to bring up to desired effectiveness
- Staff training requirements
- Future considerations – where is all this heading?
- What it can do
- What it can not do
- Cost/risk implications
- Time implications
- Staff's varying needs and requirements
- Clients' varying needs and requirements
- Combination of value-added from above
- Operation reports
- Underwriting and claim
- Policy issuing
- Accounting
- Marketing information
- Competitor's system capabilities vs. ours
- Strengths/weaknesses – functionality
- Life of our system, before major upgrade hardware/software
- What is state of the art, and where are we?
- Server technology vs. mainframes – how new interacts with old mainframe databases if behind the server is the old engine
- What is the experience of our systems support team? Extent of "product" knowledge vs.

systems knowledge

- Current status of revenues/order input vs. quarterly targets
- Customer satisfaction results – survey breakdown for feedback discussion with customers
- Competitive information on new products/services offered in our markets
- Strategic marketing thrusts be market (domestic and global)
- Manufacturing capacity/mix for current quarter and next two quarters
- How can it help me to further the goals of my division and the organisation as a whole?
- How much will it cost me in terms of dollars and person hours to get the best system?
- How easy will it be for me and my people to use it and who will provide training?
- Will it facilitate information sharing with other organisations?
- How do we get “the best bang for our buck” in choosing our systems?
- Operating results
- Competitive information
- Historical data
- Database on customers
- Database on clients
- Expectations of group to interact in system
- What competition is using
- Senior management’s expectations/goals/objectives
- Budget
- Time frames
- How to implement with minimum impact/disruption on group and maximum input from group(s)
- What’s the object of the exercise? i.e. what are you trying to achieve?
- Full costs and time frames:
 - Best case scenarios
 - Worst case scenarios
- What’s the payback?
 - \$
 - operational benefits
 - competitive advantage
- who’s involved?
 - What users are involved?
 - Is it user driven?
- How long will the new system last?
- Need to know the “jargon” so I can talk and listen and not get lost
- Need to know how it can be applied to our company
- Need to know how I can assess competition with it
- Costs
- What is best method to implement without causing shock to people/systems now in place
- What’s possible to do – in relation to what’s required
- Steps involved in creating new systems/software
- Timing – how long will it take to create and subsequently implement
- What is the relative cost?
- How can it best be done? Utilize internal vs. external sources
- Where technology fits in spectrum of available technology (industry norm)
- Advantages/drawbacks over currently used technology
- Expected productivity gains
- A long-term plan (expected future fit)
- Required training to achieve expected gains
- Need to know the benefits associated with investment – what operational efficiencies are expected
- Need to ensure that user requirements are well defined and documented

- Need to know all the costs involved: hardware, software, instruction, training, implementation, maintenance, networking costs
- Need to know the evaluation criteria and selection process: who's involved, how will a selection be made, etc.
- Need to know the "change management" and "project management" process
 - How will decisions be made w.r.t. implementation
 - Who will make them
 - How will they be communicated
- What will it do to help increase productivity and/or effectiveness?
- What will it do to help meet our customers' needs?
- What is the cost and ROLE/ROI
- How user friendly is it?
- Why do we need it now?
- What will it do to get a competitive edge on our competitors?
- Does the project deal with all factors?
- Is the budget reasonable?
- Are the timelines in line with our needs? Can they be met?
- What are the real benefits of this new system?
- What other systems/projects are going to be delayed due to this effort?
- It should be compatible with what I already have (if it requires hardware or software)
- It should provide a minimum of simple information that we need, not more paper
- Level of detail given to operations
- Competitor information
- Customer information
 - Prime contacts
 - sales information
 - trending
- Financial information
 - Costing
 - Accounts payable
 - Committed
- Project management
 - Job control
 - Site information
 - Purchase
 - Committed costs
 - Where the job is at
 - What actions need to be taken

Appendix D
Phase 1 Detailed Respondent Profiles

Company A

Measure	A1 - IS Executive	A2 - CFO
Functional Background	Information Systems	Finance
Tenure - Retail	Low	High
Tenure - Company	Medium	High
Education Background	University Undergraduate Degree: Math, Physical Sciences	University Undergraduate Degree: Business
IS Knowledge	High	Low
Implementation of Previous IS Plans	5/7	3/7 - "I can't imagine the IT people in the past. I get the impression that there always been this much integration on teams and I am talking more distant past than more recent past, because most of the projects lately have had more of a team approach"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very important
SU – Dimensionality	4D - "I would agree with that breakdown"	4D - "That seems to make sense"
SU – Vision	<p>Importance of IT "technology is an enabler, not an end in and of itself"</p> <p>Vision "that awareness now of what the business could be and what technology might enable them to do...need to understand the possibilities"</p> <p>Technology Life Cycle "pace of change of technology is now actually driving business changes" "the life cycle of technology"</p>	<p>Vision "You need to have a vision for IT"</p> <p>Importance of IT "Technology changes lead to a fundamental shift in store and office processes"</p>
SU - Senior Management Responsibilities	<p>Competition's use of IT "know where your competition sees itself" "select places where we can leapfrog competitors"</p> <p>Investment in IT "constant reinvestment is required"</p> <p>Architecture "importance of having an overall architecture"</p> <p>Importance of Infrastructure "importance of investing in</p>	<p>Architecture "... it (the new finance system) has been an interesting process from the standpoint they (the divisional systems) will run on a different platform than we do and I couldn't begin to tell you what they are, only that I have been told plenty of times that they are different, which is all that I really need to know. The IS dept., they know what they are" " (on the difference between client</p>

	<p>infrastructure"</p> <p>Funding Mechanisms "fundings for new information systems should come from the business and be defined " "fundings for managing existing systems should come from IS operational budget" "fundings for new systems provided by the business and driven by the business"</p> <p>Role of CEO "appropriate environment set by the CEO"</p>	<p>server and main frame)...I look at it in this way, client server gives me flexibility and speed, a mainframe doesn't, and that is what we need"</p> <p>Importance of Infrastructure "give me a Cadillac frame but don't make me buy a Cadillac when a Chevy Cavalier will do"</p> <p>IS Projects Driven by the Business "not having IT people drive the project - the business has to drive it"</p> <p>Complexity "if you were to talk about putting a new accounting system in the company, I would be scared to even guess what it would take in dollars, even more so than dollars is the turmoil that it would cause in the organisation"</p> <p>Steering Committees "very frank discussion and challenging but constructive relationships between all parties"</p>
<p>SU - Key Success Factors</p>	<p>Executive sponsor "choosing a division to sponsor and pilot a new system"</p> <p>Systems Development "compare pilot results to the original plan and then reassess system value"</p> <p>Steering Committees "wide open communication over the course of a project"</p> <p>Scope-Time-Dollar Trade-offs "scope-time-dollars trade-offs" "a defined level of funding for a project - there is nothing worse than being in charge of a project when there is no cheque book"</p> <p>Project Management "project management seems to be the biggest misunderstanding of SU because a lot of people don't think in terms of project. They think in terms of events. They think about the result but they don't think about what it takes to get to that result"</p> <p>Project Team "role of the user – availability, skill sets, internal and not a contractor"</p>	<p>Project team "a team approach where IT and the business work together in an integrated way"</p> <p>Defining Requirements "Need to be able to articulate sufficient details for that vision" "distinguish between a bell and a whistle and the core module" "being able to clearly articulate the vision so that we can say here is what our needs are, here is what are wish list is and then we have the IT people involved in the vendor meetings to tell us that some of them aren't wishes, they are real pipe dreams"</p> <p>Scope-Time-Dollar Trade-offs " I keep telling them (IT) I don't think it is scope creep, I am just now getting to the point where I can tell you what my scope is"</p> <p>Executive sponsor "a senior business manager to sponsor/champion a project" "IS needs to understand that their customer is the business"</p>
<p>SU – Success Measures</p>	<p>"dollars sometimes" "date of delivery - 80% perfect and before the competition is better than</p>	<p>"a positive change in KPI's, whatever they might be"</p>

	100% complete in some cases"	
SU – Key Dimension	Execution	Execution
SU – Subjective Assessment	"CEO, COO, senior VPs, and divisional presidents - 1/2 are at the possibilities level, none are at the delivery level and most are focused on the cost/benefit level in terms of real dollars, not in terms of intangible possible benefits" "...most of them (the divisional presidents) came out of marketing or merchandising and they don't want anything to do with the technology, just somebody else make it that way"	Not mentioned
IS Performance	5/7	10/10 - "Ecstatic at the progress so far on the new finance system"

Company B

Measure	B1 - IS Executive	B2 - VP - Logistics & Distribution
Functional Background	Information Systems	Logistics & Distribution
Tenure - Retail	High	High
Tenure – Company	High	High
Education Background	University Undergraduate Degree: Math; MBA	University Undergraduate Degree: Biology
IS Knowledge	High	High
Implementation of Previous IS Plans	“historically, we’ve had a pretty positive atmosphere regarding IT out there”	“some good, some bad, some okay”
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding – Overall Importance at Senior Executive Level	Very Important “it makes my job so much easier”	Very Important There are some people who love to beat up on the CIO. They refer to him as the ‘head of the department of profit prevention’. Then there are departments like mine where the CIO says, ‘I love coming over here to talk to cerebral people who get it’. “ “Overriding all of this (shared understanding) is trust – take Wal-Mart for example. Sam Walton hired some very smart people and trusted them to do the right job”
SU – Dimensionality	- all four dimensions implicitly identified	- all four dimensions implicitly identified
SU – Vision	Vision “common systems, common data”	Vision “everyone has the same vision – it’s amazing what determined people do when they have a common goal” Potential of IT “information can replace a lot i.e. inventory, electronic commerce pipelines, stringing all the systems together now from a supply chain perspective. We’re moving info faster outside the company, than inside”
SU - Senior Management Responsibilities	Role of CEO “the CEO is the big cannon in the corner office – a strong and vocal advocate for common systems, common data and common business processes”	Planning Process “have to realise that what we came up with today may change and people must understand the dynamic nature of the plan” “we get too dogmatic and want

	<p>"he has been very consistent in his leadership and never once wavered" "the CEO has said, 'we simply have to do this'"</p> <p>Steering Committees "presence of steering committee to help turn vision into action"</p> <p>Prioritisation Process "the difficulty is to decide if it's 'what they want' vs. 'what they need' vs. 'what the company needs' " it is interesting how many IT projects we do that don't have solid cost benefit – intrinsically we know this is the right thing to do"</p> <p>Funding Mechanisms "I ask for funding and they give it. It's my job to make sure the dollars are being spent on the right things, there is no one looking over my shoulder"</p> <p>Planning Process "IT plan has to be done before business plan – we have it the wrong way around"</p>	<p>things cast in stone when they shouldn't be"</p> <p>"planning process is too long, particularly in the face of rapid technological change"</p> <p>"the Japanese spend 90% of their time planning and 10% executing; in the US we spend 10% planning and 90% executing thus the plan keeps changing, there is no stake in the ground and the effect on morale is very negative."</p> <p>Signalling "all senior managers participating in IT steering committee signals to others the importance of issues being discussed" "everything starts at the top with demonstrated commitment"</p> <p>Competition's Use of IT "need to get out of the mindframe that we're unique, because we're not" "benchmarking of specific applications within the industry and then go outside the business and outside the industry"</p> <p>Business Processes "understand the underlying business processes" "understand the constraints and/or root cause/drivers for their business"</p> <p>Prioritisation Process "lots happens between a good idea and execution – dies under the bureaucracy of the business, the complexity, the politics"</p> <p>Role of CEO "understand who the people are who will gain from doing nothing" "understand the politics" "no competing interests"</p> <p>Steering Committees "honesty and openness" "process – steering committee meetings every month, IT and users, what we did and where we're going on every system" "need for people to understand the</p>
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		whole, not just the sum of the parts"
SU – Key Success Factors	<p>Systems Development</p> <p>"It's hard for some people to start with a blank sheet of paper. Some say 'I want something, but I'm not sure what it is'. Others say 'I want to be able to do this, and you tell me how to do it'. Still others say, 'I want to do this, and this is exactly what I need'. You use different approaches with each of these groups – i.e. pilots, prototyping. All approaches can work, but you have to match them with the appropriate target audience and type of project"</p>	<p>Executive Sponsor</p> <p>"have a strong champion"</p> <p>Project Management</p> <p>"understand the importance of project management"</p> <p>Project Team</p> <p>"understand the importance of a team environment – hire people on fit rather than skills"</p> <p>"leadership on a project – hand-pick these people for their tenacity and creativity"</p> <p>"celebrate the mini wins – take people to lunch, bring in pizzas"</p> <p>Training</p> <p>"the value of training"</p>
SU - Success Measures	<p>"in the old days when I was a department head, my attitude was 'I wanted to be judged on whether I delivered on what you asked for', but the issue was always whether you asked for the right things. Now as CIO, I don't use that phrase anymore because my role is to focus on delivering what is best for the company"</p>	<p>"there is no shared understanding of the measurement of 'success'"</p> <p>"activity based costing is not practised; therefore, it is impossible to calculate the true costs and benefits"</p>
SU – Key Dimension	<p>...we are not very good at making decisions of any strategic importance, this is our culture anyway. We argue, debate and hem and haw. Anytime we can turn a program into something we can execute, great! We're great on the day-to-day stuff, but not great on the L/T strategically important stuff.</p>	<p>"The Japanese spend 90% of their time planning and 10% executing. In the US we spend 10% planning and 90% executing, thus the plan keeps changing. There is no stake in the ground and the effect on morale is very negative BUT we need to recognise that what we come up with today may change and that people must understand the dynamic nature of the plan. We can get too dogmatic and want things to be cast in stone when they shouldn't be"</p>
SU - Subjective Assessment	B2 for sure, B3 to a lesser extent	None provided
IS Performance	<p>6/10, moving towards a 7/10, depends on functional areas</p> <p>"no one is 100% satisfied, but we've delivered some big hitters – each division has had at least one major thing"</p>	<p>"3/10 right now, things are late, not delivered anything on time except to my group"</p> <p>"there are departments like mine where the CIO says....'I love coming over here talking to cerebral people"</p>

Measure	B1 - IS Executive	B3 - SVP – Procurement
Functional Background	Information Systems	"various – operating sides in retail, logistics side in warehousing, and now merchandising"
Tenure - Retail	High	High
Tenure – Company	High	High
Education Background	University Undergraduate Degree: Math; MBA	University Undergraduate Degree: Business and Accounting
IS Knowledge	High	High
Implementation of Previous IS Plans	"historically, we've had a pretty positive atmosphere regarding IT out there"	"it will never be on time, that's a given" - has personally had some very big wins in projects that he's been heavily involved in
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding – Overall Importance at Senior Executive Level	Very Important "it makes my job so much easier"	Very Important
SU - Dimensionality	- all four dimensions implicitly identified	- all four dimensions implicitly identified "there needs to be an understanding of 1) what is going to be delivered – the form, 2) how it will be accessed – on-line for example, 3) when it will be delivered, using what resources, for what cost, 4) the implementation piece – timing, pilot, full scale roll out"
SU - Vision	Vision "common systems, common data"	Vision "The vision part is well understood"
SU - Senior Management Responsibilities	Role of CEO "the CEO is the big cannon in the corner office – a strong and vocal advocate for common systems, common data and common business processes" "he has been very consistent in his leadership and never once wavered" "the CEO has said, 'we simply have to do this'" Steering Committees "presence of steering committee to help turn vision into action"	Planning Process "another pitfall is the management of unknowns and that you get smarter over time; you need to have the ability to manage as you have to make mid-course corrections" Risk "for those immature products for which there was no track record, risk assessment was not a disciplined part of the process and the results were disastrous; most of

	<p>Prioritisation Process “the difficulty is to decide if it’s ‘what they want’ vs. ‘what they need’ vs. ‘what the company needs’ “it is interesting how many IT projects we do that don’t have solid cost benefit – intrinsically we know this is the right thing to do”</p> <p>Funding Mechanisms “I ask for funding and they give it. It’s my job to make sure the dollars are being spent on the right things, there is no one looking over my shoulder”</p> <p>Planning Process “IT plan has to be done before business plan – we have it the wrong way around”</p>	<p>the complete blowups happened with unknown systems where risk assessment is an important factor”</p>
<p>SU – Key Success Factors</p>	<p>Systems Development “it’s hard for some people to start with a blank sheet of paper. Some say ‘I want something, but I’m not sure what it is’. Others say ‘I want to be able to do this, and you tell me how to do it’. Still others say, ‘I want to do this, and this is exactly what I need’. You use different approaches with each of these groups – i.e. pilots, prototyping. All approaches can work, but you have to match them with the appropriate target audience and type of project”</p>	<p>Defining Requirements “the process for selecting new systems and packages is critical – the requirement piece needs to be done well, the search part (i.e. for vendors) need to be well structured, the overall prioritisation/ranking of systems is important – CBA and cross-department requirements work here” “I started as a user and we have a nasty habit of stating our needs in conclusions. The problem is that this is too narrow, and we get consumed by an historical view that may not be up to speed with the current technology. I was once taught by someone that a good user has the ability to describe what your needs are, not the solution”</p> <p>Systems Development “biggest pitfall is the deliverable against what was expected – this is in part caused by wrapped solutions that don’t deliver on their promise – too slow, not flexible or versatile enough” “a good IT person would ask you to validate the needs – CBA, timetable, etc.” “Need a good interview process, one that elicits ‘when it is done, what it will look like’; one that allows both parties to agree on what the deliverables are”</p>

		<p>Project Management “you need a discipline to both IT and user roles – a technique that ensures that you stay out of each other’s pockets...a superior product comes out of this approach”</p> <p>Project Team “once you’ve agreed on the needs, you must determine what kind of user involvement is required – i.e. someone who can sign off on this stuff, who has the authority and the skill and the knowledge; you must determine what other resources; you must determine the timeframe”</p> <p>“fully dedicated project management is a must – user project manager, IT project manager, a team effort that takes both parts – without these, projects go adrift”</p>
SU - Success Measures	“in the old days when I was a department head, my attitude was ‘I wanted to be judged on whether I delivered on what you asked for’, but the issue was always whether you asked for the right things. Now as CIO, I don’t use that phrase anymore because my role is to focus on delivering what is best for the company”	“the ultimate measure is functionality as the user perceives it” “if both IT and user are willing to celebrate the completion i.e. put it in the company newsletter” “cost benefit tends to drift away and then its all against deliverables once it is done”
SU – Key Dimension	...we are not very good at making decisions of any strategic importance, this is our culture anyway. We argue, debate and hem and haw. Anytime we can turn a program into something we can execute, great! We’re great on the day-to-day stuff, but not great on the L/T strategically important stuff.	“...the vision part is well understood and there is no loss of purpose or commitment, this is just a huge thing to realise.” “when these two (i.e. project management and the process for selecting systems) disciplined processes are missing, none of the systems will be delivered on time or when turned on, they won’t work”
SU -Subjective Assessment	B2 for sure, B3 to a lesser extent	None provided
IS Performance	6/10, moving towards a 7/10, depends on functional areas “no one is 100% satisfied, but we’ve delivered some big hitters – each division has had at least one major thing”	3/10 , “it will never be done on time, that’s a given. This is difficult to manage – when projects become long, it requires some survivability tactics in fallback and reassessment”

Company C

Measure	C1 - IS Executive	C2 – CFO
Functional Background	Information Systems	Finance
Tenure - Retail	Low (very)	Moderate
Tenure - Company	Low	Moderate
Education Background	University Undergraduate Degree: Math and Computer Science	University Undergraduate Degree: Business MBA; CA
IS Knowledge	High	Moderate
Implementation of Previous IS Plans	"bad news; systems were complex, became outdated...IS needed to re-earn its respectful place"	"they have a very good vision but the operating people will tell you that they haven't delivered anything in the last 3 years or at least it appears that way"
Level of Communication	Frequent Diverse	Frequent Diverse "the VP IS sits on the operating committee but it discusses lots of other things and people tend to be polite (the president is there). The IS steering committee isn't an IS steering committee in my book, it is just kind of everything is OK and this is what we are going to do next month. There isn't a forum where the VP IS' customers get in a room and talk about the business. There is not forum like that and I think if there was that forum, I think it would help to solve issues and it might help the VP IS to keep up to date in what the business is doing"
Shared Understanding – Overall Importance at Senior Executive Level	Very Important "awareness of information technology is a competency the they must develop"	Very Important
SU – Dimensionality	- implicitly 4 dimensional	- implicitly 4 dimensional
SU – Vision	Importance of IT "IT is everywhere in this industry – we must be aggressive in our use" "it is fundamental to our business and our success" Potential of IT "can secure competitive advantage through information systems"	Vision "for IT, the key pieces are the accumulation of data – it is going to be the key strategic thing that IT does well for a company, will help the company succeed in the future" Importance of IT "I see IT as an enabler" "I see the IT group as a service"

	<p>Technology as an Investment “technology is an asset that has a life – i.e. a planned value and then a death”</p>	<p>provider, like the finance function; I don't see them as a leader”</p>
<p>SU - Senior Management Responsibilities</p>	<p>Role of CEO “IS as equal partners with the business” “you get the IS department you deserve” “information systems belong to the company, not departments”</p> <p>Data “the importance of data – we have data but it is polluted now . The business has to lead here. In fact we built a data warehouse just to demonstrate how polluted the data is”</p> <p>Planning Process “business planning supported by IT planning – we have the stores coming in at the wrong time in the decision making process and they don't fit in” “call IT in earlier than ever when making key business decisions”</p> <p>Business Processes “a collapsing of organisational boundaries means that there are huge systems implications – BPR is making jobs more complex and that automating knowledge workers is the new order” “rethink the way you do work first and then apply IT”</p> <p>Architecture “desktop standards and control – there is a perception of control and regimentation rather than an understanding of why this is important”</p> <p>Importance of Infrastructure “establishment of infrastructure – I use the sewer and plumbing analogy – this has to work – the business is slowly growing to understand the importance”</p> <p>Staff Retention “keeping good people”</p>	<p>Sources of Ideas “I see them as a leader if there is a void or gap, but ideally I see the business leading “ “I think the way I see the flow (in decision making) is that someone would have to identify the desire to do home shopping, identify the market opportunity, the financial opportunity and then start to worry about the technology related to doing it – I don't have the view that IT shouldn't be in the room (in setting strategy) but I don't view them as leading it” “I think it is the business that is deciding whether or not it is a good idea, and then IT has to tell them what they can and can't do”</p> <p>Importance of Infrastructure “there is a fair amount of effort around the internal data warehouse; the concern though is I think from an operating point of view, they don't see as much value in it as I do probably from a finance point of view”</p> <p>Prioritisation Process “IT needs to say no, we have this huge pent up demand and change occurring in the organisation, so every project on that board (in his office) has an IT piece to it” “there is not a lot of questioning of priorities – the businesses have their own priorities and are responsive to their own priorities” “there is the whole issue going forward related to how you manage expectations, yet deliver enough to keep your clients happy”</p> <p>Competition's Use of IT “the winner in retail (e.g. Wal-Mart) seems to have every system in the world and they seem to be ahead of everyone —in knowing their customers, in knowing their vendors, in knowing what sells and what doesn't sell. They seem to</p>

		<p>have a very large step up on us all in being able to make decisions from data – this is why they're so successful”</p> <p>“in many cases we have the information, but no one uses it to the same degree as some of the other successful retailers”</p> <p>Steering Committees</p> <p>“I think one of the things we do very badly and one of the reasons that we are not successful in projects is that we are not good at steering committees – we don't use them to keep track of projects . At my previous employer, the project team leaders came up to that steering committee meeting and had a bit of a gut check that morning because they wanted to make sure that they understood the issues, wanted to make sure that they understood the progress and were able to answer the tough questions, and believe me there were tough questions like are you on budget, are you spending to plan, are your deliverables on time, those type of questions”</p> <p>“there are structural constraints in this organisation – the VP IS has very little opportunity to meet with the business in a business session. The VP IS has to interface with the business on a one-to-one basis and there is no forum for us all to get together and paint a collective picture of 'do you know what the hell you are doing to me here'. This type of forum would help the VP IS in prioritising the work and in taking out road blocks in projects”</p> <p>Absorptive Capacity</p> <p>“we always swoop in, do some studies, make some good conclusions, but it is building in to the day to day, that it is just a natural routine to look at this data, plan around it, make decisions. I think we are 3 to 5 years away from that. It is cultural, it is staffing, it is the capabilities of the people in the organisation”</p> <p>Funding Mechanisms</p>
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		<p>"a core budget and then client funded work. I think client funded work is in some sense an evil because it detracts from the core plan and I think over the last couple of years the VP IS has had to manage huge client funded work – whether done inside or outside"</p>
<p>SU – Key Success Factors</p>	<p>Project Team "discipline of implementation – business and IS but the business must lead – neither has a disciplined approach" "can't have surrogate users – i.e. not a spokesperson" Project Management "basic project management skills" Change Management "change management"</p>	<p>Defining Requirements "clarity around your own objectives – what are you trying to do with the system, what do you really need and what don't you really need" IS Group Functioning "no one quite understands how the IS organisation works. I think it has cost us time and effort over the last few years." "they used to have business analysts, and it just never worked. This one human being was supposed to know everything that went on in marketing (for example) and then help prioritise the systems requirements of marketing. Well it was nonsense, you can't have one person do that first of all – it was an insane job. We paid them outrageous sums of money." Scope-Dollar-Time Trade-offs "a lot of success is fencing in and kind of keeping scope reasonably tight and tensed" Project Team "a lot of it is putting the right resources on it" "IS here has dealt with very little user support on project: the user will sponsor the project, yet they won't put a decent person on the project and they won't put a team in place to work on it, they will give you people part time, they just won't take responsibility" "I tend to be more critical of the user community than I am of the IT community in the sense that you have got to take more control of their own worlds" Systems Development "if I go back to my time atone of the things that was very clear with</p>

		any of the line managers that were involved with systems was that there was a methodology and that we were going through very specific phases. So I think that methodology was important. What dawns on me also, is that the phasing is very important. One of the things that I don't think we have done well here is phase projects. So that you can say this is a chunk, this chunk will be delivered in 6 months. I think we tend to go out for a long time, and again that relates to methodology."
SU - Success Measures	"where's the value to the business" "accept that the ways we have now to measure IT value are inadequate and move forward"	"are you on budget?" "are you spending to plan?" "are your deliverables on time?"
SU - Key Dimension	"not just the technology ... implementation is key" "execution is key"	"I have seen enough of them (information systems projects) blow up and I know that it is very much the user as well as the IT person. It has been a shared blame in my view, even though it is usually the IT people that get coloured with the failure, but to me the user has a lot more influence than is often realised. I think that this is one of the critical things that as long as you are aware of that, then you have an option to get some action taking place. But if you (as a user) sit back and know that IT has to do it all, then that is when things really blow up."
SU - Subjective Assessment	C5 for sure C3 definitely not	Not provided
IS Performance		"I do think highly of IS, but it is just hard to pick out any one thing"

Measure	C1 - IS Executive	C3 – SVP Marketing
Functional Background	Information Systems	Store Management; Marketing
Tenure - Retail	Low (very)	High (very)
Tenure - Company	Low	Moderate
Education Background	University Undergraduate Degree: Math and Computer Science	2 years post secondary education
IS Knowledge	High	Low
Implementation of Previous IS Plans	"bad news; systems were complex, became outdated...IS needed to re-earn its respectful place"	"even today, I can't get yesterday's sales. Every other retailer in the world can get these, why can't I? I am not happy with what they've delivered in the past, even if the fault is more the business than IS for past problems"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important "awareness of information technology is a competency they must develop"	"I have advisors who know their stuff. I'm a merchant but I surround myself with good folks. I don't need to know anything about IT specifically, I need to know about competitive advantage re: IT only"
SU - Dimensionality	- implicitly 4 dimensional	- implicitly 4 dimensional
SU - Vision	Importance of IT "IT is everywhere in this industry – we must be aggressive in our use" "it is fundamental to our business and our success" Potential of IT "can secure competitive advantage through information systems" Technology as an Investment "technology is an asset that has a life – i.e. a planned value and then a death"	Importance of IT "IT can either be a competitive advantage or disadvantage" Vision "IT supports the business by focus – using information and technology to help decide on the winners and losers (products); getting products to market faster; customer service – speed check outs, special orders, colour matching paint etc.; and competitive operations" Technology Life Cycle "complexity and risk with respect to speed with which it changes"
SU – Senior Management Responsibilities	Role of CEO "IS as equal partners with the business" "you get the IS department you deserve" "information systems belong to the company, not departments" Sources of Ideas "the importance of data – we have data but it is polluted now . The	Prioritisation Process "the IS group takes on too much" "majoring in the minors" "we bow to the whim of every franchisee" Steering Committees "ineffective IS steering committee – here it is a forum for information, not prioritisation or decision making"

	<p>business has to lead here. In fact we built a data warehouse just to demonstrate how polluted the data is"</p> <p>Planning Process "business planning supported by IT planning – we have the stores coming in at the wrong time in the decision making process and they don't fit in" "call IT in earlier than ever when making key business decisions"</p> <p>Business Processes "a collapsing of organisational boundaries means that there are huge systems implications – BPR is making jobs more complex and that automating knowledge workers is the new order" "rethink the way you do work first and then apply IT"</p> <p>Architecture "desktop standards and control – there is a perception of control and regimentation rather than an understanding of why this is important"</p> <p>Importance of Infrastructure "establishment of infrastructure – I use the sewer and plumbing analogy – this has to work – the business is slowly growing to understand the importance"</p> <p>Staff Retention "keeping good people"</p>	<p>Staff Retention "I personally am not buying in to this shortage (of good IS people) stuff, but there are people who are buying it"</p>
<p>SU – Key Success Factors</p>	<p>Project Team "discipline of implementation – business and IS but the business must lead – neither has a disciplined approach" "can't have surrogate users – i.e. not a spokesperson"</p> <p>Project Management "basic project management skills"</p> <p>Change Management "change management"</p>	<p>Defining Requirements "we tend to overbuild – I asked for a car that could get me to London, I ended up getting one that could take me to Mars, but I only wanted to go to London" "the business must define what they want in a manner in which IS can understand" "ability to discriminate between necessities and niceties"</p> <p>IS Group Functioning "I do not buy in to all the costs"</p> <p>Vendor Relationship "IS folks need better negotiating skills – everything costs \$10M – they need to swing better deals from the vendors because"</p>

		everything is negotiable"
SU - Success Measures	"where's the value to the business" "accept that the ways we have now to measure IT value are inadequate and move forward"	"not a competitive disadvantage" "value to the business"
SU - Key Dimension	"not just the technology ... implementation is key" "execution is key"	"I need to know about competitive advantage re: IT only"
SU - Subjective Assessment	C5 for sure HIGH C3 definitely LOW	None provided
IS Performance	"getting better, but still not great"	"poor"

Measure	C1 - IS Executive	C4 – SVP Franchisee Relations
Functional Background	Information Systems	Varied
Tenure - Retail	Low (very)	High
Tenure - Company	Low	High
Education Background	University Undergraduate Degree: Math and Computer Science	University Undergraduate Degree: Computer Science MBA
IS Knowledge	High	High
Implementation of Previous IS Plans	"bad news; systems were complex, became outdated...IS needed to re-earn its respectful place"	
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important "awareness of information technology is a competency they must develop"	
SU - Dimensionality	- implicitly 4 dimensional	"there is another piece (to the 4 dimensions hypothesised), if I can add it. There is a blank sheet of paper that says there is my vision, then you have to overlay reality. Taking the house analogy, I can picture this beautiful extension on the back of the house, 2 storey, you can just see it, you have got to visualise it. But one little thing, your lot is only this big and there is a 25 yard set back which says, 'oh-oh, got to modify the house. There are lots of ways of working it out, and we will work it out, we just didn't put enough thought into it"
SU - Vision	<p>Importance of IT "IT is everywhere in this industry – we must be aggressive in our use" "it is fundamental to our business and our success"</p> <p>Potential of IT "can secure competitive advantage through information systems"</p> <p>Technology as an Investment "technology is an asset that has a life – i.e. a planned value and then a death"</p>	<p>Vision "IT presents the opportunity to improve the amount of work that could be done by an organisation and to improve its accuracy (...) the trick today is process management, and to my mind what you really have to understand is the processes"</p> <p>Importance of IT "IT is very much a support role or enabling role"</p> <p>Technology Positioning "I don't believe in being first. The</p>

		<p>odds of doing it right first at reasonable cost levels are minimal. They are less than 5%. There is no prize in being the pioneer. You can't show me a success by being a pioneer, the trick is to be number 2, number 3, real quick"</p>
<p>SU - Senior Management Responsibilities</p>	<p>Role of CEO "IS as equal partners with the business" "you get the IS department you deserve" "information systems belong to the company, not departments" Sources of Ideas "the importance of data – we have data but it is polluted now . The business has to lead here. In fact we built a data warehouse just to demonstrate how polluted the data is" Planning Process "business planning supported by IT planning – we have the stores coming in at the wrong time in the decision making process and they don't fit in" "call IT in earlier than ever when making key business decisions" Business Processes "a collapsing of organisational boundaries means that there are huge systems implications – BPR is making jobs more complex and that automating knowledge workers is the new order" "rethink the way you do work first and then apply IT" Architecture "desktop standards and control – there is a perception of control and regimentation rather than an understanding of why this is important" Importance of Infrastructure "establishment of infrastructure – I use the sewer and plumbing analogy – this has to work – the business is slowly growing to understand the importance" Staff Retention "keeping good people"</p>	<p>Complexity "there is another piece (to the 4 dimensions hypothesised), if I can add it. There is a blank sheet of paper that says there is my vision, then you have to overlay reality. Taking the house analogy, I can picture this beautiful extension on the back of the house, 2 storey, you can just see it, you have got to visualise it. But one little thing, your lot is only this big and there is a 25 year set back which says, 'oh-oh, got to modify the house. There are lots of ways of working it out, and we will work it out, we just didn't put enough thought into it" Business Processes "the top guys have got to have a vision of how this business operates from a process point of view. We have got to be able to say we want a one storey house, or a two storey house, we want a side split, ranch, whatever" "the business units haven't taken responsibility for the process change" Flexibility "once you know the processes, in my opinion, the role of IT is how do they use systems to deliver it efficiently and provide you the flexibility in the long term for what you can't think about" Importance of Infrastructure "what IT has done in the past is to build houses where all the walls were support walls and you couldn't put a new door in or a new window because the whole thing came down" Architecture "we need a basic set of rules on things like 'we are not going to duplicate databases' and that sort of thing"</p>

		<p>Prioritisation Process</p> <p>"what is the reality, what do you really need to run the business"</p> <p>"the problem is on the quick fix they never put the cost of what it means to make a bigger change down the road like bring in new software, etc. once you've made all these quick fixes"</p> <p>"the business and IT have to be very protective in saying wrong cost, wrong way, no way we are going to do it. Your quick win is not a quick win for the organisation."</p> <p>Sources of Ideas</p> <p>"the business will identify (technology) trends and that. If the business isn't bright enough to have people in there who are looking at the trends, looking at the way things are going, then you got the wrong people in the business, but that isn't IT's role"</p>
SU - Key Success Factors	<p>Project Team</p> <p>"discipline of implementation – business and IS but the business must lead – neither has a disciplined approach"</p> <p>"can't have surrogate users – i.e. not a spokesperson"</p> <p>Project Management</p> <p>"basic project management skills"</p> <p>Change Management</p> <p>"change management"</p>	
SU - Success Measures	<p>"where's the value to the business"</p> <p>"accept that the ways we have now to measure IT value are inadequate and move forward"</p>	"what's the benefit to the business?"
SU - Key Dimension	<p>"not just the technology ... implementation is key"</p> <p>"execution is key"</p>	"someone once wisely said to me that 'if you get the philosophy straight, the rest of the stuff falls into place easily'"
SU - Subjective Assessment	<p>C5 for sure</p> <p>C3 definitely not</p>	<p>C5 for sure</p> <p>C3 not on board at all</p>
IS Performance	"getting better but still not great"	Not mentioned

Measure	C1 - IS Executive	C5 – SVP Logistics and Distribution
Functional Background	Information Systems	All aspects
Tenure - Retail	Low (very)	High
Tenure - Company	Low	High
Education Background	University Undergraduate Degree: Math and Computer Science	University Undergraduate Degree: Business MBA
IS Knowledge	High	High
Implementation of Previous IS Plans	"bad news; systems were complex, became outdated...IS needed to re-earn its respectful place"	"we experienced a loss of momentum with IS in the '80's and we are playing catch up and are behind the eight ball a bit" "my personal experience has been very positive w.r.t. IT – the trick is for it to be led by the business"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important "awareness of information technology is a competency they must develop"	Very Important
SU - Dimensionality	- implicitly 4 dimensional	*not explicitly mentioned
SU - Vision	Importance of IT "IT is everywhere in this industry – we must be aggressive in our use" "it is fundamental to our business and our success" Potential of IT "can secure competitive advantage through information systems" Technology as an Investment "technology is an asset that has a life – i.e. a planned value and then a death"	Importance of IT "in an established retailer like us, IT is the backbreaker of everything we do" "can't make significant process changes without IT and we are somewhat hamstrung by old systems" Vision "extremely important on both the revenue and cost side" Technology Basics "fundamentals of technology options" "rudimentary knowledge of core hardware, software, databases, etc."
SU - Senior Management Responsibilities	Role of CEO "IS as equal partners with the business" "you get the IS department you deserve" "information systems belong to the	Prioritisation Process "there is a real cost associated with jury rigging our current systems – we just can't do this anymore – the tweaking is beginning to cause major problems"

	<p>company, not departments”</p> <p>Sources of Ideas</p> <p>“the importance of data – we have data but it is polluted now . The business has to lead here. In fact we built a data warehouse just to demonstrate how polluted the data is”</p> <p>Planning Process</p> <p>“business planning supported by IT planning – we have the stores coming in at the wrong time in the decision making process and they don’t fit in”</p> <p>“call IT in earlier than ever when making key business decisions”</p> <p>Business Processes</p> <p>“a collapsing of organisational boundaries means that there are huge systems implications – BPR is making jobs more complex and that automating knowledge workers is the new order”</p> <p>“rethink the way you do work first and then apply IT”</p> <p>Architecture</p> <p>“desktop standards and control – there is a perception of control and regimentation rather than an understanding of why this is important”</p> <p>Importance of Infrastructure</p> <p>“establishment of infrastructure – I use the sewer and plumbing analogy – this has to work – the business is slowly growing to understand the importance”</p> <p>Staff Retention</p> <p>“keeping good people”</p>	<p>“legacy unbundling – how to get rid of this giant hairball without taking the company to its knees”</p> <p>Sources of Ideas</p> <p>“...the trick is for it to be led by the business”</p> <p>“IS folks who come to the business with ideas”</p> <p>Planning Process</p> <p>“a clear business plan understood by all”</p> <p>“in some cases we have too much analysis and too little action”</p> <p>Complexity</p> <p>“some projects are just so big they are very difficult to manage cost-wise and difficult to define an owner -> need to chunk large projects into bite-sized pieces”</p>
<p>SU - Key Success Factors</p>	<p>Integrated Team</p> <p>“discipline of implementation – business and IS but the business must lead – neither has a disciplined approach”</p> <p>“can’t have surrogate users – i.e. not a spokesperson”</p> <p>Project Management</p> <p>“basic project management skills”</p> <p>Change Management</p> <p>“change management”</p>	<p>Systems Development</p> <p>“what different strategies are available to implement software and for delivery of IT solutions”</p> <p>Project Management</p> <p>“project management methodology – need to understand”</p> <p>Project Team</p> <p>“a team approach where there is good group cohesion and alignment”</p> <p>Executive Sponsor</p> <p>“a strong business leader who</p>

		<p>“fights for \$ and resources”</p> <p>“a business sponsorship role is important – carry the Gantt chart around, go to meetings, carry the retail architecture around, understand the CSF and when to fight for resources, communicate across peer level, celebrate successes and keep the momentum”</p> <p>“sponsorship is not about lip service or being a figure head”</p> <p>IS Group Functioning</p> <p>“what impact the business is having on the IT organisation”</p>
SU - Success Measures	<p>“where’s the value to the business”</p> <p>“accept that the ways we have now to measure IT value are inadequate and move forward”</p>	<p>“cost – lower operating costs”</p> <p>“increases flexibility”</p> <p>“service level from the vendors (e.g. given specific EDI implementation)”</p> <p>“there are no real project measures or audits...we fight for resources initially and then just go and do it”</p> <p>“most of the savings from information systems come at the end of the journey – put up big \$ now”</p>
SU - Key Dimension	<p>“not just the technology ... implementation is key”</p> <p>“execution is key”</p>	<p>“a business sponsorship role is important – carry the Gantt chart around, go to the meetings, carry the retail architecture around, understand the CSF and when to fight for resources, communicate across peer level, celebrate successes and keep the momentum – implementation is key”</p>
SU - Subjective Assessment	<p>C5 for sure</p> <p>C3 definitely not</p>	None Provided
IS Performance	“getting better but still not great”	“my personal experience has been very positive w.r.t. IT”

Measure	C1 - IS Executive	C6 – SVP Diversified Businesses
Functional Background	Information Systems	Marketing
Tenure - Retail	Low (very)	Low
Tenure - Company	Low	Low
Education Background	University Undergraduate Degree: Math and Computer Science	University Undergraduate Degree: Law MBA
IS Knowledge	High	Moderate
Implementation of Previous IS Plans	"bad news; systems were complex, became outdated...IS needed to re-earn its respectful place"	"we've had great success with systems (in previous organisation)"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important "awareness of information technology is a competency the they must develop"	Very important – "need to put feet to the fire of line executives so that they understand their own business and can tell the IT folks what they need to know to support the business ... you have to understand IT"
SU - Dimensionality	- implicitly 4 dimensional	- implicitly 4 dimensional
SU - Vision	<p>Importance of IT</p> <p>"IT is everywhere in this industry – we must be aggressive in our use"</p> <p>"it is fundamental to our business and our success"</p> <p>Potential of IT</p> <p>"can secure competitive advantage through information systems"</p> <p>Technology as an Investment</p> <p>"technology is an asset that has a life – i.e. a planned value and then a death"</p>	<p>Vision</p> <p>"need to define the business based on the possibilities provided by IT"</p> <p>Technology as an Investment</p> <p>"having a long term view of technology investments – marketing here has a short term view only and this is causing major problems"</p> <p>Technology Trends</p> <p>"general trends in technology e.g. storage trends, but not the nitty gritty details"</p>
SU - Senior Management Responsibilities	<p>Role of CEO</p> <p>"IS as equal partners with the business"</p> <p>"you get the IS department you deserve"</p> <p>"information systems belong to the company, not departments"</p> <p>Sources of Ideas</p> <p>"the importance of data – we have data but it is polluted now . The business has to lead here. In fact we built a data warehouse just to</p>	<p>Steering Committees</p> <p>"the IS steering committee is concerned with tactical and not strategic issues; concrete issues and not conceptual issues – this is a problem"</p> <p>Planning Process</p> <p>"viewing IT not as a subsidiary but as an important party to have at the strategic table"</p> <p>Flexibility</p> <p>"IT cannot compromise on the</p>

	<p>demonstrate how polluted the data is”</p> <p>Planning Process</p> <p>“business planning supported by IT planning – we have the stores coming in at the wrong time in the decision making process and they don’t fit in”</p> <p>“call IT in earlier than ever when making key business decisions”</p> <p>Business Processes</p> <p>“a collapsing of organisational boundaries means that there are huge systems implications – BPR is making jobs more complex and that automating knowledge workers is the new order”</p> <p>“rethink the way you do work first and then apply IT”</p> <p>Architecture</p> <p>“desktop standards and control – there is a perception of control and regimentation rather than an understanding of why this is important”</p> <p>Importance of Infrastructure</p> <p>“establishment of infrastructure – I use the sewer and plumbing analogy – this has to work – the business is slowly growing to understand the importance”</p> <p>Staff Retention</p> <p>“keeping good people”</p>	<p>business model”</p> <p>Role of CEO</p> <p>“creating a culture of respect for one another’s strengths – the CEO is responsible for this”</p> <p>“the importance of the right organisational structure – we are trying to make changes to the business using technology in the harness of an old structure and it is very difficult if not impossible”</p> <p>“need to have IT and the business glued together – we did this by creating a statement of values”</p> <p>Importance of Infrastructure</p> <p>“understanding infrastructure issues”</p> <p>Accountability</p> <p>“clarifying accountability is very key”</p> <p>“there can be no escape”</p>
SU - Key Success Factors	<p>Integrated Team</p> <p>“discipline of implementation – business and IS but the business must lead – neither has a disciplined approach”</p> <p>“can’t have surrogate users – i.e. not a spokesperson”</p> <p>Project Management</p> <p>“basic project management skills”</p> <p>Change Management</p> <p>“change management”</p>	<p>Executive Sponsor</p> <p>“projects can be IT led but must be business owned”</p> <p>Project Management</p> <p>“need to force a discipline on the whole process of managing IT”</p>
SU - Success Measures	<p>“where’s the value to the business”</p> <p>“accept that the ways we have now to measure IT value are inadequate and move forward”</p>	Not mentioned
SU - Key Dimension	“not just the technology ... implementation is key”	

	"execution is key"	
SU - Subjective Assessment	C5 for sure C3 definitely not	"in this company there is no shared vision" "there are cross border disputes that are not easily resolved" "the role of IT is not clearly defined" "engagement between the line and IT is not uniform – logistics is OK but marketing is definitely NOT OK"
IS Performance	"still not great but getting better"	"people are still denying that anything is wrong"

Company D

Measure	D1 - IS Executive	D2 – SVP Logistics and Systems
Functional Background	Information Systems "has always done IT work but not always in the IT area"	Logistics "has worked in a variety of functions including leading Information Services"
Tenure - Retail	High	High
Tenure - Company	High	High
Education Background	University Undergraduate Degree: Chemistry MBA	University Undergraduate Degree: Industrial Engineer
IS Knowledge	High	High
Implementation of Previous IS Plans	"Historically poor but getting much better"	"5 years ago, ISD had no confidence from the rest of the organisation, missed everything from deadlines, budget, etc. – a big mess – 100% turnover almost; people in ISD were wedded to the IS industry and not the rest of the organisation – didn't even know the business"
Level of Communication	Frequent Diverse	Frequent Diverse "we've had this group now for a few years that we call the "B" team. This is a group of senior managers and executives that meet informally often after regular hours just to shoot the breeze, talk about innovative approaches to management applicable to the organisation. We are really a group of 'out of the box thinkers and change agents'. The current IS VP is one of the members"
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very Important
SU - Dimensionality	4D – "that seems to cover it"	"I would agree with that"
SU - Vision	Importance of IT "IT fits right smack in the middle" "it is the nervous system of the organisation" "IT will be a phone company, can't work without it but it's not the business"	Importance of IT "IT is both an enabler and a driver" Vision "there is no value in volumes of information, use information in a different way to help humans to use their intuition"

	<p>"there is no area that it doesn't touch" "try and run without it" "My notion of the nervous system. IT is not a cost centre, it is not an add-on, it is part of the business. We are operations" Potential of IT "We have been focused on IT as an enabler, we could look further" Technology Positioning "leading edge or old – need to understand the implications of the choice"</p>	<p>"we have data and information, but we have not managed well the transition to knowledge and behaviour – we need to build IT to support these latter transitions" Technology Life Cycle "look to IT solutions as perishable – build them to throw them away" "the business is always saying "here we go again", but this is okay – the systems should always be changing" "ISD though has some difficulty with the notion of buying to throw away" Technology Positioning "our operations in the West have old technology – CICS on mainframe – they harvest their investments and make minimal new investments – this has worked for them" "in the East, we are not bleeding edge but are definitely in the rear guard of the vanguard – top quartile in use of technology and in a state of ever preparedness to do whatever. Thus there are wasted \$ if we don't capitalise on this – we should focus more on the time value of money"</p>
<p>SU - Senior Management Responsibilities</p>	<p>Prioritisation Process "the business strategy dictates our priorities. It's up there for all to see" "5 years ago we had a Financial Review Board that set the priorities but it didn't work. Almost all projects got approved, there was no focus and nothing got done. There was ROI gaming and all of us know how to rig that if necessary. Now the business drives everything and that is how it should be" "if you know the links between the business strategy and IT, then everything else falls out" "the difference between running the business (operations) and true investment for the future. For example, in the US, they can capitalise software development" Risk "the importance of managing risk.</p>	<p>Prioritisation Process "focus should be on business strategy and this should be used to drive IT spending and focus resources" Planning Process "part of the problem in the past has been that there was no clear vision of the organisation, that's all changed now" Funding Mechanisms "the issue is not \$ spent on IT, the issue is what do we have to invest in value creating activities – this is a completely different model" Business Processes "fundamental understanding of business processes" "in terms of important things to understand: the financial implications, the operational implications, the useful life, how are</p>

	<p>For example, we have distributed systems that spread risk. I told them there is no \$ to be saved here, but it makes good business sense”</p> <p>Data “value of data – just like real estate, they’ve got to own it”</p> <p>Role of CEO “5 years ago we created an ad-hoc committee for people interested in ‘neat technology’. Members ranged from VPs to programmers. We had no budget, we scrounged for cash. This was very much a grass roots sort of group. We met once every 3 weeks or so and have so far created an Internet site and a corporate Intranet. In addition, we have slowly been creating the capability in the organisation so that once we get the go ahead to do something, we’re ready. Folks in this group are from all over. The mix and funding changes depending on who is there”</p> <p>Steering Committees “the management of expectations – we set budgets too early and then never revisit”</p> <p>Flexibility “we pay for future flexibility when we invest in information systems”</p>	<p>we going to manage differently, how quickly is technology changing in this area, how solid are the business processes e.g. the labour scheduling system is a very stable business process and this one is an easy call for new systems BUT the new warehouse slotting system is not so stable a business process and so a new system for this is a much more difficult call”</p> <p>Absorptive Capacity “the resources that are required to build the capacity in the organisation to accept and fully utilise the technology”</p> <p>Complexity “if there is a change in culture, people, business processes, then maybe the price is too high to pay. For example, supply chain management is a huge cost – the software portion is peanuts compared to the other costs to the organisation such as building the aforementioned capabilities, redoing accountabilities, etc.” “gut feeling about how difficult a new system will be to implement so that people actually use it and the organisation benefits”</p> <p>Role of CEO “ability to take risk, willing to let experiments go on”</p>
<p>SU - Key Success Factors</p>	<p>Project Management “a more professional, less ad-hoc approach to managing projects”</p> <p>Executive Sponsor “leadership”</p> <p>IS Group Functioning “understand the company’s system strategy – e.g. we are going to be distributed and not mainframe” “the importance of common systems” “the major IT projects underway and their status” “understand and feel comfortable with the overall budget for systems – i.e. that operations are efficient and that we are investing a lot”</p>	<p>Systems Development “should build systems as follows: pilot – prove the concept and if you have to do it manually at first do it e.g. use the sneaker net “prototype – put a system in place at a location and build the disciplines to use the system “rollout – everywhere once the system and its associated disciplines are understood” “we want simple systems” “we are not good at buying and managing integrated technical solutions like SAP. A modular approach is much more appealing – it gives us much more flexibility in the future and technical</p>

		<p>advancements can take place in the different areas at different rates as applicable/necessary"</p> <p>"prefer not to develop our own software. Buy software, don't mess around with it – modify the process instead to fit the software"</p> <p>Project Management "project management"</p> <p>Change Management "the management of change"</p>
SU – Success Measures	"earned value – meet budget, meet scope, meet time"	<p>"still some ROI for software costs etc."</p> <p>"still not much 'total' investment, then here are the savings, and this is the net"</p> <p>"the 'total' investment view is the tough part, people don't factor in all the costs or all the savings"</p> <p>"focus now is on what is ISD doing for the business"</p>
SU - Key Dimension	"links to strategy – because everything else falls out"	"the vision stuff is a no-brainer, need to truly understand how many resources are required to build the capabilities in the organisation to accept and fully utilise the technology"
SU - Subjective Assessment	"it varies over your other interviews – D2 for sure"	None provided
IS Performance	"Earned value is a new measure for us but 2 years ago we were at 75%, last year we hit 85%"	<p>"we've gotten off the efficiency of ISD and onto 'we need this application, go and get it for us'"</p> <p>"the VP IS has been a godsend"</p>

Measure	D1 - IS Executive	D3 – EVP
Functional Background	Information Systems "has always done IT work but not always in the IT area"	Varied; all aspects of retail
Tenure - Retail	High	High
Tenure - Company	High	High
Education Background	University Undergraduate Degree: Chemistry MBA	University Undergraduate Degree: Economics
IS Knowledge	High	Low
Implementation of Previous IS Plans	"Historically poor but getting much better"	no explicit comment "I've successfully avoided much to do with information systems to this point in my career"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very Important "the key is to be credible in your knowledge" "the starting point is to understand how to increase the value of the organisation"
SU - Dimensionality	4D – "that seems to cover it"	Not mentioned - implicitly 1 dimensional
SU - Vision	<p>Importance of IT</p> <p>"IT fits right smack in the middle"</p> <p>"it is the nervous system of the organisation"</p> <p>"IT will be a phone company, can't work without it but it's not the business"</p> <p>"there is no area that it doesn't touch"</p> <p>"try and run without it"</p> <p>"My notion of the nervous system. IT is not a cost centre, it is not an add-on, it is part of the business. We are operations"</p> <p>Potential of IT</p> <p>"We have been focused on IT as an enabler, we could look further"</p> <p>Technology Positioning</p> <p>"leading edge or old – need to understand the implications of the choice"</p>	

<p>SU - Senior Management Responsibilities</p>	<p>Prioritisation Process</p> <p>“the business strategy dictates our priorities. It’s up there for all to see”</p> <p>“5 years ago we had a Financial Review Board that set the priorities but it didn’t work. Almost all projects got approved, there was no focus and nothing got done. There was ROI gaming and all of us know how to rig that if necessary. Now the business drives everything and that is how it should be”</p> <p>“if you know the links between the business strategy and IT, then everything else falls out”</p> <p>“the difference between running the business (operations) and true investment for the future. For example, in the US, they can capitalise software development”</p> <p>Risk</p> <p>“the importance of managing risk. For example, we have distributed systems that spread risk. I told them there is no \$ to be saved here, but it makes good business sense”</p> <p>Data</p> <p>“value of data – just like real estate, they’ve got to own it”</p> <p>Role of CEO</p> <p>“5 years ago we created an ad-hoc committee for people interested in ‘neat technology’. Members ranged from VPs to programmers. We had no budget, we scrounged for cash. This was very much a grass roots sort of group. We met once every 3 weeks or so and have so far created an Internet site and a corporate Intranet. In addition, we have slowly been creating the capability in the organisation so that once we get the go ahead to do something, we’re ready. Folks in this group are from all over. The mix and funding changes depending on who is there”</p> <p>Steering Committees</p> <p>“the management of expectations – we set budgets too early and then never revisit”</p> <p>Flexibility</p> <p>“we pay for future flexibility when we</p>	
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	invest in information systems"	
SU - Key Success Factors	<p>Project Management "a more professional, less ad-hoc approach to managing projects"</p> <p>Executive Sponsor "leadership"</p> <p>IS Group Functioning "understand the company's system strategy – e.g. we are going to be distributed and not mainframe" "the importance of common systems" "the major IT projects underway and their status" "understand and feel comfortable with the overall budget for systems – i.e. that operations are efficient and that we are investing a lot"</p>	<p>Defining Requirements "user needs to know what they want, how they think they might get it, and then hand it over to execute"</p>
SU - Success Measures	"earned value – meet budget, meet scope, meet time"	"success = bottom line over a sustainable period"
SU - Key Dimension	"links to strategy – because everything else falls out"	<p>"I don't need to go too deep here, I need to go deep into understanding the possibilities and the technology decisions I need to make, not how to make them happen"</p> <p>"don't need to know about execution – the role of ISD is to execute"</p>
SU - Subjective Assessment	"it varies over your other interviews – D2 for sure"	None provided
IS Performance	"Earned value is a new measure for us but 2 years ago we were at 75%, last year we hit 85%"	"getting better"

Measure	D1 - IS Executive	D4 – SVP-Finance
Functional Background	Information Systems "has always done IT work but not always in the IT area"	Finance
Tenure - Retail	High	High
Tenure - Company	High	High
Education Background	University Undergraduate Degree: Chemistry MBA	University Undergraduate Degree: Commerce
IS Knowledge	High	Moderate
Implementation of Previous IS Plans	"Historically poor but getting much better"	No comment
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very Important
SU - Dimensionality	4D – "that seems to cover it"	"it is important to operate at all these levels"
SU - Vision	<p>Importance of IT "IT fits right smack in the middle" "it is the nervous system of the organisation" "IT will be a phone company, can't work without it but it's not the business" "there is no area that it doesn't touch" "try and run without it" "My notion of the nervous system. IT is not a cost centre, it is not an add-on, it is part of the business. We are operations"</p> <p>Potential of IT "We have been focused on IT as an enabler, we could look further"</p> <p>Technology Positioning "leading edge or old – need to understand the implications of the choice"</p>	<p>Importance of IT "couldn't operate without IT"</p> <p>Potential of IT "IT is an enabler; to execute the strategy, whatever that is" "it is not going to lead the way out"</p> <p>Technology Trends "where technology is going?"</p>
SU - Senior Management Responsibilities	<p>Prioritisation Process "the business strategy dictates our priorities. It's up there for all to see" "5 years ago we had a Financial</p>	<p>Sources of Ideas "understand where the business is going and plan for that"</p> <p>Planning Process</p>

	<p>Review Board that set the priorities but it didn't work. Almost all projects got approved, there was no focus and nothing got done. There was ROI gaming and all of us know how to rig that if necessary. Now the business drives everything and that is how it should be"</p> <p>"if you know the links between the business strategy and IT, then everything else falls out"</p> <p>"the difference between running the business (operations) and true investment for the future. For example, in the US, they can capitalise software development"</p> <p>Risk</p> <p>"the importance of managing risk. For example, we have distributed systems that spread risk. I told them there is no \$ to be saved here, but it makes good business sense"</p> <p>Data</p> <p>"value of data – just like real estate, they've got to own it"</p> <p>Role of CEO</p> <p>"5 years ago we created an ad-hoc committee for people interested in 'neat technology'. Members ranged from VPs to programmers. We had no budget, we scrounged for cash. This was very much a grass roots sort of group. We met once every 3 weeks or so and have so far created an Internet site and a corporate Intranet. In addition, we have slowly been creating the capability in the organisation so that once we get the go ahead to do something, we're ready. Folks in this group are from all over. The mix and funding changes depending on who is there"</p> <p>Steering Committees</p> <p>"the management of expectations – we set budgets too early and then never revisit"</p> <p>Flexibility</p> <p>"we pay for future flexibility when we invest in information systems"</p>	<p>"our retail strategy is somewhat entrepreneurial and this is sometimes a challenge for the ISD group in terms of knowing what to plan for"</p> <p>Signalling</p> <p>"utilise technology day-to-day, integrate into daily operations"</p> <p>Role of CEO</p> <p>"responsibility of leaders to create the environment and then the responsibility of individuals to seize that and bring it forward"</p> <p>"to ensure that people don't try to please without thinking of the implications"</p> <p>Architecture</p> <p>"distributed architecture – more effective and efficient systems development"</p> <p>Funding Mechanisms</p> <p>"IT budget not from the operations – no levy (because they would consistently underfund)"</p>
SU - Key Success Factors	<p>Project Management</p> <p>"a more professional, less ad-hoc approach to managing projects"</p>	<p>Systems Development</p> <p>"effective systems development = critical investment"</p>

	<p>Executive Sponsor "leadership"</p> <p>IS Group Functioning "understand the company's system strategy – e.g. we are going to be distributed and not mainframe" "the importance of common systems" "the major IT projects underway and their status" "understand and fell comfortable with the overall budget for systems – i.e. that operations are efficient and that we are investing a lot"</p>	<p>"being pragmatic about solutions" "the NIH syndrome is problematic for many ISD groups, but ours is not reluctant to get outside help and is also wary about customising the hell out of it"</p>
SU - Success Measures	"earned value – meet budget, meet scope, meet time"	"value to the business"
SU - Key Dimension	"links to strategy – because everything else falls out"	"understand where the business is going and then plan for that"
SU - Subjective Assessment	"it varies over your other interviews – D2 for sure"	None provided
IS Performance	"Earned value is a new measure for us but 2 years ago we were at 75%, last year we hit 85%"	<p>"we do have a high level of investment in technology and I believe it does yield value" "it is a big \$ item"</p>

Measure	D1 - IS Executive	D5 – SVP-Franchise Division
Functional Background	Information Systems "has always done IT work but not always in the IT area"	Finance
Tenure - Retail	High	High
Tenure - Company	High	High
Education Background	University Undergraduate Degree: Chemistry MBA	University Undergraduate Degree: Commerce CMA
IS Knowledge	High	Low
Implementation of Previous IS Plans	"Historically poor but getting much better"	"used to be a lousy, lousy reputation within the company. So bad the retail banners went out and hired outside people"
Level of Communication	Frequent Diverse	Frequent Diverse "large meetings are terribly ineffective for dealing with these issues"
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very Important
SU - Dimensionality	4D – "that seems to cover it"	"Yes, all 4 levels"
SU - Vision	<p>Importance of IT</p> <p>"IT fits right smack in the middle"</p> <p>"it is the nervous system of the organisation"</p> <p>"IT will be a phone company, can't work without it but it's not the business"</p> <p>"there is no area that it doesn't touch"</p> <p>"try and run without it"</p> <p>"My notion of the nervous system. IT is not a cost centre, it is not an add-on, it is part of the business. We are operations"</p> <p>Potential of IT</p> <p>"We have been focused on IT as an enabler, we could look further"</p> <p>Technology Positioning</p> <p>"leading edge or old – need to understand the implications of the choice"</p>	<p>Potential of IT</p> <p>"so far IT has been viewed as a means to an end, but it could potentially be the end itself"</p> <p>"has been an enabling role, but could be much more crucial; maybe this is because VP-IS is not elevated high enough, as being fundamental to the business plan"</p> <p>"an awareness of the power of IT"</p>
SU - Senior	Prioritisation Process	Architecture

<p>Management Responsibilities</p>	<p>"the business strategy dictates our priorities. It's up there for all to see"</p> <p>"5 years ago we had a Financial Review Board that set the priorities but it didn't work. Almost all projects got approved, there was no focus and nothing got done. There was ROI gaming and all of us know how to rig that if necessary. Now the business drives everything and that is how it should be"</p> <p>"if you know the links between the business strategy and IT, then everything else falls out"</p> <p>"the difference between running the business (operations) and true investment for the future. For example, in the US, they can capitalise software development"</p> <p>Risk</p> <p>"the importance of managing risk. For example, we have distributed systems that spread risk. I told them there is no \$ to be saved here, but it makes good business sense"</p> <p>Data</p> <p>"value of data – just like real estate, they've got to own it"</p> <p>Role of CEO</p> <p>"5 years ago we created an ad-hoc committee for people interested in 'neat technology'. Members ranged from VPs to programmers. We had no budget, we scrounged for cash. This was very much a grass roots sort of group. We met once every 3 weeks or so and have so far created an Internet site and a corporate Intranet. In addition, we have slowly been creating the capability in the organisation so that once we get the go ahead to do something, we're ready. Folks in this group are from all over. The mix and funding changes depending on who is there"</p> <p>Steering Committees</p> <p>"the management of expectations – we set budgets too early and then never revisit"</p> <p>Flexibility</p> <p>"we pay for future flexibility when we invest in information systems"</p>	<p>"basic knowledge of systems architecture and that architecture is important"</p> <p>Business Processes</p> <p>"pretty good understanding of business processes – where that process is perhaps inadequate, then develop a systems to support the new and improved process"</p> <p>Accountability</p> <p>"senior execs should be accountable for success in this area"</p>
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<p>SU - Key Success Factors</p>	<p>Project Management "a more professional, less ad-hoc approach to managing projects"</p> <p>Executive Sponsor "leadership"</p> <p>IS Group Functioning "understand the company's system strategy – e.g. we are going to be distributed and not mainframe" "the importance of common systems" "the major IT projects underway and their status" "understand and fell comfortable with the overall budget for systems – i.e. that operations are efficient and that we are investing a lot"</p>	<p>Executive Sponsor "systems development requires senior management support"</p> <p>Systems Development "know what should be done, and then how best to get it"</p> <p>Project Team "need the right people to do it – a healthy balance between business and technology – if the balance on the team is skewed too heavily one way or the other, it will screw up"</p>
<p>SU - Success Measures</p>	<p>"earned value – meet budget, meet scope, meet time"</p>	<p>"how it has helped my business"</p>
<p>SU - Key Dimension</p>	<p>"links to strategy – because everything else falls out"</p>	<p>"make senior execs responsible"</p>
<p>SU - Subjective Assessment</p>	<p>"it varies over your other interviews – D2 for sure"</p>	<p>None provided</p>
<p>IS Performance</p>	<p>"Earned value is a new measure for us but 2 years ago we were at 75%, last year we hit 85%"</p>	<p>"have gotten a lot better but still a lot of baggage. The VP IS wears it and the group (IS) wears it"</p>

Measure	D1 - IS Executive	D6 – EVP-Wholesale Services
Functional Background	Information Systems "has always done IT work but not always in the IT area"	H/R Primarily but varied
Tenure - Retail	High	High
Tenure - Company	High	High
Education Background	University Undergraduate Degree: Chemistry MBA	University Undergraduate Degree: Labour Relations
IS Knowledge	High	Low
Implementation of Previous IS Plans	"Historically poor but getting much better"	"too many IS people are entrenched in the old ways. It has not been great in the past"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very Important
SU - Dimensionality	4D – "that seems to cover it"	"absolutely, all 4"
SU - Vision	<p>Importance of IT "IT fits right smack in the middle" "it is the nervous system of the organisation" "IT will be a phone company, can't work without it but it's not the business" "there is no area that it doesn't touch" "try and run without it" "My notion of the nervous system. IT is not a cost centre, it is not an add-on, it is part of the business. We are operations"</p> <p>Potential of IT "We have been focused on IT as an enabler, we could look further"</p> <p>Technology Positioning "leading edge or old – need to understand the implications of the choice"</p>	<p>Importance of IT "IT is an enabler" "important to make sure that the facts (i.e. reliable data) are factored into decision-making" "need to have a good understanding of what's possible and what would we have to do from IT perspective to accomplish the vision" "there is a perception out there that IT can answer everything – this is not correct"</p> <p>Technology Positioning "great copiers – never get caught up in the latest and greatest"</p> <p>Technology Trends "need to be able to understand and compare the whole slew of alternatives – in other words, know what's going on out there"</p>
SU - Senior Management	<p>Prioritisation Process "the business strategy dictates our</p>	<p>Architecture "importance of common systems</p>

<p>Responsibilities</p>	<p>priorities. It's up there for all to see"</p> <p>"5 years ago we had a Financial Review Board that set the priorities but it didn't work. Almost all projects got approved, there was no focus and nothing got done. There was ROI gaming and all of us know how to rig that if necessary. Now the business drives everything and that is how it should be"</p> <p>"if you know the links between the business strategy and IT, then everything else falls out"</p> <p>"the difference between running the business (operations) and true investment for the future. For example, in the US, they can capitalise software development"</p> <p>Risk</p> <p>"the importance of managing risk. For example, we have distributed systems that spread risk. I told them there is no \$ to be saved here, but it makes good business sense"</p> <p>Data</p> <p>"value of data – just like real estate, they've got to own it"</p> <p>Role of CEO</p> <p>"5 years ago we created an ad-hoc committee for people interested in 'neat technology'. Members ranged from VPs to programmers. We had no budget, we scrounged for cash. This was very much a grass roots sort of group. We met once every 3 weeks or so and have so far created an Internet site and a corporate Intranet. In addition, we have slowly been creating the capability in the organisation so that once we get the go ahead to do something, we're ready. Folks in this group are from all over. The mix and funding changes depending on who is there"</p> <p>Steering Committees</p> <p>"the management of expectations – we set budgets too early and then never revisit"</p> <p>Flexibility</p> <p>"we pay for future flexibility when we invest in information systems"</p>	<p>and processes"</p> <p>Planning Process</p> <p>"lets first understand what we need to do as an organisation, and then go for it and use IT if it makes sense"</p> <p>"the implications of the what-ifs of various alternatives"</p> <p>"you can't have an IT person dictate business strategy by driving IT into the business"</p> <p>Accountability</p> <p>"do the business case, quantify the return, hold people accountable for delivering on this return"</p> <p>"can't have a leap of faith, there needs to be a solid business case that provides accountability and responsibility – set the expectations for the return and then hold them accountable"</p> <p>"the business case starts with 'why are we doing it?' is it compliance, is it to gain efficiencies of what; you can quantify these → it is the responsibility of IT to help think through the business case"</p> <p>"the importance of timing – can choose to do the right things but if the timing is bad, then might as well not bother"</p> <p>Absorptive Capacity</p> <p>"need to have good understanding of the current capabilities"</p> <p>Complexity</p> <p>"an appreciation for the complexity of the task"</p> <p>"an appreciation for the resources that have to be applied and when"</p> <p>Role of CEO</p> <p>"partners at the table is how it should work"</p> <p>"IT as partners, not as servants"</p> <p>Steering Committees</p> <p>"we need different types of individuals – business-oriented, leadership, courage, strength, and tenacity to ensure the business case is a valid one"</p>
<p>SU - Key Success</p>	<p>Project Management</p>	<p>Executive Sponsor</p>

Factors	<p>"a more professional, less ad-hoc approach to managing projects"</p> <p>Executive Sponsor</p> <p>"leadership"</p> <p>IS Group Functioning</p> <p>"understand the company's system strategy – e.g. we are going to be distributed and not mainframe"</p> <p>"the importance of common systems"</p> <p>"the major IT projects underway and their status"</p> <p>"understand and feel comfortable with the overall budget for systems – i.e. that operations are efficient and that we are investing a lot"</p>	<p>"having someone at a senior level who can provide the "wait a goddamn minute role" as well as the PR role"</p>
SU - Success Measures	<p>"earned value – meet budget, meet scope, meet time"</p>	<p>"do the business case, quantify the return, hold people accountable for delivering on this return"</p>
SU - Key Dimension	<p>"links to strategy – because everything else falls out"</p>	<p>"the process from a to z – why are we doing it, how does it fit in, generally better appreciate what technology can do"</p>
SU - Subjective Assessment	<p>"it varies over your other interviews – D2 for sure"</p>	<p>None Provided</p>
IS Performance	<p>"Earned value is a new measure for us but 2 years ago we were at 75%, last year we hit 85%"</p>	<p>"has not been great to date but is improving"</p> <p>"current VP-IS is doing a great job in moving forward"</p> <p>"some negative energy still, but improving"</p>

Company E

Measure	E1 – IS Executive	E2 – VP Retail
Functional Background	Information Systems	Store Operations
Tenure – Retail	Moderate	High
Tenure – Company	Moderate	Moderate
Education Background	High School – accepted to University but unable to attend	High School
IS Knowledge	High	Low
Implementation of Previous IS Plans	Prior to '89 there were no meaningful systems at all – the stone age. Between '89 and '92 a dramatic change into the automated world	No comment
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important “...I don't think he understands business period. He has no understanding of technology. That is probably the one point that I have about the VPs of the senior team...the VP Retail wouldn't know how to turn on the machine that is on his desk. That doesn't matter in terms of a lot of things, but it sends a very clear signal out to the organisation that he doesn't understand and the sell to him is impossible. Then you are forced to say, 'I tried to get you on board, but to hell with you, we are doing this'. He doesn't like that and he sends that message out through his organisation. 'Here come those IT bone heads again, we are going to make it hard for them', is the message that goes out.	Very Important
SU – Dimensionality	“I agree with that”	“yes, those seem to be right” “that vision must be understanding, shared understanding. Right up top before you do anything else, and then when you do these other critical investments, very important, are you going to do it or are you not. What are you going to benefit from it. Key success factors, very key. What are the factors to say if its a success or not. Did you deliver on time, did you come in under budget, an you move it, can

		you change it, all of those things.”
SU – Vision	<p>Potential of IT</p> <p>“I keep getting into this debate whether or not IT is strategic within (our organisation), and everybody keeps saying it is because they think that will make me feel better, well it is not. (...) we are tactical at best”</p> <p>“I don’t think it matters whether you are strategic or not, it matters that you know whether you are or not and that you are not creating this expectation management problem for yourself”</p> <p>“...the reality is that we are a very critical part of the organisation, there is no question of that but the things we are dealing with are operational, tactical. Occasionally we steer it a little bit and that is really pushing Internet and getting into some e-commerce stuff. “</p> <p>Importance of IT</p> <p>“my peers out there see IT as really the only way that they can survive”</p> <p>Vision for IT</p> <p>“taking \$ out of the system”</p> <p>Technology Life Cycle</p> <p>“the other thing with the PC is that it is just turning over so quickly and the churning is so bad</p>	<p>Potential of IT</p> <p>“Blank piece of paper now. At store level you need to know things, what are your sales, what are your deposits, and also you should have a line in there for staffing. What I call time and attendance. Too many times, time and attendance is all your manual things, but if you have a computer that can send it in and it is automatic at store level, then you don’t have to cut a cheque”</p> <p>“CADD leads to quicker turnaround time for store planning people”</p> <p>“automated inventory system tells me what doesn’t sell (forecasting)”</p> <p>“information systems remove the human error element”</p> <p>“I have been in 4 different retail operations and it doesn’t matter what you are selling, it is just supply and demand. They should know that you want sales and margins and inventory and all of those things. So I would want to see a program that was no customisation and easy installation.”</p> <p>Technology Life Cycle</p> <p>“have to ask ‘how long has it been on the market, and is it going to change?’ If it is going to be changing, then I’ll wait for the next revolution because it is that much down the road.”</p> <p>Importance of IT</p> <p>“But the value of IS I would think next to retail is the most important division in the works”</p> <p>“The value of IS, I couldn’t put a value on it, but it is right up there”</p>
SU – Senior Management Responsibilities	<p>Planning Process</p> <p>“It is almost an oxymoron, to try and be strategic in an organisation where the ultimate decisions are made up the hill and where the decision making process just doesn’t give you some insight”</p> <p>Funding Mechanisms</p> <p>“I don’t believe in charge back (to the business units) within an</p>	<p>Business Processes</p> <p>“IT Exec needs to find out what drives retail.”</p> <p>“my advice to anybody that hasn’t got a computer system is step back to square zero – what do I need to run my business, zero based budget”</p> <p>Staff Retention</p> <p>“problem of losing good people to</p>

	<p>organisation. Cost identification is worth while, in that it is not their money anyway at the end of the day"</p> <p>Prioritisation Process</p> <p>"I have the money in my budget...so they aren't going to spend my money without my say so. There has to be a good business case, and sometimes that isn't there and I won't do it. That causes some healthy confrontation."</p> <p>Sources of Ideas</p> <p>"you tell me what you need, what the problem is and I'll come up with a solution"</p> <p>Accountability</p> <p>"total lack of accountability and responsibility at the source"</p> <p>"accountability is probably the biggest issue in this entire organisation. There is no corporate accountability at all, and there needs to be"</p> <p>Staff Retention</p> <p>"The market for IS personnel is just overwhelming us now. They leave for higher salaries and who can blame them"</p> <p>Business Processes</p> <p>"IT understands the business well, but a lot of the time the problem is that the business people don't know what their business is"</p> <p>Management Control</p> <p>"there is no meaningful project control"</p> <p>Architecture</p> <p>"What I need are some standards and guidelines for these other sheep that I am trying to herd. That works with varying degrees of success. There are always battles and we pay a price for that"</p> <p>Steering Committees</p> <p>"The steering committee concept works, and again typically that is at the VP level. And the steering committee meets typically once a month and typically very high level status report, any funding issues, any major directional issues."</p> <p>"There is no meaningful project control out there at all. You have all</p>	<p>better jobs and retaining mediocre ones"</p> <p>Competition's Use of IT</p> <p>"you must get out to the shows, you must get out and see what other retailers are doing"</p>
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	the trappings of caring and project control and no real control."	
SU – Key Success Factors	<p>Systems Development</p> <p>"it is amazing how many say, I don't care how you do it just get it done. Then as soon as I choose option 2 over option 1, then they start saying I want a Mac instead of...I think we have a very educated client group out there, who listen to the press and media too much and think that all you do is buy this thing and it works. Everything we do is buy not build, but because of the legacy systems we have here there is always building and there are always interfaces, so you can't just phone the friendly salesman, pay \$750K and just plug it in"</p> <p>Project Team</p> <p>"the major projects that have worked, we have a clear product manager from the user side and an IT team leader from this side"</p> <p>"often you get the deadwood that they don't know what to do with. And the quality of the system reflects this. Other times they will give you a very good person, but only on a part-time basis and that is as ineffective as hell, and a real problem"</p> <p>Executive Sponsor</p> <p>"the difficulty still is getting ownership. It is still very much push from here and that always compromises the effectiveness of a solution, because it is seen as imposed to some degree."</p> <p>Scope-Time-Dollars Trade-offs</p> <p>"I can't build you a house if you don't tell me it is a bungalow or a 2 storey and you can't come along when I am finished and say well now I want an indoor pool at no extra cost and I still want this done in September."</p>	<p>Systems Development</p> <p>"customisation is okay, but only to a point. We rebuilt everything we have and that was wrong"</p> <p>"I want a package off the shelf that I can use right away"</p> <p>"we should be pretty close to the fact that you can buy something off the shelf that will be exactly what you want"</p> <p>Project Team</p> <p>"I have taken a store manager out of a store for the last 3 years. He heads up the project from the retail side. I want the team to know what happens at the store level and the people who are doing the testing on it are a half a dozen of my store managers."</p> <p>Scope-Time-Dollars Trade-offs</p> <p>"When I first started out, you would get the project guy saying, 'you can add this or you can add this but you can't have both. But I want both. Well it is going to cost you'."</p>
SU - Success Measures	<p>"It should be the classic on time, on budget, and did we deliver what we said we would and did we realise the benefits. And we do that, we measure that. But on ongoing stuff, I guess we are almost managing by noise level. So success is little or no bitching or complaining."</p> <p>"I guess success is finally getting it</p>	<p>"timing is critical, you can't take forever to do it, and we always take forever to do it"</p> <p>"so the deliverables are is it on time, does it do what you want to do and can you plop something into it so that you can change the bottom line"</p>

	done. And then some form of measurement of what you did and some form of comparison back to the original requirement, did we come close to delivering what we said we would."	
SU – Key Dimension	"They shouldn't have to manage IT. I guess it would be nice if we got to the point where IT didn't require special attention and management. It does, a lot of it does. That is my job, it shouldn't be their job. I guess back to the core competency thing and all of that. I think they just need to know that IT, a) is there to help them and b) can and will be a value add. They don't need to know the how of that. Their only job is to define whatever the business requirement is, or the business problem."	"my Director of Store Development should know what is out there (technology wise). I know the kind of information that I need to manage my business. Then I leave it to someone else to tell me what is the best thing on that."
SU - Subjective Assessment	VP Finance – HIGH VP Merchandising – HIGH VP Distribution – MODERATE VP H/R – LOW VP Retail – LOW EVP – just not engaged	None given
IS Performance	"Certainly I think we are making a lot more efficient and effective use of our IT resources than we were 3 or 4 years ago" "I think by and large, if we were to do a report card I think we probably would get a 6/10 from most of the guys. Yet it depends on the most recent experience, and that is one of the problems when dealing with an IT shop" "By whatever measure you use, we are successful. But my frustration is to think how successful we could be"	"Better in the last 5 years than in the previous years gone by"

Measure	E1 – IS Executive	E3 – VP – Merchandising
Functional Background	Information Systems	Distribution Information Systems Marketing
Tenure - Retail	Moderate	High
Tenure - Company	Moderate	High
Education Background	High School – accepted to University but unable to attend	University Degree: Business Systems Western Executive Program Western Marketing Program
IS Knowledge	High	High
Implementation of Previous IS Plans	Prior to '89 there were no meaningful systems at all – the stone age. Between '89 and '92 a dramatic change into the automated world	No comment
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important *...I don't think he understands business period. He has no understanding of technology. That is probably the one point that I have about the VPs of the senior team...the VP Retail wouldn't know how to turn on the machine that is on his desk. That doesn't matter in terms of a lot of things, but it sends a very clear signal out to the organisation that he doesn't understand and the sell to him is impossible. Then you are forced to say, 'I tried to get you on board, but to hell with you, we are doing this'. He doesn't like that and he sends that message out through his organisation. 'Here come those IT bone heads again, we are going to make it hard for them', is the message that goes out.	Very Important
SU – Dimensionality	"I agree with that"	"that would be my position"
SU - Vision	Potential of IT "I keep getting into this debate whether or not IT is strategic within (our organisation), and everybody keeps saying it is because they think that will make me feel better, well it is not. (...) we are tactical at best" "I don't think it matters whether you are strategic or not, it matters that you know whether you are or not and	Importance of IT "none of that (being the retailer of choice) can happen without information and none of that can happen without strong technical support or backbone to the system" Vision "I need to have some vision around what kind of information I am going

	<p>that you are not creating this expectation management problem for yourself"</p> <p>"...the reality is that we are a very critical part of the organisation, there is no question of that but the things we are dealing with are operational, tactical. Occasionally we steer it a little bit and that is really pushing Internet and getting into some e-commerce stuff. "</p> <p>Importance of IT</p> <p>"my peers out there see IT as really the only way that they can survive"</p> <p>Vision</p> <p>"taking \$ out of the system"</p> <p>Technology Life Cycle</p> <p>"the other thing with the PC is that it is just turning over so quickly and the churning is so bad</p>	<p>to need to make better decisions tomorrow"</p> <p>Technology Life Cycle</p> <p>"I am not going to think through, have to think through what sort of platform is needs to sit on, how much it that platform going to cost, or what sort of technology I need to invest in the support on that, how fragile is that technology, am I going to have to replace my PC's every three years"</p> <p>"To stay current with whatever software is driving it."</p>
<p>SU - Senior Management Responsibilities</p>	<p>Planning Process</p> <p>"It is almost an oxymoron, to try and be strategic in an organisation where the ultimate decisions are made up the hill and where the decision making process just doesn't give you some insight"</p> <p>Funding Mechanisms</p> <p>"I don't believe in charge back (to the business units) within an organisation. Cost identification is worth while, in that it is not their money anyway at the end of the day"</p> <p>Prioritisation Process</p> <p>"I have the money in my budget...so they aren't going to spend my money without my say so. There has to be a good business case, and sometimes that isn't there and I won't do it. That causes some healthy confrontation."</p> <p>Sources of Ideas</p> <p>"you tell me what you need, what the problem is and I'll come up with a solution"</p> <p>Accountability</p> <p>"total lack of accountability and responsibility at the source"</p> <p>"accountability is probably the biggest issue in this entire organisation. There is no corporate accountability at all, and there needs to be"</p>	<p>Sources of Ideas</p> <p>"as a merchandising group, our responsibility is to be able to articulate our environment and articulate where we want to go"</p> <p>Prioritisation Process</p> <p>"We are becoming better at those types of things, we are becoming better at our payback analysis"</p> <p>"I mean this is a nice to have, got to have, you know spend some time justifying why we want to invest \$10K changing this system versus \$10K in another IT opportunity. So we are getting better at that, at IT payback, but we are not there yet, we still have the entitlement mindset, 'oh I need that change because I said, and so what is your problem, just do it. I'm the customer, just support me!'</p> <p>Architecture</p> <p>"E1 and his folks have to say, going down the road, we are going to support these software sets and this is the technology platform we are going to drive off"</p> <p>Business Processes</p> <p>"I think you have to have an understanding of what processes are key to your business, what your objectives are at the end of the day"</p>

	<p>Staff Retention "The market for IS personnel is just overwhelming us now. They leave for higher salaries and who can blame them"</p> <p>Business Processes "IT understands the business well, but a lot of the time the problem is that the business people don't know what their business is"</p> <p>Management Control "there is no meaningful project control"</p> <p>Architecture "What I need are some standards and guidelines for these other sheep that I am trying to herd. That works with varying degrees of success. There are always battles and we pay a price for that"</p> <p>Steering Committees "The steering committee concept works, and again typically that is at the VP level. And the steering committee meets typically once a month and typically very high level status report, any funding issues, any major directional issues." "There is no meaningful project control out there at all. You have all the trappings of caring and project control and no real control."</p>	<p>Staff Retention "We had trouble attracting good people and that has just gotten worse over time"</p> <p>Accountability "the VP IT would have corollary pieces in his plan so when he gets reviewed and I get reviewed we are talking about the same piece of work and we are going to get the same mark. You can't say "well I got a 90 and he get a 30". It just doesn't work that way. If we don't work together, it ain't happening, so we get the same mark."</p> <p>Steering Committees "In terms of who did you put on the project, how closely did you monitor it, we tend to have a steering committee approach that works"</p>
<p>SU – Key Success Factors</p>	<p>Systems Development "it is amazing how many say, I don't care how you do it just get it done. Then as soon as I choose option 2 over option 1, then they start saying I want a Mac instead of...I think we have a very educated client group out there, who listen to the press and media too much and think that all you do is buy this thing and it works. Everything we do is buy not build, but because of the legacy systems we have here there is always building and there are always interfaces, so you can't just phone the friendly salesman, pay \$750K and just plug it in"</p> <p>Project Team "the major projects that have worked, we have a clear product manager"</p>	<p>Systems Development "we had an uneven implementation because we had an uneven user group of what their needs were and then supporting the development and implementation" "I would be more rigorous around taking a vanilla package and customising it in the least amount of time" "I need to minimise the changes I make to the package" "they think of (the scope of a project) on an itemised basis, not globally"</p> <p>Change Management "managing change"</p> <p>Executive Sponsor "I need a champion and a leader"</p>

	<p>from the user side and an IT team leader from this side”</p> <p>“often you get the deadwood that they don’t know what to do with. And the quality of the system reflects this. Other times they will give you a very good person, but only on a part-time basis and that is as ineffective as hell, and a real problem”</p> <p>Executive Sponsor</p> <p>“the difficulty still is getting ownership. It is still very much push from here and that always compromises the effectiveness of a solution, because it is seen as imposed to some degree.”</p> <p>Scope-Time-Dollars Trade-offs</p> <p>“I can’t build you a house if you don’t tell me it is a bungalow or a 2 storey and you can’t come along when I am finished and say well now I want an indoor pool at no extra cost and I still want this done in September.”</p>	<p>and someone who understands what we are trying to do”</p> <p>Scope-Time-Dollars Trade-offs</p> <p>“They just say ‘I just want that piece in the middle’. So you say, ‘okay I’ll deliver that piece in the middle’. And then as they work their way through it they say, ‘you know what, if you could change this to do that, boy this would be a lot better’. And I say, ‘if you had thought about what I said to you in the beginning, you might have had that’. And then you get into this change process, continually changing things, because people think about it on an itemised basis, and they don’t think about it globally...so they get frustrated.”</p>
SU – Success Measures	<p>“It should be the classic on time, on budget, and did we deliver what we said we would and did we realise the benefits. And we do that, we measure that. But on ongoing stuff, I guess we are almost managing by noise level. So success is little or no bitching or complaining.”</p> <p>“I guess success is finally getting it done. And then some form of measurement of what you did and some form of comparison back to the original requirement, did we come close to delivering what we said we would.”</p>	<p>“IT delivers planned functionality”</p>
SU – Key Dimension	<p>“They shouldn’t have to manage IT. I guess it would be nice if we got to the point where IT didn’t require special attention and management. It does, a lot of it does. That is my job, it shouldn’t be their job. I guess back to the core competency thing and all of that. I think they just need to know that IT, a) is there to help them and b) can and will be a value add. They don’t need to know the how of that. Their only job is to define whatever the business requirement is, or the business problem.”</p>	<p>“I don’t want my people trying to solve technical problems because they just don’t understand it and I don’t want the information technology people trying to limit my business because they have found something that is convenient for them”</p> <p>“I think you have to see the solution presented in terms of the problem. I think you have to say ‘OK, I articulated these, show me how your solution meets those, tell me where the pitfalls are, tell me where I am exposed”</p>
SU - Subjective	VP Finance – HIGH	None given

Assessment	<p>VP Merchandising – HIGH VP Distribution – MODERATE VP H/R – LOW VP Retail – LOW EVP – just not engaged</p>	
IS Performance	<p>“Certainly I think we are making a lot more efficient and effective use of our IT resources than we were 3 or 4 years ago”</p> <p>“I think by and large, if we were to do a report card I think we probably would get a 6/10 from most of the guys. Yet it depends on the most recent experience, and that is one of the problems when dealing with an IT shop”</p> <p>“By whatever measure you use, we are successful. But my frustration is to think how successful we could be”</p>	<p>“I would say that we were anywhere from an 8-9 out of 10 on our financial systems, to a 5-6 on some of our other systems, the ones not on a shared responsibility basis. We didn’t understand what we wanted as much as we should have and the technical people were not as supportive as they could have been.”</p>

Measure	E1 – IS Executive	E4 – EVP
Functional Background	Information Systems	Store Operations
Tenure - Retail	Moderate	HIGH
Tenure - Company	Moderate	Moderate
Education Background	High School – accepted to University but unable to attend	Community College – Retail
IS Knowledge	High	Low
Implementation of Previous IS Plans	"Prior to '89 there were no meaningful systems at all – the stone age. Between '89 and '92 a dramatic change into the automated world"	"when we made our big push, things took twice as long as they should have. We were computer illiterate, the learning curve was steep, there was a lot of concern about computerisation and jobs"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important "...I don't think he understands business period. He has no understanding of technology. That is probably the one point that I have about the VPs of the senior team...the VP Retail wouldn't know how to turn on the machine that is on his desk. That doesn't matter in terms of a lot of things, but it sends a very clear signal out to the organisation that he doesn't understand and the sell to him is impossible. Then you are forced to say, 'I tried to get you on board, but to hell with you, we are doing this'. He doesn't like that and he sends that message out through his organisation. 'Here come those IT bone heads again, we are going to make it hard for them', is the message that goes out.	Very Important "(the business) needs to know what technology can do, and how it does it, what is its potential, can it do the things that are up here(in my head) that I would like to know"
SU - Dimensionality	"I agree with that"	"that covers it"
SU - Vision	Potential of IT "I keep getting into this debate whether or not IT is strategic within (our organisation), and everybody keeps saying it is because they think that will make me feel better, well it is not. (...) we are tactical at best" "I don't think it matters whether you are strategic or not, it matters that you know whether you are or not and that you are not creating this	Technology Life Cycle "you no sooner get something in and there is a better solution" Importance of IT "I really believe that technology is such a core part of our business, any retail business. Hard to comprehend how we ever did without it" "information systems should be a

	<p>expectation management problem for yourself”</p> <p>“...the reality is that we are a very critical part of the organisation, there is no question of that but the things we are dealing with are operational, tactical. Occasionally we steer it a little bit and that is really pushing Internet and getting into some e-commerce stuff.”</p> <p>Importance of IT</p> <p>“my peers out there see IT as really the only way that they can survive”</p> <p>Vision</p> <p>“taking \$ out of the system”</p> <p>Technology Life Cycle</p> <p>“the other thing with the PC is that it is just turning over so quickly and the churning is so bad</p>	<p>strategic driver, but executives don't deal with IT effectively”</p> <p>Vision</p> <p>“each divisional Vice President has to merge with that corporate vision”</p> <p>“VP-IS has to have clarity of vision as to where he wants his division to go. If not, we have troubles creating anything that is going to be valuable”</p> <p>Potential of IT</p> <p>“have to know what technology can do, and how it does it, what is its potential, can it do what I want”</p>
<p>SU - Senior Management Responsibilities</p>	<p>Planning Process</p> <p>“It is almost an oxymoron, to try and be strategic in an organisation where the ultimate decisions are made up the hill and where the decision making process just doesn't give you some insight”</p> <p>Funding Mechanisms</p> <p>“I don't believe in charge back (to the business units) within an organisation. Cost identification is worth while, in that it is not their money anyway at the end of the day”</p> <p>Prioritisation Process</p> <p>“I have the money in my budget...so they aren't going to spend my money without my say so. There has to be a good business case, and sometimes that isn't there and I won't do it. That causes some healthy confrontation.”</p> <p>Sources of Ideas</p> <p>“you tell me what you need, what the problem is and I'll come up with a solution”</p> <p>Accountability</p> <p>“total lack of accountability and responsibility at the source”</p> <p>“accountability is probably the biggest issue in this entire organisation. There is no corporate accountability at all, and there needs to be”</p> <p>Staff Retention</p>	<p>Accountability</p> <p>“the store manager is not judged on anything. Isn't judged on sales, expense control, profit or anything, so why do I need this information? Why do I need a P&L? Because we want to know how well you're doing. Or how badly I'm doing is what he's afraid of”</p> <p>Funding Mechanisms</p> <p>“funds (for info/sys) weren't a problem because have a level of VP's below who are instrumental”</p> <p>Planning Process</p> <p>“IT says to the user 'what do you want to do, tell me what you want to do and I'll build a system for you”</p> <p>Sources of Ideas</p> <p>“VP-IT asks the right questions”</p> <p>Steering Committees</p> <p>“each of the VP's as well as the IT guy had to wear a couple of hats because you couldn't have tunnel vision in its own division”</p> <p>“there needs to be that communication when systems are being developed to make sure that it happens”</p>

	<p>"The market for IS personnel is just overwhelming us now. They leave for higher salaries and who can blame them"</p> <p>Business Processes "IT understands the business well, but a lot of the time the problem is that the business people don't know what their business is"</p> <p>Management Control "there is no meaningful project control"</p> <p>Architecture "What I need are some standards and guidelines for these other sheep that I am trying to herd. That works with varying degrees of success. There are always battles and we pay a price for that"</p> <p>Steering Committees "The steering committee concept works, and again typically that is at the VP level. And the steering committee meets typically once a month and typically very high level status report, any funding issues, any major directional issues." "There is no meaningful project control out there at all. You have all the trappings of caring and project control and no real control."</p>	
<p>SU – Key Success Factors</p>	<p>Systems Development "it is amazing how many say, I don't care how you do it just get it done. Then as soon as I choose option 2 over option 1, then they start saying I want a Mac instead of...I think we have a very educated client group out there, who listen to the press and media too much and think that all you do is buy this thing and it works. Everything we do is buy not build, but because of the legacy systems we have here there is always building and there are always interfaces, so you can't just phone the friendly salesman, pay \$750K and just plug it in"</p> <p>Project Team "the major projects that have worked, we have a clear product manager from the user side and an IT team"</p>	

	<p>leader from this side"</p> <p>"often you get the deadwood that they don't know what to do with. And the quality of the system reflects this. Other times they will give you a very good person, but only on a part-time basis and that is as ineffective as hell, and a real problem"</p> <p>Executive Sponsor</p> <p>"the difficulty still is getting ownership. It is still very much push from here and that always compromises the effectiveness of a solution, because it is seen as imposed to some degree."</p> <p>Scope-Time-Dollars Trade-offs</p> <p>"I can't build you a house if you don't tell me it is a bungalow or a 2 storey and you can't come along when I am finished and say well now I want an indoor pool at no extra cost and I still want this done in September."</p>	
SU - Success Measures	<p>"It should be the classic on time, on budget, and did we deliver what we said we would and did we realise the benefits. And we do that, we measure that. But on ongoing stuff, I guess we are almost managing by noise level. So success is little or no bitching or complaining."</p> <p>"I guess success is finally getting it done. And then some form of measurement of what you did and some form of comparison back to the original requirement, did we come close to delivering what we said we would."</p>	"value to the business"
SU – Key Dimension	<p>"They shouldn't have to manage IT. I guess it would be nice if we got to the point where IT didn't require special attention and management. It does, a lot of it does. That is my job, it shouldn't be their job. I guess back to the core competency thing and all of that. I think they just need to know that IT, a) is there to help them and b) can and will be a value add. They don't need to know the how of that. Their only job is to define whatever the business requirement is, or the business problem."</p>	Not reported
SU – Subjective Assessment	<p>VP Finance – HIGH</p> <p>VP Merchandising – HIGH</p> <p>VP Distribution – MODERATE</p>	<p>VP Finance – HIGH</p> <p>VP Merchandising – HIGH</p> <p>No comment on the others</p>

	<p>VP H/R – LOW VP Retail – LOW EVP – just not engaged</p>	
IS Performance	<p>“Certainly I think we are making a lot more efficient and effective use of our IT resources than we were 3 or 4 years ago”</p> <p>“I think by and large, if we were to do a report card I think we probably would get a 6/10 from most of the guys. Yet it depends on the most recent experience, and that is one of the problems when dealing with an IT shop”</p> <p>“By whatever measure you use, we are successful. But my frustration is to think how successful we could be”</p>	<p>“What has been the major contributor, how the organisation looks to the board and operates today versus 1988, IT would be right up there at the top”</p> <p>“the VP IS is a great guy, extremely bright, good sense of humour. He is the right guy. Whenever there is a new system, he asks the right questions. Which is good, because they (the VPs) don’t know the questions to ask, so he asks them.”</p>

Measure	E1 – IS Executive	E5 – VP-Human Resources
Functional Background	Information Systems	Human Resources; Labour Relations
Tenure - Retail	Moderate	High
Tenure - Company	Moderate	Moderate
Education Background	High School – accepted to University but unable to attend	University Undergraduate Teacher's College
IS Knowledge	High	Low
Implementation of Previous IS Plans	Prior to '89 there were no meaningful systems at all – the stone age. Between '89 and '92 a dramatic change into the automated world	"I've been frustrated for the last 2 or 3 years. For the new HRMIS, it took a very long time to get it to where we were comfortable that it could do the job, at least the basic job with some degree of creditability and accuracy."
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important "...I don't think he understands business period. He has no understanding of technology. That is probably the one point that I have about the VPs of the senior team...the VP Retail wouldn't know how to turn on the machine that is on his desk. That doesn't matter in terms of a lot of things, but it sends a very clear signal out to the organisation that he doesn't understand and the sell to him is impossible. Then you are forced to say, 'I tried to get you on board, but to hell with you, we are doing this'. He doesn't like that and he sends that message out through his organisation. 'Here come those IT bone heads again, we are going to make it hard for them', is the message that goes out.	Very Important
SU - Dimensionality	"I agree with that"	
SU - Vision	Potential of IT "I keep getting into this debate whether or not IT is strategic within (our organisation), and everybody keeps saying it is because they think that will make me feel better, well it is not. (...) we are tactical at best" "I don't think it matters whether you are strategic or not, it matters that	Technology Life Cycle "frustration with keeping up with this stuff is that it changes so quickly" "I guess it is the same with a lot of IT stuff that what was supposedly a good system 5 years ago, had I known about it, today is passé" Key Technologies "I should probably be better versed in what technologies are available

	<p>you know whether you are or not and that you are not creating this expectation management problem for yourself"</p> <p>"...the reality is that we are a very critical part of the organisation, there is no question of that but the things we are dealing with are operational, tactical. Occasionally we steer it a little bit and that is really pushing Internet and getting into some e-commerce stuff. "</p> <p>Importance of IT</p> <p>"my peers out there see IT as really the only way that they can survive"</p> <p>Vision</p> <p>"taking \$ out of the system"</p> <p>Technology Life Cycle</p> <p>"the other thing with the PC is that it is just turning over so quickly and the churning is so bad</p>	<p>today out there for an organisation of this size"</p> <p>"To know the pros and cons of the top three or four or five or whatever out there would be a good thing"</p>
<p>SU - Senior Management Responsibilities</p>	<p>Planning Process</p> <p>"It is almost an oxymoron, to try and be strategic in an organisation where the ultimate decisions are made up the hill and where the decision making process just doesn't give you some insight"</p> <p>Funding Mechanisms</p> <p>"I don't believe in charge back (to the business units) within an organisation. Cost identification is worth while, in that it is not their money anyway at the end of the day"</p> <p>Prioritisation Process</p> <p>"I have the money in my budget...so they aren't going to spend my money without my say so. There has to be a good business case, and sometimes that isn't there and I won't do it. That causes some healthy confrontation."</p> <p>Sources of Ideas</p> <p>"you tell me what you need, what the problem is and I'll come up with a solution"</p> <p>Accountability</p> <p>"total lack of accountability and responsibility at the source"</p>	<p>Sources of Ideas</p> <p>"info/sys projects can be driven by other divisions for their own needs"</p> <p>Prioritisation Process</p> <p>"there is an IT plan, anyone can input their priorities"</p> <p>Architecture</p> <p>"where we should be going and what kind of architecture we should evolve to"</p> <p>Steering Committees</p> <p>"let's not bring every little problem to the steering committee for the VPs to decide every little thing"</p> <p>"meet every 2 to 4 weeks for a brief meeting. It should be 'this is where we have come from, we have corrected all these problems on our own, we only have one major thing for you to talk about which is X, Y or Z, and that is it"</p>

	<p>"accountability is probably the biggest issue in this entire organisation. There is no corporate accountability at all, and there needs to be"</p> <p>Staff Retention</p> <p>"The market for IS personnel is just overwhelming us now. They leave for higher salaries and who can blame them"</p> <p>Business Processes</p> <p>"IT understands the business well, but a lot of the time the problem is that the business people don't know what their business is"</p> <p>Management Control</p> <p>"there is no meaningful project control"</p> <p>Architecture</p> <p>"What I need are some standards and guidelines for these other sheep that I am trying to herd. That works with varying degrees of success. There are always battles and we pay a price for that"</p> <p>Steering Committees</p> <p>"The steering committee concept works, and again typically that is at the VP level. And the steering committee meets typically once a month and typically very high level status report, any funding issues, any major directional issues."</p> <p>"There is no meaningful project control out there at all. You have all the trappings of caring and project control and no real control."</p>	
<p>SU – Key Success Factors</p>	<p>Systems Development</p> <p>"it is amazing how many say, I don't care how you do it just get it done. Then as soon as I choose option 2 over option 1, then they start saying I want a Mac instead of...I think we have a very educated client group out there, who listen to the press and media too much and think that all you do is buy this thing and it works. Everything we do is buy not build, but because of the legacy systems we have here there is always building and there are always interfaces, so you can't just</p>	<p>Executive Sponsor</p> <p>"part of the frustration is that we are still a mainframe kind of mentality which inhibits ownership"</p> <p>Systems Development</p> <p>"(package customisation) is sometimes necessary, but can cause a lot of problems"</p> <p>"people got frustrated because you are buying this new system, installing it and then you wind up having to change"</p> <p>Project Team</p> <p>"people on the (project) team have</p>

	<p>phone the friendly salesman, pay \$750K and just plug it in"</p> <p>Project Team</p> <p>"the major projects that have worked, we have a clear product manager from the user side and an IT team leader from this side"</p> <p>"often you get the deadwood that they don't know what to do with. And the quality of the system reflects this. Other times they will give you a very good person, but only on a part-time basis and that is as ineffective as hell, and a real problem"</p> <p>Executive Sponsor</p> <p>"the difficulty still is getting ownership. It is still very much push from here and that always compromises the effectiveness of a solution, because it is seen as imposed to some degree."</p> <p>Scope-Time-Dollars Trade-offs</p> <p>"I can't build you a house if you don't tell me it is a bungalow or a 2 storey and you can't come along when I am finished and say well now I want an indoor pool at no extra cost and I still want this done in September."</p>	<p>to be in sync"</p> <p>"the people on the team really need to be in sync with one another"</p> <p>"the team leader really needs to be top notch"</p> <p>"choosing the right people to be on the team in terms of personalities but also in terms of expertise, being able to contribute easily"</p>
<p>SU - Success Measures</p>	<p>"It should be the classic on time, on budget, and did we deliver what we said we would and did we realise the benefits. And we do that, we measure that. But on ongoing stuff, I guess we are almost managing by noise level. So success is little or no bitching or complaining."</p> <p>"I guess success is finally getting it done. And then some form of measurement of what you did and some form of comparison back to the original requirement, did we come close to delivering what we said we would."</p>	<p>"I could say the traditional things, you have milestones and if everything was completed, sure that is the bottom line, that is the measure"</p> <p>"I guess having gone through this other one (other project), I think I could just feel, attending meetings and just the feedback of people on the team, whether it was successful or not just by the enthusiasm of doing the various stages"</p> <p>"(on the committee) if the roles were properly defined and it was clear that people were sticking to what the roles were intended to be, that would be a measure of success too"</p>
<p>SU - Key Dimension</p>	<p>"They shouldn't have to manage IT. I guess it would be nice if we got to the point where IT didn't require special attention and management. It does, a lot of it does. That is my</p>	<p>"Specifically, I'm not sure where, except like motherhood, there is no escape so you have to try and become more comfortable with everything and more</p>

	<p>job, it shouldn't be their job. I guess back to the core competency thing and all of that. I think they just need to know that IT, a) is there to help them and b) can and will be a value add. They don't need to know the how of that. Their only job is to define whatever the business requirement is, or the business problem."</p>	<p>knowledgeable"</p>
<p>SU – Subjective Assessment</p>	<p>VP Finance – HIGH VP Merchandising – HIGH VP Distribution – MODERATE VP H/R – LOW VP Retail – LOW EVP – just not engaged</p>	<p>None provided</p>
<p>IS Performance</p>	<p>"Certainly I think we are making a lot more efficient and effective use of our IT resources than we were 3 or 4 years ago"</p> <p>"I think by and large, if we were to do a report card I think we probably would get a 6/10 from most of the guys. Yet it depends on the most recent experience, and that is one of the problems when dealing with an IT shop"</p> <p>"By whatever measure you use, we are successful. But my frustration is to think how successful we could be"</p>	<p>"When I first started here, there were lots of complaints, this goes back 8 years. Compared to 8 years ago, there is just no comparison to 8 years ago. Things have improved. I don't know what to measure it against. Sure it could be better, everybody gets frustrated sometimes, but I don't have a good benchmark with which to make a valid critique"</p>

Measure	E1 – IS Executive	E6 – VP-Finance and Admin.
Functional Background	Information Systems	Finance and Administration
Tenure - Retail	Moderate	High
Tenure - Company	Moderate	High
Education Background	High School – accepted to University but unable to attend	University Undergraduate Degree in Administration CMA, CIM, CCM
IS Knowledge	High	High
Implementation of Previous IS Plans	Prior to '89 there were no meaningful systems at all – the stone age. Between '89 and '92 a dramatic change into the automated world	“In this organisation, in 1987 we were doing programming on punch cards – the users. We put our first financial system in in 1987. \$2B a year corporation and we had a paper clip and a ledger up until 1989” “We have gone through a fair amount of technological change since then”
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important “...I don't think he understands business period. He has no understanding of technology. That is probably the one point that I have about the VPs of the senior team...the VP Retail wouldn't know how to turn on the machine that is on his desk. That doesn't matter in terms of a lot of things, but it sends a very clear signal out to the organisation that he doesn't understand and the sell to him is impossible. Then you are forced to say, 'I tried to get you on board, but to hell with you, we are doing this'. He doesn't like that and he sends that message out through his organisation. 'Here come those IT bone heads again, we are going to make it hard for them', is the message that goes out.	Very Important
SU - Dimensionality	“I agree with that”	“yes, all four”
SU - Vision	Potential of IT “I keep getting into this debate whether or not IT is strategic within (our organisation), and everybody keeps saying it is because they think that will make me feel better,	Importance of IT “technology is a tool like any other tool and therefore you need to manage it in a way that you would manage anything else that you were giving somebody else to work with”

	<p>well it is not. (...) we are tactical at best"</p> <p>"I don't think it matters whether you are strategic or not, it matters that you know whether you are or not and that you are not creating this expectation management problem for yourself"</p> <p>"...the reality is that we are a very critical part of the organisation, there is no question of that but the things we are dealing with are operational, tactical. Occasionally we steer it a little bit and that is really pushing Internet and getting into some e-commerce stuff. "</p> <p>Importance of IT</p> <p>"my peers out there see IT as really the only way that they can survive"</p> <p>Vision</p> <p>"taking \$ out of the system"</p> <p>Technology Life Cycle</p> <p>"the other thing with the PC is that it is just turning over so quickly and the churning is so bad</p>	
<p>SU - Senior Management Responsibilities</p>	<p>Planning Process</p> <p>"It is almost an oxymoron, to try and be strategic in an organisation where the ultimate decisions are made up the hill and where the decision making process just doesn't give you some insight"</p> <p>Funding Mechanisms</p> <p>"I don't believe in charge back (to the business units) within an organisation. Cost identification is worth while, in that it is not their money anyway at the end of the day"</p> <p>Prioritisation Process</p> <p>"I have the money in my budget...so they aren't going to spend my money without my say so. There has to be a good business case, and sometimes that isn't there and I won't do it. That causes some healthy confrontation."</p> <p>Sources of Ideas</p> <p>"you tell me what you need, what the problem is and I'll come up with a solution"</p>	<p>Architecture</p> <p>"so I am more interested in the information architecture and the information structure than I am in the technology structure"</p> <p>"I have to rely somewhat on the people who are charged with overseeing the infrastructure of the technology"</p> <p>Steering Committees</p> <p>"I don't think they tend to bring the focus on management on a project"</p> <p>Accountability</p> <p>"the project team should be fully accountable for the project"</p> <p>"there has to be a charging of a project team in such a way that the project team understands that they are fully accountable for the project"</p> <p>"when you get a project that has to get done and the overall requirements of the organisation will drive a project and something that is good is everybody does get this common purpose because they realise they are all on the hook"</p>

	<p>Accountability “total lack of accountability and responsibility at the source” “accountability is probably the biggest issue in this entire organisation. There is no corporate accountability at all, and there needs to be”</p> <p>Staff Retention “The market for IS personnel is just overwhelming us now. They leave for higher salaries and who can blame them”</p> <p>Business Processes “IT understands the business well, but a lot of the time the problem is that the business people don’t know what their business is”</p> <p>Management Control “there is no meaningful project control”</p> <p>Architecture “What I need are some standards and guidelines for these other sheep that I am trying to herd. That works with varying degrees of success. There are always battles and we pay a price for that”</p> <p>Steering Committees “The steering committee concept works, and again typically that is at the VP level. And the steering committee meets typically once a month and typically very high level status report, any funding issues, any major directional issues.” “there is no meaningful project control out there at all. You have all the trappings of caring and project control and no real control.”</p>	<p>Planning Process “they don’t put the appropriate emphasis on planning” “...it comes back to planning”</p> <p>Steering Committees “the development process required little involvement from the senior team. Otherwise you find that people will push all of their problems up so than they get dealt with at the top and I don’t think that is a productive way. I think that you should try and have the resolutions to those situations that the people you have put in charge of running the various aspects of your project and if you can get the right synergy together there on those individuals then the project gets delivered well”</p> <p>Signalling “The EVP is not a technology guy. He understands the power of technology, but he himself is not very technically literate. I think this year he finally got a PC and turned it on. He used to sit there and never turn it on, so they finally gave him some training on that. But he won’t use the email system. He doesn’t realise and I don’t think he understands that when he doesn’t use it, nobody uses it”</p>
<p>SU – Key Success Factors</p>	<p>Systems Development “it is amazing how many say, I don’t care how you do it just get it done. Then as soon as I choose option 2 over option 1, then they start saying I want a Mac instead of...I think we have a very educated client group out there, who listen to the press and media too much and think that all you do is buy this thing and it works. Everything we do is buy not build, but because of the</p>	<p>Systems Development “I have some concerns that the integration of all the existing interfaces into that technology and into my system will be maintained and the integrity of that data will be maintained” “it is a lot easier to take a standard package and adjust your business structure around that so that when there are changes to software your business is going to go right along</p>

	<p>legacy systems we have here there is always building and there are always interfaces, so you can't just phone the friendly salesman, pay \$750K and just plug it in"</p> <p>Project Team</p> <p>"the major projects that have worked, we have a clear product manager from the user side and an IT team leader from this side"</p> <p>"often you get the deadwood that they don't know what to do with. And the quality of the system reflects this. Other times they will give you a very good person, but only on a part-time basis and that is as ineffective as hell, and a real problem"</p> <p>Executive Sponsor</p> <p>"the difficulty still is getting ownership. It is still very much push from here and that always compromises the effectiveness of a solution, because it is seen as imposed to some degree."</p> <p>Scope-Time-Dollars Trade-offs</p> <p>"I can't build you a house if you don't tell me it is a bungalow or a 2 storey and you can't come along when I am finished and say well now I want an indoor pool at no extra cost and I still want this done in September."</p>	<p>with it"</p> <p>"it doesn't make any sense to invest in customised software"</p> <p>Testing</p> <p>"...and they don't put the appropriate emphasis on testing, the end result is that they end up with a system that requires a tonne of changes"</p> <p>Project Team</p> <p>"what works is if you can have 2 individuals, one from the technology side and one from the user side that are really committed to working together to get the project in"</p> <p>"if it is an important system there should be full time involvement and a separate workspace"</p> <p>"we tend to find that systems that my staff tend to be directly involved in have much better track history than systems that do not"</p> <p>Executive Sponsor</p> <p>"success of the project depends primarily on project management by the project champion (who is not necessarily IT)"</p> <p>Scope-Time-Dollars Trade-offs</p> <p>"a project is much easier to manage is they are not always running around doing a lot of change requirements to the plan and to the schedule and then to the budget ultimately"</p> <p>"unfortunately the actual deadline never changes, so you get compression on the other components of the project and usually it is testing that gets short changed"</p>
SU – Success Measures	<p>"It should be the classic on time, on budget, and did we deliver what we said we would and did we realise the benefits. And we do that, we measure that. But on ongoing stuff, I guess we are almost managing by noise level. So success is little or no bitching or complaining."</p> <p>"I guess success is finally getting it done. And then some form of measurement of what you did and</p>	<p>"you are not constrained the moment you get the technology, the hardware, from any future changes to your business"</p> <p>"I am looking for applications that are as flexible as possible for as long as possible"</p>

	some form of comparison back to the original requirement, did we come close to delivering what we said we would."	
SU – Key Dimension	"They shouldn't have to manage IT. I guess it would be nice if we got to the point where IT didn't require special attention and management. It does, a lot of it does. That is my job, it shouldn't be their job. I guess back to the core competency thing and all of that. I think they just need to know that IT, a) is there to help them and b) can and will be a value add. They don't need to know the how of that. Their only job is to define whatever the business requirement is, or the business problem."	"You see, my view has changed somewhat. "We have a core set of requirements that we want to accomplish. The actual technology that's used to deliver those requirements, in some respects is not as great of a concern to me as what it once was...I'm more interested in the architecture"
SU – Subjective Assessment	VP Finance – HIGH VP Merchandising – HIGH VP Distribution – MODERATE VP H/R – LOW VP Retail – LOW EVP – just not engaged	EVP – LOW VP Retail – LOW VP Merchandising – HIGH VP Distribution – MODERATE VP H/R – LOW
IS Performance	"Certainly I think we are making a lot more efficient and effective use of our IT resources than we were 3 or 4 years ago" "I think by and large, if we were to do a report card I think we probably would get a 6/10 from most of the guys. Yet it depends on the most recent experience, and that is one of the problems when dealing with an IT shop" "By whatever measure you use, we are successful. But my frustration is to think how successful we could be"	"we are getting better, and we've come a long way"

Company F

Measure	F1 – IS Executive	F2 – Managing Director
Functional Background	Information Systems	Store Management/General Management
Tenure - Retail	High	High
Tenure - Company	High	High (25 years)
Education Background	University Undergraduate Degree: Town and Country Planning “ a lot of project management is about getting element done before hand. So you can't build a house until you have the infrastructure. So there's a lot of similarities when you are planning a building”	A levels in the UK -> High School
IS Knowledge	High “I ran the user side before, now I am running the information technology side”	Low
Implementation of Previous IS Plans	“when I arrived, there were no computers. They resisted for ages. There was a president here who I scared by saying that at Head Office overseas they are very technical and if you don't get on board now, you will be so far behind you will be out of it.” “we were in the dark ages” “we've moved from the 'I hate those IT people and they don't do anything for us' to 'they are actively helping us manage the business”	No experience
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very Important
SU - Dimensionality	4D – “You have got have a vision for discussion. So you have got to have the idea. And you have got to have all these things: you have to be able to market it, and talk about it, and to communicate about it and buy some support – get everybody interested and understanding it. Then obviously you have to have the people who are going to work with details so you can determine the way to get this wonderful idea to work. Because sometimes you get these people with	4D – “being through the what we need to do and why do we need it, I need to know how much it will be. And to a lesser extent, and I guess this is where I have changed over the last few years, but to a lesser extent, I need to understand how they roll it out. I said to a lesser extent I think because I am less interested in the detail of the practicality of that aspect of it. I am interested only if it has an impact. I would want to know which is the

	<p>great ideas, and none of the answers. So the attention to detail people are critical. Then you have got to measure the quality of it, checking to make sure that the quality is successful. All of the different stages down the line."</p>	<p>first store. They are going to do more than 2. At what stage are they going to review it. When does it go through the biggest chunk and when are they doing to complete it. Do they have a team in to do it. What they did do, and I did agree with them, is that they would bring somebody in from one of the stores for a year (for the POS system)</p>
SU - Vision	<p>Vision "you have got to have a vision for discussion"</p> <p>Importance of IT "We have a much higher profile, but we are not seen as one of the key players yet"</p> <p>Potential of IT "We are key players in terms of running the business but we are not key players in terms of managing the business"</p> <p>Technology Basics "I use some jargon because I expect them (the business) to know some technology basics"</p>	
SU - Senior Management Responsibilities	<p>Prioritisation Process "prioritisation of information systems investments – too often it is done on the basis of which one costs the least, not in terms of which one will deliver the biggest payoff, which is as it should be"</p> <p>"what are the critical investments and in what order"</p> <p>"we can do just about anything, tell me what it is that you want to do, tell me why you want to do it, what benefit it is going to give the company and then I will tell you how much it is going to cost"</p> <p>"you've got to have a cost justification for investments – can't have things because they are sexy and cool, have to be concerned with what it is going to do to the bottom line"</p> <p>"you need details on the costs – what is the wiring going to cost, what will hardware cost, how much training, how much travel, how much will the next version cost, how much more memory will be required"</p>	<p>Prioritisation Process "need proper cost benefit analysis so that when we do a post implementation review we have something to check against"</p> <p>Role of the CEO "you have to create a mechanism or environment or a relationship that allows that (not hiding key issues with a systems project for fear of budget concerns) to happen"</p>

	<p>"you really have to cost it down to the nth degree so that there are no shocks and so that you don't go over budget"</p> <p>"but also guys, if we do this system first it will give you X as a benefit, doing this gives you no financial benefit, it is just something you have to do. So it is actually coming back and saying well which one is going to give me most bucks for my bang, and which will actually bring in that bang"</p> <p>Steering Committees</p> <p>"need to have an IT person who sits on the operating committee – doesn't have to be an executive necessarily but someone who can say 'hang on boys, you cannot do that system until we do this system cause this system is what it all hinges on'"</p> <p>Complexity</p> <p>"the implications of change to the way they work and the way the store works"</p> <p>Risk</p> <p>"the risks involved to the business, to the store operations"</p>	
SU – Key Success Factors	<p>Training</p> <p>"training, training, training"</p> <p>"understanding all the costs to a fine level of detail e.g. costs of training"</p> <p>Defining Requirements</p> <p>"the VP of marketing desperately wants a new marketing system but far too often they go out and they see a computer system, it is really sexy and it is great, wow we could use this, and they don't go back and say what do we really want to do. Lots of times I am driving them back and go what do you want to do? I make them start their sentences with 'I want the ability to...'"</p>	<p>Defining Requirements</p> <p>"need to understand the reason or need that is being met"</p> <p>"need to have thought through how the need will be met in sufficient detail e.g. for the POS system, at the till, the customer will be asked for his/her postal code"</p> <p>"don't over specify the thing. There is a great tendency to take on what is new, what is sexy, what is the new thinking, the new IT and it will last you 2 minutes. Very often we end up specifying something because it has all of those, it still does the job but it does lots of other things – the 120/20 rule"</p> <p>Systems Development</p> <p>"proper system rollout, we can't tolerate a lousy rollout"</p>
SU - Success Measures	<p>" a lot of times we don't measure the success, we just go 'oh it is in'"</p>	<p>"it is lots of factors – like cash pay back, like numbers of people, it might even be customer relationships"</p> <p>"it is more important to have it right"</p>

		<p>than to have it on time. And it is probably more important to have it right than to have it on budget"</p> <p>"there is nothing worse than getting to the end of it, spending \$1M and then finding the system is bloody wrong or it is not doing what you want it to do."</p>
SU - Key Dimension	"it is really the how, how are you going to do it"	Not mentioned
SU - Subjective Assessment	"We haven't got there yet. So sometimes my frustration is that they (the business) will make decisions, they made a couple last week which were entirely wrong because they hadn't got all the facts. They didn't know the best way of doing something. It looked good on paper and it looked sensible on paper, but they hadn't really looked at what it meant"	Not provided
IS Performance	"we've moved from the 'I hate those IT people and they don't do anything for us' to 'they are actively helping us manage the business'"	"we're getting there. Ann is great"

Measure	F1 – IS Executive	F3 – VP of Store Operations
Functional Background	Information Systems	Store Management
Tenure - Retail	High	High
Tenure - Company	High	High (15 years)
Education Background	University Undergraduate Degree: Town and Country Planning “ a lot of project management is about getting element done before hand. So you can't build a house until you have the infrastructure. So there's a lot of similarities when you are planning a building”	High School
IS Knowledge	High “I ran the user side before, now I am running the information technology side”	Low
Implementation of Previous IS Plans	“when I arrived, there were no computers. They resisted for ages. There was a president here who I scared by saying that at Head Office overseas they are very technical and if you don't get on board now, you will be so far behind you will be out of it.” “we were in the dark ages” “we've moved from the 'I hate those IT people and they don't do anything for us' to 'they are actively helping us manage the business”	“whatever the time or the cost, multiply by 2” “I feel a bit uncomfortable ...and I think this is borne out of so many disastrous IT projects in the past where we have been sold a bill of goods”
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very Important
SU - Dimensionality	4D – “You have got have a vision for discussion. So you have got to have the idea. And you have got to have all these things: you have to be able to market it, and talk about it, and to communicate about it and buy some support – get everybody interested and understanding it. Then obviously you have to have the people who are going to work with details so you can determine the way to get this wonderful idea to work. Because sometimes you get these people with great ideas, and none of the answers. So the attention to detail people are	4D – “you're dead on”

	<p>critical. Then you have got to measure the quality of it, checking to make sure that the quality is successful. All of the different stages down the line.”</p>	
SU - Vision	<p>Vision “you have got to have a vision for discussion”</p> <p>Importance of IT “We have a much higher profile, but we are not seen as one of the key players yet”</p> <p>Potential of IT “We are key players in terms of running the business but we are not key players in terms of managing the business”</p> <p>Technology Basics “I use some jargon because I expect them (the business) to know some technology basics”</p>	<p>Potential of IT “you have got to understand the possibilities, we need to dream a bit”</p> <p>Vision “for example, data base marketing – what are the other possibilities related to buying? Managing inventory better?”</p> <p>Technology Basics “don’t need to know the vendors”</p>
SU - Senior Management Responsibilities	<p>Prioritisation Process “prioritisation of information systems investments – too often it is done on the basis of which one costs the least, not in terms of which one will deliver the biggest payoff, which is as it should be”</p> <p>“what are the critical investments and in what order”</p> <p>“we can do just about anything, tell me what it is that you want to do, tell me why you want to do it, what benefit it is going to give the company and then I will tell you how much it is going to cost”</p> <p>“you’ve got to have a cost justification for investments – can’t have things because they are sexy and cool, have to be concerned with what it is going to do to the bottom line”</p> <p>“you need details on the costs – what is the wiring going to cost, what will hardware cost, how much training, how much travel, how much will the next version cost, how much more memory will be required”</p> <p>“you really have to cost it down to the nth degree so that there are no shocks and so that you don’t go over budget”</p> <p>“but also guys, if we do this system</p>	<p>Prioritisation Process “need cost benefit analysis”</p> <p>Complexity “thorough understanding of the true costs: of maintenance, of the resources needed both internally and externally; resource impact on other parts of the business; some concept of how much would be required to invest in marketing in order to launch it; impact a particular route will have on our customer i.e. what is the value added?; impact on the operations of the store”</p> <p>Risk “broad understanding of the major pitfalls e.g. merge and purge – the main risk factors”</p> <p>“change management – most businesses let themselves down here”</p> <p>“once you understand the possibilities, need to focus on the critical one(s)”</p> <p>Competition’s Use of IT “it is our responsibility (as senior executives) to find out from the people responsible for it, what the major pitfalls are, what are the</p>

	<p>first it will give you X as a benefit, doing this gives you no financial benefit, it is just something you have to do. So it is actually coming back and saying well which one is going to give me most bucks for my bang, and which will actually bring in that bang"</p> <p>Steering Committees "need to have an IT person who sits on the operating committee – doesn't have to be an executive necessarily but someone who can say 'hang on boys, you cannot do that system until we do this system cause this system is what it all hinges on'"</p> <p>Complexity "the implications of change to the way they work and the way the store works"</p> <p>Risk "the risks involved to the business, to the store operations"</p>	<p>concerns in the industry, what do our colleagues in other retailers have to say about it, those types of issues"</p> <p>Planning Process "we are obliged to understand the long term ramifications of this kind of change e.g. they are obliged in my view to understand how it will impact us going forward"</p> <p>Sources of Ideas "business needs control over priorities (in terms of information systems investments)</p>
<p>SU - Key Success Factors</p>	<p>Training "training, training, training" "understanding all the costs to a fine level of detail e.g. costs of training"</p> <p>Defining Requirements "the VP of marketing desperately wants a new marketing system but far too often they go out and they see a computer system, it is really sexy and it is great, wow we could use this, and they don't go back and say what do we really want to do. Lots of times I am driving them back and go what do you want to do? I make them start their sentences with 'I want the ability to...'"</p>	<p>Training "early in the process, give me the idiot's guide – what it is, what it is supposed to do, explain it to me all the way down the chain"</p> <p>Executive Sponsor "an owner for the project" "I am responsible for making sure that there is an owner for the project"</p> <p>Project Management "a good project management approach"</p> <p>Project Team "a working party with IS and the business" "individuals on the team come together to debate, discuss, prioritise, and fill the requirements. There must be user representation, so it isn't good enough for foods to say I want to distribute all of my foods, well IT doesn't know what the hell that means"</p> <p>Systems Development "most of the disastrous IT projects are probably derived out of what we hold dearest to our hearts – our core skills. Off the shelf is not good"</p>

		<p>enough for us. That is not our philosophy in life. We would not buy a jacket from a supplier without ensuring that it met our standards and changed that button or tweaked that sleeve or change the fabric, so our attitude flowed into everything else we did. We had to design it from scratch.”</p> <p>“Instead of going and saying what is actually available off the shelf, we designed this, we had a brief as to what the requirements were, and we kept adding to it and nailing on to it. We created this monster that couldn’t even execute its original purpose. Everybody wanted something from it and eventually we all got nothing from it.”</p> <p>“the 80:20 rule applies here – I am now someone who believes very much in buying off the shelf”</p>
SU - Success Measures	“ a lot of times we don’t measure the success, we just go ‘oh it is in”	“cost benefit analysis”
SU - Key Dimension	“it is really the how, how are you going to do it”	<p>“Often I don’t even know what it (a new system) is and why we are doing this. I think that is where we let ourselves down.”</p> <p>“don’t need to know how, just the what”</p>
SU - Subjective Assessment	“We haven’t got there yet. So sometimes my frustration is that they (the business) will make decisions, they made a couple last week which were entirely wrong because they hadn’t got all the facts. They didn’t know the best way of doing something. It looked good on paper and it looked sensible on paper, but they hadn’t really looked at what it meant”	“very little”
IS Performance	“we’ve moved from the ‘I hate those IT people and they don’t do anything for us’ to ‘they are actively helping us manage the business”	<p>“IT used to have two words for everything – no and no. The relationship was terrible. Our new IT person has been instrumental in changing our perception of IT”</p> <p>“IT now actually delivers”</p>

Company G

Measure	G1 – IS Executive	G2 – General Manager, Operations
Functional Background	Information Systems	General Management
Tenure – Retail	High	High
Tenure - Company	Low	Low
Education Background	University Undergraduate Degree: Marketing and Business Systems	Community College: Business Administration
IS Knowledge	High	Low
Implementation of Previous IS Plans	"I've seen everything"	"So for a long time, the system actually managed us. We found ourselves, at least for the 1 st year, we were managing the stores based on the systems needs and it took a while for us to understand that that was what was happening and then once we understood that, to turn that around and become more productive and actually manage the system" "really good, really positive. Positive in terms of the IT guys really trying to understand what the needs of the store were"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very important
SU - Dimensionality	4D - "all levels are important because having only a little bit makes it more difficult"	4D – "I would find it absolutely fascinating to see when you go into different organisations and I am sure that the vice presidents would say yes we all have a shared vision and when you get down through the organisation, you get completely different views"
SU - Vision		Vision "...a management information tool" "the most amazing thing is being able to provide information to the staff – we can provide information on margins, everything that has happened in a given section...it is an amazing tool for motivating staff" "on the customers side, you get more respect when you have

		<p>information technology"</p> <p>"it is a real marketing tool...they say you are sophisticated, on the ball organisation and you run a good ship and you know where things are"</p> <p>Importance of IT</p> <p>"their (the IT group) whole lives are to support us"</p> <p>Technology Positioning</p> <p>"I think overall we will be leading edge where it makes sense. Our overall philosophy is to be profitable. We are in to good business decisions"</p>
SU - Senior Management Responsibilities	<p>Business Processes</p> <p>"fundamental understanding of the business processes and then a commitment to continuous improvement of these"</p> <p>"this can make all the difference"</p> <p>"get the business processes right first, then do an RFP, then look at top 3 or 4 vendors, short list top 2 and have another look at them and then make the decision"</p> <p>Competition's Use of IT</p> <p>"bring in ideas from other industries"</p> <p>Sources of Ideas</p> <p>"the whole process is driven by the business"</p>	<p>Sources of Ideas</p> <p>"there is really only one thing and that is an understanding of how you want the system to work...what makes it work for us I guess is that I at least and certainly a lot of other people in the store understood how the store needed to run and therefore how the system needs to work in order to complement that"</p> <p>Prioritisation Process</p> <p>"the business case has to be comprehensive – what our customers value, how are profits affected"</p>
SU - Key Success Factors	<p>Systems Development</p> <p>"trade-offs between technical superiority and functionality"</p> <p>"knowledge of the development process for systems and the complexity and cost"</p> <p>"users need to understand that design + the development cycle = success"</p> <p>"need to avoid the 'not exactly what I wanted' scenario"</p> <p>Scope-Time-Dollars Trade-offs</p> <p>"scope creep problem - understand the 80:20 rule"</p> <p>"time is a constraint and cost is an issue – everyone wants it faster for less \$"</p> <p>Executive Sponsor</p> <p>"requirement for a strong person internally, someone with clout in the business to drive things"</p> <p>"some who will stay close and</p>	<p>Training</p> <p>"in some of the stores there are people who've been there for a 100 years...training is a real issue so the computer doesn't just sit in the corner, it actually gets used on a day to day basis so that the information is valid"</p>

	<p>monitor progress; understand the steps of what it will take; understand some of the things that could go wrong e.g. data integrity in the database is his responsibility to manage"</p> <p>Training "ability to implement all the functionality" "training is a huge issue"</p> <p>Change Management "managing resistance to change – managing to get people out of the old way of doing things"</p>	
SU - Success Measures	"value to the business"	"overall profitability – and connected to that is the inventory management, the turns and the margins"
SU - Key Dimension	"I like the Apollo 13 analogy: there are lots of things going on behind the scenes; you try to plan for contingencies but something will always come up. It is the job of IT to manage through this - no need to get involved in the details"	"there is really only one thing and that is an understanding of how you want the system to work...what makes it work for us I guess is that I at least and certainly a lot of other people in the store understood how the store needed to run and therefore how the system needs to work in order to complement that"
SU - Subjective Assessment	None provided	None provided
IS Performance	"we're late with the data warehouse project, but that's to be expected in this case"	"too early to tell"

Measure	G1 - IS Executive	G3 – VP Human Resources
Functional Background	Information Systems	Marketing and Human Resources
Tenure - Retail	High	Moderate
Tenure – Company	Low	Low
Education Background	University Undergraduate Degree: Marketing and Business Systems	University Undergraduate Degree: BA in Economics
IS Knowledge	High	Moderate
Implementation of Previous IS Plans	"I've seen everything"	"an underwhelming experience with the internet" "generally positive experience – I've always felt very fortunate"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very important "implementation experiences have a lot to do with buy-in at the top level and understanding"
SU - Dimensionality	4D - "all levels are important because having only a little bit makes it more difficult"	- implicitly four dimensional
SU - Vision	No explicit comments	Potential of IT "where I'm going to be measured, in terms of KPIs, and how IT will facilitate this – gives it a clearer focus" Technology Basics "individual technologies and the trade-offs: usability on a day-to-day basis; intrinsically understanding pros and cons of things like data marts vs. data warehouses"
SU - Senior Management Responsibilities	Business Processes "fundamental understanding of the business processes and then a commitment to continuous improvement of these" "this can make all the difference" "get the business processes right first, then do an RFP, then look at top 3 or 4 vendors, short list top 2 and have another look at them and then make the decision" Competition's Use of IT "bring in ideas from other industries" Sources of Ideas "the whole process is driven by the	Sources of Ideas "information technology is my responsibility and the IS executive is there to support me" "I determine when information technology is involved" Prioritisation Process "information systems investments need to make sense from a process perspective – make the link" "need to position IS investments well for people – help them understand why they need it" "cost issue – ascertaining what your

	<p>business"</p>	<p>commitment (re: the technology) should be relative to your goals" "when is the right time to spend \$ - critical investments – what and when" Role of CEO "culture – no us versus them mentality; no hierarchy or bureaucracy" "information systems executive as a part of the business, not a separate entity" "no us versus them" Steering Committees "effective communication about what is going on"</p>
<p>SU - Key Success Factors</p>	<p>Systems Development "trade-offs between technical superiority and functionality" "knowledge of the development process for systems and the complexity and cost" "users need to understand that design + the development cycle = success" "need to avoid the 'not exactly what I wanted' scenario" Scope-Time-Dollars Trade-offs "scope creep problem - understand the 80:20 rule" "time is a constraint and cost is an issue – everyone wants it faster for less \$" Executive Sponsor "requirement for a strong person internally, someone with clout in the business to drive things" "some who will stay close and monitor progress; understand the steps of what it will take; understand some of the things that could go wrong e.g. data integrity in the database is his responsibility to manage" Training "ability to implement all the functionality" "training is a huge issue" Change Management "managing resistance to change – managing to get people out of the old way of doing things"</p>	<p>Training "training" Project Management "project management: a team for each of the business processes; timing; budget; defining checkpoints; managing critical path"</p>
<p>SU - Success</p>	<p>"value to the business"</p>	<p>"usability – is everyone using it; is</p>

Measures		<p>the information useful and helps people do their jobs better"</p> <p>"if it helps to deliver the outputs that were planned for"</p> <p>"as secondary concerns, on time and on budget but these are not overriding"</p>
SU - Key Dimension	<p>"I like the Apollo 13 analogy: there are lots of things going on behind the scenes; you try to plan for contingencies but something will always come up. It is the job of IT to manage through this - no need to get involved in the details"</p>	<p>"I don't need to understand what the VP IS does. If I have the R (responsibility), then I often bring the VP IS in with the S (support)"</p>
SU - Subjective Assessment	None provided	None Provided
IS Performance	<p>"we're late with the data warehouse project, but that's to be expected in this case"</p>	8/10 – primarily because of usability

Measure	H1 - IS Executive	H2 - VP Supply Chain Management
Functional Background	Information Systems	Supply Chain Management
Tenure - Retail	Low - 1 year	Moderate
Tenure – Company	Low - 1 year	Moderate - 4 years
Education Background	University Undergraduate Degree: Economics and History; Masters in Accounting	University Undergrad Degree: Marketing Research MBA
IS Knowledge	High	High
Implementation of Previous IS Plans		"our new VP IS has been a blessing. She has a totally different approach. The previous one was from the old school where MIS did everything and they tried to push systems to the business...it didn't work very well" "senior management buy-in is critical but this gets created by seeing the payback from previous investments and having experience in other companies"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding – Overall Importance at Senior Executive Level	Very Important	Very important
SU – Dimensionality		
SU – Vision	Technology Life Cycle "vendors are driving companies to move faster and faster and are forcing changes" Technology Basics "literate in technology and understand the base functionality" "technology is secondary knowledge"	Potential of Technology "information systems are tools only, the process is first in importance and then tools come in to support" "when I arrived there were no systems at all essentially, just basic stuff. We began immediately to focus on supply chain systems"
SU – Senior Management Responsibilities	Importance of Infrastructure "supportive in infrastructure (plumbing) issues" Funding Mechanisms "we've had problems aligning why we're doing some things, so we said lets take 4-5 business objectives, and mesh the top down approach with the bottom up wish lists from everyone and build our IS budget on this basis; the bottom up "horsetrading" approach doesn't work too well here" Prioritisation Process	Sources of Ideas "used to have to request info from MIS... then they'd spend hours prioritising our requests...we'd get frustrated. Now MIS provides the tools and as much as the users want and can use, they get" Prioritisation Process "full cost benefit analysis, where clear financial returns are required with hurdle rates, payback periods and ROI specified" Absorptive Capacity

	<p>"cast investments in terms of business benefits, such as profit improvement"</p> <p>"need to also consider ROI in a quantitative way"</p> <p>Sources of Ideas</p> <p>"information systems investments are initiated by the business in response to a business problem; the objectives a clearly defined - in this way senior executives take ownership"</p> <p>Role of the CEO</p> <p>"CEO needs to create the right climate/culture for success with IS"</p> <p>Steering Committees</p> <p>"senior executives need to be close enough to the project, not to get mired in all the detail but to understand the details of the project approach, the organisation of the project, the key milestones and the budget tracking"</p>	<p>"if you don't take in to account the impact of systems on our partners (people), so far as job change is concerned, then all of the effort on systems is worthless"</p> <p>"this means you assess where they're at and bring them up to speed – everyone has to go through this"</p> <p>"our CEO always wants to know the impact of systems on our people. As we put more IS in, some partners are leaving and we have to manage this issue and find out why they're leaving"</p>
<p>SU – Key Success Factors</p>	<p>Executive Sponsor</p> <p>"an executive project sponsor is critical"</p> <p>"mentoring is the ultimate in quality assurance because the approach is communicated and expectations are set and managed"</p> <p>Project Management</p> <p>"a project plan that is realistic and carefully managed – realistic means manageable deliverables and management of expectations along the way"</p> <p>Project Governance</p> <p>"steering committees are the vehicles for understanding how and where executives can lend support"</p> <p>Project Team</p> <p>"a successful project requires three things: quality assurance, good project management and user participation throughout"</p> <p>"key user and IS resources are honed in and stick around - team bonuses and individual retention bonuses are key, best user resources are supplied, willing to work together to solve problems"</p> <p>"a joint project approach (user and IS) with clear accountability"</p> <p>"at our company, sometimes the user 'overowns' the problem - we get some disconnect because we have users</p>	<p>Project Team</p> <p>"users need to get involved, and there needs to be an executive user sponsor, but it takes so long to get users involved who have other things to do so we now have a separate group of users who work with MIS full time on all our systems. We struggled with this but it is now working okay"</p> <p>Training</p> <p>"the functional group is responsible for providing our training and all our documentation. MIS deals with the vendor and administers the system once it is up and running"</p>

	<p>who specify I want product X. In other words the solution is presented before the problem is clearly articulated"</p> <p>"we have very technology savvy younger folks who want it yesterday and want the latest and greatest technology...we have a convincing role of <u>why</u> IS is making these decisions"</p> <p>"we have educated users"</p> <p>Scope-Time-Dollars Trade-offs</p> <p>"senior executives need to understand the time it takes, the cost, the resources and the ROI in terms of quantitative and qualitative measures"</p>	
SU – Success Measures	<p>"not necessarily on budget or on time, although there is a balance or tolerance here"</p> <p>"success is when user needs are met"</p>	<p>"ROI and payback as per cost benefit analysis"</p> <p>"on time and on budget but ROI and payback come first"</p>
SU – Key Dimension	Senior Management	<p>"our one big disaster occurred because we didn't have a dedicated user resource - it should have taken 3 months, and instead it took 10. We learned from this and now have our dedicated functional teams"</p>
SU – Subjective Assessment	None provided	"a great partnership now"
IS Performance	"I'm feeling my way"	10/10 - "very successful so far, witness the payback just on our green coffee"

Measure	H1 - IS Executive	H3 - VP Finance
Functional Background	Information Systems	Finance
Tenure - Retail	Low - 1 year	High
Tenure - Company	Low - 1 year	Moderate - 4 years
Education Background	University Undergraduate Degree: Economics and History; Masters in Accounting	University Undergrad Degree: Finance
IS Knowledge	High	High
Implementation of Previous IS Plans		"all over the map"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very important "if all execs understood IS, then wouldn't it all be wonderful"
SU - Dimensionality		
SU - Vision	<p>Technology Life Cycle "vendors are driving companies to move faster and faster and are forcing changes"</p> <p>Technology Basics "literate in technology and understand the base functionality" "technology is secondary knowledge"</p>	
SU - Senior Management Responsibilities	<p>Importance of Infrastructure "supportive in infrastructure (plumbing) issues"</p> <p>Funding Mechanisms "we've had problems aligning why we're doing some things, so we said lets take 4-5 business objectives, and mesh the top down approach with the bottom up wish lists from everyone and build our IS budget on this basis; the bottom up "horsetrading" approach doesn't work too well here"</p> <p>Prioritisation Process "cast investments in terms of business benefits, such as profit improvement" "need to also consider ROI in a quantitative way"</p> <p>Sources of Ideas "information systems investments are initiated by the business in response to a business problem; the objectives a clearly defined - in this way senior executives take ownership"</p>	<p>Prioritisation Process "truly understanding the business objectives for information systems investments"</p> <p>Business Processes "parties involved truly understand the details of the operation and the end utilisation"</p>

	<p>Role of the CEO "CEO needs to create the right climate/culture for success with IS"</p> <p>Steering Committees "senior executives need to be close enough to the project, not to get mired in all the detail but to understand the details of the project approach, the organisation of the project, the key milestones and the budget tracking"</p>	
<p>SU - Key Success Factors</p>	<p>Executive Sponsor "an executive project sponsor is critical" "mentoring is the ultimate in quality assurance because the approach is communicated and expectations are set and managed"</p> <p>Project Management "a project plan that is realistic and carefully managed – realistic means manageable deliverables and management of expectations along the way"</p> <p>Project Governance "steering committees are the vehicles for understanding how and where executives can lend support"</p> <p>Project Team "a successful project requires three things: quality assurance, good project management and user participation throughout" "key user and IS resources are honed in and stick around - team bonuses and individual retention bonuses are key, best user resources are supplied, willing to work together to solve problems" "a joint project approach (user and IS) with clear accountability" "at our company, sometimes the user 'overowns' the problem - we get some disconnect because we have users who specify I want product X. In other words the solution is presented before the problem is clearly articulated" "we have very technology savvy younger folks who want it yesterday and want the latest and greatest technology...we have a convincing role of <u>why</u> IS is making these decisions" "we have educated users"</p> <p>Scope-Time-Dollar Trade-offs</p>	<p>Scope-Time-Dollars Trade-offs "biggest concern should be the scope of the project and the associated milestones. Who will it physically impact: primary users, secondary users, people in the field" "in one project that didn't go well, our planning called for timelines that were too tight but there was no communication of what would happen if something didn't work according to the plan (and something didn't) and so the deliverable weren't met; there were bad expectations set right up front" "key milestones and timelines and how sensitive these are"</p> <p>Project team "a dedicated user team e.g. like the one in supply chain management, that works with the MIS group" "the combined team is critical to making it all work"</p> <p>Project Management "discipline in adhering to milestones - weekly status updates and then just doing it" "process for crisis resolution thought out ahead of time, with contingency plans in place"</p> <p>Training "initial training is key but so is ongoing training and this often gets ignored" "too often all of the responsibility for training appears to fall on the shoulders of the MIS group and it should be a joint responsibility"</p>

	"senior executives need to understand the time it takes, the cost, the resources and the ROI in terms of quantitative and qualitative measures"	
SU - Success Measures	"not necessarily on budget or on time, although there is a balance or tolerance here" "success is when user needs are met"	"when a system is deployed, if the project deliverables are met and there is demonstrated commitment from the people in the field, then it is successful" "we don't define our metrics of success up front although we are doing more of this in the last 6 months"
SU - Key Dimension	Senior Management	"we fall down on the deployment because we don't fully understand all the parties who will be affected and we don't provide enough training and we don't communicate enough with them"
SU - Subjective Assessment	None provided	None provided
IS Performance	"I'm feeling my way"	C+ - "we fall down on the deployment because we don't fully understand all the parties who will be affected and we don't provide enough training and we don't communicate enough with them"

Measure	H1 - IS Executive	H4 - VP Human Resources
Functional Background	Information Systems	Human Resources
Tenure - Retail	Low - 1 year	High
Tenure - Company	Low - 1 year	High - 8 years
Education Background	University Undergraduate Degree: Economics and History; Masters in Accounting	University Undergrad Degree: Business
IS Knowledge	High	High
Implementation of Previous IS Plans		"generally positive experience in the past with IT"
Level of Communication	Frequent Diverse	Frequent Diverse
Shared Understanding - Overall Importance at Senior Executive Level	Very Important	Very important "in my experience the more I can talk their language and vice versa, the better" "in one bad project I was involved in, there were different sets of expectations right off; they (IS and the H/R folks) didn't really understand one another - the wrong language, different priorities"
SU - Dimensionality		
SU - Vision	Technology Life Cycle "vendors are driving companies to move faster and faster and are forcing changes" Technology Basics "literate in technology and understand the base functionality" "technology is secondary knowledge"	Technology Basics "I enjoy the technical aspects; in my experience the more I can talk their language and vice versa, the better" "technology and what we are using and the pluses and minuses at a high level" "trade-offs in things like: stable system vs. best in breed; enterprise wide solutions; client server vs. hand held"
SU - Senior Management Responsibilities	Importance of Infrastructure "supportive in infrastructure (plumbing) issues" Funding Mechanisms "we've had problems aligning why we're doing some things, so we said lets take 4-5 business objectives, and mesh the top down approach with the bottom up wish lists from everyone and build our IS budget on this basis; the bottom up "horsetrading" approach doesn't work too well here" Prioritisation Process "cast investments in terms of	Prioritisation Process "a clear business case with defined deliverables for all information systems investments...this also helps to set expectations" Funding Mechanisms "the company's priorities for information systems - we need to know our strategic priorities before we can make trade-offs amongst investment opportunities" Steering Committees "clear communication right from the request for \$ using a business

	<p>business benefits, such as profit improvement" "need to also consider ROI in a quantitative way" Sources of Ideas "information systems investments are initiated by the business in response to a business problem; the objectives a clearly defined - in this way senior executives take ownership" Role of the CEO "CEO needs to create the right climate/culture for success with IS" Steering Committees "senior executives need to be close enough to the project, not to get mired in all the detail but to understand the details of the project approach, the organisation of the project, the key milestones and the budget tracking"</p>	<p>case" "ongoing, weekly, updates on the project status"</p>
<p>SU - Key Success Factors</p>	<p>Executive Sponsor "an executive project sponsor is critical" "mentoring is the ultimate in quality assurance because the approach is communicated and expectations are set and managed" Project Management "a project plan that is realistic and carefully managed – realistic means manageable deliverables and management of expectations along the way" Project Governance "steering committees are the vehicles for understanding how and where executives can lend support" Project Team "a successful project requires three things: quality assurance, good project management and user participation throughout" "key user and IS resources are honed in and stick around - team bonuses and individual retention bonuses are key, best user resources are supplied, willing to work together to solve problems" "a joint project approach (user and IS) with clear accountability" "at our company, sometimes the user 'overowns' the problem - we get some disconnect because we have users who specify I want product X. In</p>	<p>Project Management "a strong project plan" "if we don't have the same concept of a project plan, then it is a waste of time" Project Team "work as a team - IS and user" "education and training piece for users and involving them early enough" Scope-Time-Dollar Trade-offs "MIS often wants to get it 100% right and have it late, when we might be more interested in the 80% solution on time" Defining Requirements "we have to get faster and spend less time defining our requirements and be prepared to adapt our processes to the system" IS Group Functioning "the MIS strategy – where is the IS group headed in 5 years, what is their vision and mission for the dept" "how the MIS group gets its work done e.g. steps they go through, JAD sessions, project review meetings - I need to know this so that I can work with them"</p>

	<p>other words the solution is presented before the problem is clearly articulated"</p> <p>"we have very technology savvy younger folks who want it yesterday and want the latest and greatest technology...we have a convincing role of <u>why</u> IS is making these decisions"</p> <p>"we have educated users"</p> <p>Scope-Time-Dollar Trade-offs</p> <p>"senior executives need to understand the time it takes, the cost, the resources and the ROI in terms of quantitative and qualitative measures"</p>	
SU - Success Measures	<p>"not necessarily on budget or on time, although there is a balance or tolerance here"</p> <p>"success is when user needs are met"</p>	"on time, on budget and on objective"
SU - Key Dimension	Senior Management	"how the MIS group gets its work done e.g. steps they go through, JAD sessions, project review meetings - I need to know this so that I can work with them"
SU - Subjective Assessment	None provided	None provided
IS Performance	"I'm feeling my way"	C but rapidly moving to a B and can see the day for an A

Appendix E
Phase 1 Interview Guide

Sample Phase 1 Interview Guide – Business Executive

Supply background information: thank you, clarification of purpose of the interview, summarise project briefly, reiterate confidentiality

Personal Background

Lets start by having you tell me about your yourself:

How long have you worked for the company? In what positions?

How long have you worked in retail?

What other industries have you worked in?

What sort of educational background do you have?

General Views on the Industry

What are your views on the major trends affecting the industry?

How does IT fit in with these trends?

Who are the leaders in the industry? Why?

Organizational Context

What is the organization's strategy?

How important is IT to the strategy?

How well do you think the organization is responding to what you perceive to be the major trends in the industry?

Information Technology within the Organization – Decision Making and Communication

What are the major initiatives that the organization is undertaking related to IT?

Who drives these initiatives?

Is there a separate IT strategy?

How is IT incorporated into the overall business strategy?

What is the decision making process for IT issues/investments?

In what ways are you involved with IT decision making for the organization?

What are the critical issues, related to IT, for the organization?

How successful, in the past, have IT initiatives been? Why?

Direct Experience with IT

What experience, directly or indirectly, have you had managing information systems?

Generally speaking, how would you characterize your experiences with IT (i.e. positive, negative, both)?

Shared Understanding

What do you think you, as a senior executive, need to know about information systems or managing information systems, in order to deploy them successfully within the organization?

What do you think the senior information systems executive needs to know about the business, in order to deploy information systems successfully within the organization?

What do you think the critical success factors are for deploying information systems?

What issues do you think are important for the executives to have a shared understanding of, in order for successful deployment of information systems within the organization?

How would you characterize the level of shared understanding, on the senior executive team, around information systems?

IS Performance

How successful has the deployment of information systems been within the organization in general, and within your own group?

How do you define success in deploying information systems?

Appendix F
Details of Shared Understanding Issues

SU – VisionImportance of IT

- "technology is an enabler, not an end in and of itself"
- "I see IT as an enabler"
- "I see the IT group as a service provider, like the finance function; I don't see them as a leader"
- "IT is everywhere in this industry – we must be aggressive in our use"
- "it is fundamental to our business and our success"
- "IT can either be a competitive advantage or disadvantage"
- "IT is very much a support role or enabling role"
- "in an established retailer like us, IT is the backbreaker of everything we do"
- "can't make significant process changes without IT and we are somewhat hamstrung by old systems"
- "IT is both an enabler and a driver"
- "couldn't operate without IT"
- "IT is an enabler"
- "important to make sure that the facts (i.e. reliable data) are factored into decision-making"
- "need to have a good understanding of what's possible and what would we have to do from IT perspective to accomplish the vision"
- "there is a perception out there that IT can answer everything – this is not correct"
- "my peers out there see IT as really the only way that they can survive"
- "But the value of IS I would think next to retail is the most important division in the works"
- "The value of IS, I couldn't put a value on it, but it is right up there"
- "none of that (being the retailer of choice) can happen without information and none of that can happen without strong technical support or backbone to the system"
- "I really believe that technology is such a core part of our business, any retail business. Hard to comprehend how we ever did without it"
- "information systems should be a strategic driver, but executives don't deal with IT effectively"
- "technology is a tool like any other tool and therefore you need to manage it in a way that you would anything else that you were giving somebody else to work with"
- "We have a much higher profile, but we are not seen as one of the key players yet"

Vision

- "You need to have a vision for IT"
- "Technology changes lead to a fundamental shift in store and office processes"
- "that awareness now of what the business could be and what technology might enable them to do...need to understand the possibilities"
- "common systems, common data"
- "everyone has the same vision – it's amazing what determined people do when they have a common goal"
- "The vision part is well understood"
- "for IT, the key pieces are the accumulation of data – it is going to be the key strategic thing that IT does well for a company, will help the company succeed in the future"
- "IT supports the business by focus – using information and technology to help decide on the winners and losers (products); getting products to market faster; customer service – speed check outs, special orders, colour matching paint etc.; and competitive operations"
- "IT presents the opportunity to improve the amount of work that could be done by an organisation and to improve its accuracy (...) the trick today is process management, and to my mind what you really have to understand is the processes"
- "extremely important on both the revenue and cost side"
- "need to define the business based on the possibilities provided by IT"
- "there is no value in volumes of information, use information in a different way to help humans to

use their intuition"

"we have data and information, but we have not managed well the transition to knowledge and behaviour – we need to build IT to support these latter transitions"

"taking \$ out of the system"

"I need to have some vision around what kind of information I am going to need to make better decisions tomorrow"

"each divisional Vice President has to merge with that corporate vision"

"VP-IS has to have clarity of vision as to where he wants his division to go. If not, we have troubles creating anything that is going to be valuable"

"you have got to have a vision for discussion"

"for example, data base marketing – what are the other possibilities related to buying? Managing inventory better?"

Technology Life Cycle

"pace of change of technology is now actually driving business changes"

"the life cycle of technology"

"complexity and risk with respect to speed with which it changes"

"look to IT solutions as perishable – build them to throw them away"

"the business is always saying "here we go again", but this is okay – the systems should always be changing"

"ISD though has some difficulty with the notion of buying to throw away"

"have to ask 'how long has it been on the market, and is it going to change? If it is going to be changing, then I'll wait for the next revolution because it is that much down the road."

"the other thing with the PC is that it is just turning over so quickly and the churning is so bad"

"have to ask 'how long has it been on the market, and is it going to change? If it is going to be changing, then I'll wait for the next revolution because it is that much down the road"

"I am not going to think through, have to think through what sort of platform it needs to sit on, how much is that platform going to cost, or what sort of technology I need to invest in the support on that, how fragile is that technology, am I going to have to replace my PC's every three years"

"To stay current with whatever software is driving it"

"you no sooner get something in and there is a better solution"

"frustration with keeping up with this stuff is that it changes so quickly"

"I guess it is the same with a lot of IT stuff that what was supposedly a good system 5 years ago, had I known about it, today is passé"

"vendors are driving companies to move faster and faster and are forcing changes"

Potential of IT

"information can replace a lot i.e. inventory, electronic commerce pipelines, stringing all the systems together now from a supply chain perspective. We're moving info faster outside the company, than inside"

"can secure competitive advantage through information systems"

"IT is an enabler; to execute the strategy, whatever that is"

"it is not going to lead the way out"

"so far IT has been viewed as a means to an end, but it could potentially be the end itself"

"has been an enabling role, but could be much more crucial; maybe this is because VP-IS is not elevated high enough, as being fundamental to the business plan"

"an awareness of the power of IT"

"Blank piece of paper now. At store level you need to know things, what are your sales, what are your deposits, and also you should have a line in there for staffing. What I call time and attendance. Too many times, time and attendance is all your manual things, but if you have a computer that can send it in and it is automatic at store level, then you don't have to cut a cheque"

<p>"CADD leads to quicker turnaround time for store planning people"</p> <p>"automated inventory system tells me what doesn't sell (forecasting)"</p> <p>"information systems remove the human error element"</p> <p>"I have been in 4 different retail operations and it doesn't matter what you are selling, it is just supply and demand. They should know that you want sales and margins and inventory and all of those things. So I would want to see a program that was no customisation and easy installation."</p> <p>"I keep getting into this debate whether or not IT is strategic within (our organisation), and everybody keeps saying it is because they think that will make me feel better, well it is not. (...) we are tactical at best"</p> <p>"I don't think it matters whether you are strategic or not, it matters that you know whether you are or not and that you are not creating this expectation management problem for yourself"</p> <p>"...the reality is that we are a very critical part of the (organisation), there is no question of that but the things we are dealing with are operational, tactical. Occasionally we steer it a little bit and that is really pushing Internet and getting into some e-commerce stuff. "</p> <p>"have to know what technology can do, and how it does it, what is its potential, can it do what I want"</p> <p>"We have a much higher profile, but we are not seen as one of the key players yet"</p> <p>"you have got to understand the possibilities, we need to dream a bit"</p> <p>"where I'm going to be measured, in terms of KPIs, and how IT will facilitate this – gives it a clearer focus"</p> <p>"information systems are tools only, the process is first in importance and then tools come in to support"</p> <p>"when I arrived there were no systems at all essentially, just basic stuff. We began immediately to focus on supply chain systems"</p>
<p>Technology as an Investment</p> <p>"technology is an asset that has a life – i.e. a planned value and then a death"</p> <p>"having a long term view of technology investments – marketing here has a short term view only and this is causing major problems"</p>
<p>Technology Positioning</p> <p>"I don't believe in being first. The odds of doing it right first at reasonable cost levels are minimal. They are less than 5%. There is no prize in being the pioneer. You can't show me a success by being a pioneer, the trick is to be number 2, number 3, real quick"</p> <p>"our operations in the West have old technology – CICS on mainframe – they harvest their investments and make minimal new investments – this has worked for them"</p> <p>"in the East, we are not bleeding edge but are definitely in the rear guard of the vanguard – top quartile in use of technology and in a state of ever preparedness to do whatever. Thus there are wasted \$ if we don't capitalise on this – we should focus more on the time value of money"</p> <p>"great copiers – never get caught up in the latest and greatest"</p>
<p>Technology Basics</p> <p>"fundamentals of technology options"</p> <p>"rudimentary knowledge of core hardware, software, databases, etc."</p> <p>"I use some jargon because I expect them (the business) to know some technology basics"</p> <p>"don't need to know the vendors"</p> <p>"individual technologies and the trade-offs: usability on a day-to-day basis; intrinsically understanding pros and cons of things like data marts vs. data warehouses"</p> <p>"literate in technology and understand the base functionality"</p> <p>"technology is secondary knowledge"</p> <p>"I enjoy the technical aspects; in my experience the more I can talk their language and vice versa, the better"</p> <p>"technology and what we are using and the pluses and minuses at a high level"</p> <p>"trade-offs in things like: stable system vs. best in breed; enterprise wide solutions; client server vs. hand held"</p>
<p>Technology Trends</p>

"general trends in technology e.g. storage trends, but not the nitty gritty details"

"where technology is going?"

"need to be able to understand and compare the whole slew of alternatives – in other words, know what's going on out there"

Key Technologies

"I should probably be better versed in what technologies are available today out there for an organisation of this size"

"To know the pros and cons of the top three or four or five or whatever out there would be a good thing"

SU - Senior Management Responsibilities

<p>Competition's use of IT</p> <p>"Know where your competition sees itself"</p> <p>"select places where we can leapfrog competitors"</p> <p>"need to get out of the mindframe that we're unique, because we're not"</p> <p>"benchmarking of specific applications within the industry and then go outside the business and outside the industry"</p> <p>"the winner in retail (e.g. Wal-Mart) seems to have every system in the world and they seem to be ahead of everyone —in knowing their customers, in knowing their vendors, in knowing what sells and what doesn't sell. They seem to have a very large step up on us all in being able to make decisions from data – this is why they're so successful"</p> <p>"in many cases we have the information, but no one uses it to the same degree as some of the other successful retailers"</p> <p>"you must get out to the shows, you must get out and see what other retailers are doing"</p> <p>"it is our responsibility (as senior executives) to find out from the people responsible for it, what the major pitfalls are, what are the concerns in the industry, what do our colleagues in other retailers have to say about it, those types of issues"</p> <p>"bring in ideas from other industries"</p>
<p>Investment in IT</p> <p>"constant reinvestment is required"</p>
<p>Architecture</p> <p>"importance of having an overall architecture"</p> <p>".... it (the new finance system) has been an interesting process from the standpoint they (the divisional systems) will run on a different platform than we do and I couldn't begin to tell you what they are, only that I have been told plenty of times that they are different, which is all that I really need to know. The IS dept., they know what they are"</p> <p>" (on the difference between client server and main frame)...I look at it in this way, client server gives me flexibility and speed, a mainframe doesn't, and that is what we need"</p> <p>"desktop standards and control – there is a perception of control and regimentation rather than an understanding of why this is important"</p> <p><u>"we need a basic set of rules on things like 'we are not going to duplicate databases' and that sort of thing"</u></p> <p>"distributed architecture – more effective and efficient systems development"</p> <p>"basic knowledge of systems architecture and that architecture is important"</p> <p>"importance of common systems and processes"</p> <p>"What I need are some standards and guidelines for these other sheep that I am trying to herd. That works with varying degrees of success. There are always battles and we pay a price for that"</p> <p>"E1 and his folks have to say, going down the road, we are going to support these software sets and this is the technology platform we are going to drive off"</p> <p>"where we should be going and what kind of architecture we should evolve to"</p> <p>"so I am more interested in the information architecture and the information structure than I am in the technology structure"</p> <p>"I have to rely somewhat on the people who are charged with overseeing the infrastructure of the technology"</p>
<p>Importance of Infrastructure</p> <p>"importance of investing in infrastructure"</p> <p>"give me a Cadillac frame but don't make me buy a Cadillac when a Chevy Cavalier will do"</p> <p>"establishment of infrastructure – I use the sewer and plumbing analogy – this has to work – the business is slowly growing to understand the importance"</p> <p>"there is a fair amount of effort around the internal data warehouse; the concern though is I think from an operating point of view, they don't see as much value in it as I do probably from a finance point of view"</p>

"what IT has done in the past is to build houses where all the walls were support walls and you couldn't put a new door in or a new window because the whole thing came down"

"understanding infrastructure issues"

"supportive in infrastructure (plumbing) issues"

Funding Mechanisms

"funding for new systems provided by the business and driven by the business"

"funding for new information systems should come from the business and be defined "

"funding for managing existing systems should come from IS operational budget"

"I ask for funding and they give it. It's my job to make sure the dollars are being spent on the right things, there is no one looking over my shoulder"

"a core budget and then client funded work. I think client funded work is in some sense an evil because it detracts from the core plan and I think over the last couple of years the VP IS has had to manage huge client funded work – whether done inside or outside"

"the issue is not \$ spent on IT, the issue is what do we have to invest in value creating activities – this is a completely different model"

"IT budget not from the operations – no levy (because they would consistently underfund"

"I don't believe in charge back (to the business units) within an organisation. Cost identification is worth while, in that it is not their money anyway at the end of the day"

"funds (for info/sys) weren't a problem because have a level of VP's below who are instrumental"

"we've had problems aligning why we're doing some things, so we said lets take 4-5 business objectives, and mesh the top down approach with the bottom up wish lists from everyone and build our IS budget on this basis; the bottom up "horsetrading" approach doesn't work too well here"

"the company's priorities for information systems - we need to know our strategic priorities before we can make trade-offs amongst investment opportunities"

Role of CEO

"appropriate environment set by the CEO"

"the CEO is the big cannon in the corner office – a strong and vocal advocate for common systems, common data and common business processes"

"he has been very consistent in his leadership and never once wavered"

"the CEO has said, 'we simply have to do this'"

"understand who the people are who will gain from doing nothing"

"understand the politics"

"no competing interests"

"IS as equal partners with the business"

"you get the IS department you deserve"

"information systems belong to the company, not departments"

"creating a culture of respect for one another's strengths – the CEO is responsible for this"

"the importance of the right organisational structure – we are trying to make changes to the business using technology in the harness of an old structure and it is very difficult if not impossible"

"need to have IT and the business glued together – we did this by creating a statement of values"

"5 years ago we created an ad-hoc committee for people interested in 'neat technology'.

Members ranged from VPs to programmers. We had no budget, we scrounged for cash. This was very much a grass roots sort of group. We met once every 3 weeks or so and have so far created an Internet site and a corporate Intranet. In addition, we have slowly been creating the capability in the organisation so that once we get the go ahead to do something, we're ready.

Folks in this group are from all over. The mix and funding changes depending on who is there"

"responsibility of leaders to create the environment and then the responsibility of individuals to seize that and bring it forward"

"to ensure that people don't try to please without thinking of the implications"

"partners at the table is how it should work"

"IT as partners, not as servants"

"ability to take risk, willing to let experiments go on"

"you have to create a mechanism or environment or a relationship that allows that (not hiding key issues with a systems project for fear of budget concerns) to happen"

"culture – no us versus them mentality; no hierarchy or bureaucracy"

"information systems executive as a part of the business, not a separate entity"

"no us versus them"

"CEO needs to create the right climate/culture for success with IS"

IS Projects Driven by the Business

"not having IT people drive the project - the business has to drive it"

Steering Committee

"very frank discussion and challenging but constructive relationships between all parties"

"wide open communication over the course of a project"

"presence of steering committee to help turn vision into action"

"honesty and openness"

"process – steering committee meetings every month, IT and users, what we did and where we're going on every system"

"need for people to understand the whole, not just the sum of the parts"

"I think one of the things we do very badly and one of the reasons that we are not successful in projects is that we are not good at steering committees – we don't use them to keep track of projects. At my previous employer, the project team leaders came up to that steering committee meeting and had a bit of a gut check that morning because they wanted to make sure that they understood the issues, wanted to make sure that they understood the progress and were able to answer the tough questions, and believe me there were tough questions like are you on budget, are you spending to plan, are your deliverables on time, those type of questions"

"there are structural constraints in this organisation – the VP IS has very little opportunity to meet with the business in a business session. The VP IS has to interface with the business on a one-to-one basis and there is no forum for us all to get together and paint a collective picture of 'do you know what the hell you are doing to me here'. This type of forum would help the VP IS in prioritising the work and in taking out road blocks in projects"

"ineffective IS steering committee – here it is a forum for information, not prioritisation or decision making"

"the IS steering committee is concerned with tactical and not strategic issues; concrete issues and not conceptual issues – this is a problem"

"the management of expectations – we set budgets too early and then never revisit"

"we need different types of individuals – business-oriented, leadership, courage, strength, and tenacity to ensure the business case is a valid one"

"The steering committee concept works, and again typically that is at the VP level. And the steering committee meets typically once a month and typically very high level status report, any funding issues, any major directional issues."

"There is no meaningful project control out there at all. You have all the trappings of caring and project control and no real control."

"I don't think they tend to bring the focus on management on a project"

"the development process required little involvement from the senior team. Otherwise you find that people will push all of their problems up so that they get dealt with at the top and I don't think that is a productive way. I think that you should try and have the resolutions to those situations that the people you have put in charge of running the various aspects of your project and if you can get the right synergy together there on those individuals then the project gets delivered well"

"In terms of who did you put on the project, how closely did you monitor it, we tend to have a steering committee approach that works"

"each of the VP's as well as the IT guy had to wear a couple of hats because you couldn't have tunnel vision in its own division"

"there needs to be that communication when systems are being developed to make sure that it happens"

"let's not bring every little problem to the steering committee for the VPs to decide every little thing"

"meet every 2 to 4 weeks for a brief meeting. It should be 'this is where we have come from, we have corrected all these problems on our own, we only have one major thing for you to talk about which is X, Y or Z, and that is it'"

"need to have an IT person who sits on the operating committee – doesn't have to be an executive necessarily but someone who can say 'hang on boys, you cannot do that system until"

we do this system cause this system is what it all hinges on"

"effective communication about what is going on"

"clear communication right from the request for \$ using a business case"

"ongoing, weekly, updates on the project status"

"senior executives need to be close enough to the project, not to get mired in all the detail but to understand the details of the project approach, the organisation of the project, the key milestones and the budget tracking"

Prioritisation Process

"the difficulty is to decide if it's 'what they want' vs. 'what they need' vs. 'what the company needs'

" it is interesting how many IT projects we do that don't have solid cost benefit – intrinsically we know this is the right thing to do"

"lots happens between a good idea and execution – dies under the bureaucracy of the business, the complexity, the politics"

"IT needs to say no, we have this huge pent up demand and change occurring in the organisation, so every project on that board (in his office) has an IT piece to it"

"there is not a lot of questioning of priorities – the businesses have their own priorities and are responsive to their own priorities"

"there is the whole issue going forward related to how you manage expectations, yet deliver enough to keep your clients happy"

"what is the reality, what do you really need to run the business"

"the problem is on the quick fix they never put the cost of what it means to make a bigger change down the road like bring in new software, etc. once you've made all these quick fixes"

"the business and IT have to be very protective in saying wrong cost, wrong way, no way we are going to do it. Your quick win is not a quick win for the organisation."

"there is a real cost associated with jury rigging our current systems – we just can't do this anymore – the tweaking is beginning to cause major problems"

"legacy unbundling – how to get rid of this giant hairball without taking the company to its knees"

"the business strategy dictates our priorities. It's up there for all to see"

"5 years ago we had a Financial Review Board that set the priorities but it didn't work. Almost all projects got approved, there was no focus and nothing got done. There was ROI gaming and all of us know how to rig that if necessary. Now the business drives everything and that is how it should be"

"if you know the links between the business strategy and IT, then everything else falls out"

"the difference between running the business (operations) and true investment for the future. For example, in the US, they can capitalise software development"

"focus should be on business strategy and this should be used to drive IT spending and focus resources"

"I have the money in my budget...so they aren't going to spend my money without my say so. There has to be a good business case, and sometimes that isn't there and I won't do it. That causes some healthy confrontation."

"We are becoming better at those types of things, we are becoming better at our payback analysis"

"I mean this is a nice to have, got to have, you know spend some time justifying why we want to invest \$10K changing this system versus \$10K in another IT opportunity. So we are getting better at that, at IT payback, but we are not there yet, we still have the entitlement mindset, 'oh I need that change because I said, and so what is your problem, just do it. I'm the customer, just support me!'

"there is an IT plan, anyone can input their priorities"

"prioritisation of information systems investments – too often it is done on the basis of which one costs the least, not in terms of which one will deliver the biggest payoff, which is as it should be"

"what are the critical investments and in what order"

"we can do just about anything, tell me what it is that you want to do, tell me why you want to do it, what benefit it is going to give the company and then I will tell you how much it is going to cost"

"you've got to have a cost justification for investments – can't have things because they are sexy and cool, have to be concerned with what it is going to do to the bottom line"

"you need details on the costs – what is the wiring going to cost, what will hardware cost, how much training, how much travel, how much will the next version cost, how much more memory will be required"

"you really have to cost it down to the nth degree so that there are no shocks and so that you don't go over budget"

"but also guys, if we do this system first it will give you X as a benefit, doing this gives you no financial benefit, it is just something you have to do. So it is actually coming back and saying well which one is going to give me most bucks for my bang, and which will actually bring in that bang"

"need proper cost benefit analysis so that when we do a post implementation review we have something to check against"

"need cost-benefit analysis"

"information systems investments need to make sense from a process perspective – make the link"

"need to position IS investments well for people – help them understand why they need it"

"cost issue – ascertaining what your commitment (re: the technology) should be relative to your goals"

"when is the right time to spend \$ - critical investments – what and when"

"cast investments in terms of business benefits, such as profit improvement"

"need to also consider ROI in a quantitative way"

"the IS group takes on too much "majoring in the minors"

"we bow to the whim of every franchisee"

"full cost benefit analysis, where clear financial returns are required with hurdle rates, payback periods and ROI specified"

"truly understanding the business objectives for information systems investments"

"a clear business case with defined deliverables for all information systems investments...this also helps to set expectations"

Planning Process

"IT plan has to be done before business plan – we have it the wrong way around"

"have to realise that what we came up with today may change and people must understand the dynamic nature of the plan"

"we get too dogmatic and want things cast in stone when they shouldn't be"

"planning process is too long, particularly in the face of rapid technological change"

"the Japanese spend 90% of their time planning and 10% executing; in the US we spend 10% planning and 90% executing thus the plan keeps changing, there is no stake in the ground and the effect on morale is very negative."

"another pitfall is the management of unknowns and that you get smarter over time; you need to have the ability to manage as you have to make mid-course corrections"

"business planning supported by IT planning – we have the stores coming in at the wrong time in the decision making process and they don't fit in"

"call IT in earlier than ever when making key business decisions"

"a clear business plan understood by all"

"in some cases we have too much analysis and too little action"

"viewing IT not as a subsidiary but as important party to have at the strategic table"

"part of the problem in the past has been that there was no clear vision of the organisation, that's all changed now"

"our retail strategy is somewhat entrepreneurial and this is sometimes a challenge for the ISD group in terms of knowing what to plan for"

"lets first understand what we need to do as an organisation, and then go for it and use IT if it makes sense"

"the implications of the what-ifs of various alternatives"

"you can't have an IT person dictate business strategy by driving IT into the business"

"It is almost an oxymoron, to try and be strategic in an organisation where the ultimate decisions are made up the hill and where the decision making process just doesn't give you some insight"

"IT says to the user 'what do you want to do, tell me what you want to do and I'll build a system for you"

"they don't put the appropriate emphasis on planning"

"...it comes back to planning"

"we are obliged to understand the long term ramifications of this kind of change e.g. they are obliged in my view to understand how it will impact us going forward"

Signalling

"all senior managers participating in IT steering committee signals to others the importance of issues being discussed"

"everything starts at the top with demonstrated commitment"

"utilise technology day-to-day, integrate into daily operations"

"The EVP is not a technology guy. He understands the power of technology, but he himself is not very technically literate. I think this year he finally got a PC and turned it on. He used to sit there and never turn it on, so they finally gave him some training on that. But he won't use the email system. He doesn't realise and I don't think he understands that when he doesn't use it, nobody uses it"

Business Processes

"understand the underlying business processes"

"understand the constraints and/or root cause/drivers for their business"

"a collapsing of organisational boundaries means that there are huge systems implications – BPR is making jobs more complex and that automating knowledge workers is the new order"

"rethink the way you do work first and then apply IT"

"the top guys have got to have a vision of how this business operates from a process point of view. We have got to be able to say we want a one storey house, or a two storey house, we want

a side split, ranch, whatever"

"fundamental understanding of business processes"

"in terms of important things to understand: the financial implications, the operational implications, the useful life, how are we going to manage differently, how quickly is technology changing in this area, how solid are the business processes e.g. the labour scheduling system is a very stable business process and this one is an easy call for new systems BUT the new warehouse slotting system is not so stable a business process and so a new system for this is a much more difficult call"

"the business units haven't taken responsibility for the process change"

"pretty good understanding of business processes – where that process is perhaps inadequate, then develop a system to support the new and improved process"

"IT Exec needs to find out what drives retail."

"my advice to anybody that hasn't got a computer system is step back to square zero – what do I need to run my business, zero based budget"

"fundamental understanding of the business processes and then a commitment to continuous improvement of these"

"this can make all the difference"

"get the business processes right first, then do an RFP, then look at top 3 or 4 vendors, short list top 2 and have another look at them and then make the decision"

"parties involved truly understand the details of the operation and the end utilisation"

"IT understands the business well, but a lot of the time the problem is that the business people don't know what their business is"

"I think you have to have an understanding of what processes are key to your business, what your objectives are at the end of the day"

Risk

"for those immature products for which there was no track record, risk assessment was not a disciplined part of the process and the results were disastrous; most of the complete blowups happened with unknown systems where risk assessment is an important factor"

"the importance of managing risk. For example, we have distributed systems that spread risk. I told them there is no \$ to be saved here, but it makes good business sense"

"the risks involved to the business, to the store operations"

"broad understanding of the major pitfalls e.g. merge and purge – the main risk factors"

"change management – most businesses let themselves down here"

"once you understand the possibilities, need to focus on the critical one(s)"

Sources of Ideas

"I see them as a leader if there is a void or gap, but ideally I see the business leading "

"I think the way I see the flow (in decision making) is that someone would have to identify the desire to do home shopping, identify the market opportunity, the financial opportunity and then start to worry about the technology related to doing it – I don't have the view that IT shouldn't be in the room (in setting strategy) but I don't view them as leading it"

"I think it is the business that is deciding whether or not it is a good idea, and then IT has to tell them what they can and can't do"

"the business will identify (technology) trends and that. If the business isn't bright enough to have people in there who are looking at the trends, looking at the way things are going, then you've got the wrong people in the business, but that isn't IT's role"

"...the trick is for it to be led by the business"

"IS folks who come to the business with ideas"

"understand where the business is going and plan for that"

"you tell me what you need, what the problem is and I'll come up with a solution"

"as a merchandising group, our responsibility is to be able to articulate our environment and articulate where we want to go"

"VP-IT asks the right questions"

"info/sys projects can be driven by other divisions for their own needs"

"business needs control over priorities (in terms of information systems investments)"

"information technology is my responsibility and the IS executive is there to support me"

"I determine when information technology is involved"

"the whole process is driven by the business"

"information systems investments are initiated by the business in response to a business problem; the objectives a clearly defined - in this way senior executives take ownership"

"used to have to request info from MIS... then they'd spend hours prioritising our requests...we'd get frustrated. Now MIS provides the tools and as much as the users want and can use, they get"

Absorptive Capacity

"we always swoop in, do some studies, make some good conclusions, but it is building in to the day to day, that it is just a natural routine to look at this data, plan around it, make decisions. I think we are 3 to 5 years away from that. It is cultural, it is staffing, it is the capabilities of the people in the organisation"

"need to have good understanding of the current capabilities"

"the resources that are required to build the capacity in the organisation to accept and fully utilise the technology"

"if you don't take in to account the impact of systems on our partners (people), so far as job change is concerned, then all of the effort on systems is worthless"

"this means you assess where they're at and bring them up to speed – everyone has to go through this"

"our CEO always wants to know the impact of systems on our people. As we put more IS in,

some partners are leaving and we have to manage this issue and find out why they're leaving"

Complexity

"there is another piece (to the 4 dimensions hypothesised), if I can add it. There is a blank sheet of paper that says there is my vision, then you have to overlay reality. Taking the house analogy, I can picture this beautiful extension on the back of the house, 2 storey, you can just see it, you have got to visualise it. But one little thing, your lot is only this big and there is a 25 year set back which says, 'oh-oh, got to modify the house. There are lots of ways of working it out, and we will work it out, we just didn't put enough thought into it"

"an appreciation for the complexity of the task"

"an appreciation for the resources that have to be applied and when"

"if you were to talk about putting a new accounting system in the company, I would be scared to even guess what it would take in dollars, even more so than dollars is the turmoil that it would cause in the organisation"

"some projects are just so big they are very difficult to manage cost-wise and difficult to define an owner -> need to chunk large projects into bite-sized pieces"

"if there is a change in culture, people, business processes, then maybe the price is too high to pay. For example, supply chain management is a huge cost – the software portion is peanuts compared to the other costs to the organisation such as building the aforementioned capabilities, redoing accountabilities, etc."

"gut feeling about how difficult a new system will be to implement so that people actually use it and the organisation benefits"

"the implications of change to the way they work and the way the store works"

"thorough understanding of the true costs: of maintenance, of the resources needed both internally and externally; resource impact on other parts of the business; some concept of how much would be required to invest in marketing in order to launch it; impact a particular route will have on our customer i.e. what is the value add?; impact on the operations of the store"

Flexibility

"once you know the processes, in my opinion, the role of IT is how do they use systems to deliver it efficiently and provide you the flexibility in the long term for what you can't think about"

"IT cannot compromise on the business model"

"we pay for future flexibility when we invest in information systems"

Accountability

"clarifying accountability is very key"

"there can be no escape"

"senior execs should be accountable for success in this area"

"can't have a leap of faith, there needs to be a solid business case that provides accountability and responsibility – set the expectations for the return and then hold them accountable"

"the business case starts with 'why are we doing it?' is it compliance, is it to gain efficiencies of what; you can quantify these → it is the responsibility of IT to help think through the business case"

"the importance of timing – can choose to do the right things but if the timing is bad, then might as well not bother"

"do the business case, quantify the return, hold people accountable for delivering on this return"

"total lack of accountability and responsibility at the source"

"accountability is probably the biggest issue in this entire organisation. There is no corporate accountability at all, and there needs to be"

"the VP IT would have corollary pieces in his plan so when he gets reviewed and I get reviewed we are talking about the same piece of work and we are going to get the same mark. You can't say "well I got a 90 and he get a 30". It just doesn't work that way. If we don't work together, it ain't happening, so we get the same mark."

"the store manager is not judged on anything. Isn't judged on sales, expense control, profit or anything, so why do I need this information? Why do I need a P&L? Because we want to know how well you're doing. Or how badly I'm doing is what he's afraid of"

"the project team should be fully accountable for the project"

"there has to be a charging of a project team in such a way that the project team understands that they are fully accountable for the project"

"when you get a project that has to get done and the overall requirements of the organisation will drive a project and something that is good is everybody does get this common purpose because they realise they are all on the hook"

Data

"value of data – just like real estate, they've got to own it"

"the importance of data – we have data but it is polluted now . The business has to lead here. In fact we built a data warehouse just to demonstrate how polluted the data is"

Staff Retention

"The market for IS personnel is just overwhelming us now. They leave for higher salaries and who can blame them"

"problem of losing good people to better jobs and retaining mediocre ones"

"We had trouble attracting good people and that has just gotten worse over time"

"keeping good people"

"I personally am not buying in to this shortage (of good IS people) stuff, but there are people who are buying it"

Functioning of IS Organisation

"I do not buy in to all the costs"

Management Control

"there is no meaningful project control"

SU - Key Success Factors

Executive sponsor

- "choosing a division to sponsor and pilot a new system"
- "a senior business manager to sponsor/champion a project"
- "IS needs to understand that their customer is the business"
- "having someone at a senior level who can provide the "wait a goddamn minute role" as well as the PR role"
- "have a strong champion"
- "a strong business leader who fights for \$ and resources"
- "a business sponsorship role is important – carry the Gantt chart around, go to meetings, carry the retail architecture around, understand the CSF and when to fight for resources, communicate across peer level, celebrate successes and keep the momentum"
- "sponsorship is not about lip service or being a figurehead"
- "projects can be IT led but must be business owned"
- "leadership"
- "systems development requires senior management support"
- "the difficulty still is getting ownership. It is still very much push from here and that always compromises the effectiveness of a solution, because it is seen as imposed to some degree."
- "I need a champion and a leader and someone who understands what we are trying to do"
- "part of the frustration is that we are still a mainframe kind of mentality which inhibits ownership"
- "success of the project depends primarily on project management by the project champion (who is not necessarily IT)"
- "an owner for the project"
- "I am responsible for making sure that there is an owner for the project"
- "requirement for a strong person internally, someone with clout in the business to drive things"
- "some who will stay close and monitor progress; understand the steps of what it will take; understand some of the things that could go wrong e.g. data integrity in the database is his responsibility to manage"
- "an executive project sponsor is critical"
- "mentoring is the ultimate in quality assurance because the approach is communicated and expectations are set and managed"

Systems Development

- "compare pilot results to the original plan and then reassess system value"
- "It's hard for some people to start with a blank sheet of paper. Some say 'I want something, but I'm not sure what it is'. Others say 'I want to be able to do this, and you tell me how to do it'. Still others say, 'I want to do this, and this is exactly what I need'. You use different approaches with each of these groups – i.e. pilots, prototyping. All approaches can work, but you have to match them with the appropriate target audience and type of project"
- "biggest pitfall is the deliverable against what was expected – this is in part caused by wrapped solutions that don't deliver on their promise – too slow, not flexible or versatile enough"
- "a good IT person would ask you to validate the needs – CBA, timetable, etc."
- "Need a good interview process, one that elicits 'when it is done, what it will look like'; one that allows both parties to agree on what the deliverables are"
- "if I go back to my time atone of the things that was very clear with any of the line managers that were involved with systems was that there was a methodology and that we were going through very specific phases. So I think that methodology was important. What dawns on me also, is that the phasing is very important. One of the things that I don't think we have done well here is phase projects. So that you can say this is a chunk, this chunk will be delivered in 6 months. I think we tend to go out for a long time, and again that relates to methodology."
- "what different strategies are available to implement software and for delivery of IT solutions"
- "should build systems as follows: pilot – prove the concept and if you have to do it manually at

first do it e.g. use the sneaker net

"prototype – put a system in place at a location and build the disciplines to use the system"

"rollout – everywhere once the system and its associated disciplines are understood"

"we want simple systems"

"we are not good at buying and managing integrated technical solutions like SAP. A modular approach is much more appealing – it gives us much more flexibility in the future and technical advancements can take place in the different areas at different rates as applicable/necessary"

"prefer not to develop our own software. Buy software, don't mess around with it – modify the process instead to fit the software"

"it is amazing how many say, I don't care how you do it just get it done. Then as soon as I choose option 2 over option 1, then they start saying I want a Mac instead of...I think we have a very educated client group out there, who listen to the press and media too much and think that all you do it buy this thing and it works. Everything we do is buy not build, but because of the legacy systems we have here there is always building and there are always interfaces, so you can't just phone the friendly salesman, pay \$750K and just plug it in"

"customisation is okay, but only to a point. We rebuilt everything we have and that was wrong"

"I want a package off the shelf that I can use right away"

"we should be pretty close to the fact that you can buy something off the shelf that will be exactly what you want"

"effective systems development = critical investment"

"being pragmatic about solutions"

"know what should be done, and then how best to get it"

"the NIH syndrome is problematic for many ISD groups, but ours is not reluctant to get outside help and is also wary about customising the hell out of it"

"the major projects that have worked, we have a clear product manager from the user side and an IT team leader from this side"

"often you get the deadwood that they don't know what to do with. And the quality of the system reflects this. Other times they will give you a very good person, but only on a part-time basis and that is as ineffective as hell, and a real problem"

"I have taken a store manager out of a store for the last 3 years. He heads up the project from the retail side. I want the team to know what happens at the store level and the people who are doing the testing on it are a half a dozen of my store managers."

"we had an uneven implementation because we had an uneven user group of what their needs were and then supporting the development and implementation"

"I would be more rigorous around taking a vanilla package and customising it in the least amount of time"

"I need to minimise the changes I make to the package"

"they think of (the scope of a project) on an itemised basis, not globally"

"(package customisation) is sometimes necessary, but can cause a lot of problems"

"people got frustrated because you are buying this new system, installing it and then you wind up having to change"

"I have some concerns that the integration of all the existing interfaces into that technology and into my system will be maintained and the integrity of that data will be maintained"

"it is a lot easier to take a standard package and adjust your business structure around that so that when there are changes to software your business is going to go right along with it"

"it doesn't make any sense to invest in customised software"

"proper system rollout, we can't tolerate a lousy rollout"

"most of the disastrous IT projects are probably derived out of what we hold dearest to our hearts – our core skills. Off the shelf is not good enough for us. That is not our philosophy in life. We

would not buy a jacket from a supplier without ensuring that it met our standards and changed that button or tweaked that sleeve or change the fabric, so our attitude flowed into everything else we did. We had to design it from scratch."

"Instead of going and saying 'what is actually available off the shelf?', we designed this, we had a brief as to what the requirements were, and we kept adding to it and nailing on to it. We created this monster that couldn't even execute its original purpose. Everybody wanted something from it and eventually we all got nothing from it."

"the 80:20 rule applies here – I am now someone who believes very much in buying off the shelf"

"trade-offs between technical superiority and functionality"

"knowledge of the development process for systems and the complexity and cost"

"users need to understand that design + the development cycle = success"

"need to avoid the 'not exactly what I wanted' scenario"

Scope-Time-Dollars Trade-offs

"scope-time-dollars trade-offs"

"a defined level of funding for a project - there is nothing worse than being in charge of a project when there is no cheque book"

"I keep telling them (IT) I don't think it is scope creep, I am just now getting to the point where I can tell you what my scope is"

"a lot of success is fencing in and kind of keeping scope reasonably tight and tensed"

"I can't build you a house if you don't tell me it is a bungalow or a 2 storey and you can't come along when I am finished and say well now I want an indoor pool at no extra cost and I still want this done in September."

"When I first started out, you would get the project guy saying, 'you can add this or you can add this but you can't have both. But I want both. Well it is going to cost you'."

"They just say 'I just want that piece in the middle'. So you say, 'okay I'll deliver that piece in the middle'. And then as they work their way through it they say, 'you know what, if you could change this to do that, boy this would be a lot better'. And I say, 'if you had thought about what I said to you in the beginning, you might have had that'. And then you get into this change process, continually changing things, because people think about it on an itemised basis, and they don't think about it globally...so they get frustrated."

"a project is much easier to manage if they are not always running around doing a lot of change requirements to the plan and to the schedule and then to the budget ultimately"

"unfortunately the actual deadline never changes, so you get compression on the other components of the project and usually it is testing that gets short changed"

"scope creep problem - understand the 80:20 rule"

"time is a constraint and cost is an issue – everyone wants it faster for less \$"

"senior executives need to understand the time it takes, the cost, the resources and the ROI in terms of quantitative and qualitative measures"

"biggest concern should be the scope of the project and the associated milestones. Who will it physically impact: primary users, secondary users, people in the field"

"in one project that didn't go well, our planning called for timelines that were too tight but there was no communication of what would happen if something didn't work according to the plan (and something didn't) and so the deliverables weren't met; there were bad expectations set right up front"

"key milestones and timelines and how sensitive these are"

"MIS often wants to get it 100% right and have it late, when we might be more interested in the 80% solution on time"

Project Team

"role of the user – availability, skill sets, internal and not a contractor"

"a team approach where IT and the business work together in an integrated way"

"understand the importance of a team environment – hire people on fit rather than skills"

"leadership on a project – hand-pick these people for their tenacity and creativity"

"celebrate the mini wins – take people to lunch, bring in pizzas"

"once you've agreed on the needs, you must determine what kind of user involvement is required"

– i.e. someone who can sign off on this stuff, who has the authority and the skill and the knowledge; you must determine what other resources; you must determine the timeframe”

“fully dedicated project management is a must – user project manager, IT project manager, a team effort that takes both parts – without these, projects go adrift”

“discipline of implementation – business and IS but the business must lead – neither has a disciplined approach”

“can’t have surrogate users – i.e. not a spokesperson”

“a lot of it is putting the right resources on it”

“IS here has dealt with very little user support on project: the user will sponsor the project, yet they won’t put a decent person on the project and they won’t put a team in place to work on it, they will give you people part time, they just won’t take responsibility”

“I tend to be more critical of the user community than I am of the IT community in the sense that you have got to take more control of their own worlds”

“a team approach where there is good group cohesion and alignment”

“need the right people to do it – a healthy balance between business and technology – if the balance on the team is skewed too heavily one way or the other, it will screw up”

“people on the (project) team have to be in sync”

“the people on the team really need to be in sync with one another”

“the team leader really needs to be top notch”

“choosing the right people to be on the team in terms of personalities but also in terms of expertise, being able to contribute easily”

“what works is if you can have 2 individuals, one from the technology side and one from the user side that are really committed to working together to get the project in”

“if it is an important system there should be full time involvement and a separate workspace”

“we tend to find that systems that my staff tend to be directly involved in have much better track history than systems that do not”

“a working party with IS and the business”

“individuals on the team come together to debate, discuss, prioritise, and fill the requirements. There must be user representation, so it isn’t good enough for foods to say I want to distribute all of my foods, well IT doesn’t know what the hell that means”

“a successful project requires three things: quality assurance, good project management and user participation throughout”

“key user and IS resources are honed in and stick around - team bonuses and individual retention bonuses are key, best user resources are supplied, willing to work together to solve problems”

“a joint project approach (user and IS) with clear accountability”

“at our company, sometimes the user ‘overowns’ the problem - we get some disconnect because we have users who specify I want product X. In other words the solution is presented before the problem is clearly articulated”

“we have very technology savvy younger folks who want it yesterday and want the latest and greatest technology...we have a convincing role of why IS is making these decisions”

“we have educated users”

“users need to get involved, and there needs to be an executive user sponsor, but it takes so long to get users involved who have other things to do so we now have a separate group of users who work with MIS full time on all our systems. We struggled with this but it is now working okay”

“a dedicated user team e.g. like the one in supply chain management, that works with the MIS group”

“the combined team is critical to making it all work”

“work as a team - IS and user”

“education and training piece for users and involving them early enough”

Project Management

"project management seems to be the biggest misunderstanding of SU because a lot of people don't think in terms of project. They think in terms of events. They think about the result but they don't think about what it takes to get to that result"

"understand the importance of project management"

"you need a discipline to both IT and user roles – a technique that ensures that you stay out of each other's pockets...a superior product comes out of this approach"

"basic project management skills"

"project management methodology – need to understand"

"need to force a discipline on the whole process of managing IT"

"a more professional, less ad-hoc approach to managing projects"

"project management"

"a good project management approach"

"project management: a team for each of the business processes; timing; budget; defining checkpoints; managing critical path"

"a project plan that is realistic and carefully managed – realistic means manageable deliverables and management of expectations along the way"

"discipline in adhering to milestones - weekly status updates and then just doing it"

"process for crisis resolution thought out ahead of time, with contingency plans in place"

"a strong project plan"

"if we don't have the same concept of a project plan, then it is a waste of time"

Defining Requirements

"Need to be able to articulate sufficient details for that vision"

"distinguish between a bell and a whistle and the core module"

"the process for selecting new systems and packages is critical – the requirement piece needs to be done well, the search part (i.e. for vendors) need to be well structured, the overall prioritisation/ranking of systems is important – CBA and cross-department requirements work here"

"I started as a user and we have a nasty habit of stating our needs in conclusions. The problem is that this is too narrow, and we get consumed by an historical view that may not be up to speed with the current technology. I was once taught by someone that a good user has the ability to describe what your needs are, not the solution"

"clarity around your own objectives – what are you trying to do with the system, what do you really need and what don't you really need"

"the VP of marketing desperately wants a new marketing system but far too often they go out and they see a computer system, it is really sexy and it is great, wow we could use this, and they don't go back and say what do we really want to do. Lots of times I am driving them back and go what do you want to do? I make them start their sentences with 'I want the ability to...'"

"need to understand the reason or need that is being met"

"need to have thought through how the need will be met in sufficient detail e.g. for the POS system, at the till, the customer will be asked for his/her postal code"

"don't over specify the thing. There is a great tendency to take on what is new, what is sexy, what is the new thinking, the new IT and it will last you 2 minutes. Very often we end up specifying something because it has all of those, it still does the job but it does lots of other things – the 120/20 rule"

"user needs to know what they want, how they think they might get it, and then hand it over to execute"

"we have to get faster and spend less time defining our requirements and be prepared to adapt our processes to the system"

"being able to clearly articulate the vision so that we can say here is what our needs are, here is what are wish list is and then we have the IT people involved in the vendor meetings to tell us that some of them aren't wishes, they are real pipe dreams"

"I started as a user and we have a nasty habit of stating our needs in conclusions. The problem is that this is too narrow, and we get consumed by an historical view that may not be up to speed"

<p>with the current technology. I was once taught by someone that a good user has the ability to describe what your needs are, not the solution"</p> <p>"we tend to overbuild – I asked for a car that could get me to London, I ended up getting one that could take me to Mars, but I only wanted to go to London"</p> <p>"the business must define what they want in a manner in which IS can understand"</p> <p>"ability to discriminate between necessities and niceties"</p>
<p>Training</p> <p>"the value of training"</p> <p>"training, training, training"</p> <p>"understanding all the costs to a fine level of detail e.g. costs of training"</p> <p>"early in the process, give me the idiots guide – what it is, what it is supposed to do, explain it to me all the way down the chain"</p> <p>"ability to implement all the functionality"</p> <p>"training is a huge issue"</p> <p>"training"</p> <p>"the functional group is responsible for providing our training and all our documentation. MIS deals with the vendor and administers the system once it is up and running"</p> <p>"initial training is key but so is ongoing training and this often gets ignored"</p> <p>"too often all of the responsibility for training appears to fall on the shoulders of the MIS group and it should be a joint responsibility"</p>
<p>Change Management</p> <p>"change management"</p> <p>"the management of change"</p> <p>"managing change"</p> <p>"managing resistance to change – managing to get people out of the old way of doing things"</p>
<p>IS Group Functioning</p> <p><u>"what impact the business is having on the IT organisation"</u></p> <p>"understand the company's system strategy – e.g. we are going to be distributed and not mainframe"</p> <p>"the importance of common systems"</p> <p>"the major IT projects underway and their status"</p> <p>"understand and feel comfortable with the overall budget for systems – i.e. that operations are efficient and that we are investing a lot"</p> <p>"the MIS strategy – where is the IS group headed in 5 years, what is their vision and mission for the dept"</p> <p>"how the MIS group gets its work done e.g. steps they go through, JAD sessions, project review meetings - I need to know this so that I can work with them"</p> <p>"no one quite understands how the IS organisation works. I think it has cost us time and effort over the last few years."</p> <p>"they used to have business analysts, and it just never worked. This one human being was supposed to know everything that went on in marketing (for example) and then help prioritise the systems requirements of marketing. Well it was nonsense, you can't have one person do that first of all – it was an insane job. We paid them outrageous sums of money."</p> <p>"I do not buy in to all the costs"</p>
<p>Vendor Relationship</p> <p>"IS folks need better negotiating skills – everything costs \$10M – they need to swing better deals from the vendors because everything is negotiable"</p>
<p>Testing</p> <p>"...and they don't put the appropriate emphasis on testing, the end result is that they end up with a system that requires a tonne of changes"</p>
<p>Project Governance</p>

"steering committees are the vehicles for understanding how and where executives can lend support"

Appendix G

Initial List of Phase 2 Scale Items

VISION

- Compared to the competition, ACME is a leader in their use of information technology.
- Compared to other industries, ACME is a leader in their use of information technology.
- Data warehouses are leading edge technology.
- The data warehouse is not just a technology, but a means to transform overall decision making.
- The data warehouse will be a key source of competitive advantage for ACME.
- The data warehouse is a key enabler of competitive advantage for ACME.
- Information systems in general should be a key strategic driver at ACME.
- Customer-relationship marketing can only be achieved using the data warehouse.

KEY INVESTMENTS

- The data warehouse is not an isolated technology, but an investment in ACME's infrastructure and thus in ACME's future.
- The data warehouse should be viewed as a "perishable" item, with a defined shelf-life of 5 years.
- The data warehouse project should be the top priority IS project at ACME.
- The annual budget for information systems at ACME is about right.
- Funding for information systems at ACME should be controlled centrally.
- The portfolio of major information systems projects underway at ACME is reasonable.
- The VP-IS should be the primary initiator of potential information systems projects.
- The VP-IS should prioritize the information systems investments at ACME.

- It is important for all senior managers at ACME to understand the status of all major information systems projects underway at ACME, not just the one's that relate directly to them.
- It is important at ACME that the SVP-IS be a member of the senior management team.

MANAGEMENT LEVERS/CSFs

- The VP-IS should be held accountable for delivering the benefits outlined in the business case for the data warehouse.
- The VP-Marketing should be held accountable for delivering the benefits outlined in the business case for the data warehouse.
- The VP-Marketing and the VP-IS should be jointly held accountable for delivering the benefits outlined in the business case for the data warehouse.
- 2 years is a reasonable time frame for completion of the project.
- The IS project team should be responsible for selecting the hardware vendor(s)
- The IS project team should be responsible for selecting the data warehouse vendor(s)
- The IS project team should be responsible for selecting the application software vendor(s)
- Purchasing packaged software is the best solution for the data warehouse
- Purchasing packaged software is the best solution for the application software
- Package customization is a reasonable solution if no suitable off-the-shelf packages can be identified (i.e. if the software doesn't match exactly ACME's business process)
- In-house software development is a reasonable alternative to consider
- The most important decision criterion for the data warehouse and application software is for marketing to get 100% of the functionality it desires.
- The Project Team has the right mix of ACME employees and contract workers.

- The decision to limit the amount of data in the data warehouse is appropriate.
- The VP-IS should expand the scope of the project to include the supply-chain applications.
- The project is very complex.
- The project is large.
- The project is well-defined.
- Success of the project will depend primarily on good solid project management.
- The amount of training planned for the data warehouse and application software is about right..
- The type of training planned for the data warehouse and application software is about right.
- The timing of the planned training for the data warehouse and application software is about right.
- Process Re-engineering of the Marketing department concurrent with the data warehouse project is appropriate (as opposed to doing before or after implementation)

SUCCESS

Rate the importance of the following measures of success for the data warehouse project:

- it is delivered on time
- it is delivered on budget
- it delivers the intended/planned for functionality
- it is easy to use
- it is used frequently
- the project team is willing to celebrate the implementation
- it positively affects the KPI's of the marketing department

- it results in achievement of the strategic objective of a 5% increase in sales

Appendix H
Sample Phase 2 Cover Letter

[Date]

[address]

Dear ,

It was a pleasure speaking with you today, and thank you again for agreeing to assist us in this research project. As we discussed during our phone conversation, I am sending you several survey questionnaires – one for the senior information systems person in the retail group (Questionnaire A), and three (Questionnaire B) for peers of the IS executive in the rest of the organization (e.g. VP of Marketing, Distribution, etc.).

We have enclosed four envelopes in this package, one for each individual completing a survey. In each envelope you will find an instruction sheet, a questionnaire, a return envelope and a prepaid courier slip. Once an individual has completed a survey, it can be returned using the enclosed envelope and courier slip. Detailed instructions are included with each envelope, and all responses are held in strictest confidence. **We would ask, however, that you list the individuals who are completing Questionnaire B (i.e. list their titles) on the appropriate page of Questionnaire A, prior to the distribution of the questionnaires.**

Thanks again for giving us a hand with this project. It will make a huge difference in the quality of our thinking, and is very much appreciated. Please let us know if you have any questions, by contacting us at 613-545-2343. We look forward to sending you the final results from the research project.

Best Regards,

Elsbeth Murray
Doctoral Candidate

Stephanie Gibson
Research Assistant

Appendix I

Phase 2 Survey – Participant Instruction Sheet

Questionnaire Guidelines

Your participation in this research project is very important and very much appreciated. This research project is an important component of the final phase of my Ph.D. thesis research, the purpose of which is to examine senior management views regarding information technology (IT) related investments.

Please find attached a survey questionnaire. It will take you approximately 20 minutes to complete and is fairly straightforward. Please try to complete it in one sitting. Your responses on the questionnaire will be treated as **confidential**, and neither you nor your organization will be identified in any way.

As with any research effort, the ultimate product of that research is largely dependent on the willingness of a busy executive like yourself to devote your time. Thank you once again for your valuable participation in this research. If you have any questions about the questionnaire or the research in general, please call either Stephanie Gibson or Elspeth Murray at (613) 545-2343.

Thank You!

Appendix J

Phase 2 Survey Questionnaire A – IS Executive

Research into Executive Views on Information Systems

Questionnaire A

**to be completed by the Senior
Information Systems Executive**

Richard Ivey School of Business
The University of Western Ontario

IVEY

Elsbeth Murray, Ph.D. Candidate
Stephanie Gibson, Research Associate

Phone: (613) 545-2343

Fax: (613) 545-2321

Email: em5@qsilver.queensu.ca

Project Introduction and General Instructions

Thank you for your participation in this research project. We very much value your insights. The questionnaire which follows these instructions should take you approximately 20 minutes to complete. Most of the questions require you to circle one response. In several instances, however, you are required to circle several responses. There are no right or wrong answers to any of the questions. Please try to answer all questions in the booklet.

Your responses on the questionnaire will be treated as **confidential**. In no instance will you or your company be identified as having given a particular response. Once you are finished, please enclose the booklet in the attached envelope, and return it directly to us using the prepaid courier slip.

Thank you for forwarding complementary questionnaires, to one or more of your peers in other parts of the company. In order for us to be able to synthesize the results from all completed questionnaires, we need to know the title(s) of the individual(s) you have forwarded the complementary questionnaire(s) to. Would you please list the titles of these individuals in the spaces provided below.

Peer 1 – Title: _____

Peer 2 – Title: _____

Peer 3 – Title: _____

Peer 4 – Title: _____

We hope that you will find the questionnaire itself to be thought provoking and useful. If you would like a report summarizing the findings from this study, please ensure that you include your name and address in the appropriate place at the end of the questionnaire.

As with any research effort, the ultimate product of that research is largely dependent on the willingness of busy executives like yourself to devote their time. Thank you once again for your valuable participation in this research. If you have any questions about the questionnaire or the research in general, we can be reached at (613) 545-2343.

Section I – General Views on Information Technology Issues

1. In your view, what are the three most important information systems issues facing your company?

a) _____

b) _____

c) _____

2. In your view, which three information technologies are most important to your company's future success?

a) _____

b) _____

c) _____

3. For each of the following, please describe your views of the potential importance of information systems to your company? (circle all that apply)

	Strongly Agree		Neutral		Strongly Disagree
a) Information systems are an important source of competitive advantage	1	2	3	4	5
b) Information systems are enablers of key business strategies	1	2	3	4	5
c) Information systems are support tools	1	2	3	4	5
d) Other _____	1	2	3	4	5

4. Generally speaking, do you feel your company gets value for the money invested in information systems?

Yes _____ No _____ Don't know _____

5. Do you know the status (e.g. on track, delayed) of the major information systems projects underway in your company?

No _____

Yes _____ ... Please list top 3

a) _____

b) _____

c) _____

Section I – General Views on Information Technology Issues (cont'd)

6. How much experience do you have in management positions other than in information systems? (circle one)

- a) A great deal
- b) A fair bit
- c) Some
- d) A little
- e) None

7. Considering your company, for each of the following statements, please circle the number corresponding to the level of satisfaction.

	Your views :					Choosing only one of the peers that you forwarded the survey to, (Peer: _____), how do you think he/she would respond:				
	Highly Dissatisfied		Neutral		Highly Satisfied	Highly Dissatisfied		Neutral		Highly Satisfied
a) Top management's involvement in information technology developments	1	2	3	4	5	1	2	3	4	5
b) Consideration of the potential of information technology during the formulation of business plans	1	2	3	4	5	1	2	3	4	5
c) Funding availability for information systems development	1	2	3	4	5	1	2	3	4	5
d) The business knowledge of information systems personnel	1	2	3	4	5	1	2	3	4	5
e) The criteria used to prioritise information systems investments	1	2	3	4	5	1	2	3	4	5
f) The project management practices generally employed on information systems projects	1	2	3	4	5	1	2	3	4	5
g) Users' involvement in the development of information systems	1	2	3	4	5	1	2	3	4	5
h) The ownership of information systems project	1	2	3	4	5	1	2	3	4	5
i) The amount of training provided on information systems	1	2	3	4	5	1	2	3	4	5
j) The quality of training provided on information systems	1	2	3	4	5	1	2	3	4	5

Section I – General Views on Information Technology Issues (cont'd)

8. On average, how frequently do you communicate with your peers (as listed on cover sheet) in other parts of the company? (circle one only for each peer)

Peer 1	Peer 2	Peer 3
a) Several times a week	a) Several times a week	a) Several times a week
b) Several times a month	b) Several times a month	b) Several times a month
c) Once a month	c) Once a month	c) Once a month
d) Quarterly	d) Quarterly	d) Quarterly
e) Less than quarterly	e) Less than quarterly	e) Less than quarterly

9. Generally speaking, how would you characterize the relationship between the IT organization and the business units of each of the peers which you have selected?

Peer 1	Peer 2	Peer 3
a) Very productive	a) Very productive	a) Very productive
b) Productive	b) Productive	b) Productive
c) Neither productive nor unproductive	c) Neither productive nor unproductive	c) Neither productive nor unproductive
d) Unproductive	d) Unproductive	d) Unproductive
e) Very Unproductive	e) Very Unproductive	e) Very Unproductive

10. To what extent do you share common views with your peers in the rest of the company on the following statements:

	Peer 1					Peer 2					Peer 3				
	Not at all	Neutral	To a great Extent			Not at all	Neutral	To a great Extent			Not at all	Neutral	To a great Extent		
a) The potential uses of information technology within the company	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
b) Your responsibilities as a senior manager, for managing information technology effectively and efficiently	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
c) The actual development and implementation processes for information systems	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
d) The appropriate way to evaluate information technology investments	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5

Section II - Personal Preferences

Please do not spend too much time on the following questions. There are no right or wrong answers and therefore your first response is important.

		Strongly Disagree		Neutral		Strongly Agree
1.	There's a right way and a wrong way to do almost everything.	1	2	3	4	5
2.	Practically every problem has a solution.	1	2	3	4	5
3.	I have always felt that there is a clear distinction between right and wrong.	1	2	3	4	5
4.	Nothing gets accomplished in this world unless you stick to some basic rules.	1	2	3	4	5
5.	If I were a doctor, I would prefer the uncertainties of a psychiatrist to the clear and definite work of someone like a surgeon or x-ray specialist.	1	2	3	4	5
6.	Vague and impressionistic pictures really have little appeal for me.	1	2	3	4	5
7.	Before an examination, I feel much less anxious if I know how many questions there will be.	1	2	3	4	5
8.	The best part of working on a jigsaw puzzle is putting in the last piece.	1	2	3	4	5
9.	I don't like to work on a problem unless there is a possibility of coming out with a clear cut and unambiguous answer.	1	2	3	4	5
10.	I like to fool around with new ideas, even if they turn out later to be a total waste of time.	1	2	3	4	5
11.	Perfect balance is the essence of all good composition.	1	2	3	4	5

Section II – Personal Preferences (cont'd)

Please indicate the degree to which you agree with each of the statements below. Do not spend too much time on any one item, and try not to be influenced by previous choices. Please **CIRCLE** your responses.

		Strongly Disagree		Neutral		Strongly Agree
1.	Whether or not I get to be a leader depends mostly on my ability	1	2	3	4	5
2.	To a great extent my life is controlled by accidental happenings	1	2	3	4	5
3.	I feel that what happens in my life is mostly determined by powerful people	1	2	3	4	5
4.	Whether or not I get into a car accident depends mostly on how good a driver I am	1	2	3	4	5
5.	When I make plans, I am almost certain to make them work	1	2	3	4	5
6.	Often there is no chance of protecting my personal interests from bad luck	1	2	3	4	5
7.	When I get what I want, it's usually because I'm lucky	1	2	3	4	5
8.	Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power	1	2	3	4	5
9.	How many friends I have depends on how nice a person I am	1	2	3	4	5
10.	I have often found that what is going to happen will happen	1	2	3	4	5
11.	My life is chiefly controlled by powerful others	1	2	3	4	5
12.	Whether or not I get into a car accident is mostly a matter of luck	1	2	3	4	5
13.	People like myself have very little chance of protecting our personal interests when they conflict with those of strong groups	1	2	3	4	5

Section III - Organizational Impact

The following statements relate to the impact of information systems, in general, on various facets of YOUR organization's performance. Please indicate the extent to which you agree or disagree with each statement. Please **CIRCLE** your responses

The first group of statements relates to the impact of information systems, in general, on organizational efficiency

	Strongly Disagree		Neutral		Strongly Agree
In your experience, information systems...					
1. ...save time	1	2	3	4	5
2. ...allow more work to get done	1	2	3	4	5
3. ...enable the organization to react more quickly to changes in the marketplace	1	2	3	4	5
4. ...improve productivity	1	2	3	4	5
5. ...speed decision making	1	2	3	4	5
6. ...improve our efficiency	1	2	3	4	5

The first group of statements relates to the impact of information systems, in general, on organizational effectiveness

	Strongly Disagree		Neutral		Strongly Agree
In your experience, information systems.....					
1. ...improve organization effectiveness	1	2	3	4	5
2. ...enable the organization to respond more appropriately to changes in the marketplace	1	2	3	4	5
3. ...facilitate innovation	1	2	3	4	5
4. ...improve the quality of decisions	1	2	3	4	5
5. ...enable the organization to determine which products and services to market	1	2	3	4	5
6. ...make us more flexible	1	2	3	4	5

Section IV - Your Views On Information Systems at ACME Retailer

The following short scenario describes an information systems investment being undertaken by a retailer by the name of ACME Retailer. At various points in the text, are some related questions. Please answer the questions immediately after reading the preceding and relevant section. You are free to review any of your answers at any time.

ACME Retailer

ACME Retailer is a publicly held corporation operating in the grocery segment, under 5 separate banners as separate divisions. ACME has 750 stores located across the United States and Canada. All operations and functions, including information systems, are controlled centrally at Head Office. ACME has approximately 100,000 employees. Annual revenues are \$14 billion, and profits have been relatively constant for the past 2 years due in large part to internal cost cutting activities. Same store sales have been declining for 6 consecutive quarters.

The senior management team has identified "stopping the decline" and in fact increasing same store sales by 5% as a one of 2 major strategic thrusts for ACME. The management team identified, as a key strategy for obtaining the required sales increase, the development of a Customer Loyalty program. The other key strategic objective is to reduce operating costs by 7%. The primary strategy identified for achieving this objective is to undertake a complete analysis and re-think of ACME's supply chain.

The Vice President of Information Systems (VP-IS), a member of the senior management team reporting to the CEO, had for some time been touting the benefits of data warehouses for making programs such as the Customer Loyalty one, possible. There were several models of customer loyalty programs, and the one the VP-IS believed would be most appropriate for ACME was one which captured sales information on an individual customer basis. At ACME's most recent business planning session, the senior management team decided to act on his advice and forge ahead with the Customer Loyalty program. In fact, the VP-IS is and has been the primary champion/driver for most such information systems related initiatives at ACME. In addition to the data warehouse, several other new information systems investments are required to execute the customer loyalty program - a minor redesign of the Point-of-Sale (POS) systems, and purchase or development of supporting applications designed to extract information from the data warehouse.

	Your views after reading this section:					Considering the same peer as in Section 1, how do you think he/she would respond?				
	Strongly Disagree	Neutral	Strongly Agree			Strongly Disagree	Neutral	Strongly Agree		
1. Data warehouses are an example of ACME using leading edge technology.	1	2	3	4	5	1	2	3	4	5
2. The data warehouse will be a key enabler of competitive advantage for ACME.	1	2	3	4	5	1	2	3	4	5
3. At ACME, customer-relationship marketing can only be achieved using the data warehouse.	1	2	3	4	5	1	2	3	4	5
4. The data warehouse is not an isolated technology, but an investment in ACME's future.	1	2	3	4	5	1	2	3	4	5

Section IV – Your Views On Information Systems at ACME Retailer (cont'd)

Funding for information systems at ACME is controlled centrally. There are no departmental or divisional levies. The annual IS budget averages 1/2 % of sales, or roughly \$70M. The information systems department has 225 employees. Of these, 150 are allocated to running and maintaining current systems. The remaining 75 are assigned work on projects, on a project-by-project basis. They are involved in selecting vendors, developing applications, implementing systems, and so forth, for ACME. Compared to industry standards, ACME has had average success in the past in deploying and utilizing information systems.

Prioritization of information systems spending is done by the VP-IS based primarily on business case submissions, but also on the basis of their fit with ACME's current strategies as outlined in ACME's strategic plan. He keeps senior management abreast of the status of major information systems initiatives primarily through 20 minute quarterly briefings conducted during regular senior management meetings. The data warehouse is the VP-IS's top priority item. Other information systems investments underway currently are: a new Human Resource Management system, Electronic Commerce (e.g. Internet shopping), and a new inventory control system at one of the 4 major distribution centres. In addition to these projects, 20 smaller divisional and functional initiatives are also underway, mostly related to supply chain management.

	Your views after reading this section:					Considering the same peer as in Section 1, how do you think he/she would respond?				
	Strongly Disagree	Neutral	Strongly Agree			Strongly Disagree	Neutral	Strongly Agree		
5. The portfolio of major information systems projects underway at ACME is reasonable.	1	2	3	4	5	1	2	3	4	5
6. The VP-IS should initiate most information systems projects at ACME.	1	2	3	4	5	1	2	3	4	5
7. The VP-IS should prioritise the information systems investments at ACME.	1	2	3	4	5	1	2	3	4	5
8. It is important for <u>all</u> senior managers at ACME to understand the status of all major information systems projects underway at ACME, not just the ones that relate directly to them.	1	2	3	4	5	1	2	3	4	5
9. At ACME, it is important that the potential of information technology be considered during the formulation of business plans	1	2	3	4	5	1	2	3	4	5
10. It is important at ACME that the VP-IS be a member of the senior management team.	1	2	3	4	5	1	2	3	4	5
11. The VP-Marketing should be solely accountable for delivering the benefits outlined in the business case for the data warehouse.	1	2	3	4	5	1	2	3	4	5

Section IV - Your Views On Information Systems at ACME Retailer (cont'd)

The POS redesign will require minimal new hardware at the store level, and will consist primarily of memory upgrades. Existing POS software will have to be slightly modified with no visible change in operating procedures required. Store POS systems are currently polled each night, and sales information collected centrally at ACME head office. Store inventory is managed centrally, and the nightly sales information is used to process orders, allocate inventory, coordinate shipments, and so forth.

The data warehouse is a new concept for ACME. Although ACME has used information systems and databases in the past, the IS department has no direct experience with the scale and scope of data warehouses. Current thinking at ACME on data warehouses indicates that the amount of data to be included in the data warehouse should be limited to that identified by the marketing department as key. Marketing has identified 13 different information systems within ACME that contain key data needed by the new data warehouse.

In addition to the actual data warehouse itself, application programs for extracting information from the data warehouse will be required. In the past, customers have not been targeted individually, and the data that will be available when the data warehouse is complete will have a major impact on future marketing initiatives as well as the basic business processes of the department. To date, marketing has not been a heavy user of information systems. Although everyone has a Pentium PC on his or her desk connected to the ACME Wide Area Network (WAN), these have been used primarily for E-mail, word processing and spreadsheet analyses. The overall budget for the project is projected at \$5M - \$3M allocated to labour costs (IS personnel only); \$1M for hardware; and \$1M for software. Training costs are included in the labour estimate. The VP-IS has indicated that the dollars invested in the project should be viewed as a depreciable asset that has a useful life of no more than 5 years.

The VP-IS has formed a project team to work on the Customer Loyalty program. The assigned project leader is an experienced IS Manager who has been with ACME for 5 years, exclusively in the IS department. The team is comprised mostly of IS professionals with a 50/50 split between ACME employees and contract employees with data warehouse expertise. The team will have approximately 30 people full-time, split between the POS redesign, the data warehouse and the application software activities. Marketing and store operations personnel will be brought into the project team on a part-time and as-needed basis. The VP - Marketing department will be responsible for assigning marketing personnel.

The project team is responsible for selecting the hardware and software vendors. Packaged software solutions are preferred but in-house customization is possible if no suitable packages can be found. As an alternative to package customization, in-house development will also be considered. The estimated time for completion of the information systems portion of the program is 2 years, assuming suitable packaged software can be found. The marketing department also has a process re-engineering team in place to revamp the business processes in order to make the best use of the data warehouse's capabilities. The re-engineering team will be working closely and in parallel with the IS team.

The project plan calls for a phased-in roll-out of the new POS software over a 6 month period. Given the minor changes to the POS software, no major formal training activity is planned. The data warehouse will "go live" when completed and POS software would be rolled out shortly thereafter. Training for marketing staff on the new data warehouse and associated applications will be done by IS personnel familiar with the new system. The major training activity planned is a 2-day group seminar for all affected marketing staff prior to implementation of the new system. In addition, 3 IS employees will be assigned as resource people for on-going training, as required.

Just after the initial project plan had been put together, as outlined above, the supply-chain team project leader approached the VP-IS about the possibility of expanding the scope of the project to include some applications that would be very useful to ACME in better managing the supply-chain.

Section IV - Your Views On Information Systems at ACME Retailer (cont'd)

	Your views after reading this section:					Considering the same peer as in Section I, how do you think he/she would respond?				
	Strongly Disagree	Neutral	Strongly Agree			Strongly Disagree	Neutral	Strongly Agree		
12. For ACME, purchasing packaged software is the best solution for the data warehouse project (even if the software doesn't <u>match exactly</u> ACME's requirements).	1	2	3	4	5	1	2	3	4	5
13. The Project Team for the data warehouse project, has the right mix of IS, marketing employees and external contract workers.	1	2	3	4	5	1	2	3	4	5
14. The Data Warehouse project manager is justified in limiting the amount of data in the data warehouse.	1	2	3	4	5	1	2	3	4	5
15. The scope of the data warehouse project should be enlarged to include the supply-chain applications.	1	2	3	4	5	1	2	3	4	5
16. The data warehouse project is complex.	1	2	3	4	5	1	2	3	4	5
17. The data warehouse project is large.	1	2	3	4	5	1	2	3	4	5
18. The data warehouse project is well-defined.	1	2	3	4	5	1	2	3	4	5
19. Success of the data warehouse project rests primarily on the ability of the IS professionals to follow project management best practices.	1	2	3	4	5	1	2	3	4	5
20. The amount of training planned for the data warehouse and application software is about right.	1	2	3	4	5	1	2	3	4	5
21. The type of training planned for the data warehouse and application software is about right.	1	2	3	4	5	1	2	3	4	5
22. The best measures of success for ACME's data warehouse project are if the project is delivered on time and on budget.	1	2	3	4	5	1	2	3	4	5
23. How relevant to your firm, is the situation depicted in the ACME Retailer Scenario? (circle one)										
	<ul style="list-style-type: none"> a) Very relevant b) Relevant c) Neither relevant nor irrelevant d) Somewhat irrelevant e) Not at all relevant 									

Section VI - Demographic Information

The remainder of the questionnaire asks for some information about yourself.

1. How long have you worked for this organization? _____ YEARS

2. How many years have you worked in retail? _____ YEARS

3. What is your current job title? _____

4. How long have you worked in your current position? _____ YEARS

5. In what other areas, and for how long, have you worked during your career (please circle all that apply)

1	SALES AND MARKETING	_____	YEARS
2	FINANCE	_____	YEARS
3	ACCOUNTING	_____	YEARS
4	DISTRIBUTION	_____	YEARS
5	LOGISTICS	_____	YEARS
6	PROCUREMENT	_____	YEARS
7	HUMAN RESOURCES	_____	YEARS
8	GENERAL MANAGEMENT	_____	YEARS
9	ADMINISTRATION	_____	YEARS
10	PLANNING	_____	YEARS
11	MIS	_____	YEARS
12	OTHER:		
	Please specify _____	_____	YEARS

6. What is your age? _____ YEARS

7. What is your gender? (circle number)

1 FEMALE	2 MALE
----------	--------

8. What level of education have you completed? (circle all that apply)

1	SOME VOCATIONAL OR HIGH SCHOOL
2	COMPLETED VOCATIONAL OR HIGH SCHOOL
3	SOME COLLEGE OR UNIVERSITY
4	COMPLETED COLLEGE OR UNIVERSITY
	Specify major(s) _____
4	SOME GRADUATE WORK
5	A GRADUATE DEGREE
	Specify degree(s) _____
	and major(s) _____
6	OTHER Please specify _____

Any additional comments:

I would like to receive the Final Report of the study's findings and recommendations:

Yes _____ No _____

If yes, YOUR NAME: _____
COMPANY NAME: _____

ADDRESS: _____

I would be interested in receiving a follow-up telephone call to discuss my responses in more detail:

Yes _____ No _____

If yes, YOUR NAME: _____

COMPANY NAME: _____

TELEPHONE NUMBER: _____

Thank you again for your participation in this research.

Please use the envelope provided to return your questionnaire.

Appendix K

Phase 2 Survey Questionnaire B – Business Executive

Research into Executive Views on Information Systems

Questionnaire B

**to be completed by a Senior Functional
or Business Unit Executive**

Richard Ivey School of Business
The University of Western Ontario

IVEY

Elsbeth Murray, Ph.D. Candidate
Stephanie Gibson, Research Associate

Phone: (613) 545-2343

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Project Introduction and General Instructions

Thank you for your participation in this research project. We very much value your insights. The questionnaire which follows these instructions should take you approximately 20 minutes to complete. Most of the questions require you to circle one response. In several instances, however, you are required to circle several responses. There are no right or wrong answers to any of the questions. Please try to answer all questions in the booklet.

Your responses on the questionnaire will be treated as **confidential**. In no instance will you or your company be identified as having given a particular response. Once you are finished, please enclose the booklet in the attached envelope, and return it directly to us using the prepaid courier slip.

We hope that you will find the questionnaire itself to be thought provoking and useful. If you would like a report summarizing the findings from this study, please ensure that you include your name and address in the appropriate place at the end of the questionnaire.

As with any research effort, the ultimate product of that research is largely dependent on the willingness of busy executives like yourself to devote their time. Thank you once again for your valuable participation in this research. If you have any questions about the questionnaire or the research in general, we can be reached at (613) 545-2343

Section I – General Views on Information Technology Issues

1. In your view, what are the three most important information systems issues facing your company?

a) _____

b) _____

c) _____

2. In your view, which three information technologies are most important to your company's future success?

a) _____

b) _____

c) _____

3. For each of the following, please describe your views of the potential importance of information systems to your company? (circle all that apply)

	Strongly Agree		Neutral		Strongly Disagree
a) Information systems are an important source of competitive advantage	1	2	3	4	5
b) Information systems are enablers of key business strategies	1	2	3	4	5
c) Information systems are support tools	1	2	3	4	5
d) Other _____	1	2	3	4	5

4. Generally speaking, do you feel your company gets value for the money invested in information systems?

Yes _____ No _____ Don't know _____

5. Do you know the status (e.g. on track, delayed) of the major information systems projects underway in your company?

No _____

Yes _____ ... Please list top 3

a) _____

b) _____

c) _____

Section I – General Views on Information Technology Issues (cont'd)

6. How much experience do you have with managing information systems? (circle one)

- a) A great deal
- b) A fair bit
- c) Some
- d) A little
- e) None

7. Considering your company, for each of the following statements, please circle the number corresponding to the level of satisfaction.

	Your views :					How do you think the IS executive in YOUR COMPANY would respond:				
	Highly Dissatisfied		Neutral		Highly Satisfied	Highly Dissatisfied		Neutral		Highly Satisfied
a) Top management's involvement in information technology developments	1	2	3	4	5	1	2	3	4	5
b) Consideration of the potential of information technology during the formulation of business plans	1	2	3	4	5	1	2	3	4	5
c) Funding availability for information systems development	1	2	3	4	5	1	2	3	4	5
d) The business knowledge of information systems personnel	1	2	3	4	5	1	2	3	4	5
e) The criteria used to prioritise information systems investments	1	2	3	4	5	1	2	3	4	5
f) The project management practices generally employed on information systems projects	1	2	3	4	5	1	2	3	4	5
g) Users' involvement in the development of information systems	1	2	3	4	5	1	2	3	4	5
h) The ownership of information systems projects success	1	2	3	4	5	1	2	3	4	5
i) The amount of training provided on information systems	1	2	3	4	5	1	2	3	4	5
j) The quality of training provided on information systems	1	2	3	4	5	1	2	3	4	5

Section I – General Views on Information Technology Issues (cont'd)

8. On average, how frequently do you communicate with the Senior Information Services Executive? (circle one)
- a) Several times a week
 - b) Several times a month
 - c) Once a month
 - d) Quarterly
 - e) Less than quarterly
9. Generally speaking, how would you characterize the relationship between the IT organization and the rest of the company?
- a) Very productive
 - b) Productive
 - c) Neither productive nor unproductive
 - d) Unproductive
 - e) Very unproductive
10. To what extent do you share common views with the Senior Information Services Executive on the following statements:

	Not at all		Neutral		To a great Extent
a) The potential uses of information technology within the company	1	2	3	4	5
b) Your responsibilities as a senior manager, for managing information technology effectively and efficiently	1	2	3	4	5
c) The actual development and implementation processes for information systems	1	2	3	4	5
d) The appropriate way to evaluate information technology investments	1	2	3	4	5

Section II - Personal Preferences

Please do not spend too much time on the following questions. There are no right or wrong answers and therefore your first response is important.

		Strongly Disagree		Neutral		Strongly Agree
1.	There's a right way and a wrong way to do almost everything.	1	2	3	4	5
2.	Practically every problem has a solution.	1	2	3	4	5
3.	I have always felt that there is a clear distinction between right and wrong.	1	2	3	4	5
4.	Nothing gets accomplished in this world unless you stick to some basic rules.	1	2	3	4	5
5.	If I were a doctor, I would prefer the uncertainties of a psychiatrist to the clear and definite work of someone like a surgeon or x-ray specialist.	1	2	3	4	5
6.	Vague and impressionistic pictures really have little appeal for me.	1	2	3	4	5
7.	Before an examination, I feel much less anxious if I know how many questions there will be.	1	2	3	4	5
8.	The best part of working on a jigsaw puzzle is putting in the last piece.	1	2	3	4	5
9.	I don't like to work on a problem unless there is a possibility of coming out with a clear cut and unambiguous answer.	1	2	3	4	5
10.	I like to fool around with new ideas, even if they turn out later to be a total waste of time.	1	2	3	4	5
11.	Perfect balance is the essence of all good composition.	1	2	3	4	5

Section II – Personal Preferences (cont'd)

Please indicate the degree to which you agree with each of the statements below. Do not spend too much time on any one item, and try not to be influenced by previous choices. Please **CIRCLE** your responses.

		Strongly Disagree	Neutral			Strongly Agree
1.	Whether or not I get to be a leader depends mostly on my ability	1	2	3	4	5
2.	To a great extent my life is controlled by accidental happenings	1	2	3	4	5
3.	I feel that what happens in my life is mostly determined by powerful people	1	2	3	4	5
4.	Whether or not I get into a car accident depends mostly on how good a driver I am	1	2	3	4	5
5.	When I make plans, I am almost certain to make them work	1	2	3	4	5
6.	Often there is no chance of protecting my personal interests from bad luck	1	2	3	4	5
7.	When I get what I want, it's usually because I'm lucky	1	2	3	4	5
8.	Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power	1	2	3	4	5
9.	How many friends I have depends on how nice a person I am	1	2	3	4	5
10.	I have often found that what is going to happen will happen	1	2	3	4	5
11.	My life is chiefly controlled by powerful others	1	2	3	4	5
12.	Whether or not I get into a car accident is mostly a matter of luck	1	2	3	4	5
13.	People like myself have very little chance of protecting our personal interests when they conflict with those of strong groups	1	2	3	4	5

Section III - Organizational Impact

The following statements relate to the impact of information systems, in general, on various facets of YOUR organization's performance. Please indicate the extent to which you agree or disagree with each statement. Please **CIRCLE** your responses

The first group of statements relates to the impact of information systems, in general, on organizational efficiency

	Strongly Disagree		Neutral		Strongly Agree
In your experience, information systems...					
1. ...save time	1	2	3	4	5
2. ...allow more work to get done	1	2	3	4	5
3. ...enable the organization to react more quickly to changes in the marketplace	1	2	3	4	5
4. ...improve productivity	1	2	3	4	5
5. ...speed decision making	1	2	3	4	5
6. ...improve our efficiency	1	2	3	4	5

The first group of statements relates to the impact of information systems, in general, on organizational effectiveness

	Strongly Disagree		Neutral		Strongly Agree
In your experience, information systems.....					
8. ...improve organization effectiveness	1	2	3	4	5
9. ...enable the organization to respond more appropriately to changes in the marketplace	1	2	3	4	5
10. ...facilitate innovation	1	2	3	4	5
11. ...improve the quality of decisions	1	2	3	4	5
12. ...enable the organization to determine which products and services to market	1	2	3	4	5
13. ...make us more flexible	1	2	3	4	5

Section IV - Your Views On Information Systems at ACME Retailer

The following short scenario describes an information systems investment being undertaken by a retailer by the name of ACME Retailer. At various points in the text, are some related questions. Please answer the questions immediately after reading the preceding and relevant section. You are free to review any of your answers at any time.

ACME Retailer

ACME Retailer is a publicly held corporation operating in the grocery segment, under 5 separate banners as separate divisions. ACME has 750 stores located across the United States and Canada. All operations and functions, including information systems, are controlled centrally at Head Office. ACME has approximately 100,000 employees. Annual revenues are \$14 billion, and profits have been relatively constant for the past 2 years due in large part to internal cost cutting activities. Same store sales have been declining for 6 consecutive quarters.

The senior management team has identified "stopping the decline" and in fact increasing same store sales by 5% as a one of 2 major strategic thrusts for ACME. The management team identified, as a key strategy for obtaining the required sales increase, the development of a Customer Loyalty program. The other key strategic objective is to reduce operating costs by 7%. The primary strategy identified for achieving this objective is to undertake a complete analysis and re-think of ACME's supply chain.

The Vice President of Information Systems (VP-IS), a member of the senior management team reporting to the CEO, had for some time been touting the benefits of data warehouses for making programs such as the Customer Loyalty one, possible. There were several models of customer loyalty programs, and the one the VP-IS believed would be most appropriate for ACME was one which captured sales information on an individual customer basis. At ACME's most recent business planning session, the senior management team decided to act on his advice and forge ahead with the Customer Loyalty program. In fact, the VP-IS is and has been the primary champion/driver for most such information systems related initiatives at ACME. In addition to the data warehouse, several other new information systems investments are required to execute the customer loyalty program - a minor redesign of the Point-of-Sale (POS) systems, and purchase or development of supporting applications designed to extract information from the data warehouse.

	Your views after reading this section:					How do you think the IS executive in YOUR COMPANY would respond:				
	Strongly Disagree		Neutral		Strongly Agree	Strongly Disagree		Neutral		Strongly Agree
1. Data warehouses are an example of ACME using leading edge technology.	1	2	3	4	5	1	2	3	4	5
2. The data warehouse will be a key enabler of competitive advantage for ACME.	1	2	3	4	5	1	2	3	4	5
3. At ACME, customer-relationship marketing can only be achieved using the data warehouse.	1	2	3	4	5	1	2	3	4	5
4. The data warehouse is not an isolated technology, but an investment in ACME's future.	1	2	3	4	5	1	2	3	4	5

Section IV - Your Views On Information Systems at ACME Retailer (cont'd)

Funding for information systems at ACME is controlled centrally. There are no departmental or divisional levies. The annual IS budget averages 1/2 % of sales, or roughly \$70M. The information systems department has 225 employees. Of these, 150 are allocated to running and maintaining current systems. The remaining 75 are assigned work on projects, on a project-by-project basis. They are involved in selecting vendors, developing applications, implementing systems, and so forth, for ACME. Compared to industry standards, ACME has had average success in the past in deploying and utilizing information systems.

Prioritization of information systems spending is done by the VP-IS based primarily on business case submissions, but also on the basis of their fit with ACME's current strategies as outlined in ACME's strategic plan. He keeps senior management abreast of the status of major information systems initiatives primarily through 20 minute quarterly briefings conducted during regular senior management meetings. The data warehouse is the VP-IS's top priority item. Other information systems investments underway currently are: a new Human Resource Management system, Electronic Commerce (e.g. Internet shopping), and a new inventory control system at one of the 4 major distribution centres. In addition to these projects, 20 smaller divisional and functional initiatives are also underway, mostly related to supply chain management.

	Your views after reading this section:					How do you think the IS executive in YOUR COMPANY would respond:				
	Strongly Disagree	Neutral	Strongly Agree			Strongly Disagree	Neutral	Strongly Agree		
5. The portfolio of major information systems projects underway at ACME is reasonable.	1	2	3	4	5	1	2	3	4	5
6. The VP-IS should initiate most information systems projects at ACME.	1	2	3	4	5	1	2	3	4	5
7. The VP-IS should prioritise the information systems investments at ACME.	1	2	3	4	5	1	2	3	4	5
8. It is important for <u>all</u> senior managers at ACME to understand the status of all major information systems projects underway at ACME, not just the ones that relate directly to them.	1	2	3	4	5	1	2	3	4	5
9. At ACME, it is important that the potential of information technology be considered during the formulation of business plans	1	2	3	4	5	1	2	3	4	5
10. It is important at ACME that the VP-IS be a member of the senior management team.	1	2	3	4	5	1	2	3	4	5
11. The VP-Marketing should be solely accountable for delivering the benefits outlined in the business case for the data warehouse.	1	2	3	4	5	1	2	3	4	5

Section IV - Your Views On Information Systems at ACME Retailer (cont'd)

The POS redesign will require minimal new hardware at the store level, and will consist primarily of memory upgrades. Existing POS software will have to be slightly modified with no visible change in operating procedures required. Store POS systems are currently polled each night, and sales information collected centrally at ACME head office. Store inventory is managed centrally, and the nightly sales information is used to process orders, allocate inventory, coordinate shipments, and so forth.

The data warehouse is a new concept for ACME. Although ACME has used information systems and databases in the past, the IS department has no direct experience with the scale and scope of data warehouses. Current thinking at ACME on data warehouses indicates that the amount of data to be included in the data warehouse should be limited to that identified by the marketing department as key. Marketing has identified 13 different information systems within ACME that contain key data needed by the new data warehouse.

In addition to the actual data warehouse itself, application programs for extracting information from the data warehouse will be required. In the past, customers have not been targeted individually, and the data that will be available when the data warehouse is complete will have a major impact on future marketing initiatives as well as the basic business processes of the department. To date, marketing has not been a heavy user of information systems. Although everyone has a Pentium PC on his or her desk connected to the ACME Wide Area Network (WAN), these have been used primarily for E-mail, word processing and spreadsheet analyses. The overall budget for the project is projected at \$5M - \$3M allocated to labour costs (IS personnel only); \$1M for hardware; and \$1M for software. Training costs are included in the labour estimate. The VP-IS has indicated that the dollars invested in the project should be viewed as a depreciable asset that has a useful life of no more than 5 years.

The VP-IS has formed a project team to work on the Customer Loyalty program. The assigned project leader is an experienced IS Manager who has been with ACME for 5 years, exclusively in the IS department. The team is comprised mostly of IS professionals with a 50/50 split between ACME employees and contract employees with data warehouse expertise. The team will have approximately 30 people full-time, split between the POS redesign, the data warehouse and the application software activities. Marketing and store operations personnel will be brought into the project team on a part-time and as-needed basis. The VP - Marketing department will be responsible for assigning marketing personnel.

The project team is responsible for selecting the hardware and software vendors. Packaged software solutions are preferred but in-house customization is possible if no suitable packages can be found. As an alternative to package customization, in-house development will also be considered. The estimated time for completion of the information systems portion of the program is 2 years, assuming suitable packaged software can be found. The marketing department also has a process re-engineering team in place to revamp the business processes in order to make the best use of the data warehouse's capabilities. The re-engineering team will be working closely and in parallel with the IS team.

The project plan calls for a phased-in roll-out of the new POS software over a 6 month period. Given the minor changes to the POS software, no major formal training activity is planned. The data warehouse will "go live" when completed and POS software would be rolled out shortly thereafter. Training for marketing staff on the new data warehouse and associated applications will be done by IS personnel familiar with the new system. The major training activity planned is a 2-day group seminar for all affected marketing staff prior to implementation of the new system. In addition, 3 IS employees will be assigned as resource people for on-going training, as required.

Just after the initial project plan had been put together, as outlined above, the supply-chain team project leader approached the VP-IS about the possibility of expanding the scope of the project to include some applications that would be very useful to ACME in better managing the supply-chain.

Section IV - Your Views On Information Systems at ACME Retailer (cont'd)

	Your views after reading this section:					How do you think the IS executive in YOUR COMPANY would respond?				
	Strongly Disagree		Neutral		Strongly Agree	Strongly Disagree		Neutral		Strongly Agree
12. For ACME, purchasing packaged software is the best solution for the data warehouse project (even if the software doesn't <u>match exactly</u> ACME's requirements).	1	2	3	4	5	1	2	3	4	5
13. The Project Team for the data warehouse project, has the right mix of IS, marketing employees and external contract workers.	1	2	3	4	5	1	2	3	4	5
14. The Data Warehouse project manager is justified in limiting the amount of data in the data warehouse.	1	2	3	4	5	1	2	3	4	5
15. The scope of the data warehouse project should be enlarged to include the supply-chain applications.	1	2	3	4	5	1	2	3	4	5
16. The data warehouse project is complex.	1	2	3	4	5	1	2	3	4	5
17. The data warehouse project is large.	1	2	3	4	5	1	2	3	4	5
18. The data warehouse project is well-defined.	1	2	3	4	5	1	2	3	4	5
19. Success of the data warehouse project rests primarily on the ability of the IS professionals to follow project management best practices.	1	2	3	4	5	1	2	3	4	5
20. The amount of training planned for the data warehouse and application software is about right.	1	2	3	4	5	1	2	3	4	5
21. The type of training planned for the data warehouse and application software is about right.	1	2	3	4	5	1	2	3	4	5
22. The best measures of success for ACME's data warehouse project are if the project is delivered on time and on budget.	1	2	3	4	5	1	2	3	4	5
23. How important to your firm, is the situation depicted in the ACME Retailer Scenario? (circle one)										
	a) Very important									
	b) Important									
	c) Neither important nor unimportant									
	d) Unimportant									
	e) Not at all important									

Section VI - Demographic Information

The remainder of the questionnaire asks for some information about yourself.

1. How long have you worked for this organization? _____ YEARS
2. How many years have you worked in retail? _____ YEARS
3. What is your current job title? _____
4. How long have you worked in your current position? _____ YEARS
5. In what other areas, and for how long, have you worked during your career (please circle all that apply)

1	SALES AND MARKETING	_____ YEARS
2	FINANCE	_____ YEARS
3	ACCOUNTING	_____ YEARS
4	DISTRIBUTION	_____ YEARS
5	LOGISTICS	_____ YEARS
6	PROCUREMENT	_____ YEARS
7	HUMAN RESOURCES	_____ YEARS
8	GENERAL MANAGEMENT	_____ YEARS
9	ADMINISTRATION	_____ YEARS
10	PLANNING	_____ YEARS
11	MIS	_____ YEARS
12	OTHER: Please specify _____	_____ YEARS
6. What is your age? _____ YEARS
7. What is your gender? (circle number)

1 FEMALE	2 MALE
----------	--------
8. What level of education have you completed? (circle all that apply)

1	SOME VOCATIONAL OR HIGH SCHOOL
2	COMPLETED VOCATIONAL OR HIGH SCHOOL
3	SOME COLLEGE OR UNIVERSITY
4	COMPLETED COLLEGE OR UNIVERSITY
	Specify major(s) _____
4	SOME GRADUATE WORK
5	A GRADUATE DEGREE
	Specify degree(s) _____
	and major(s) _____
6	OTHER Please specify _____

Any additional comments:

I would like to receive the Final Report of the study's findings and recommendations:

Yes _____ No _____

If yes, YOUR NAME: _____

COMPANY NAME: _____

ADDRESS: _____

I would be interested in receiving a follow-up telephone call to discuss my responses in more detail:

Yes _____ No _____

If yes, YOUR NAME: _____

COMPANY NAME: _____

TELEPHONE NUMBER: _____

Thank you again for your participation in this research.

Please use the envelope provided to return your questionnaire.

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